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Household Accounting: Experience in Concepts and Compilation

Volume 2
Household Satellite Extensions

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1. This handbook focuses on household sector accounts and their possible extensions as described in the System of National Accounts 1993 (1993 SNA).[1] Its intention is to describe the experiences of countries on conceptual and compilation issues of household sector and satellite accounting.

2. The present handbook is part of the series "Handbook of National Accounting" prepared by the United Nations Statistics Division (UNSD) in support of the implementation of the System of National Accounts 1993 (1993 SNA). The series includes, besides this one, the following handbooks which have already been published (or will be soon published) on:

- Integrated Environmental and Economic Accounting;[2]
- Use of the System of National Accounts in Economies in Transition;[3]
- Input-Output Table Compilation and Analysis;[4]
- Links between Business and National Accountss;[5]
- A Systems Approach to National Accounts Compilation;[6]
- Analytical and Policy Uses of National Accounts.[7]

3. Besides the handbooks prepared by UNSD, other member organizations of the Inter-Secretariat Working Group on National Accounts (ISWGNA) such as Eurostat (the Statistical Office of the European Communities), the International Monetary Fund (IMF), and the Organization for Economic Co-operation and Development (OECD), as well as other international organizations such as the Food and Agriculture Organization (FAO)and the World Tourism Organization etc., also prepare handbooks in their specialized fields of statistics. All handbooks published or soon to be published in support of the implementation of the 1993 SNA are announced in the *ISWGNA SNA News and Notes,* which is a bi-annual newsletter edited and published by UNSD.[8]

4. This handbook is a compilation of contributions made by various authors specialized in their respective national accounts and related fields. In preparation for this handbook, the authors met during the United Nations "Expert Group Meeting on Household Satellite Accounting" at United Nations (Headquarters) in New York from 6 to 10 October 1997. At this meeting the papers submitted were discussed and, where necessary, proposals for changes were made. A summary of the discussions of the Expert Group follows this introduction. Some comments were also made by the Group on the "spirit" of the handbook, which are presented in the following section.

II. "Spirit" of the handbook

5. Traditionally, the household sector is the least developed sector of the System. Although the previous 1968 SNA required the compilation of household accounts, only a few countries are producing such accounts. The 1993 SNA describes the concepts underlying a complete sequence of accounts for all sectors including the household sector. As the household sector includes all economic information on the human residents of a country, the challenge is to devote more resources to the compilation of household sector accounts. The handbook is seen as a tool in assisting in such efforts. The goal is to develop a more independent (which means based on its own data sources) compilation of household sector accounts compared to the prevailing practice of applying a more or less residual approach.

6. Besides the household sector accounts, there is a need to develop further household satellite accounts and social accounting matrices (SAMs). Two main issues emerge. First, since economic growth does not automatically translate into human development for all groups in a society, the need to study the links between the economic and social spheres is coming to the forefront of policy-making. Those links were, for example, extensively discussed during major UN conferences such as the Social Summit in Copenhagen or the Women's Conference in Beijing, and satellite accounts and SAMs were felt to be an appropriate means of analyzing such links. Second, since societies move not only from the agricultural to the industrial age but also from the industrial to the services and information age, it is necessary to provide a basis for analyzing this change, for instance, by developing further the concepts and compilation approaches to analyzing the characteristics of human capital and changes therein within the household sector, its household groupings, labour categories and industries.

7. Macro-economic policy worldwide relies very much on the main aggregates of the SNA, including Gross Domestic Product (GDP), final consumption, capital formation, etc. However, given the increasing socio-economic policy demands, the usefulness of the national accounts for policy analysis may be strengthened by making more use of the flexibility of its framework, in particular through satellite accounts and analysis. The task is multi-faceted and multi-dimensional.

8. The main target group of the handbook are national accountants in developed as well as in developing countries. It should prepare them for a dialogue with data collecting statisticians in various social fields, researchers and policy makers.

9. Given the diversity of social issues among countries, it is illusory to look for exhaustive guidelines. Although the handbook covers various issues of importance for the subject, it cannot and does not intend to be comprehensive, neither with respect to concepts nor with respect to practical descriptions on how to set up household sector and household satellite accounts.

III. The overall structure of the handbook

10. Since the development of household satellite accounts requires a minimum set of information on the household sector within the system of national accounts, this handbook is subdivided into two volumes. The first volume is called "Household Sector Accounts" and is devoted to the development of household sector accounts as described in the central framework of the 1993 System of National Accounts (1993 SNA). The second volume is called "Household Satellite Extensions" and concentrates on various types of household satellite accounts as extensions of household sector accounts.

11. Chapter I of volume 1 contains the description of the household sector according to the 1993 SNA and gives details on further elaborations of the household sector. Chapter II focuses on the concept of the informal sector, which is a crucial feature of the 1993 SNA with regard to the market production of household units, the income received from those production activities as well as employment opportunities in the informal sector. Chapter III presents country and case studies on the compilation of household sector accounts. Finally, chapter IV describes the links of the household sector to selected other sectors.

12. Volume 2 is primarily devoted to various types of household satellite accounting: labour accounting, functional satellite accounting, accounting for household production, and socio-economic accounting as done in Human Resource Accounts (HRAs), SAMs and Systems of Economic and Social Accounting Matrices (SESAMEs) which are all described in chapter V. Chapter VI of volume 2 focuses on the measurement of social issues. It describes various social indicators, problems in measuring them and potential data sources.

13. All the papers in volume 1 and 2 of the handbook reflect experiences in a variety of fields related to national accounting. Since each field has its own literature, the papers provide a list of references of work done elsewhere, which is intended to be as comprehensive as possible. This includes literature on concepts and compilation methods, but also reflects experiences in applying those in different parts of the world.

IV. The contents of volume 1

14. Chapter I of volume 1 "The household sector in the 1993 SNA" focuses on the concept of the household sector in the 1993 SNA and further elaborations. Since it is felt that issues on the household are scattered throughout the 1993 SNA, this chapter helps to summarize them as an introduction to the handbook. In particular, the chapter deals with the definition of the household sector and its sub-sectors and the different aspects of households as producers, recipients of income, and consumers. It also looks at the members of households as the economically active population.

15. Chapter I also gives further details on important aspects of households which are not further elaborated in the handbook. Other aspects, however, such as the informal sector within the household sector or the production boundary are discussed again in more detail in later chapters of the handbook.

16. Chapter II, "The Informal Sector as Part of the Household Sector", focuses on the concept of the informal sector, which is a crucial but often neglected feature of the 1993 SNA, with regard to the market production of household units, the income received from those production activities as well as employment in the informal sector. The concept of the informal sector and how it is transformed into a methodology for conducting informal sector surveys is covered by the first paper in this chapter. The paper describes in detail the internationally agreed upon definition of the informal sector arrived at at the 15th International Conference of Labour Statisticians in 1993. The second paper elaborates further on an integrated approach to the survey activities of national statistical offices for large, medium and in particular for small enterprises, which is called the FIRST methodology.

17. The third paper of chapter II describes the experiences carried out in the Philippines on collecting urban informal sector data in general and on homeworker and working children in particular. The next paper of the chapter puts forward a proposal on a minimum data set on the informal sector for national accounting purposes. The last paper presents an overview of progress made in the measurement of the informal sector and provides data on the level and development of informal sector employment and production.

18. Chapter III on "Experiences in Compiling Household Sector Accounts" gives a selected overview of country practices in the compilation of household sector accounts. The chapter starts with a paper on the Canadian experience, followed by a paper on experiences in India, Nepal, and Malaysia. The last paper of that chapter elaborates on micro-macro data links with regard to household sector accounting.

19. Chapter IV on "Links of the Household Sector to Other Sectors" is the last chapter of volume 1. It starts with a paper on the Norwegian experience with the links of the household sector to the government

sector, followed by a paper on the links between the household sector and the non-profit sector. Finally, some experiences are discussed concerning the direct and indirect links of the household sector to the rest of the world with a special focus on the socio-economic dimension of the household and particular household sub-groups. In particular, the paper on the Caribbean experience demonstrates the vulnerability of small countries to external links.

V. The contents of volume 2 "Household Satellite Extensions"

20. Volume 2 of the handbook focuses on satellite extensions of the household sector. Chapter V on "Types of Household Satellite Accounting" presents five different types of such extensions. The first one is on Labour Accounting, which is a further elaboration of chapter XVII of the 1993 SNA on "Population and Labour Inputs". Labour Accounting is essential for national accounting. However, elaborated Labour Accounting is, as the respective paper demonstrates, a tool still hardly developed in national accounting practices.

21. The next example of satellite accounts is on Functional Satellite Accounts. The paper presented in this handbook focuses on the French examples of Functional Satellite Accounting, which date back to the 70s when France started to develop Functional Satellite Accounts on research and development, health, social protection, etc. It introduces the impact of policy needs on satellite accounts development.

22. Another example of household satellite accounts is on the measurement of household production both within the SNA production boundary and, in particular, outside it. Various issues are raised in the papers on that subject which are not only of a methodological nature but also discuss classification and valuation issues as well as country practices. The last paper in that section discusses some theoretical issues in valuing non-market activities.

23. The fourth type of household satellite accounts described in volume 2 focuses on the Human Resource Accounts (HRA) developed by UNSD. In contrast to Functional Satellite Accounts, HRAs are so-called integrated satellite accounts (1993 SNA, '21.122/3). They are a comprehensive presentation of the SNA and include some changes in concepts and further detail in classification in support of an alternative satellite analysis. They provide an integrated framework of socio-economic data. The general features of these accounts are presented in the first paper in this section. The next papers report on the experiences carried out with such types of accounts in the Republic of Korea and Colombia.

24. In the last section of chapter V, Social Accounting Matrices and their extensions (SAMs and SESAMEs) are presented. Like HRAs, they are also comprehensive presentations of the SNA and therefore may also be referred to as integrated satellite accounts. The first paper in this section explains the general features of SAMs and, in particular, of SESAMEs in measuring welfare. The other two papers reflect the experiences carried while introducing SAMs and SESAME in the Netherlands and in Indonesia.

25. The structure of chapter V is guided by the scope of satellite accounts: Labour Accounts as well as Functional Satellite Accounts focus on special aspects of the socio-economic dimension of the household sector. Accounting for household production deals with those activities not covered by the SNA production boundary. HRAs, SAMs and SESAMEs capture all previous aspects, in particular those on the labour market and those reflected in the Functional Satellite Accounts. In addition, SESAMEs and Human Resource Accounts provide the link between the social indicators approach and the national accounts. Moreover, SESAMEs are intended to incorporate environmental accounts. SESAMEs are the most detailed system of socio-economic accounting; at the same time they are also the most demanding framework regarding data and resources.

26. The final chapter VI of volume 2 is on “Measurement of Social Issues”. Satellite accounts try to address social issues such as poverty, health and education. How to describe these issues statistically is the subject of this chapter. The first paper of chapter VI concentrates on the definition and measurement of selected indicators and the progress made in the last decades. The next paper describes in detail efforts made to find the proper indicators to address poverty as a social issue. The final paper then describes surveys as one of the sources of data for the compilation of social indicators.

Summary of the Discussions of the Expert Group

27. The Expert Group in its meeting from 6 to 10 October 1997 had intensive discussions about the papers presented. The following summary will list the main ideas of the discussions besides those which were already presented in chapter II of the Introduction.

I. Household sector accounts

A. The household sector

28. The first volume of the handbook summarizes various aspects of household sector accounting as outlined in the 1993 System of National Accounts (1993 SNA). Further clarifications are needed with regard to certain concepts outlined in the 1993 SNA. In particular, further work on operationalization and measurement is necessary with regard to concepts such as actual consumption, the informal sector, hidden or illegal activities, and household production.

29. With respect to the scope of the household sector accounts, the compilation of the production, income, and use of income accounts of households has priority in order to derive saving of households. Depending on the needs, data availability and resources, countries may further develop household sector accounts, including capital and financial accounts and even balance sheets.

30. Regarding the detailed analysis of economic and social links, the development of a possible international sub-classification of the household sector is proposed. Such a classification may be developed on the basis of several criteria, including socio-economic characteristics such as the level of education or the occupational category of the reference person, whether the household is an agricultural household or not, whether it is located in a rural, urban or other area, the size of the household, etc. Size of income may also be used as a classification criterion.

31. The central framework of the SNA includes part of households' non-market production (e.g. agricultural production and all goods for own-consumption). For many reasons, among which are the homogeneity of macroeconomic aggregates, some valuation difficulties due to the absence of economically meaningful prices, and the usefulness of central national accounts for policy purposes, the SNA production boundary should remain where it stands (for further details see 1993 SNA, Chapter 6, paragraphs 6.19 to 6.22). For analytical purposes, it was proposed that the satellite account for non-market household production should cover the entire range of such production, i.e. activities lying both outside and within the SNA; and that these should be presented separately in the satellite account so as to offer the widest and most flexible possibilities for the analysis of non-market share.

B. The informal sector as part of the household sector

32. With regard to the delineation of informal sector production within total household sector production, further operationalization and a clear attribution of producing units to the respective sectors is necessary, in order to avoid data gaps or double counting in individual countries and to increase international comparability.

33. Following the SNA, the informal sector should also be identified as a subdivision of the institutional sector of households, so that welfare-oriented measures can be derived. For instance, informal sector households can be defined as those which receive most of their income from informal sector production.

34. An integrated system of surveys of household activities has advantages compared to surveys covering only one or a few sectors or industries. With respect to the still prevailing deficiencies in the data on the market production of households, two survey strategies are described: the FIRST method, and the mixed household and enterprise survey strategy developed by the ILO for informal sector activities and employment.

35. With regard to informal sector surveys, given the lack of bookkeeping by informal units and the costliness of detailed inquiries, informal sector sample surveys may concentrate on a simplified set of data items. In particular for national accounts purposes, small data sets in combination with additional information from supplementary surveys as well as further estimates may provide a comprehensive picture of the informal sector in the household accounts.

36. The Delhi Group on Informal Sector Statistics held its first meeting in May 1997. Part of the future work of the Delhi Group will be devoted to the data needs of national accounting with respect to the informal sector.

C. Experiences in compiling household sector accounts

37. With regard to the compilation of household sector accounts, which requires the combined use of independent data sources, there is a need to develop more practical and detailed examples and guidelines, to be based on the practical experiences of pioneering countries.

38. Links between micro- and meso-/macro-data are useful though hard to maintain. In some countries, such as Mozambique, micro-data from the household survey, are carefully scrutinized and then adjusted and completed, so that a comprehensive and internally compatible database is available for the compilation of household sector accounts. Thereafter, the only adjustments made are to reconcile the data with the SNA concepts, including imputation, and to integrate them with separate estimates of small-scale production by households and the data of other (institutional) sectors of the economy. The latter adjustments, however, are not reflected in the micro-data, which implies that at that point of the compilation the link between micro- and macro-data is cut.

D. Links of the household sector to other sectors

39. The central framework of national accounts provides users with a functional analysis of household, government, and non-profit institutions final consumption. Beyond this integrated approach, actual final consumption could be adapted in satellite accounting to particular social concerns, e.g. with respect to education, health, etc. This adaptation would then result in a partial incorporation of non-household expenditures towards those concerns, and may also include some collective expenditures, for instance general administrative expenses by the Ministry of Education or Health, which also need to be taken into account when the effectiveness of educational or health policies is examined.

40. With regard to the links of the household sector to non-profit institutions (NPIs), there is a need to further elaborate the SNA criteria with regard to the scope and classification of NPIs.

41. With regard to the links of the household sector with the rest of the world, the vulnerability of households to external influences is an important issue. This can be addressed by developing a type of analysis that would require “from whom to whom” links between the household sector and the rest of the

world. Further work, however, is needed to develop the orientation of such a matrix and to elaborate appropriate data sources.

II. Household satellite extensions

A. Types of household satellite accounting

42. The efforts to integrate economic and social analysis through satellite accounts are welcome. They will provide more adequate support for a balanced development of economic and social statistics.

43. The experimental and operational implementation in countries of satellite studies were presented. These included Labour Accounting Systems (LAS), Functional Satellite Accounts, accounting for household production, Human Resource Accounts (HRA), and Social Accounting Matrices and their extensions (SAMs and SESAMEs). This concerns, in particular, accounting systems that have already been institutionalized in one or more countries. They provide a means of bringing closer together the practices of national accountants and the policy users of the accounting data.

44. The development of labour accounts within satellite systems such as Labour Accounts, Human Resource Accounts and SESAMEs was considered to be important as a means of further strengthening the role of employment in the central framework of the 1993 SNA (1993 SNA Chapter XVII). Detailed information on employment by labour type (such as gender and skill level) provided by those systems would enhance the usefulness of other information provided by the System such as information on wages and salaries, output, etc.

45. When reviewing the practices of the Functional Satellite Accounts, their decentralized use by technical and/or interested government agencies and social partners is considered an advantage. Such practice would make better use of technical capabilities in specialized areas and would help develop a better link between national economic and satellite accounting and its uses in policy analysis and modeling.

46. Extensions of the production boundary to non-market non-SNA activities for special studies may be referred back to an early development initiated by some economists. Kuznetz, for instance, suggested in his studies that all activities needed to be considered whether market or not, in order to determine whether the economy was growing or not.

47. Following the recommendations of the 1993 SNA, extensions of the production boundary to non-market non-SNA household activities could best be implemented in a satellite framework. It was agreed that, as recommended in the SNA, the scope of what should be considered "extended production" should be defined according to the third party criterion. Activities not meeting this criterion, e.g. sleeping, eating, listening to music, etc, are personal activities, they are not productive activities and therefore not relevant for the satellite account. Because of valuation problems, some countries have until now imputed a monetary value only to household maintenance (food preparation, cleaning, repairs, etc.), while other countries have included, in addition, the care of persons (care of children, of dependent adults). These differences in the "extent" of "extensions" should eventually disappear with the development of appropriate valuation techniques.

48. Classifications which can cover both economic and social production activities are being proposed. However, caution is suggested, in particular as the unit of observation and classification for social activities, e.g. in time-use surveys, would be different from the unit used for descriptions of

economic activities. Establishments, as defined in the SNA, are homogenous production units that use "bundles" of time-use activities and not the single time-use activities that are considered when determining the contribution of social production outside the SNA production boundary (e.g. in the compilation of GDP based on the SNA, the economic activity of a crèche consists of a combination of activities such as childcare, food preparation and serving, transportation, doctor's visits, etc.). Further work will be needed to identify corresponding bundles of time-use activities within and outside the SNA production boundary.

49. The preferred method of valuing household non-market SNA and non-SNA activities is the output method. At the same time, valuation should be applied with caution, because it involves assumptions about interpersonal utilities, and furthermore would involve valuation of household activities that were never part of market transactions and never gave rise to monetary income, but would result in changes in production and consumption patterns if market transactions had actually taken place. The various theories of value should be closely studied by those using valuations for non-market non-SNA activities, in particular the value theory developed by Hicks or Debreu, which is very closely followed in national economic accounting.

50. Some experts were in favour of valuing time-use activities in order to quantify their contribution to an extended concept of GDP. Others, who focused on the use of time-use data in the specification of functional relations of household behaviour, thought that valuation was methodologically and/or practically not feasible.

51. When reviewing satellite accounts practices with regard to household sector concerns in the Functional Satellite Accounts approaches, HRA and SESAME, developers of alternative analyses should prepare links between T-accounts presentations, matrices and separate tables, so that users are able to compare analyses more effectively. The matrix presentation provides more detailed data with regard to "from whom to whom" links between household sub-sectors and also with other sectors, and, provided sufficient data are available, this information is useful in analysis. In most cases such analysis could not, however, rely on assuming that coefficients are fixed.

52. When dealing with employment links between income generated in production and income used by households in HRAs and SESAMEs, a distinction should be made between "jobs", which is generally the unit of which information is obtained from economic surveys, and "persons", which is the unit of classification in household surveys. Such surveys should therefore be designed to ensure coverage of all jobs held by persons during the relevant reference periods. Furthermore, it should be kept in mind that on the "job" side there are filled and vacant jobs, and that there are employed persons and unemployed persons. The elements of a Labour Accounting System are to be taken into account when designing HRAs and SESAMEs. It is recognized, however, that the additional elements of vacant "jobs" and unemployed persons included in an LAS might be difficult to identify in developing countries and in particular in the informal sector and/or in activities with great seasonal fluctuations in employment.

B. Measurement of social issues

53. Poverty and other income and capability indicators should be developed in close coordination with household sector satellite accounts. In particular, a link should be established between the classifications and concepts of the latter and poverty indicators. Data development of these separate efforts should also be better coordinated, so that at the national level use can be made of the same database. This is even more important at the international level, as non-coordination of both efforts would result in many data gaps and, as a result, in non-comparability of indicators between countries. Poverty indicators should not only be merely descriptive of an overall situation but also identify special groups and issues that governments could target in their policies towards relieving poverty constraints.

54. Various activities are in progress to increase the quality and detail of household sector data. In particular with regard to the social dimension of households the efforts undertaken by survey types such as Living Standards Measurement Studies (LSMS) are acknowledged. However, the costliness and burden on both respondents and national statistical systems of such surveys have to be taken into account. One might also favour "leaner" surveys which may be carried out more often in order to generate time series.

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55. This handbook is the result of the international cooperation between the United Nations Statistics Division (UNSD), national and international statistical agencies and individual experts who have volunteered to bring in their expertise and time in preparing this handbook. Some countries and institutions also funded the participation of their experts in the Expert Group Meeting on Household Satellite Accounting held in New York from 6 to 10 October 1997.

56. UNSD is grateful to national statistical offices, international organizations and individual experts for their contribution to the successful completion of this handbook. The list of individual experts involved in the preparation of this handbook and their function as well as their institutional affiliation is given on the following pages. The opinions expressed in the handbook do not necessarily represent those of the United Nations or of the institutions the respective authors are affiliated with.

57. Mr. Bernd Becker was responsible for organizing the Expert Group meeting and for preparing the draft of the handbook. Thanks to generous financial support by the World Bank final editing was undertaken under the supervision of Mr. Robin Lynch [World Bank]. The conceptual outline of the handbook as well as of the agenda for the expert group meeting was developed together with Mr. Jan van Tongeren in close cooperation with Mr. Jean-Etienne Chapron. Regarding technical and organizational matters, special mention should be made of the valuable contribution made by Mr. Stefan Schweinfest in close cooperation with Mr. Ralf Becker, Ms. Elene Pfond, Ms. Juana Sanchez-Galvan, Ms. Anu Vempaty, and Ms. Marta Bergonzoli. The project was carried out under the responsibility of Ms. Cristina Hannig.

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List of Abbreviations and Acronyms

BOP	Balance of Payments
BPM	Balance of Payments Manual
CARICOM	Caribbean Community
c.i.f.	cost, insurance, freight
COFOG	Classification of the Functions of Government
COICOP	Classification of Individual Consumption by Purpose
COPNI	Classification of the Purposes of the Non-Profit Institutions serving Households
COPP	Classification of Producers by Purpose
CPA	Classification of Products by Activity
CPC	Central Product Classification
CPI	Consumer Price Index
CPM	Capability Poverty Measure
ECA	Economic Commission for Africa
ECE	Economic Commission for Europe
ECLAC	Economic Commission for Latin America and the Caribbean
ESA	European System of Accounts
ESCAP	Economic and Social Commission for Asia and the Pacific
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
Eurostat	Statistical Office of European Union
FAO	Food and Agriculture Organization of the United Nations
f.o.b.	free on board
FIRST	Fully Integrated Rational Survey Technique
FISIM	financial intermediation services indirectly measured
GDP	gross domestic product
GFCF	gross fixed capital formation
GFS	government finance statistics
GNI	gross national income
GNP	gross national product
HDI	Human Development Index
HDR	Human Development Report
HPI	Human Poverty Index
IARIW	International Association for Research on Income and Wealth
ICD	International Classification of Diseases and Related Health Problems
ICIDH	International Classification of Impairments, Disabilities and Handicaps
ICLS	International Conference of Labour Statisticians
ICP	International Comparison Programme
ICSE	International Classification of Status in Employment
IEA	integrated economic account
ILO	International Labour Organization
IMF	International Monetary Fund
INSEE	Institut national de la statistique et des études économiques
INSTRAW	International Research and Training Institute for the Advancement of Women
IO table	input-output table
IS	informal sector
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
ISIC	International Standard Industrial Classification of All Economic Activities
ISWGNA	Inter-Secretariat Working Group on National Accounts
IT	information technology
LAS	Labour Accounting System
LFS	Labour Force Survey

LSMS	Living Standard Measurement Study
MNSDS	Minimum National Social Data Set
MPS	Material Product System
NACE	General Industrial Classification of Economic Activities within the European Communities
NAFTA	North American Free Trade Agreement
NDP	net domestic product
n.e.c.	not elsewhere classified
NGO	non-governmental organization
NPI	non-profit institution
NPISHs	non-profit institutions serving households
OECD	Organization for Economic Co-operation and Development
OECS	Organization of Eastern Caribbean States
PIM	perpetual inventory method
PPP	purchasing power parity
PREALC	Regional Programme for Employment in Latin America and the Caribbean
psu	primary sampling unit
R and D	research and development
ROW	rest of the world
SAM	social accounting matrix
SEEA	system of environmental and economic accounts
SESAME	system of economic and social accounting matrices and extensions
SITC	Standard International Trade Classification
SME	Small and micro enterprises
SNA	System of National Accounts
SUT	supply and use table
TUS	time-use statistics
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNSD	United Nations Statistics Division
VAT	value added tax
WHO	World Health Organization
WTO	World Trade Organization

CHAPTER V

TYPES OF HOUSEHOLD SATELLITE ACCOUNTING

1. Labour Accounting

Developing labour account estimates: Issues and approaches

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I. Introduction and background

1. This paper tries to provide an overview of the main concepts and principles of Labour Accounting Systems (LAS) and present the work on developing estimates for coordinated LAS in four countries: Denmark, the Netherlands, Norway and Switzerland. Similar activities may also be under way in other countries, but documentation was easily available to the author only for these four, one of which, the Netherlands, is widely recognised to be the leading country in this field.

2. The term "labour accounts" or "labour accounting system" emerged from discussions which started in the early '80s between representatives of some national statistical offices and of the statistical secretariats of some international organizations, concerning the objectives, principles and mechanisms for pulling together in an effective manner the fragmented statistics available on labour markets. This concern was related to statistics on employment, unemployment, wages and income from employment as such, as well as to the coherence between these respective areas of labour statistics, and between them and other areas of statistics, both economic statistics, in particular as organized by the System of National Accounts (SNA), and social and demographic statistics. The concern applied to statistics both for a particular reference period and for the changes which take place between reference periods, both in respect of the net changes for groups and the gross changes for individuals. The participants in the discussion felt that users as well as producers of labour market statistics would benefit from the creation of a framework which could assist in the production of comprehensive and coherent statistics with improved precision for the said areas, and in the use of fragmented, incomplete and partly overlapping primary statistics, which also might be less precise than required by users. By using the term Labour Accounting System (LAS) for this framework, it was intended to signal (i) the intention to make use of any relevant definitional relationships between central concepts and units; and (ii) the conviction that a useful LAS framework would serve as a coordinating tool for all labour statistics, in the same way as the 1993 SNA serves as a coordinating tool for economic and financial statistics.

3. Having participated actively in the discussions from the start, the Bureau of Statistics of the International Labour Office presented *ILO (1992)* for discussion at the 15th International Conference of Labour Statisticians, see *ILO (1993)* paragraphs 98-108).[1] Both the outline and the discussion observed that the difficult problems in preparing labour accounts would be related to the use of available data to generate the actual estimates, and that only experience with the preparation and use of such estimates would lead to further progress in respect of developing a coherent and agreed LAS. In addition to presenting the main concepts and principles of LAS, the objective of this paper is, therefore, to review the LAS work in the four countries mentioned, with respect to similarities and differences in the approaches taken to the establishment of labour accounts, and to see whether conclusions can be drawn with respect to the direction of future work. The presentation of the national approaches is based mainly on *Poulsen et al (1996), Statistics Denmark (1997a and 1997b), Leunis & Altena (1996), Hansen & Skoglund (1997), Buhmann et al (1995), Ackermann et al (1997)* and *Vuille (1997).*

II. User areas

4. In the discussion of an LAS, one has to distinguish between two sets of issues: (i) those concerning the logical and definitional structure; and ii) those concerning the observation and estimation of the corresponding data (parameters). This distinction is necessary, as the issue of inconsistency in primary statistics has tended to get confused with that of ensuring logical consistency within the LAS. The problem of how best to use the primary statistics to estimate the "data cells" defined by the structure of an LAS is basically no different from that faced by national accountants and other secondary users of statistical data, and in seeking its solution one may, in the same way as national accountants, benefit from the requirement that estimates be consistent within the logical framework of the LAS structure, and in particular the "accounting relationships" in the system. Thus one basic use of the LAS is to provide a logical framework for obtaining internally consistent estimates of key labour market variables and their distribution over the population. Such consistent estimates are in turn necessary for the description and analysis of the state and dynamics of the labour market and its interaction with the rest of the economy. In addition to "accounting relationships", the logical framework will require the consistent use of units of observation and measurement, time references, definitions and classifications.

5. More specifically, the "description and analysis of the state and dynamics of the labour market and its interaction with the rest of the economy" refers to the following main areas for statistical description and analysis:

(a) obtaining an overall picture of the employment status of the population and its distribution over the numerous variables of interest for economic, labour market and educational policies and planning, as well as estimates of net changes which can be derived from successive situation descriptions, see *Gouriev (1984) and Neubourg (1983)*

(b) studies of the total amount of human resources, changes in these resources and their allocation between different activities. These include productivity studies which require consistency between labour input data, on the one hand, and production or national accounts data, on the other, see *Harildstad (1989);*

(c) studies of the relationship between the cost of labour and the demand for it, on the one hand, and the remuneration of labour and the supply of it, on the other, see *Altena et al (1991)*

(d) studies of "gross" changes ("flows") in the number of jobs and persons and in their activity situation, see *Neubourg (1983).*

6. There are very real differences in the requirements of these different user areas in terms of units of observation, units of measurement, reference period and periodicity, core elements of any LAS. User areas such as (a) and (d) focus mainly on persons, both as units of observation and units of measurement, but will often differ with respect to the desired periodicity and reference period. User areas such as (b) and (c) are mainly interested in the flow of productive services and how they are generated, allocated and rewarded, and may focus on hours as a unit of observation and some quality indicator (e.g. value or "money") as a unit of measurement, even if the reference period and periodicity are the same as those for (a) or (d).

III. Periodicity and reference periods

7. The reference periods required for user areas such as (b) and (c) will depend on the accounting periods used. A calendar year or a quarter are most frequently used. Productivity studies require data on the "amount" of productive services rendered by labour during the reference periods. User areas (a) and (c) will be interested in certain stocks, such as:

(a) the average number of persons (or posts) that have had certain status characteristics during the reference period; or

(b) the number of persons with certain characteristics present at the end of the reference period;

or they will focus on various changes, such as:

(c) the net changes in the number of persons in each status category;

(d) the total number of changes occurring in the reference period;

(e) the total number of persons who experience at least one change within a reference period; and/or

(f) the number of persons who have changed status from one period (or one reference date) to the next.

8. The numbers for (c) to (f) are equal only for very short reference periods, periods that are too short for a post or a person to experience more than one change. We must expect that in practice "labour accounts" will be mostly concerned with type (c) and (f) changes for reasons relating to the availability of data. However, data from administrative records may tend to be of type (d) while some users may prove to have a preference for type (e) data. (It may be worth noting that whereas changes of types (d) and (e) recorded for each of, for example, four quarters add up to the total which would be recorded if the reference period was one year, the adding up of quarterly changes to obtain changes over one year is not possible with type (c) and (f) data.)

IV. Units and other structural elements

9. This section describes the basic units which serve as the building blocks of the logical LAS structure and how they are related. (Note that the use of a specific reference period is implicit in what follows.)

10. Posts and persons are the main objects (or units of observation) of an LAS because these are the units which are counted in (part of) the LAS as well as observed in many of the underlying statistics. When "persons" and "posts" are linked, there exists a "job" (and vice versa: it takes a "job" to link a "post" and a "person"):

(a) a person requires no further comment at this stage;

(b) post should be defined as a set of tasks which are (designed to be) carried out by one "person";

(c) a job should be defined as an implicit or explicit contractual relationship between a specific "person" and a specific "post". Each "job" represents the link between an employed person and a filled post. (This includes the "self-employed" person who fills a "post", with himself/herself as the "employer".)

11. The primary units "posts", "persons" and "jobs" are carriers of characteristics (variable values) which are of interest to the users of an LAS. Some of these characteristics are derived from other units of observation, i.e. employers and households:

(a) a household is an important part of the context for a person's participation in the labour market. Characteristics of households therefore are important in much of the analysis and description of labour supply;

(b) an employer may be a corporation, a government unit, a non-profit institution or a person in his/her capacity as the owner of an unincorporated enterprise[2]. In addition to being important in the definition of "posts", "employers" are primary carriers of characteristics which are important when describing "posts" and, through them, also "jobs" and/or "persons".

12. In an LAS we want to distinguish between those characteristics of "posts" and "persons" which describe their relation to the labour market, (i.e. those describing "activity situations"), and other characteristics ("distribution variables") which are used to describe the structure of the primary units in the different activity situations. The following activity situations seem most important:

(i) for posts: (a) filled posts
(b) vacant posts

(ii) for persons: (a) employed persons
(b) unemployed persons
(c) persons outside the labour force

13. While initially the number of activity-descriptive classes can be limited to these three for "persons" and two for "posts", the number of classes can be expanded if required, e.g. with "training" and "education".

14. The international recommendations concerning the definition of activity situations for persons are presented in the resolution concerning the statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th ICLS in 1982[3]. Corresponding recommendations do not exist for "posts" or "jobs", but some elements of future definitions would seem to follow from the logic of their inclusion in the LAS:

(a) Since a "filled post" should correspond to (at least) one "employed person", there will be (at least) one "post" whenever we have an "employed person". As "employed persons" may be "temporarily absent from work", we may also have a "filled post temporarily inactive" because of such absence. (However, since some workers can be engaged on a

temporary basis as substitutes for some of the workers who are absent, there cannot be a one-to-one relationship between the number of "employed persons temporarily absent" and the number of "filled posts temporarily inactive".);

(b) There has not been much international discussion of the concept and measurement of vacancies. However, it has been suggested, e.g. in *Hoffmann (1995),* that it is fairly straightforward to evelop a definition of a "vacant post" which parallels the definition of an "unemployed person":

'A ''vacant post" can be said to exist if an employer before or during the reference period has taken concrete steps to find a suitable person to carry out a specific set of tasks and would have taken on (entered into a job contract with) such a person if she/he had been available during the reference period.'

Definitions which are close to this have been used as the basis for surveys, e.g. in Canada, Hong Kong, the Netherlands and the United States. Experience to date does indicate, however, that it is virtually impossible to design surveys which can cover all "vacancies" to which "unemployed persons" may apply (see also *Verhage et al (1997)).*

15. Chart 1 in the annex describes how the units discussed above are related. It has been drawn to emphasise the parallel between "persons" and "posts", representing the supply side and the demand side of the labour market respectively. However, this should not lead one to forget a fundamental difference between these two types of units: "persons" can exist independently of the labour market (thus the need for the category "persons outside the labour force") while it it meaningless to speak of "posts outside the labour market". Consequently, "the total number of posts" cannot be defined independently of its components "filled posts" and "vacant posts".

16. In addition to making it possible to define "vacant posts", the term "designed to be" in the definition of "post" given in paragraph 12(b), will allow the definition of "posts" to cover the "shared post" situation (or "shared job" which is the more common expression). A "shared post" is the situation where a "post" has been designed by the employer to be filled by one "person" but, for various reasons, two or more "persons" have been engaged to carry out its tasks. In other words, one "post" can be linked to more than one "person". This parallels the situation of one "employed person" being linked to more than one "post". Difficulties which arise from this can probably best be dealt with through the appropriate characteristics of "jobs", e.g. as "part-time/full-time", "principal/substitute", "shared/not shared" posts.

17. One function of the "job" concept is to represent the link between one particular "filled post" and one particular "employed person". The "job" is the unit observed in most establishment-based employment statistics, and it is also the link which makes it possible to associate person-specific characteristics (e.g. age, sex, education, work-history) with "posts", and post-specific characteristics (e.g. the occupation and status-in-employment of the post as well as the industry of the employer) with "employed persons".

18. There is a clear parallel between "jobs" in an LAS and "transactions" in the national accounts. In fact, "jobs" should be seen as reflecting a specific sub-set of the transactions described by the national accounts. This provides the main basis for overlap between the two systems.

19. Chart I includes "hours actually worked" and "hours paid for" as two special sets of units linked to "jobs". Both types of unit are of central interest to users of an LAS, both in themselves and because they provide the basis for productivity calculations ("hours actually worked"), for definitional links with the SNA ("hours paid for") and for defining "accounting relationships" within the LAS (see section VII below).

V. The measurement of quantities

20. The main quantities asked for in an LAS will be:

(a) number of units, i.e. number of posts, jobs and persons;

(b) amount of productive services rendered by employed persons/used in filled posts;

(c) value of productive services rendered by employed persons/used in filled posts.

21. When describing the number of persons, it should be possible for the LAS to have direct links with the demographic accounts, including educational accounts, which are part of the *Framework for Social and Demographic Statistics (FSDS)* described in *United Nations (1979),* i.e. common conventions, definitions and classifications. Similarly, information on "hours actually worked" should be linked to a "time-use" component of the FSDS. When describing the value of productive services, it should be possible for the LAS to have direct links to the system of national accounts (SNA), particularly as one of the satellite tables to the national accounts is designed to display the amount of productive services provided by labour.

22. While standard conventions specify how to measure the number of persons and the value of labour services, no agreement has been reached concerning the measurement of the amount of services provided by labour. Four different measurement methods can be said to exist (or to have been proposed):

(a) number of "persons at work" (a sub-set of "persons employed");

(b) number of "work-years" ("man-years");

(c) number of "actual hours of work";

(d) "value of wage bill at constant wages".

23. Measurement method (a) is generally thought by most users to be too crude to be satisfactory, as differences in the intensity of work of different people during the reference period are not taken into account. Method (b) is currently the most commonly used in the national accounts satellite tables mentioned above, and is often thought of as equivalent to "number of jobs on a full-time basis". It uses a reference to the "normal work-year" when converting from "persons employed" to "work-years", and the estimation is usually based on a classification of "persons employed" as either "full-time" or "part-time" workers. Several countries now seem to find that "normal work-year" and "part-time work" are concepts which are too imprecise and variable, both over time and between industries, and they therefore would prefer to use measurement method (c). Method (d) has been proposed as the best method to make adjustments both for the intensity of work during the reference period and for differences in the amount of productive services rendered by different types of labour due to differences in qualifications and other factors, but no examples of its use in official statistics have been found.

24. It seems likely that measurement methods (a) and (b) will continue to be the most widely used in the near future, as they require less (or simpler) information than methods (c) and (d), which may be preferable in principle for certain types of analysis. Collecting good data which can serve as a basis for measurement methods (c) and (d) is not easy, and is especially difficult with regard to persons working for profit or family gain and not for pay.

25. A time-accounting approach to the measurement of time actually worked has been outlined, see e.g. *Hoffmann (1981),* which, based on later studies from Finland, for example, seems to give better estimates of hours worked by self-employed groups than the standard approach used in labour force surveys. If "hours of work" are obtained for quality-relevant categories of employed persons (as definedby e.g. occupation or education), then we can apply some weighting scheme to arrive at a quality-adjusted measure of "amount of services rendered". The difficulty, of course, is to determine the basis for such weights.

26. Most of the weighting systems which have been proposed are related either to the cost of increasing the quality and productivity of workers (e.g. years of schooling and special vocational preparation, costs of education and training) or to the results of their productive activity (e.g. relative wages). The problem with cost-related weights is that there is no way of knowing the degree to which the cost of training received is related to the resulting capacity to render productive services. (Available evidence seems to indicate that cross-section correlations are positive but weak, and that they are probably not stable over time.) One problem with result-related weights, such as wages, is that they only reflect results under rather strict assumptions about the markets in which they are determined. These assumptions are not satisfied in real labour or goods markets, and we have no way of knowing how important this is for the ability of, say, relative wages to reflect relative productivities. This problem is compounded when we remember that the remuneration of many employed persons is determined not directly in a labour market, but indirectly in goods and services markets with a combined remuneration of both labour and capital. Consequently, "wage bill at constant wages" is also a problematic basis for measuring the amount of productive services rendered, even if we do not take into account the difficulties of estimating a "wage equivalent" component of the incomes of "self-employed" persons.

VI. Classifications

27. The "distribution variables" referred to in paragraph 11 above have two important functions in the LAS. The most obvious one is to describe the important characteristics of the units "accounted for" by the LAS, i.e. the stock of persons and posts in the different activity situations, the changes in these stocks or the amount or value of services provided in/by the units during a particular reference period. Gross transition of "persons" or "posts" between classes in the "distribution variables" should not be seen as part of the LAS, but it may be included in other parts of a socio-demographic accounting system. The second function is related to the estimation of cells in the LAS tables. The data sources which can be used as a basis for LAS estimates will frequently be incomplete, in particular with respect to the units covered, and different sources will be truncated differently. The identification of the holes in the coverage of the different sources and their degree of overlap in terms of the distribution variables will provide a basis for making the necessary estimates and/or improving the database.

28. It is useful, at least from a data collection point of view, to recognise the primary unit for each distribution variable. Other units may also be described by these variables, but only if they have a recognised relationship to the primary unit, i.e. they are sub-units or they are linked in a defined way to the primary units, e.g. in the way "persons" are classified by "industry" by being linked to a "post" at an employer (i.e. an establishment) through a "job". Table 1 indicates the main distribution variables of interest to users of LAS-based statistics and how they are allocated among primary units. The table also

indicates whether some type of international recommendation exists concerning the definition and classification (value set) of the variables.

VII. Accounting relationships in the labour accounting system

29. "Accounting relationships" in an LAS will relate to stocks of "persons" (for the supply side) and "posts" (for the demand side), to changes in these units, and to flows of hours and income/costs. The elaboration of these relationships is important both because describing the structure of the LAS will make explicit the logical and definitional interdependence of various elements in the LAS, and because they can facilitate the identification of inconsistencies in the available data used to make LAS estimates, and the necessity for adjustments and/or supplementary data. Wherever relevant, the design of these accounting relationships must be coordinated with corresponding parts of the System of National Accounts (SNA)[4] and the Framework for Social and Demographic Statistics (FSDS), for the same reasons, although in practice the coordination between an LAS and the SNA and FSDS systems depends more on the coordination of scope, units, reference periods and classifications.

30. Accounting for the stocks of persons should take the total population as the point of departure, making sure that in this context "total population" is defined in a way which is consistent with the SNA guidelines for the definition of the (national) production boundary, as well as the FSDS guidelines.[5] Depending on the main uses of the data, there will be a need to account for the average number of persons in each of the groups defined by cross-classification of the activity variables and the distribution variables, as well as for the "closing stocks" at the end of each reference period. The former stock concept is the one most closely related to the flow accounts for hours and income (see paragraphs 33 and 34). The latter stock concept is the one most directly relevant for the change accounts (see paragraph 32). The basic relationship to be satisfied by these accounts is:

total population = employed persons
+ unemployed persons
+ persons outside the labour force

31. In paragraph 13 it was underlined that the total number of "posts" cannot be defined or observed independently of its components - "filled" and "vacant" "posts". In paragraph l2(b) the observation was made that in practice it is virtually impossible to observe all vacancies. Most accounts of the stock of "posts" will therefore be limited to "filled posts" and an observable sub-set of "vacant posts" with groups defined by distribution variables. Consistency issues with the SNA concern the delineation of activities which belong to the national economy. The same considerations as for "persons" will determine the choice of "average" or "closing" stock concept. The basic relationship to be satisfied by these accounts is:

total number of posts = filled posts + vacant posts

32. In early discussions about an LAS, much attention was paid to gross changes from one closing date to the next (see paragraph 7(e) above). Making sure that all possible forms of such changes have been identified and estimated, given the periodicity and reference periods, is one type of "accounting relationship" that is necessary within a complete LAS, well illustrated in *Denton et al (1976).* Such "change accounts" must account for, and therefore define, "births" and " deaths" of "posts" and "persons" respectively, in addition to transfers from one activity situation to another. There is no problem in principle in defining "activity transfers" or "births" and "deaths" of persons (where the latter would cover migrants as well as real deaths and entries and exits to/from any lower and upper age limits), and such data will often be available and of interest. More problematic are the "status transfers", "births" and "deaths" of "posts", as these can only be defined on the basis of recruitment activities (i.e. "vacant posts")

or observed "jobs" (i.e. "filled posts"). Most employers are likely to find it difficult to give information about activity changes of "posts", i.e. about whether a newly hired person has entered into a formerly "vacant post" or into a "new post", and whether the departure of a person has created a "vacant post" or has led to the loss ("death") of a "post", even though in public discussions there are frequent references to and considerable interest in the "loss" and "creation" of "jobs", i.e. "post" in the terminology of this paper. The latter distinction must be tied to a decision to replace the departed worker.

33. A complete "time accounting" system has been outlined in *Denton (1986)*. This can serve as a basis for defining a third type of LAS "accounting relationship" which will make use of the convention that "time used for work" by "employed persons" must be "absorbed" by "filled posts". Tying the two sides together are the "jobs", which can link information from employers and workers about "hours paid for", "hours actually worked" and "paid hours absent from work". Ensuring equivalent coverage of the data sources used to estimate the two sides will, however, pose a major practical problem. Accounting for "hours actually worked" should be developed in a way which is consistent with the conventions developed for time-use studies, which account for the total use of time over a short reference period[6], as well as being consistent with the development of yearly estimates of "hours actually worked" linked to the SNA. The basic relationship to be satisfied by these accounts is:

total number of hours actually worked by employed persons
= total hours paid for
- total hours of paid absence and resting time
+ total hours of unpaid work
= total hours used by filled posts

34. The monetary accounts of the LAS should link together the income of employed persons and the cost of employing them. This is conceptually much easier to do for income and the cost of "paid employment" (e.g. work of employees) than for "self-employment". For the former the basic relationship to be satisfied by these accounts is:

total income from "paid employment"
+/- various components
= total cost of paid labour.

35. The starting point for further specifications should be the ICLS resolutions and SNA conventions regarding the corresponding income and cost concepts, see e.g. *ILO (1997a)*.

Table 1: Distribution variables in the labour accounting system by primary units

1.	Employers	-	Ownership
		-	Industry*
		-	Size
		-	Location
2.	Posts	-	Status in employment*
		-	Occupation*
		-	Contractual working hours
		-	Shift system
		-	Pay system
		-	Collective agreement
3.	Jobs	-	Income from employment*
		-	Amount of labour costs*
		-	Amount of compensation of employees*
		-	Amount' of net operating surplus for self-employed persons (of unincorporated enterprises)*
		-	Normal or usual hours worked*
		-	Hours paid for
4.	Persons	-	Sex
		-	Age*
		-	Nationality
		-	Ethnic group
		-	Union membership
		-	Education obtained*
		-	Actual hours worked*
		-	Past occupation (and other life history variables)
		-	Work aspirations
		-	Activities (other than those defining status)
5.	Households	-	Domicile (location)
		-	Type of household*

* Indicates that there exists some type of international recommendation concerning the definition and classification of this variable. They are not necessarily coordinated with each other or with the SNA recommendations.

VIII. Data sources for an LAS - weaknesses and strengths

36. Estimates in an LAS will be based on information provided by individuals or by establishments, directly to the statistical agency through household and establishment surveys or indirectly through information stored in the records of various administrative agencies.[7]

37. The advantages of *household surveys* (HS) are (i) that they provide complete coverage of the resident, non-institutional population of the country; (ii) that employment and unemployment estimates will be consistent; (iii) that the estimation procedures used normally will try to compensate for biases due to selective non-response rates within the target population; and (iv) that they are flexible and can be made to measure desired concepts. The disadvantages are (i) the need to adjust for the institutional and non-resident population of workers in the national economy, e.g. those who commute to neighbouring countries for work, to ensure consistency with the geographic scope of the national accounts; (ii) the low level of precision in many of the estimates of interest, due to the use of sampling[8;] and (iii) reliance on the knowledge and memories of the respondents may result in inaccurate information.

38. The advantages of *establishment surveys* (ES), or an establishment census (EC), are (i) that they provide fairly precise estimates for the population and variables covered; and (ii) that the employment estimates will be consistent with those for production and factor income made within the framework of the national accounts. The disadvantages are the need to adjust for (i) inadequate coverage of small establishments, in particular those in the "informal sector" and in certain activities[9;] and (ii) the observation of (characteristics of) "jobs" rather than (of) persons. In addition ESs will normally provide only a limited range of characteristics of workers.

39. The advantages of using *administrative records* (AR), in addition to those related to the data collection costs of the statistical agency, are (i) that the estimates made from them will not suffer from sampling imprecision; and (ii) that some variables (important to the administrative process) may be measured very reliably. The disadvantages are (i) that the measurement of certain other variables may have very low reliability, and (ii) that the information may concern "cases" and "jobs", rather than persons. This depends on whether the information originated with persons or establishments, unless individual registrations for the same person can be linked, i.e. by the use of unique personal identification numbers of the Scandinavian type. Important concerns are also the lack of stability in coverage and definitions due to changes in administrative rules and capacities as well as in public behaviour relative to the administrative institutions and regulations.

IX. The use made of the different sources in the countries studied

40. The relative importance of the different types of sources are different in the four countries, as is the strategy for using them. In the Netherlands and Norway the focus seems to be on providing estimates of employment which are consistent with the national accounts production and income estimates. The main starting point for the Dutch estimates is an ES where information on both employment and earnings is collected, whereas the Norwegians have to cope with a more splintered collection of not particularly well-coordinated ESs, although most of them seem to cover the same variables. In both countries the results from the main HS, the Labour Force Survey (LFS), is used to fill in most of the elements which are missing from complete coverage according to national accounts conventions. The LFS is based on relatively large samples and continuous in both the Netherlands and Norway, thus providing a good basis for year estimates of totals and averages for the population and the variables covered.

41. The Swiss team has prepared parallel investigations of the consequences of starting from each of their three main sources for the chosen reference date 1 January 1991. These sources are the December 1990 population census, the September 1991 establishment census (PC and EC respectively) and the second quarter 1991 LFS. Adjustments were made to the three sources to bring their results into line with the those required by the LAS framework. The resulting estimates of total employment from these adjustments were very similar for the latter two sources, a difference of about one percent, while the estimate arrived at from the population census was 7 to 8 percent lower than the other two.

42. The Danish work starts from the register-based labour force statistics (RAS) supplemented with data from sources not already used in the construction of the RAS, to make the adjustments necessary to change the population from persons to jobs and the reference period from November of the reference year to the average for the year. Included among those "other" sources is also the annual LFS, the only source which is not based on administrative registrations.

43. In all four countries adjustments are made to compensate for "shortcomings" in the primary data sources or differences between the sources, and differences between the sources and the general framework used for the LAS. The Dutch talk about three such types of shortcomings or differences[10,] related respectively to

(a) differences in definitions, classifications and the amount of detail[11]: the adjustment for which is "harmonization";

(b) differences in population coverage: the adjustment for which is "achievement of full coverage";

(c) measurement errors; which one seeks to "minimise".[12]

44. The elimination of the remaining minor differences is said to constitute "balancing".

45. In the part of the LAS which concerns employment it is very important to distinguish between the different types of units (which can be) counted. "Jobs" are counted in an ES and an EC, "persons" are counted in an LFS and a PC, while the coordination with national accounts data for e.g. productivity analysis, will often require the use of "full time equivalent work-years" or "total number of work-hours". The difference between the first two is the result of some persons holding more than one job during the reference period. The conversion from the number of jobs or persons on the one side and the number of work-years or work-hours on the other is designed to adjust as much as possible for differences between sectors and over time in the amount of work, i.e. in the incidence of overtime and part-time work as well as differences in normal working hours[13]. It is not clear whether such adjustments can be regarded as harmonization in the typology above, but the adjustment to achieve consistency in reference periods would seem to be.

X. The scope of the national LAS estimates

46. There are several dimensions to the question of the scope or coverage of an LAS: (i) geographic; (ii) type of workers, (iii) topical and (iv) whether the focus is on situations and corresponding net changes, or on gross flows into and out of the stock of persons in these situations:

47. Relevant geographic scope will be determined by whether the objective is to coordinate with SNA and economic statistics or to coordinate with social and demographic statistics. Coordination with statistics on production requires that the national LAS should cover all jobs located in a country according

to the national accounts, and only these jobs (see the discussion in chapter XIV, sections B and C, and chapter XVII, section B of the 1993 SNA). Coordination with social and demographic statistics requires that the national LAS should cover all persons either legally residing in the country *(de jure)* or present there *(de facto)*. The fact that people may work in a country different from where they normally (or actually) reside means that adjustments must be made to make sure that the geographic coverage of statistics on jobs, normally from establishment-based reports, and on persons, normally from household surveys, have the same geographic scope. Such adjustments are made most explicitly by the Dutch and the Swiss, presumably reflecting the respective relative importance of transborder commuting by workers. The Norwegians adjust only for foreigners working on Norwegian registered ships, but not for transborder commuting, e.g. with Sweden. The Danes do not say whether they make such adjustments, although commuting must be of some importance across the borders with Germany and Sweden.

48. Topically, the scope of an LAS can be divided into several modules: (a) employment; (b) income from employment; (c) labour costs; (d) unemployment; and (e) vacancies. Within a module, the work to develop coherent LAS estimates will tend to focus on the categories which are considered to be most important, either numerically or from a policy perspective; or for which the available data sources are seen as most adequate. Consequently the LAS work in all four countries has started with the first of these modules, with separate procedures for workers in paid employment and workers in self employment, because different data sources and adjustments have to be used. In the Danish, Dutch and Norwegian work estimates for (b) and (c) have also been developed which are consistent with those for (a) at the macrolevel, but only as concerns workers in paid employment. No efforts have been described concerning the corresponding rewards and costs for persons in self employment.[14]

49. Modules (d) and (e) were included in the framework presented in ILO, 1992, as an issue related to dimension (iv) above, but the national sources reviewed for this paper only mention these aspects of the LAS and do not present any concrete efforts to include estimates related to these elements into the LAS work. With respect to (d), unemployment, this is surprising, given that in all countries this is a major policy concern for which uncoordinated statistics from different sources exist, with different strengths and weaknesses. It is less surprising for (e), vacancies, as only the Dutch seem to have regular ESs on this. The other countries only have ARs as bases for statistics on vacancies, and it is recognised that they cover a relatively small proportion of all vacancies.

50. To extend the LAS framework to include in (e) persons in training is a possibility mentioned in ILO (1992). This element is also mentioned in the Danish work, but limited to adult education. To do so would tie the LAS work closer to the, fairly loose, FSDS. However, no work to do so has been described in the sources reviewed. For each of these modules, estimates can be made for the situation of a (sequence of) particular year(s), i.e. "stock" estimates and estimates of net changes. The extension of the work to include estimates of "flows", i.e. gross changes for one or two modules, is mentioned by the Danes and the Swiss as a stated intention as one gains experience and/or new or improved statistics become available.

XI. Concluding remarks

51. The efforts to develop LAS estimates reviewed in this paper demonstrate that work on LAS in some national statistical offices has now advanced from conceptual discussions to partial estimations. The focus of these estimations is on (i) making optimal use of statistics from different sources, giving priority to paid employment and using the LFS results as an overall reference for coverage; and (ii) ensuring coordination with corresponding national accounts estimates for production and income. One may speculate that the preference for (ii) rather than for preparing e.g. overall integrated estimates for gross

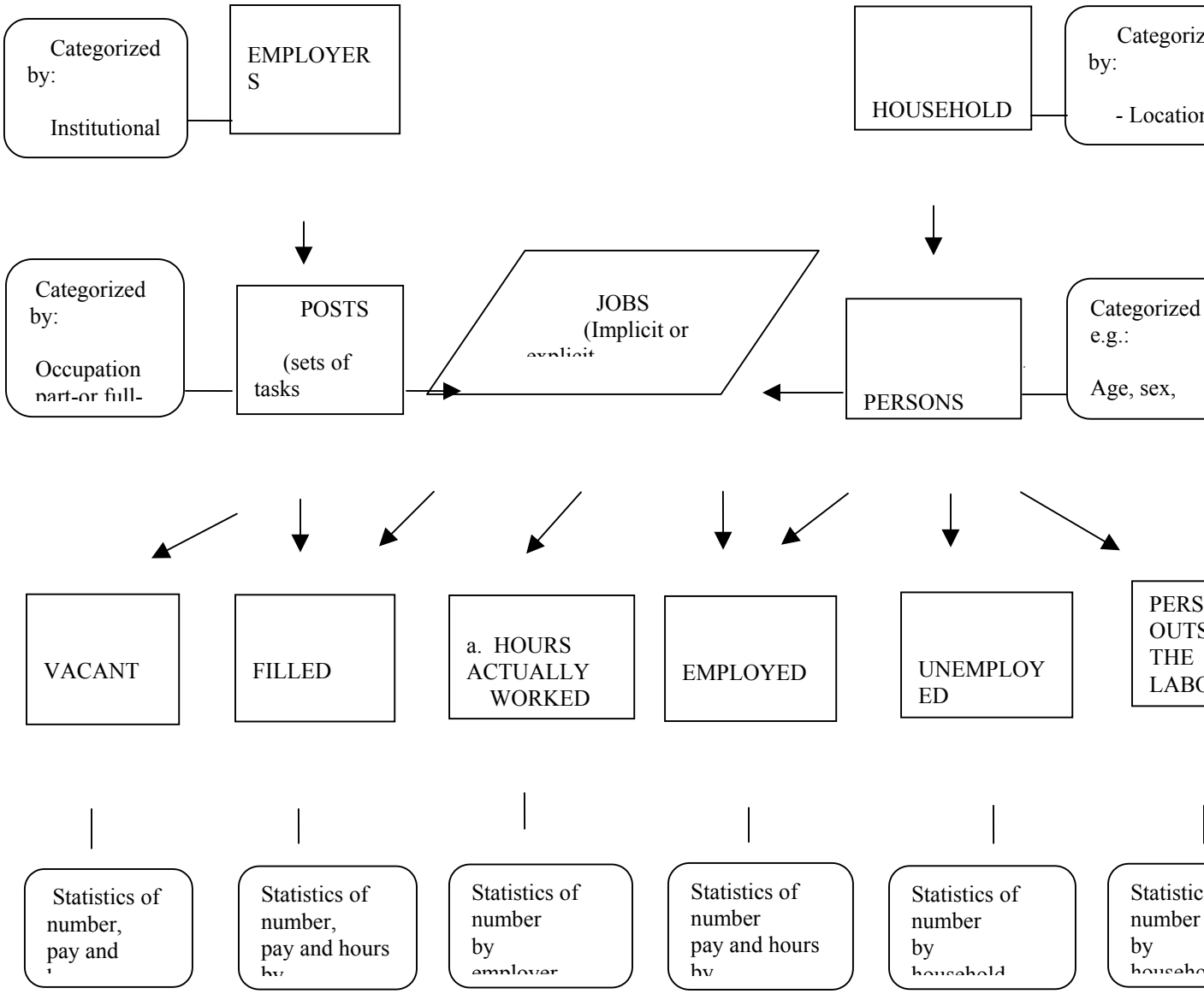
flows between labour market situations, or labour supply and demand imbalances, may be motivated partly by the prestige and importance of the national accounts in national statistical programmes, and partly by the availability of suitable data. The result is, therefore, that it is the inclusion of a more complete description of the labour market which seems to be the most urgently required extension of LAS estimates. This may seem slightly ironic, given that the early attention of the LAS discussions were more on the latter concerns than on the former.

52. That work on what is now called "labour accounts" has a fairly long history is not surprising given that the LAS focus is on the most important resource of any society, its mobilisation and allocation among different uses, and how it is costed and rewarded. Furthermore, these elements also go a long way to determining our welfare: before, during and after our participation in labour markets. What is surprising is that efforts to make systematic use of the splintered statistics for these markets have not been given higher priority much earlier than is in fact the case[15]; and among the efforts referred to in this paper only the Dutch seem to have the "critical mass" and perseverance needed to make work on LAS estimates as central to the production and use of labour market statistics as national accounts estimates are for economic statistics and empirical analysis. The fact that the labour market and labour issues thus belong to both the economic and social spheres in our society, and are analysed both by economists and by other social scientists, does seem to have prevented rather than supported the development of integrated and consistent data systems. The descriptive needs and analytical perspectives have been too diverse to promote the creation of a strong core of integrated data. Only time will show whether the current, relatively stronger, political and analytical concern with micro rather than macroeconomic and social issues will lead to wider support and more resources for LAS related work.

XII. Postscript, December 1997

53. The above presentation was finalised before the First Meeting of the "Paris Group" on Labour Statistics; Paris, 27-28 November 1997. At this meeting, representatives from national statistical offices in Australia, Finland, France and the United Kingdom presented short, informal papers on work in their organizations which is similar to that presented above, partly under the heading of "reconciliation of labour market statistics from different sources" and partly as "labour accounting". (A paper from Canada presented to the same session only concerned the reconciliation of unemployment statistics from different sources.) The objectives of the work and the nature of the problems encountered are similar to those discussed above, but with little reference to the reconciliation with national accounts concepts and estimates. The work undertaken in Australia and the United Kingdom is, however, concerned with statistics on earnings, wages and salaries in addition to those on employment and unemployment. For further information, see *INSEE (1997)*.

Chart 1: Conceptual Framework for a Labour Accounting System



NOTE: "Numbers" means stock at a point in time, average over a time period or total over a period (for flows, e.g. hours actually worked or paid for).

The statistics on total compensation by institutional sector and by industry provides links to the system of national accounts.

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Endnotes

[1] Sections II-VII represent, with only minor modifications, the text of *ILO (1992)*.

[2] Because some employed persons are self-employed, we must use the counter-intuitive convention that a person may have a "job" and a "post" with herself/himself as "employer". Logically this should not present any problems, nor should it be problematic from a data-collection point of view.

[3] See *Hussmanns et al (1990)* for further discussion of these recommendations.

[4] As "jobs" represent the link between "filled posts" and "employed persons", there is no need to have separate accounts for "jobs", even though they play an important conceptual role in the LAS. Also in this respect they can be seen as the parallel of "transactions" in the SNA.

[5] The most difficult issue, of importance only for some countries, will be the treatment of persons living in one country and working in another.

[6] See e.g. *UN Statistics Division (1997)* as well as *Hoffmann & Mata (1997)*.

[7] Information collected through establishment surveys will normally be provided on the basis of (interpretations of) the administrative records kept by the establishments in their own interest and for their own use.

[8] The Swiss work is the only serious discussion of *Population Census* results in the context of the LAS system. The LAS framework is used for an analysis of weaknesses in the employment estimates from the 1990 census.

[9] Such under-coverage is relatively more important for LAS estimates than for national accounts estimates because it normally relates to establishments with lower than average productivity. This implies that when linking to NA estimates represents a major reason for the use of ES data in LAS work, care should be made not to make such coverage adjustments in the LAS estimates which go beyond those (to be) made in the corresponding national accounts estimates.

[10] These types of adjustments are also relevant when creating consistent time series, even when the source is said to be "the same".

[11] The reference to "amount of detail" is unexplained, but one may assume that it refers to the use of information from a secondary source to estimate the distribution over categories for a variable not covered by the primary source, or not covered with a value set which is sufficiently detailed.

[12] The Dutch include "sampling errors" among the "measurement errors". This is an unfortunate and misleading terminology, as sampling does not lead to errors in the resulting statistics, but to imprecision. Such imprecision can be reduced by the use of supplementary information, and it seems that this is what the Dutch do, and why they talk about "minimization of measurement errors". One would expect adjustments necessitated by "untreated" sampling imprecision to be part of the balancing.

[13] Using "hours" as unit of account will make it easier to prepare coordinated estimates which include education and training activities, as well as make possible relevant distinctions between "productive",

"economic" and "market" activities in the sense discussed in *UN Statistics Division (1997)* and *Hoffmann & Mata (1997).*

[14] The SNA only defines a combined reward to labour and capital for the self-employed. The ILO has prepared proposals concerning the measurement of income from employment for the self-employed as well as for those in paid employment, discussed at a meeting of experts in October 1997 and, in modified form, at the *16th International Conference of Labour Statisticians in October 1998,* see *ILO (1997a) and ILO (1997b).*

[15] The so-called "balance sheets of labour resources" routinely prepared in the former centrally controlled economies of central and eastern Europe and in the former Soviet Union represent an exception to this, see e.g. *Gouriev (1984).* The conceptual scope of the LAS is, however, much broader than it was for these balances, although, so far, the same cannot be said of most of the national estimates prepared under the LAS heading.

2. Functional Satellite Accounts

Functional satellite accounts: Links to policy needs and methodological features: French experiences

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I. Background

1. The first international standards of national accounts which emerged in the post-World War II period focused on very aggregated figures, even when they dealt with households. Households as a sector were described as a whole. This is not to say that the economists and statisticians from various countries who developed these first standards were not interested at all in the variety of households. It was said from the beginning that households as a whole involve different socio-economic groups whose analysis should be developed in full coherence with national accounts' macro-aggregates.

2. At the same time however international standards' authors were aware that household surveys existed or were being developed in a number of countries. Taking account of the big challenge of developing national accounts, the priority was to compile accounts for each major sector. It was also written but probably not stressed enough that the compilation of household accounts should be conducted on different sub-groupings of households (as in the United Nations 1968 System of National Accounts).

3. In short, national accounts were supposed to provide large aggregates while specific household surveys were expected to allow specific studies on social groups, defined according to various socio-economic criteria, at least in the first instance. However, that was not explicit in international standards. As usual with unwritten or unspoken features, it quickly led to enormous misunderstandings. Many users of macroeconomic and social statistics, and unfortunately some national accountants, confused a largely pragmatic scale of priorities with a structural drawback of national accounts: the framework of national accounts was supposed to ignore the social dimension of macroeconomic reality. It is one of the merits of the 1993 System of National Accounts that it has dispelled this confusion.

4. If we take the concrete example of France, the situation did not fit in with this general scheme. The first national accounts compiled in France in the post-war period described sector transactions according to a classification of social groups where households were split in about 14 groups. The conceptual framework was described in the review "Statistiques et Etudes Financières", September 1952 and May 1953, and figures for 1951 were published in 1957. Still further developments included the distribution of household current income and expenditure according to socio-economic sub-groupings: the official report on French national accounts published in 1960 introduced figures for 1956 on seven sub-groupings ("Statistiques et Etudes Financières", August 1960).

5. That was not easy. The reconciliation of statistical figures on income, consumption, and savings for socio-economic groups was hampered in particular by the poor reliability of micro-data related to the professional income of self-employed workers. This explains why only quinquennial estimates of distribution of income accounts have been compiled for household socio-economic groups since the mid-fifties. Their frequency and above all their late publication prevented them fully meeting users' needs. An

improvement occurred in the early nineties with the release of annual series of disposable income accounts for household socio-economic groups[2].

6. In parallel with the problem of compiling accounts for household sub-groups, another way of describing the social dimension of economic growth emerged. Initially related to the difficulty of identifying all aspects of international development aid in the national accounts, the idea of semi-integrated aggregates had been developed in France by André Vanoli. It was put into practice, though in a limited way, in the specific area of housing. Since the post-war period housing had been a source of concern for the government and all social groups represented on the committees of the French Planning Agency (Commissariat Général du Plan). How to adjust supply and demand? Were subsidies and social benefits socially efficient? Was the financial system able to provide the funds required for the building of new houses? A lot of data was extracted by national accountants but it was difficult to provide a manageable set of data which could both answer the specific questions on housing and refer to the classifications and concepts of national accounts in a user-friendly way. In 1967, following the demand expressed by the Ministry of Construction, an inter-ministerial working group designed an autonomous macro-accounting system covering housing, with adapted classifications of units, transactions, and activities. The need for easy comparisons with the rest of the national economy was also taken in account: the adapted classifications should preserve coherence with the national accounts' central classifications. Compared with the initial idea, these first satellite accounts were more limited. Nevertheless they can be considered the first trial functional satellite accounts[3].

7. The French planning process was significantly altered in the following decade of the seventies. In particular, the production of quantitative medium-term targets integrated into the framework of national accounts was abandoned. That had no impact on the development of satellite accounts. While medium-term targets disappeared, the annual work conducted for government budget purposes went on. The annual assessment of government action in its major fields of competence continued to be important background information for the draft budget presented to Parliament. Besides the global overview provided by the central framework of national accounts, the specific sets of data made available through satellite accounts were useful. The creation of ad hoc committees (called in French "Commission des Comptes", literally "Commission of Accounts"), discussing the current and expected state of a social area on the basis of satellite accounts, reinforced this process.

II. Satellite accounts are deeply rooted in policy makers' needs

8. Satellite accounts are not created *ex nihilo* by national accountants. They originate in an explicit demand expressed by policy makers working in a field of "social concern". This means that the issues addressed are relevant for the national community as a whole; and more concretely that the area covered is characterized by large-scale government intervention. In addition to this first meaning, "social concern" also refers to the living conditions of individuals and households. In general the demand comes first from a governmental body (a Ministry for instance) which is particularly active in this field. There are exceptions. For instance, a project of satellite accounts for the "third-sector" was launched in the early eighties at the joint request of representative bodies of non-profit associations, cooperatives, and mutual benefit societies.

9. Since 1970 the demand for new satellite accounts has continued and the proportion of failures is low. This success has several reasons:

- The reference to national accounts is frequent in political and social discussions and debates in France. The use of some major national accounts aggregates in European institutional mechanisms[4] has reinforced this popularity.

- The principle of functional satellite accounts is to exhaustively cover all activities which are characteristic of the field concerned.
- The basic structure is simple: total expenditure, financing, producers, and beneficiaries. This results in a very handy tool, with a limited number of aggregates providing a global overview of the field covered.
- Satellite accounts are coherent with the central framework of national accounts. They allow the comparison of their specific aggregates with the most frequent macroeconomic aggregates like GDP, final consumption, etc. National Expenditure as a percentage of GDP is often the favourite indicator of users of satellite accounts.
- Satellite accounts are adapted to the specific features of the field they are covering. They are, therefore, very accessible to non-statisticians more acquainted with the social and economic aspects of the field covered than with concepts of national accounts (i.e. the majority of users).

10. This explains why satellite accounts are used as a frame of reference for political debate between governmental agencies, trade unions, business associations, professional bodies, and consumers' associations.

III. Institutional arrangements: Looking for an appropriate forum

11. Political debate can be organized within the framework of the existing appropriate fora. New institutional arrangements may also be found for this specific purpose. The creation of ad hoc "Commissions of Accounts" corresponds to that kind of new institutional arrangement.

12. In principle a Commission of Accounts is created as a consultative body. It includes representatives of government, business associations, trade unions, economists and social scientists specialized in the field. Its tasks are to validate the annual accounts, to advise the government on desirable statistical developments, and to report on the main economic and social assessments drawn from accounts. The Chairperson is nominated by the government. He or she belongs to the category of authoritative specialists.

13. There is no standard form of Commission of Accounts. For instance the Commission of Health Accounts includes representatives of government (Ministry of Social Affairs, Ministry of Health, National Statistical Office - INSEE -, Budget Directorate, Ministry of Agriculture, Planning Agency), Social Security Institutions, associations of medical and para-medical professionals, associations of private hospitals, trade unions of health employees, and academics in the field of health economics.

14. Compared with the Commission of Health Accounts, the Commission of Housing Services Accounts consists also of representatives of government (Ministry of Infrastructure, Transport and Housing, Ministry of Finance, Ministry of the Interior, Planning Agency), Central Bank, and renowned academics specialized in housing economics. However, neither business associations, trade unions nor consumers' associations are officially represented.

15. The secretariat of the Commission is operated by the statistical unit in charge of the compilation of satellite accounts. The regular outcome of the Commission's work is the release of an annual report on the economic and social situation in its field of competence. This report may also include recommendations on improvements to statistical sources or methods, based on work performed in working groups created by the Commission. As a general rule the report is published, either by the Ministry or by a private publisher (up to now the reports of the Commission of Housing Services have been published by Economica, Paris).

16. Satellite accounts not having an ad hoc Commission of Accounts are "hosted" by another Commission. This was the case for Social Protection Accounts, created in 1970. There is no Commission for these satellite accounts. However, their main tables are presented in the report of the so-called "Commission of Accounts of Social Security". This Commission does not correspond to functional satellite accounts as such, it is in charge of assessing and validating the microeconomic accounts of the three main Social Security Institutions, respectively in charge of health, social security, and old-age benefits. The macroeconomic Social Protection Accounts help the Commission to take account of the global background in its field of competence.

17. Furthermore, the recent reform of the financing of social protection, voted by the French Parliament in 1996, has provided the Social Protection Accounts with a broader forum. According to the 1996 reform, the financing of social protection is now fixed by an annual law, in the same way as the country's Budget. A detailed report on the current economic situation of social protection in France is attached to the draft law submitted by the government to Parliament. This report is made by the unit in charge of Social Protection Accounts in the statistical branch of the Ministry of Social Affairs, and relies on these satellite accounts.

18. What about satellite accounts which are not associated either with an ad hoc Commission of Accounts or a report to Parliament, which is the case for the Education accounts. This might have increased the initial difficulties met at the very beginning of the work. In the absence of an independent body officially in charge of assessing the figures developed in the framework of satellite accounts, it is possible that sufficient incentives were lacking. However, this difficulty seems to have been overcome. The data from the Education accounts are published annually by the Ministry of Education and are widely disseminated through the media (including the Internet). Aggregates like Domestic Education Expenditure, average expenditure by student by level of education, etc. are very important data for political debate on the cost-efficiency of the French system of education. Once they are made public, about one semester after the end of the last reported year, they are commented on by all social, economic, and political figures in the field of education. They have achieved the status of reference material.

19. Nowadays there are eight "functional" satellite accounts in France. Table 1 gives their main institutional background. It must be specified that there are in France other specialized "Commissions of Accounts", dealing with macroeconomic accounts focused on specific economic activities, such as: transportation (the oldest: it was created in the fifties), agriculture, the wholesale and retail trade, services, manufacturing industry. As a matter of fact, these specialized accounts are closer to what is called in the 1993 System of National Accounts "Key Sector Accounts". For this reason they are not introduced here.

IV. General features

20. The French functional satellite accounts are often described as focusing on areas "of social concern". As stated above, this means first that these satellite accounts address issues relevant to the nation as a whole, in areas generally characterized by large-scale government intervention. In addition "social" can also refer to the living conditions of people. In fact, functional satellite accounts generally deal as a priority with one aspect of living conditions rather than the productive achievement of an economic activity. However this second meaning of "social concern" has not to be overstated: the satellite accounts for research and development created in 1970 are a non-negligible counter-example.

21. All functional satellite accounts in France have been created at the explicit request of the government bodies in charge of the fields concerned. The main aim of such requests is to have exhaustive and coherent information about the economics of the field managed by the requesting body. The satellite accounts address the key concerns of government managers. They also are seen as a tool in the dialogue

with social partners involved in the field (trade unions, employers' associations, independent professional bodies).

22. When speaking of "functional satellite accounts" in France, it is necessary to specify that "functional" refers to an enlarged approach of functions i.e., of the purpose of the expenditure of the institutions in the field. This approach primarily refers to the purposes of government expenditure, and also to the expenditure of households, non-profit institutions, and corporations.

23. Satellite accounts have two complementary goals:

- they give an overview of economic and social life within one area of the national economy, using concepts and classifications adapted to the specific characteristics of the field;
- they are coherent with the description of the whole national economy, as provided by the central framework of national accounts, allowing a meaningful comparison of their specific field with the rest of the economy.

24. In a first instance these goals might appear contradictory rather than complementary. Indeed, it is never easy to balance specificity and coherence in the building of new satellite accounts. Regarding national accountants and specialists in the field concerned, the most common case is a mutual ignorance of the characteristics and requirements of respective fields of work. In order to reduce the risk of misunderstandings, a sustained dialogue between specialists of the national accounts central framework and specialists in the area concerned is necessary. Too large a gap between concepts and classifications would hamper comparisons of satellite accounts data with macroeconomic aggregates. An excessive respect for the central framework of national accounts would frustrate users and eventually make the new satellite accounts irrelevant. The goal is to keep control of the differences between satellite accounts and the central framework of national accounts.

25. Satellite accounts do not only take account of the specificity of the area they cover; the also offer a flexible structure, open to : non-national accounts types" indicators. In particular they can include non-monetary data. For instance, the Education accounts incorporate the number of students by level of education, the Social Protection accounts incorporate the number of beneficiaries for each type of social benefit, the housing services accounts incorporate the number of dwellings by type of occupation and status of occupier. As such, satellite accounts help to bridge the gap between national accounts and the whole system of information covering the area concerned. The can therefore be regarded as a helpful tool for the enhancement of internal as well as external coherence of economic and social information.

Table 1: French Functional Satellite Accounts

	Date (*) started	Annual Quantification	Commission of Accounts	Organization in Charge
Research & Development	1970	yes	no	Ministry of Education and Research
Health	1970	yes	yes	Ministry of Health
Social Protection	1979	yes	yes(**)	Ministry of Social Affairs
Education	1976-1980	yes	no	Ministry of Education
Environment	1986	yes(***)	no (****)	French Environment Institute/Ministry of Environment
Tourism	1988	yes	yes	Ministry of Tourism
Housing Services	1992	yes	yes	Ministry of Housing
Audio-Video	1992	yes	yes	Cabinet Office of the Prime Minister

(*) Dates shown are of the creation of the Commission of Accounts, which does not always coincide with the establishment of the satellite accounts. Where no commission exists, we have shown the date of establishment of the accounts.

(**) There is no Commission of Accounts for social protection in the broad sense. However, since the reform of French Social Security in 1996, Social Protection Accounts are submitted in October to the French Parliament as an appendix to the annual draft law on the financing of Social Security.

(***) A first estimate of the Environment National Expenditure, consistent with European standards, has been published by the French Ministry of the Environment and the French Environment Institute in *Données Economiques de l'Environnement,* Economica, Paris, 1996.

(****) The creation of a Commission of Accounts of Environment Economics is scheduled for the end of 1998.

This table is an updated version of the one published by Michel BRAIBANT, in Le Courrier Des Statistiques, English Series Nr. 1, INSEE, Paris 1995.

V. Accounting framework and data

A. Main structure

26. The development of functional satellite accounts in France was an incremental process. Each new experience generally benefited from former experiences, at least for the main lines of the accounting framework. It is remarkable that a common general framework progressively emerged despite the great variety of fields covered by these satellite accounts. This common framework must be rather general since each satellite account is designed to take account of the specific aspects of its field and thus escapes from the standardization of central national accounts.

27. At present a large part of the common French framework of functional satellite accounts has been retained within the System of National Accounts issued in 1993 (1993 SNA) as the new world standard for national accounting. It is therefore not necessary to describe in detail what is already available in the 1993 SNA in a more comprehensive way[5]. Some points of reference are summarized below.

28. The key question addressed by functional satellite accounts is: "What is the total amount of resources devoted to this field?" The answer is the central aggregate of functional satellite accounts: National Expenditure.

29. Beside the main question, three secondary questions are addressed

- Who finances the expenditure?
- Who benefits from these resources?
- How are the productive activities which are characteristic to the field organized?

30. Of course, one of the prime tasks of designers of satellite accounts is to define their field of reference. In accordance with the main approach to the field, namely an expenditure approach, the scope of satellite accounts consists of all field-specific expenditures. It includes purchases of specific products, transfers specific to the field and, in order to appropriately describe the whole capital component of national expenditure, investments of characteristic producers.

31. It is worth describing further the linkages between "specific products" and "characteristic activities".

- Characteristic activities are those whose productive organization is important information for managers in the field (see the third "secondary question" above). Their output is made up of "characteristic products" whose use is included in national expenditure.
- There are also products whose use is included in national expenditure but whose process of production is not interesting as such for users of the satellite accounts. These products are called "connected products". Characteristic and connected products together are called "specific products".

32. The main tables of the French functional satellite accounts are very close to the corresponding standard tables of the 1993 SNA. However they are less developed than in the 1993 SNA. Their extent changes among satellite accounts, depending on the priorities expressed by users. At least one table is always compiled: the national expenditure by component table. Financing is also systematically analyzed. The current accounts of characteristic producing units are also compiled, but their investment is not always present. There is no inclusion of these producers' accounts in a global input-output (or supply and use) framework, contrary to the recommendation of the 1993 SNA.

33. Another gap is more regrettable: the persistent absence of a detailed analysis of beneficiaries in almost all satellite accounts. It is possible to identify that part of national expenditure which goes to households as a whole, through their final consumption and transfers from government bodies. Unfortunately, further details are generally missing in the French functional satellite accounts, contrary to the 1993 SNA recommendation. An exception is provided by the accounts of housing services, where beneficiaries are systematically split in owner-occupiers, tenants of the public sector (i.e. with subsidized rents), and tenants of the private sector.

34. As far as the analysis of beneficiaries is concerned, some reasons for the gap in the French accounts can be given.

- First of all, the concrete development of satellite accounts is driven by their main users, who are at the same time their main sponsors and even, at the consolidated level of a whole Ministry, their compilers. That is not to say that the government managers of a field of social concern are not interested at all in knowing in detail who is benefiting from their action. It simply seems not to be their first priority and they are content with a reliable identification of macro-groupings of beneficiaries like households, enterprises, non-profit institutions, and other government bodies.
- The second reason is the difficulty in identifying the beneficiaries in several cases: the sophistication of channels of finance sometimes makes it difficult to decide who eventually is the actual beneficiary.
- Last but not least, there are social fields where the statistical system is not sufficiently developed to capture detailed information on beneficiaries.

B. Three concrete examples: Health, education, housing services

35. In order to give a more concrete picture of the accounting framework of the French functional satellite accounts, three examples are given below: health, education, and housing services. It is worth noting that they were created at very different moments: Health Accounts were among the pioneers (1970), Education Accounts date back to the time of consolidation (1980), Housing Services Accounts are the most recent (1992).[6]

1. Health Accounts

36. The Health Accounts cover all medical and paramedical activities, including the retail trade in pharmaceutical and medical goods, the activities of blood banks, and ambulance services. They also cover medical and paramedical education, medical research, and the general management of health services performed by government bodies and non-governmental specialized organizations (e.g. the French branch of the Red Cross).

37. The output of these activities defines the characteristic products. The other specific products of health are the "connected products": pharmaceutical products, medical and surgical equipment, prescription spectacles and contact lenses, orthopaedic and prosthetic appliances[7].

38. The three main synthetic tables of the Health Accounts are[8]:

- Total Medical Consumption describes individual consumption by type of product: medical and paramedical services (market and non-market), transport of patients, medicines, orthopaedic and prosthetic appliances. Preventive medical services are systematically separated from other medical services.
- Current Health Expenditure by component is structured according to the purpose of the expenditure: expenditure for patients (medical care and medical goods, social benefits in cash),

preventive expenditure, expenditure for the care system (cost of medical research, and cost of medical education and training), health management expenditure and its financing (cost of general management of the health system, and cost of management of health social benefits by social security institutions).

- Financing of Current Health Expenditure combines the components listed above, the type of financing, and the type of financing units. Types of financing (social benefits, subsidies, current operating costs) and types of financing units (social security, mutual benefit societies, state and local authorities, insurance companies, households) are classified according to the specific features of the health system in France, but these classifications are consistent with those of the central framework of national accounts.

39. The production accounts of characteristic activities are partially compiled. Up to now they have been focused on public hospitals. There is no detailed analysis of beneficiaries.

2. Education Accounts

40. The Education Accounts cover all teaching activities, market and non-market, and the so-called "subsidiary activities". The latter include course administration, pedagogical research, general management of education, school and university restaurants, boarding schools, school medical activities, university libraries, and the production of pedagogical documents by governmental agencies.

41. Besides the output of these "characteristic activities" the "connected commodities" of Education include school bus services, schoolbooks and supplies, clothing and leisure linked to schools and required by school authorities.

42. Three main sets of tables are compiled in the Education Accounts[9]:

- Domestic Education Expenditure is structured by types of characteristic activities, and types of connected commodities. The wages of teachers in training are shown under a specific heading. Teaching activities are structured by level (primary education, secondary education, higher education, adult education and other education provided outside the school system). The tables display the whole amounts as well as average expenditure by student.
- Producers' Expenditures are split into current and capital expenditures. They are structured by types of unit: state schools and universities, private schools mainly financed by government subsidies, private schools and universities owned by chambers of commerce, other private schools and universities, in-house training centres, central and local government units other than schools and universities.
- Financing of Education is split into financing of current expenditures and financing of capital expenditures. Each table combines components of Domestic Education Expenditure and financing units. Financing units are grouped according to a specific classification (Ministry of Education, other Ministries, local authorities, other government bodies, businesses, households). However, this classification is consistent with the classification of institutional sectors in the central framework of national accounts[10]. An additional table displays the transition from initial to final financing units[11].

43. A rough description of the beneficiaries of Education is available in the table of number of students by level of education and type of teaching unit. There is no further analysis of beneficiaries.

3. Housing Services Accounts

44. The Housing Services Accounts cover the housing service activity. This characteristic activity is structured in "channels" which are the backbone of the whole accounts. Channels are defined by the nature of the owner. The two main channels are own-account production of owners occupying their dwellings, and renting of non-furnished dwellings. Holiday home services are grouped in an ad-hoc channel. Each channel is subdivided according to specific criteria. The renting channel, for instance, is structured according to the nature of the owners, namely individuals, public housing bodies, and other legal entities. The channels are also the reference for grouping consumers of housing services (i.e. owner-occupiers and tenants) and beneficiaries of government aid.

45. In addition to the characteristic services provided through the various channels, connected commodities include: energy, maintenance of halls, stairs, lifts, etc., own account domestic services of concierges and other employees in collective buildings, and home insurance.

46. The main tables are somewhat different from the Health and Education Accounts. Their common feature is the reference to channels[12].

- The first table describes the current expenses of consumers, i.e. occupants.
- The second set of tables describes the current and capital accounts of producers, i.e. owners, as well as the financing of their investments.
- The third set of tables lists all forms of aid provided to consumers and producers of housing services by government and employers[13.] They cover subsidies, bonuses on interest rates, and tax reductions.
- Finally, non-monetary tables show the stock of dwellings and its changes over the year (in number of dwellings). Since these tables are structured according to channels of housing services, they give an idea of the distribution of individual households among channels because in national accounts, as in demographic statistics, households are defined with reference to dwellings[14]. These tables also allow the computation of average housing expenses and the income of owners and occupants in each channel.

VI. Who does what?

A. The starting point

47. The definition of the process of the elaboration of functional satellite accounts relies on some basic principles and many pragmatic adaptations. The main aim is to be as close as possible to the needs of those who have a special interest in an area of social concern: government, business, individuals. Except at the very beginning, French national accountants never themselves initiated the building of satellite accounts. The demand has to come from entities active in the field. The unit in charge of conceptual coordination and national accounts development in the French Statistical Office (INSEE) then becomes the focal point for advice and technical assistance provided to the demanding body. Based on the cumulative experience of previous functional satellite accounts, this unit will be particularly active in the first stage of the work. This first stage consists of a clear identification of the coverage of the future satellite accounts. This process is conducted in general within a working group where specialists and policy makers discuss with statisticians in the area and "national accounts concepts people" from INSEE.

48. It is worth noting that the French statistical network is rather decentralized. Every Ministry has its own statistical branch, the size of which depends on the area of responsibility of the Ministry. This branch belongs to the public statistical service. According to the 1946 law creating INSEE, it is the task of the French statistical office to coordinate the public statistical service. The decentralization of statistics is

therefore monitored and somewhat tempered by the coordinating role of INSEE[15]. This structure is helpful in the dialogue between specialists in the area concerned and INSEE's national accounts concepts people.

B. Accounting framework and pilot compilation

49. The second stage is the actual construction of the satellite accounts' accounting framework and the pilot compilation of data. The work is conducted at this stage by the statistical branch of the Ministry concerned, in close cooperation with INSEE's national accounts concepts people. Here the main decisions are taken regarding the coherence of the satellite accounts in progress with the central framework of the national accounts.

50. Compiling data in draft tables as soon as possible is also very important because it helps to check the compliance of existing statistics with the needs of users. This can lead to a compromise between what is desirable and what is possible. It can also result in the creation of new sources of information. On the one hand, some government bodies may agree to provide data from their administrative tasks, since they understand what such data can be used for and are interested in getting in return a coherent and exhaustive overview of their area of responsibility. On the other hand, the public statistical service may allocate resources to the creation or extension of a statistical survey whose importance in the overview of a given social area has been demonstrated by the pilot compilation.

C. Regular production

51. The third stage is the beginning of the regular production of data. In general, it starts before all the statistical tools are ready to provide data for all the tables. Since the main tables can be produced on a regular basis, with sufficient reliability, and in a reasonably short term, it is advisable to initiate the current production and to release the figures. In fact, the various bodies at the origin of the new satellite accounts expect a quick and concrete return on their initial investment.

52. This is the most delicate stage of the process. If the transition to regular production takes too long, there is a danger of the team working on the project breaking up, as well as budgetary cuts hampering the development of basic statistics. In contrast, the quick release of the first macroeconomic aggregates and tables on the area may boost the social and political demand for additional information. That will support the development of the second-priority parts of the new satellite accounts[16].

53. The beginning of regular production often coincides with the creation of a "Commission of Accounts" (see Part III above).

54. Once regular production is up and running, the role of INSEE's national accounts concepts people becomes marginal. However, regular contact with the producers of satellite accounts is maintained. It can take the form of periodic exchanges of information, participation in sessions of the corresponding Commission of Accounts, etc. Cooperation can be reactivated at the request of the statisticians in charge of the satellite accounts, for instance in the case of new development projects.

55. Another form of cooperation between satellite accounts producers and central national accountants may be the provision of figures. For instance, that part of the national accounts dealing with health services is largely drawn from health satellite accounts. In the same way, social benefits and social contributions in the central national accounts are provided by producers of the social protection satellite accounts.

56. To illustrate the process described above, the same satellite accounts as in Part III will be used: Health, Education, and Housing Services.

D. Production of Health Accounts in France

57. The health accounts were developed on the basis of an existing statistical tool. Detailed estimates of the consumption of medical services by households had been developed in the late sixties by CREDOC, a research centre mainly sponsored by the French Planning Agency.[17] In 1970 a Commission of Health Accounts was created by the government. INSEE's national accounts concepts people cooperated with CREDOC to create the first framework of health accounts under the auspices of this Commission. The health accounts continued to be compiled by CREDOC up to 1982. They were transferred at that time to the area of responsibility of the Studies, Statistics, and Information Systems Service in the Ministry of Social Affairs.

58. Health accounts are compiled on an annual basis. They consist of three sets of tables (for further details see Part V.B.1 above):

- Total Medical Consumption,
- Current Health Expenditure by component,
- Financing of Current Health Expenditure.

59. Annual production accounts of hospitals are also compiled.

60. Detailed estimates of health satellite accounts are used - after conceptual adjustment - in the central framework of national accounts. Their methods and sources are in principle revised at the same time as in the central accounts. However the Commission of Health Accounts can recommend methodological changes at its own convenience, while preserving coherence with the central office of the national accounts.

61. The Commission of Health Accounts meets every year in June. It includes representatives of the government agencies concerned, of business, of medical and paramedical professions, of trade unions, as well as academics. It is chaired by a prominent figure in the field of health. The Commission considers the report prepared by the Statistical Service of the Ministry of Social Affairs, commenting on the most recent series. It also discusses the technical reports of its working groups[18] and recommends methodological improvements when appropriate.

62. The annual report on Health Accounts is transmitted by the Commission of Health Accounts to the government and widely disseminated through the media. The accounts are published by the Ministry of Social Affairs in its regular statistical publications. The main tables are also published by INSEE in its annual report on national accounts.

E. Production of Education Accounts in France

63. Education accounts were created at the request of the Studies and Statistics Service of the Ministry of Education. In the mid-seventies, experimental accounts were compiled on 1973 by a joint team from INSEE and Ministry of Education, but after this they were not produced on a regular basis. The work started again in 1980 on the basis of the first experiment, and time series were compiled with INSEE support.

64. The current Education accounts are compiled each year by the statistical service of the Directorate of Assessment and Forecasting in the Ministry of Education. They consist of three main sets (for further details see Part V.B.2 above):

- Domestic Education Expenditure (global amount and average by pupil or student),
- Producers' Expenditures,
- Financing of Education.

65. The current methods and sources of the Education accounts have been revised in the second half of the eighties, in coordination with the last revision of the central national accounts. A new revision is intended to take place when the central framework of national accounts is published (spring 1999).

66. The main provisional estimates for a given year, and associated time series, are released in the summer of the following year[19], while the detailed tables and time series are published at the end of the year by the Ministry of Education. The main tables are also published by INSEE in its annual report on national accounts. There is no Commission of Education Accounts.

F. Production of Housing Accounts in France

67. The Housing Services accounts originated from a request from the Ministry of Construction and Housing in 1989. As explained at the beginning of this chapter, the first and unsuccessful prototype of satellite accounts was designed in the late sixties for the purposes of house building policy. The current satellite accounts are focused on housing services. Social concern has shifted from initial investment, namely the building of dwellings, to regular working, namely the provision and consumption of housing services.

68. The initial work of delineating the field to be covered and compiling the draft accounting structure was conducted by the statistical branch of the Ministry of Construction and Housing in partnership with the INSEE unit in charge of national accounts concepts. Discussions took place in an ad hoc working group which included statisticians, representatives of operational branches in the Ministry of Construction and Housing and representatives of the Ministry of Finance. Thereafter, the work was monitored by a steering committee of six high level officials from the Ministry of Construction and Housing (Director of Economic Affairs, Director of Construction, Head of Statistics on Construction and Housing), the Budget Directorate, the Directorate of Economic Forecasting, and INSEE. The steering committee had to assign priorities to the satellite account tables, to organize the programme of work in the coming years, to validate the first estimates, and to make concrete proposals on the tasks and composition of the Commission of Accounts of Housing Services.

69. The Housing Services accounts are currently compiled on an annual basis by the Statistical Service of the Ministry of Construction, Transport, and Housing. They consist of four main sets of tables (for further details see Part V.B.3 above):

- Current expenses of occupants of dwellings,
- Current and capital accounts of owners of dwellings,
- Aid to occupants and owners of dwellings,
- Stock of dwellings: structure and changes over years.

70. The Commission of Accounts of Housing Services was created by decree in March 1992. It meets once or twice every year. Its members are representatives of the administration and experts from the academic or industrial world. The Commission validates the latest estimates of the satellite accounts and issues an annual Report on Accounts of Housing Services. It also conducts the development of its satellite accounts. This latter task is performed through ad hoc technical expert groups[20].

71. The report on Accounts of Housing Services is published every year by the Ministry of Construction and Housing. It includes the main aggregates of these accounts, detailed tables, and

comments on the most recent economic changes in housing services. It also describes work in progress on the Housing Services accounts.

72. It is worth noting that the satellite accounts of Housing Services are regularly compared with the central national accounts. Having been recently created, the satellite accounts of Housing Services have tested alternative methods of estimating housing services and investment in dwellings. This flexibility is not possible in the central national accounts because users give priority to the coherence of time series. This requires the careful presentation and documentation of figures from the satellite accounts. At the same time it helps to check the relevance and reliability of the central accounts methodology. This is particularly useful now in the ongoing revision of the methods and sources of national accounts which is conducted within the framework of the new European System of Accounts (ESA 1995). This major revision, scheduled to be completed in spring 1999 with the first publication of the new series, will incorporate the findings from the work on the satellite accounts of Housing Services.

VII. Conclusions

73. The creation of satellite accounts thirty years ago in the French system of national accounts has been extremely fruitful. Major changes have occurred in institutional, economic and social structures in France since that time. However the demand for new satellite accounts has not decreased. This is probably due to the high flexibility of the statistical tool called “satellite accounts”. It can be used by specialists in its field with limited difficulty of understanding because it provides them with a global overview of their field using familiar language. At the same time, contact with the central national accounts and their macroeconomic aggregates is preserved. Satellite accounts bridge macroeconomic accounts and field-specific information.

74. Of course, increasing use creates increasing duties, among them integrity, neutrality, transparency, relevance, timeliness and reliability. A good guarantee of respect of these duties is provided by the fact that satellite accounts are compiled by statisticians working in the Ministry in charge of the field covered, with the National Statistical Institute playing the role of external consultant and technical associate. The existence of Commissions of Accounts is also particularly helpful for this purpose, although noticeable exceptions can be found in the French situation (e.g. Education Accounts).

75. The functional dimension of French satellite accounts is mainly oriented towards the purposes of government expenditure. However, a lot of government functions are in meeting the main functions of household consumption. This social dimension is visible in the three examples given above: health, education, housing services can be observed from the point of view of both government and households.

76. In French functional satellite accounts, a detailed analysis of beneficiaries is not fully developed. That does not mean that an analysis of beneficiaries is not possible within the framework of satellite accounts. It is easy to imagine that a reasonable use of existing household surveys could give promising results. In other countries the analysis of beneficiaries may be a priority of functional satellite accounts. Indeed, that depends on the needs expressed by users for information in the field covered by the satellite accounts. Among these users government agencies often play a prominent role, which can be related to their budgetary influence. They have to be convinced themselves or by other users that it is useful to show within the satellite accounts the way their action is reaching the various sectors of the population.

77. A last point has to be made. Concrete examples based on the French experience have shown that, in general, the regular production and dissemination of satellite accounts starts before the whole framework is completed. The functional satellite accounts are always in progress. This is not without purpose. Satellite accounts must be rapidly used for purposes of applied studies. The 1976 French system

of national accounts, where, for the first time, satellite accounts are described as a part of the whole system of national accounts, may be quoted here: "[Satellite accounts compilers] must begin to provide inputs that will help economic policy makers in their field to address current issues without awaiting the results of the work in progress, even if we know that these findings will lead to a different and better description of the field."

Annex 1: Some data from French Health Accounts

Table A.1. Total Medical Consumption
Billion French Francs

	1993	1994	1995	1996
Hospital Care	309	322	338	347
- *Public*	235	245	259	265
- *Private*	74	77	79	82
Out-patient Care	181	183	189	194
- *Doctors*	86	88	91	94
- *Medical Assistants*	28	29	30	31
- *Dentists*	41	42	43	44
- *Analyses*	20	18	19	19
- *Thermal Treatment*	6	6	6	6
Transport of Patients	9	10	10	10
Medicines	117	119	126	129
Orthopaedic and Prosthetic Appliances	17	18	19	20
Preventive Medical Service	14	14	15	16
TOTAL MEDICAL CONSUMPTION	**647**	**666**	**697**	**715**
as % of Total Final Consumption	**11.3%**	**11.3%**	**11.5%**	**11.3%**

Source: Health Account- Services of Statistics, Studies, and Information Systems, Ministry of Labour and Social Affairs

Table A.2. Current Health Expenditure
Billion French Francs

	1993	1994	1995	1996
Expenditure for Patients	684	703	734	752
Preventive Expenditure	17	18	18	19
Expenditure for the Care System	15	16	17	17
Health Management Expenditure and its Financing	11	11	12	13
CURRENT HEALTH EXPENDITURE	**726**	**747**	**781**	**801**
as % of GDP	**10.3%**	**10.1%**	**10.2%**	**10.2%**

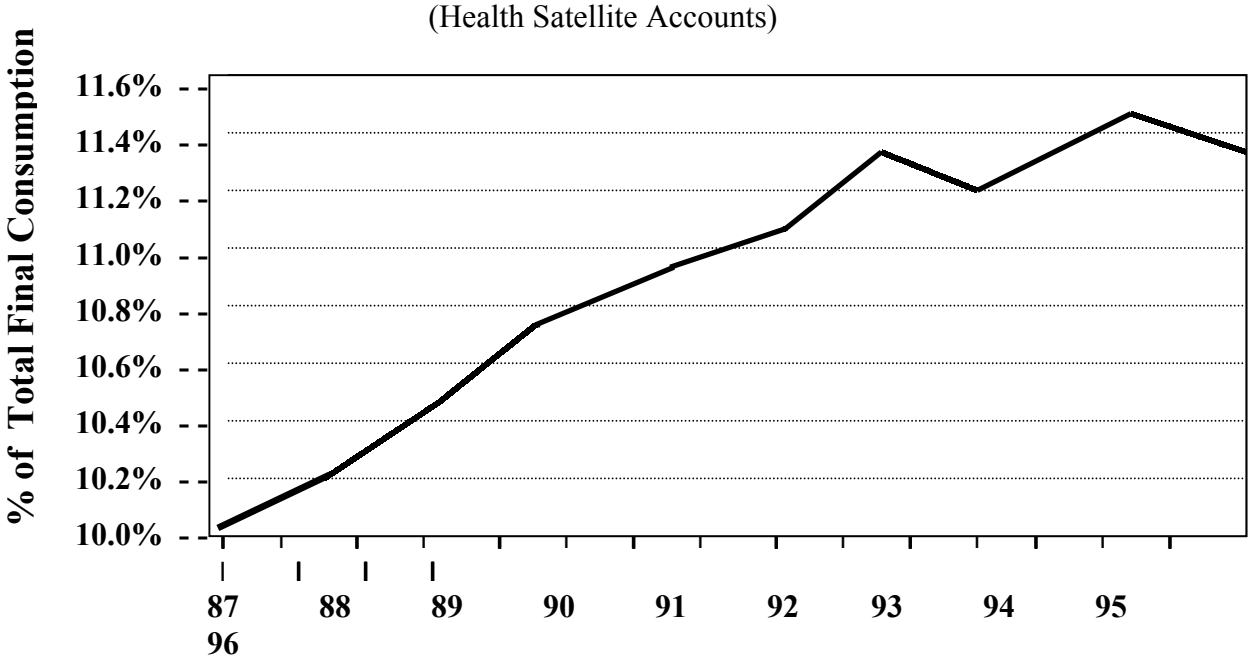
Source: Health Account- Services of Statistics, Studies, and Information Systems, Ministry of Labour and Social Affairs.

Table A.3. Current Health Expenditure by Type of Financing (Aggregated Format)
Year 1996 - Billion French Francs

Expenditure⇒ Financing ⇓	Hospital Care (1)	Out-patient Care (2)	Transport of Patients (3)	Medicines Ortho-paedic appliances etc., (4)	Aid for Patients (5)	Expen-diture for Patients (1+2+3+4+5) (6)	Preven-tive Expen-diture (7)	Expen-diture for the Care System (8)	Health Manage-ment" (9)	Current Health Expenditure (6+7+8+9)
Social Benefits	85	134	9	106	43	377	1	-	-	378
paid by										
- Social Security	74	111	9	86	43	323	1			324
- Mutual Benefit Soc	8	22		19		49				49
- Central & Local Govt.	3	1		1		5				5
Budget Allowance	233	-	1	1	-	235	-	-	-	235
Other transfers	-	-	-	-	9	9	-	-	-	9
Operating costs of:	1	-	-	-	-	1	18	17	13	49
- Social Security							2			2
-Central & Local Govt.	-1					1	10	13	1 11	25
-Mutual Benefit Soc.							6		1	11
- Others								4		11
Private Insurance	5	16	-	12	-	33	-	-	-	33
Households	23	44	-	30	-	97	-	-	-	97
TOTAL	347	194	10	149	52	752	19	17	131	801

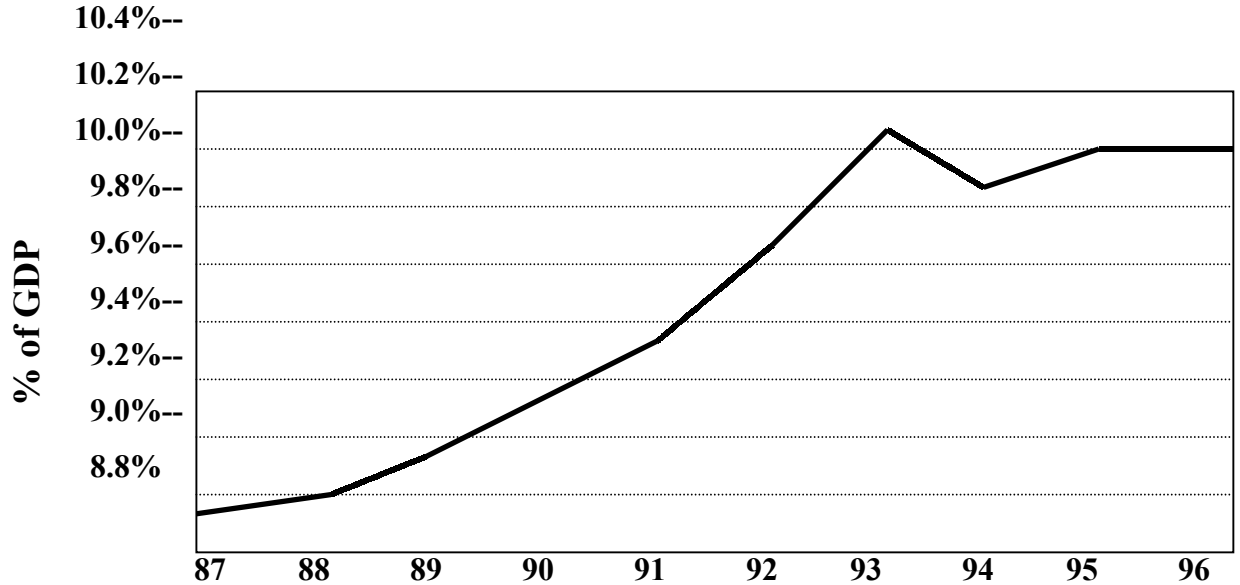
Source: Health Accounts Service of Statistics, Studies and Information Systems, Ministry of Labour and Social Affairs

Medical Consumption-FRANCE
(Health Satellite Accounts)



Source: Ministry of Social Affairs

Current Health Expenditure-FRANCE
(Health Accounts)



Source: Ministry of Social Affairs

Annex 2: Some data from French Education Accounts

Table A.4. Domestic Education Expenditure
Billion French Francs

	1993	1994	1995
Teaching activities	425	443	460
of which:			
- Primary Education	112	115	120
- Secondary Education	175	183	189
- Higher Education	68	71	74
-Training Schools	5	5	6
- Adult Education	49	52	54
Subsidiary Activities	56	57	59
Connected commodities	29	31	32
of which:			
- School bus Services	10	10	11
- Schoolbooks and supplies	14	15	16
Wages of Teachers in Training	10	12	12
DOMESTIC EDUCATION EXPENDITURE	**520**	**543**	**563**
as % of GDP	**7.3%**	**7.3%**	**7.3%**

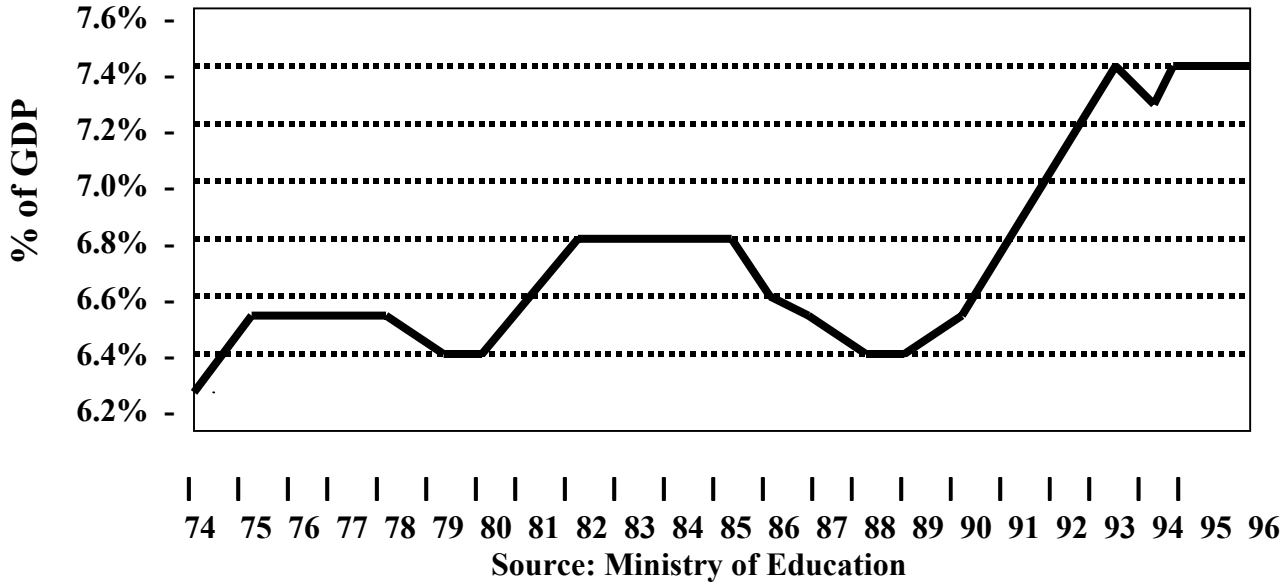
Source: Education Accounts, Directorate of Assessment and Forecasting,
Ministry of Education

Table A.5. Average Expenditure by Student
Thousand French Francs

	1993	1994	1995
Primary Education	21	22	23
Secondary Education	40	41	43
Higher Education	44	44	45
All Levels of Education	31	33	34

Source: Education Accounts, Directorate of Assessment and Forecasting,
Ministry of Education

Domestic Education Expenditure-FRANCE
(Education Accounts)



Source: Ministry of Education

Table A.6. Current Expenses of Consumers of Housing Services (i.e. Occupants) /Main Home
Year 1995 - Billion French Francs

	Occupying Owners	**Tenants of non-furnished dwellings owned by:**				**Other Status**	**TOTAL**
Type of Expenses	///	**Individuals**	**Social housing bodies**	**Other Entities**	**Sub-total**	///	///
Rents	373	140	80	15	235	46	654
Energy	128	25	28	3	56	11	195
Collective Costs Borne by Tenants*	5	5	7	1	13	0	18
External Services **	43	5	4	1	11	3	57
Compensation of Buildings' Employees	1	1	3	0	4	0	5
Taxes	5	5	3	1	9	0	4
Other Expenses	1	3	1	0	4	0	5
TOTAL	**556**	**184**	**127**	**21**	**332**	**60**	**948**

* In France; the cost of maintenance and minor repairs to halls, lifts, stairs, etc., in collective buildings is partly aid by tenants, partly paid by owners. Here is recorded the part paid by tenants.

** This item contains the cost of maintenance and minor repairs in individual dwelling which are paid by occupants, and their home insurance.

Source: Housing Services Accounts, Economic and Statistical Service, Ministry of Infrastructure, Housing, and Transport.

Table A.7. Current Resources and Uses of Producers of Housing Services
(i.e. Owners) / Main Home
Year 1995 - Billion French Francs

USES	Occupying Owners	Owners of Dwellings Rented Without Furniture				Other Status	TOTAL
Type of Use	///	Individual	Social housing Bodies	Other Entities	Sub-total	//	///
Collective Costs Borne by Owners*	4	3	5	1	9	1	13
External Services**	4	12	4	2	18	1	23
Compensation Of Buildings' Employees	1	1	14	0	15	1	17
Taxes	25	24	6	4	34	4	63
Interest	121	13	n.a.	n.a.	n.a	0	n.a.
Other	0	2	0	0	2	0	2
Transfer to Occupant						46	46
Current Balance	222	86	n.a.	n.a.	n.a.	- 7	n.a.
TOTAL	**377**	**141**	**83**	**15**	**239**	**46**	**661**

RESOURCES	Occupying Owners	Owners of Dwellings Rented Without Furniture				Other Status	TOTAL
Type of Resource	///	Individuals	Social housing Bodies	Other Entities	Sub-total	///	///
Rents	373	140	80	15	235	46	654
Subsidies	3	0	2	0	2	0	5
Insurance Claims	1	1	1	0	2	0	2
TOTAL	**377**	**141**	**83**	**15**	**239**	**46**	**661**

* See footnote on collective costs borne by tenants on Table A.6 above.
** This item contains fees paid to building managers and intermediaries, maintenance and small repair, and insurance.
Source: Housing Services Accounts, Economic and Statistical Service, Ministry of Infrastructure, Housing and Transport.

Table A.8. Annual Changes in the Number of Dwellings (Measured in March Every Year)
Thousand Dwellings

	1992/1994	1993/1994	1994/1995	1995/1996
Main Home	237	228	213	180
- Occupying Owners	109	123	91	51
- Tenants	131	112	127	140
- Other Status	-3	-7	-5	-11
Vacation Home	48	52	51	46
Vacant Dwelling	5	14	57	57
TOTAL	**290**	**294**	**321**	**283**

Source: Housing Services Accounts, Economic and Statistical Service, Ministry of Infrastructure, Housing and Transport

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Endnotes

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[2] The German national accounts have included, for several decades, annual series of households' disposable income compiled for macro-social groups and made available to users on request.

[3] This very first framework of functional satellite accounts was never completely compiled. Only its financial part was actually produced on an annual basis by the French central bank (Banque de France) and used for several years.

[4] Gross National Product is used in the distribution of budgetary contributions among member countries of the European Union. In the building of the European Economic and Monetary Union the principal indicators of public management, namely public deficit and public debt, are defined according to the European standard of national accounts.

[5] System of National Accounts, Chapter XXI, Part C "Framework for Functionally Oriented Satellite Accounts", paragraphs 21.49 to 21.121. Drafted by André Vanoli, with further elaboration beyond the French practice.

[6] Housing Services Accounts must not be confused with the "Housing Accounts" which were in the late sixties the first attempt to build functional satellite accounts. As described in Part I "Background" above, the latter referred to the building of houses and dwellings. The current Housing Services Accounts primarily refer to housing services. This shift of focus reflects the change in priorities of policy makers and social partners active in this field.

[7] Only the retail trade of these goods is a characteristic activity. The manufacture of pharmaceutical products, medical and surgical equipment, prescription spectacles and contact lenses, orthopaedic and prosthetic appliances is left outside the field of health accounts.

[8] Some data from Health Accounts are in Annex 1.

[9] Some data from Education Accounts are in Annex 2.

[10] There is one fault in this consistency. In the Education Accounts the financing units grouped as "enterprises" are not split into unincorporated enterprises and corporations, for statistical reasons. This does not hamper to any great extent comparisons with the central framework of national accounts. Business financing amounts to only 5.5 % of the Domestic Education Expenditure, and to 0.4 % of the French GDP.

[11] Initial financing units are those which ultimately bear the expenses, while final financing units are those who pay the producers or buy the connected products. This definition does not comply with the 1993 System of National Accounts, which defines "initial" and "final" financing in the opposite way.

[12] Some data from Housing Services Accounts are in Annex 3.

[13] In France there is a tax on payroll for the financing of housing. Employers can be exempted from paying this tax if they directly or indirectly finance the development of housing.

[14] The 1993 SNA makes a distinction between persons living permanently in an institution, thus grouped in "Institutional Households", and other households named "Individual households" (see 1993 SNA, chapter IV, paragraphs 4.132 to 4.137). What is described in Housing Services Accounts relates to "Individual Households".

[15] Furthermore, ministerial statistical branches are managed by INSEE staff seconded to Ministries.

[16] It is assumed, of course, that the first two stages have been conducted in fairly close association with representatives of all political and social entities involved in the field concerned. Classifications, concepts, and tables have to be relevant and to meet users' needs.

[17] CREDOC is the French acronym for the then Center for Research and Documentation on Consumption. The field of responsibility and the official name of CREDOC have changed over the years but it has kept its original acronym.

[18] Among issues recently reviewed by working groups created by the Commission of Health Accounts are the measure of price changes of medicines, the role of insurance companies in the reimbursement of households' health expenses, the definition and estimate of preventive health expenditure.

[19] They are subject to further revisions for two more years.

[20] Three technical expert groups are currently working on housing aids, housing balance sheet accounts, and the review of basic data required for the regular compilation of housing services accounts.

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3. Accounting for household production

Measuring and valuing non-SNA activities[1]

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I. Introduction

1. This paper first illustrates, with data from fourteen countries, the potential of time-use studies for measuring, in comparable physical quantities, labour inputs in SNA and non-SNA production. It then presents monetary valuations of unpaid household labour and of household non-market production achieved on the basis of time-use data in a few of these countries. The conclusion points to desirable future developments.

2. From an economic perspective, human activities can be grouped into three large categories:

   (a) *Personal activities* as defined by the third party criterion, namely activities the performance of which cannot be delegated to a person other than the one benefiting from them. From here on we refer to these as *"non-economic"* activities. They include physical and recreational activities and education. Clarification is needed about the latter. Education is an investment in human capital as is investment in health: it produces returns in all activities, SNA, non-SNA and personal. Although it may have economic consequences, it does not meet the third person criterion (nobody can learn for someone else) and should therefore be classified as a personal activity and not as an economic activity as it sometimes is.

   (b) *Recorded economic activities,* i.e. grosso modo activities falling within the SNA production boundary. From here on, we refer to these as *"SNA activities"*.

   (c) *Unrecorded economic activities,* which generate goods and services produced and consumed by households without involving monetary transactions and which are not recorded in labour statistics or in national accounts. From here on, we refer to these as *"non-SNA activities"*. We still refer to the 1968 SNA production boundary because the data we use are still constructed according to its recommendations. The 1993 revision of the SNA introduced minor changes to the production boundary: goods produced by households for own consumption and water-carrying will eventually be added to the national accounts, but the bulk of domestic activities remains outside the scope of the accounts. They include domestic and related activities (food preparation, childcare, adult care, making and care of textiles, upkeep of dwelling and surroundings, repair and maintenance of dwellings and of household equipment, household management and shopping, gardening and pet care) and unpaid work for the community.

3. This paper deals with category 'c' activities, i.e. unrecorded economic activities.

II. Labour inputs: Measurement in time units

A. Methodology

4. The time-use data presented come from fourteen countries for which relatively recent measurements are available, representative of the total national population. These are:

> Australia, Austria, Bulgaria, Canada, Denmark, Finland, France, Germany, Great Britain, Israel, Italy, the Netherlands, Norway and the United States.

5. The coverage of countries is not exhaustive. Had more time been available, more countries could have supplied data.

6. Fundamental differences exist between time-use studies carried out in the various countries and these differences have been analyzed in detail by researchers in the field. The consensus now is that, in order to ensure cross-national comparability, future projects ought to be coordinated from the start and should use compatible methodologies. This is the task undertaken, under the auspices of EUROSTAT, by the European Time-Use Survey team in which researchers from non-member countries also participate.

7. Meanwhile, for the UNDP/HDRO study, as we were working post-factum with existing data, we tried to reduce, at least in part, the differences relating to time units, the age groups under observation and the categorization of activities.

8. We could not eliminate the differences relating to data collection methods (from diary entries, memory or other methods), the handling of seasonal variations, the degree of representativeness of the sample including handling of non-responses or the handling of transportation time, etc. One should therefore refrain from making cross-national comparisons with the available data. The only permitted exercise is to analyze, within the individual countries, the structure of time-use and to determine the orders of magnitude and trends over time when available.

B. Recent measurements

9. In short, the results contained in the UNDP/HDRO report yield the following orders of magnitude.

- In the fourteen countries, *economic activities require on average less than one-third of the 24 hours day,* ranging from country to country between 6:01 and 7:40 hours per day. (N.B. The averages given are arithmetic averages calculated over 365 days and over the entire population under observation, i.e. in principle aged 15 and above).
- In eight countries, *non-SNA activities absorb roughly as much labour time as SNA activities.*
- In six countries, *gender equality is achieved, on average, in amount of economic time*
- while in the other countries, *women work more hours than men.*
- In all countries but one, the largest share of their labour time is spent by *men in SNA activities, but by women in non-SNA activities.*
- In all countries but one, *food preparation requires the largest proportion of non-SNA time.*

10. Trend data for three countries show:

- A decrease in extended (i.e. SNA plus non-SNA) economic time and in the economic time of each gender;

- A trend towards equalization of the genders' contribution to extended economic time;
- A decrease in production time for traditional household goods and services, with the exception of childcare;
- An increase in household management/shopping time.

III. Labour inputs: Monetary valuation

A. Methodology

11. For national accounting purposes, it would be preferable to value non-SNA labour using an output-based approach, which is described below in section IV.A.1. However, in the available monetary valuations of non-SNA labour inputs, the value of unpaid labour is obtained by imputing a market wage to the hours invested in household production. Several kinds of market wages have been used, in earlier studies, for this imputation. The most frequently used are:

- Wages for equivalent market functions, i.e. wages of workers producing, in market enterprises, the goods or services produced by unpaid household members;
- Wage averages, i.e. average wages of all market workers or average wages of subsets of workers (women, service enterprises, etc.);
- Wages of polyvalent substitute household workers (generalists), i.e. workers who can perform, within the household premises, all or most of the productive activities performed by unpaid household members.

12. In the UNDP/HDRO study, we decided to discard the "wages for equivalent market functions" alternative because they correspond to productivity in market enterprises (mass production, streamlining, capital intensiveness, etc.) which are entirely different from those prevailing in households. The wages paid in a market enterprise correspond to its productivity and the value of unpaid household labour may be overstated, at least in the production of goods, if counted at this wage rate.

13. We also decided to discard the average wages of subsets of workers (subsets defined by characteristics, such as sex, age, education, occupational status, etc. commanding different wage levels) as used in some studies as a proxy for the opportunity cost of time. These average wages are inappropriate for macroeconomic valuations for several reasons. The opportunity-cost-of-time approach is derived from the microeconomic theory of time allocation. It imputes to household work time spent to earn the wage the unpaid household worker would earn in the market if he/she chose to give up household work and take up employment. This microeconomic theory rests on a number of assumptions: the rational behaviour of utility maximization, well-informed individuals, having choices and choosing freely in a competitive market, reaching equilibrium conditions, etc. In practice these assumptions are rarely verified because of labour market and household functioning constraints. One disturbing result of evaluations based on the opportunity cost of time is that the same household activity commands different values depending on who performs it; for instance, the value of dish-washing is higher if the person performing the activity is a university graduate or only attended primary school.

14. Contributors to the UNDP/HDRO study provided valuations based on the wages of polyvalent substitute household workers. These wages appear to be the most appropriate for imputing a monetary value to unpaid household work because they correspond to the market value of labour performed in household productivity circumstances. The best wages on which to base the imputation are those of generalist substitutes with household management responsibilities. Alternatively, the wages of housekeepers performing several different tasks may be used, adjusted in order to account for the additional responsibilities and for the continuous availability of unpaid household workers.

15. Net or gross wages? There is no general agreement as to which are best. We think that the choice between the two depends on the use to be made of the valuation results. Net wages reflect the economic flows actually generated by non-SNA activities. Gross wages reflect which flows would be generated and how SNA aggregates would be affected, if production was transferred from households to the market. They also reflect households' foregone expenditure and can therefore be used for the analysis of households' economic behaviour. We believe that estimates based on net wages are therefore more appropriate for inclusion in the household satellite account.

16. Net wages are defined in the same way in our source studies while gross wages are defined in different ways: gross wages always include income taxes, but sometimes they include all labour costs i.e. employers' social security contributions (which in some countries amount up to 40 per cent of wages, while in other countries social security is financed from public funds), hours paid but not worked, etc. The impact of these differences on the imputed value of labour is illustrated by data available from a few countries, where the more or less inclusive wages of household substitutes were imputed on the same time data sets. In the French (1985) and in the German (1992) data, estimates based on labour costs are respectively 3 and 9 percentage points higher than those based on gross wages. In the Danish (1987) and in the German (1992) data, estimates based on labour costs are respectively 16 and 23 percentage points higher than those based on net wages (see Table 1).

17. Other differences exist from country to country in the way the hourly wages of substitute household workers are determined. For instance, they can be determined on an hourly basis (in this case, hours not worked are not counted), or on the basis of monthly rates (counting contractual hours or only hours actually worked). Schäfer and Schwarz (1994) calculated the non-negligible impact of these choices on the German valuation. These differences partly explain the range of results obtained in the various estimates.

18. Our efforts at standardization (choice of the same category of wages for imputation, distinction between net wages, gross wages and labour costs) reduce the very large diversity of valuation methods previously used in the various studies; the valuation picture is thus somewhat clarified. However, although the valuations of labour presented in this study are expressed in the same language, the language has not yet been codified: each study still uses its own dialect.

19. Because of differences in wage determination and differences in the basic time-use data (see section II), the values of non-SNA labour thus obtained are not cross-nationally comparable.

B. Recent measurements

20. In summary, the results contained in the UNDP/HDRO report yield the following orders of magnitude. Taking the national GDPs as a measuring stick, we find that:

- In seven estimates provided by five countries, the median *value of non-SNA labour* obtained with *labour costs is 45 $\pm$ 10 per cent of GDP;*
- In two estimates provided by two countries, the value obtained with *gross wages is 39 $\pm$ 6 per cent of GDP;*
- In two estimates provided by two countries, the value obtained with *net wages is 26 $\pm$ 5 per cent of GDP.*

IV. Products: Monetary valuation

A. Methodology

1. Direct valuation at market prices

21. In national accounting, the consensus is that, conceptually, the preferred method is to directly measure outputs in physical quantities and to value them at the market price of equivalent market products. (1993 SNA, para. 6.84 and 6.85). This principle, set forth for goods and services produced for own final use and included within the system production boundary, should also apply to non-SNA production in the satellite account.

22. This output-based valuation method requires the measurement in physical quantities of household outputs: for instance, number and kinds of meals prepared, number of children taken care of, kilograms of laundry washed, etc. These outputs were measured sporadically for certain activities in a few countries. Finland is the only country to have measured the outputs of all household activities, and to have done this on a national representative sample, without, however, using these physical quantities for valuation ([Finland], 1980-1986).

23. Once the value of non-SNA production is obtained by imputing the prices of equivalent market products, the corresponding mixed income (i.e. the actual value of unpaid labour) may be calculated by subtracting the value of intermediate inputs and of capital consumption. Mixed income divided by the number of hours worked yields the hourly returns to labour, a value which it would be interesting to compare to market wages.

2. Valuation at cost of inputs

24. Databases on the volume of outputs have not been widely developed yet. As a consequence, most of the available studies have valued household production by another method: valuation at cost of inputs, i.e. as the sum of (imputed) labour value, intermediate consumption and fixed capital consumption. With this method, it is labour which is valued at a market price. This is achieved by borrowing market wages as discussed in section II.A.

B. Recent measurements

25. The valuations referred to in the UNDP/HDRO paper are performed at cost of inputs. They are not cross-nationally comparable because of differences in the basic time-use data (see section II.A), in wage determination (see section III.A), in the handling of intermediate and capital consumption, in inclusiveness, etc. These differences account for part of the range of valuation results. For instance, in the Danish (1987) and German (1992) estimates, the inclusion of imputed rents for owner-occupied dwellings raises the value of household production by 7 and 4 percentage points respectively.

26. Table 1 presents the value of labour and the value of production at cost of inputs, in non-SNA activities, for six countries. These values are expressed as a percentage of GDP.

27. In short, these valuations yield orders of magnitude that we express here in qualitative terms in order to emphasize their imprecision:

- The three lower bound estimates of the *value of non-SNA production* obtained with *labour costs is close to half the value of GDP;*
- One estimate obtained with net wages is equal to one third of GDP.

V. Further elaborations of monetary valuations

28. The results reported in sections III.2 and IV.2 are what we may call the "usual" measurements. New paths were explored in the UNDP/HDRO report. Only a limited number of examples are provided, but they indicate directions which may be further pursued.

A. Extended private consumption

29. We first need to clarify some concepts.

1. *Extended"* refers to SNA plus non-SNA; it applies to such concepts as the economy, product, labour, consumption, etc. We speak of the extended economy, extended consumption, etc.

2. Consumption: Household extended private consumption consists of what they buy and consume without further processing (e.g. an ice-cream cone) plus what they produce themselves and consume directly.

30. From the SNA perspective, "private consumption" is assumed to be household final consumption. However it includes:

- Good and services which are used as intermediate inputs in non-SNA production (e.g. vegetables), and which will be transformed in the final product to be consumed (e.g. a soup);
- Durables, some of which are productive (e.g. refrigerators); the SNA assumes all durables are consumed at the moment they are bought, while from the extended economics perspective, productive durables are consumed gradually over their lifetime and are accounted for as a factor of production.

31. *From the extended production perspective,* we deduct from SNA private consumption, intermediate inputs and productive durables. In other words, in the satellite account we modify a value provided by the central framework, in order to incorporate it into the extended accounting system. We call it *"modified private consumption"*.

32. *"Extended consumption"* is the value obtained by adding together modified private consumption and household non-SNA production.

33. Table 2 shows estimates of the contribution of non-SNA activities to extended private consumption. We have data from Finland, Germany and Bulgaria. Their results are close: *non-SNA production contributes some 60 per cent of extended private consumption.*

34. Table 3 provides, with data from Bulgaria, a trans-temporal illustration of the contribution of non-SNA activities to per capita extended private consumption. The latter appears to have decreased from 65 to 58 per cent between 1971 and 1988.

35. The absolute figures are also interesting. Extended per capita consumption decreases during this period as a result of a decrease in SNA consumption, further aggravated by an even larger decrease in

non-SNA consumption. This observation contradicts the widespread belief that households can compensate for a loss in market consumption by increasing their non-market economic activity. A possible hypothesis for explaining the observation is that non-market production is partly dependent on market production: for instance, if no paints are available, or if no money is available for buying paints, households do not repaint their dwellings.

36. If comparable valuations become available, it will be possible to compare extended per capita consumption in different countries or, within one country, at several points in time or across socio-economic groups.

B. Standardized extended private consumption

37. Extended consumption, however, does not tell the whole story. When comparing consumption across time, or between countries or socio-economic groups, we should take into account the labour required for achieving this consumption level. (A given consumption level reached with lower labour inputs is more favourable from the human point of view, as less economic time means that more personal time is available).

38. In order to carry out such comparisons it is necessary to integrate two data sets: consumption levels and labour time. This can be achieved by standardizing labour time. The procedure, used in Malaysia by Kusnic and Da Vanzo (1980), consists of hypothesizing the same amount of labour time (for instance the median labour time) for both entities to be compared (e.g. countries) and calculating what consumption would have been in each if labour time had been equal to the chosen standard. By applying this procedure to extended labour and extended consumption, we obtain a value that we call *"standardized extended private consumption"*.

39. Bulgaria provided some data enabling us to illustrate the procedure. Table 4 shows that between 1971 and 1988, in Bulgaria, per capita extended private consumption declined by 22 percentage points while per capita extended labour time declined by 18.6 percentage points.

40. We standardize at 8 hours of extended labour/person/day. The standardized data indicate that the decline in consumption is strongly related to the decline in economic time. If Bulgarians had worked the same amount of time in both years, the decline in consumption would only have been of 3 percentage points.

41. The same procedure, applied to cross-national data or across socio-economic groups within one country, would allow meaningful comparisons permitting integrated appraisals of living standards.

VI. Conclusions

42. The 1993 SNA formally recognizes that non-SNA activities are productive and that they contribute to the "well-being" (we prefer the term "consumption") of the population. It recommends handling the measurement of these activities in a satellite account, which is a flexible frame where monetary units can be presented alongside physical units, for instance time units.

43. Time-use measurements clearly have potential for assessing the economic dimensions of human labour. Perhaps the most important indication they give is that, at the macroeconomic level, labour inputs into non-SNA activities are of the same order of magnitude as labour inputs into SNA activities. Labour statistics, however, record only the latter; they do not account for about one half of human labour. (This is because labour statistics have to comply with constraining definitions, designed exclusively for recording

labour market activities). Because of this enormous gap, labour statistics give a distorted image of how even industrialized societies utilize the available labour resources to achieve their standard of living.

44. At present, the comparison between time invested in SNA and non-SNA activities can only be achieved by means of time-use data. Labour statistics provide data on "hours worked" (in SNA activities) which cannot be compared to time-use data because of entirely different data collection methods (sources, definitions, etc.). Labour statistics also provide data on the number of "homemakers", a residual category of non-employed individuals assumed to be occupied full-time by domestic activities. The work performed in non-SNA activities, by both women and men counted as "active" in labour statistics, is totally unrecorded.

45. Measurements in time units have the following characteristics which qualify them as a satisfactory tool for the economic assessment of non-SNA activities: they are the result of direct observations which do not require any theoretical assumptions and they are eminently suitable for international comparisons, the time unit being the same around the world. Time-use methodology is progressing rapidly towards coordination and comparability, in particular in the context of the European Time-Use Survey.

46. Time-use, however, does not measure human effort, i.e. it makes no difference between one hour worked in harsh circumstances and one hour worked in more comfortable circumstances: time spent in laundering in the cold water of a stream or time spent in operating an electric washer-dryer are very different from the human point of view. To our knowledge, these qualitative differences have never been measured on a large scale, either for SNA or for non-SNA activities.

47. The available national valuations of household non-market production yield interesting orders of magnitude. In order to serve as a basis for the formulation of economic and social policies, they would require further elaboration. For example, the assessment of the respective contributions of SNA and non-SNA activities to extended private consumption or the analysis of extended income distribution across socio-economic groups.

48. Because of different choices made during the valuation process, the range of values presently available is wide. In order to achieve cross-national comparability, methodological recommendations have to be developed internationally. Valuation methodology is progressing at a much slower pace than time-use methodology. Monetary valuations have already been carried out in several countries for many years, but the field lacks coordination: it progresses in a dispersed way. The only international conference on the subject was held in 1993 in Ottawa at the initiative of Statistics Canada.

49. In order to be compatible with SNA data, a different valuation method than the one used in the UNDP/HDRO studies will have to be used: the valuation will have to be output-based, i.e. it will have to start with the physical measurement of household output and value it at market prices (Goldschmidt-Clermont, 1987, 1989, 1993). Unfortunately, very little experience is available, as yet, with this approach at the national level. It is, however, no more difficult to develop than the refined strategies developed for the traditional sectors of the national accounts.

50. Time-use based valuations are inappropriate for studying extended income distribution. Non-market time is elastic and is used at the discretion of households. In order to save on expenditures, households with low monetary income may devote time to production for own-consumption even if it yields low hourly returns. Diminishing returns are ignored when household incomes are compared on the basis of unpaid labour time multiplied by an imputed wage. Because of diminishing returns to labour and because of more hours of work, households with low monetary income may, with time-based valuations,

appear better off than they actually are. In order to avoid this difficulty, output-based valuations are necessary.

51. Let us conclude with an agenda for the future:

- Increased contacts, the systematic exchange of information and coordination between those involved in the monetary valuation of household production, in a similar way and in contact with those involved in time-use measurements;
- The development of the output-based valuation approach;
- The allocation of the necessary financial resources for this new sector of economic accounting which has been neglected until now.

Annexes

Table 1: Value of labour and value of production at cost of inputs in non-SNA activities of seven countries

Percent of GDP

Country	**Value of labour inputs**				**Value of production**				**Sources**
	SNA compen-sation of employ-ees	Non-SNA 1) net wages	gross wages	all labour cost	SNA GDP	Non-SNA gross value added at cost of inputs1) net wages	gross wages	all labour costs	
Australia 1992 (age 15+)	51			72	100			88	Ironmonger 1994)
Denmark 1987 (age:16-74)	56*	21(a)*		37 */**	100			43(b) **	*Mellgaard and Rermose (1995) **Bonke (1993)
Finland 1990 (age: 15+)	56			45	100			46.4	Vihavainen (a) (1995)
France 1985 (age: 15+)			33	36	100				Chadeau (1992)
Germany (a) 1992 (age: 16+)	55	31	45	54(b)	100	33	47	55(c)	Schafer and Schwarz (1994)
Norway 1990 (age: 16-79)				38	100				Dahle, Kittered (1992)
Bulgaria (a) 1988 (age: 0.1+)	85				100	47	71	84	Zachariev, Todorova, Tcsekova, Mantchevska (1994, priv. communication)

Notes: (1) wage of a substitute household worker, polyvalent.

Denmark: (a) Net wages are calculated as gross wages for unskilled manual workers minus the average tax paid by these workers.
(b) If gross value added for owner-occupied dwelling is included, the value rises from 43 to 50.

Finland: (a) Plus additional unpublished calculations based on Statistics Finland (1990b).

Germany: (a) Old Länder only (former territory of the Federal Republic of Germany).
(b) Paid leave, paid public holidays, paid absence because of sickness not included.
(c) If gross value added for owner-occupied dwelling is included the value rises, respectively, to 37, 51,59.

Bulgaria: (a) The value of labour inputs and therefore the value of production are calculated on a different population basis (age: 0.1+) than in other studies (age: 15+).

Table 2: Contribution of non-SNA activities to extended private consumption of Bulgaria, Finland and Germany

Percent (%) of extended private consumption

Country	Private consumption			Sources
	Extended	SNA modified 1)	Non-SNA	
Finland 1990	**100**	**37**	**63**	Statistics Finland (1994; private communication)
Germany (a) 1992	**100**	**38**	**62 (b)**	Schafer and Schwarz (1994)
Bulgaria (a) 1988	**100**	**42**	**58**	Tcsekova (1994, private communication)

Notes: 1) *Private consumption* as given in SNA minus goods and services used in non-SNA production (i.e. intermediate inputs and consumer durables).

Germany: (a) Old Länder only (former territory of the Federal Republic of Germany).
(b) Value of production in non-SNA activities (labour factor calculated on net wages of substitute household workers, polyvalent).

Bulgaria: (a) The value of labour inputs and therefore the value of production are calculated on a different population basis (age: 0.1 +) than in other studies (age: 15 +).

Table 3: Contribution of non-SNA activities to per capita extended private consumption in Bulgaria 1971, 1977, and 1988

in current PPP U.S. Dollars

Year	Private consumption			Sources
	Extended	SNA modified 1)	Non-SNA 2)	
1971				Time-use data: Niemi and Anachkova (1992)
U.S.$	2735.8	96.3	1772.8	
%	**100**	**35.2**	**64.8**	
1977				Monetary valuation: Mantchevska and Illeva (1994, private communication)
U.S.$	3198	1244	1954	
%	**100**	**38.9**	**61.1**	
1988				
U.S.$	2137	889	1248	
%	**100**	**41.6**	**58.4**	

Notes: PPP U.S. $ is not calculated, but estimated by Mantchevska and Ilieva:
1971: 1 BGL = 1.170 U.S. $, 1977: 1 BGL = 1.075 U.S. $, 1988: 1 BGL = 0.410 U.S. $

1) Private consumption as given in SNA minus goods and services used in non-SNA Production(i.e. intermediate inputs and consumer durables).

2) Value of production in non-SNA activities (labour factor calculated on net wages of substitute household workers, polyvalent).

Time-use data were collected in 1971 and 1977 on the population aged 6 years and over; in 1988, on the entire resident population (0.1 year and over). The value of labour inputs is essentially not effected by these differences because the labour contribution of children aged 6 and below is negligible (Time-use Studies World Wide, 1990, pp. 496-499).

Table 4: Integrated per capita extended private consumption (U.S. Dollars) and per capita total economic time (hours and minutes per day) in Bulgaria: 1971, 1977 and 1988

Current PPP U.S. $ and average time per person in hours and minutes per day (h.:m.)

Year	Per capita extended private consumption 1) U.S. $ (PPP)	Extended labour time per person (SNA + non-SNA) h.:m	Standardized extended per capita consumption 2) U.S. $ (PPP)	Sources
1971	**2736**	**8:40**	**2516**	Time-use data Niemi/Anachkova (1992); monetary valuation: Mantchevska/ Illieva (1994, private communications)
1977	**3198**	**8:19**	**3076**	
1988	**2137**	**7:03**	**2440**	

Notes: PPP U.S. $ is not calculated, but estimated by Mantchevska and llieva: 1971: 1 BGL = 1.170 U.S. $, 1977: 1 BGL = 1.075 U.S. $, 1988: 1 BGL = 0.410 U.S. $

1) Private consumption as given in SNA minus goods and services used in non-SNA production (i.e.intermediate inputs and consumer durables). Value of production in non-SNA activities (labour factor calculated on net wages of substitute household workers, polyvalent).

2) Standardized at 8 hours total economic time per person per day.

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Endnotes

[1] The paper draws on a study (Goldschmidt-Clermont and Pagnossin-Aligisakis, 1995) carried out at the request and with the financial support of the United Nations Development Programme, as a contribution to the 1995 Human Development Report. The study was possible thanks to the cooperation of the following researchers and statistical offices who, within a very short space of time, supplied their national data, rearranged to fit the common format we had drawn up: Karen Blanke, Manfred Ehling, Dieter Schäfer and Norbert Schwarz, Federal Statistical Office of Germany; Jens Bonke, Danish National Institute of Social Research and Peter Rørmose, Danmarks Statistik; Jonathan Gershuny, ESRC Research Centre on Microsocial Change, University of Essex and Sally Jones, School of Social Sciences, University of Bath; Ghislaine Grimler, France; Inge Gross, Austrian Central Statistical Office; Eeva Hamunen, Hannu Pääkkönen and Marjut Vihavainen, Statistics Finland; Duncan Ironmonger, Department of Economics, University of Melbourne; Ragni Hege Kitterød and Julie Aslaksen, Statistics Norway; Gina Koslov, Central Bureau of Statistics, Israel; Iiris Niemi, European Time-use Survey, Statistical Office of the European Union; Leonarda Roveri, National Statistical Institute, Italy; Zahari Staikov and Bistra Anachkova, Institute of Sociology, Bulgarian Academy of Sciences; Lili Petrova, Sofian Sociological Society; P. Zahariev, Jana Ilieva, Boyka Todorova and Nikolina Tcsekova, National Statistical Institute; Mantchevska, V.T.Bank; Statistics Canada;Statistics Netherlands.

A proposal for a European satellite account of household production

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I. Introduction

1. Statistics Finland obtained Eurostat SUP.COM96 funding for a project to develop a harmonized satellite system of household production and to evaluate the quality and applicability of data from the European Time-Use Pilot Survey for the calculation of unpaid household labour.

2. A great deal of research has been done on the measurement of housework and household production. Different methods for evaluating housework have been used and they have been debated extensively. Germany and the United Kingdom have published their satellite accounts of household production[2]. A number of researchers have drawn attention to the need to develop a joint set of guidelines for calculating the value and the volume of household production, which would greatly facilitate international comparisons. This paper outlines a draft proposal for satellite accounts of household production. Developing satellite accounts is certainly a continuous process, and this paper is one step in that process. It is hoped that it will generate discussion which will lead to some solutions and raise new questions.

II. National accounts and satellites

3. The System of National Accounts (1993 SNA) is a set of accounting guidelines designed primarily to facilitate international statistical comparisons. Given the rigidity of the system it is not feasible to try to introduce new items that do not fit well with the existing guidelines and which might distort the established uses of indicators such as GDP. The 1993 SNA guidelines allow for the creation of satellite accounts for the special data needs of productive activity in a given economic field that cannot be satisfied within the core framework of the national accounts. Satellite accounts are compatible with the logic of national accounting, yet completely separate from it.

4. There are two different types of satellite accounts. The first type is one which sums up and reorganizes all the data available on a certain area in the existing accounts. A case in point is tourism. This kind of satellite account will help to provide a clearer picture of the complex economic impacts of tourism. The second type is represented by a satellite account in which 1993 SNA concepts and classifications are allowed to be modified. These satellite accounts are obviously subject to greater controversy than the former type, but they also generate more new information on areas that otherwise would remain excluded from accounts. The household satellite account represents this latter category. The household satellite account applies a broader concept of production than the 1993 SNA.

5. The European System of Accounts (ESA)[3] is broadly consistent with the SNA guidelines. It nevertheless incorporates certain differences, particularly in its presentation, which is more in line with its use within the European Union. This proposal for a household satellite account is based, in the final analysis, on ESA guidelines.

III. Household production

A. Scope of household satellite accounts

6. The purpose of the household satellite account is to provide an overall picture of productive activities undertaken in households and give an estimate of their economic value. The aim is also to identify how large a proportion of this production is covered by national accounts and how large a proportion is excluded. Looking at the SNA and ESA production boundaries, even if they are the same in principle, in practice they may differ in terms of how the boundaries are interpreted.

7. The 1993 SNA defines production "in general" as "an activity carried out under the control and responsibility of an institutional unit that uses inputs of labour, capital and goods and services to produce outputs of goods and services" (1993 SNA 6.15). Household production meets this definition of production. However, with certain exceptions, the 1993 SNA definition of production only covers "production of goods and services that are supplied to units other than their producers" (6.18). This means that household production is excluded from the accounts because the outcome of production is consumed in the same unit in which it is produced, i.e. within the household.

8. According to the 1993 SNA, goods (but not services) produced in households for own use shall be included in the accounts if the production is believed to be quantitatively important in relation to the total supply of that good in the country concerned (1993 SNA 6.24-6.25). In the ESA, this has been considered as follows: "by convention, household production of goods in Europe is not significant in relation to total production" and thus it is excluded with the exception of own-account construction of dwellings, services produced by owner-occupied dwellings, the production, storage and processing of agricultural products and volunteer activities that result in goods (ESA 3.08). This means that the volume of household production included in the accounts may vary from country to country depending on the national definition of the significance of the goods produced. The inclusion in the household satellite account of both production outside the national accounts and production falling within the scope of the national accounts, will guarantee that the data are also comparable with non-ESA countries.

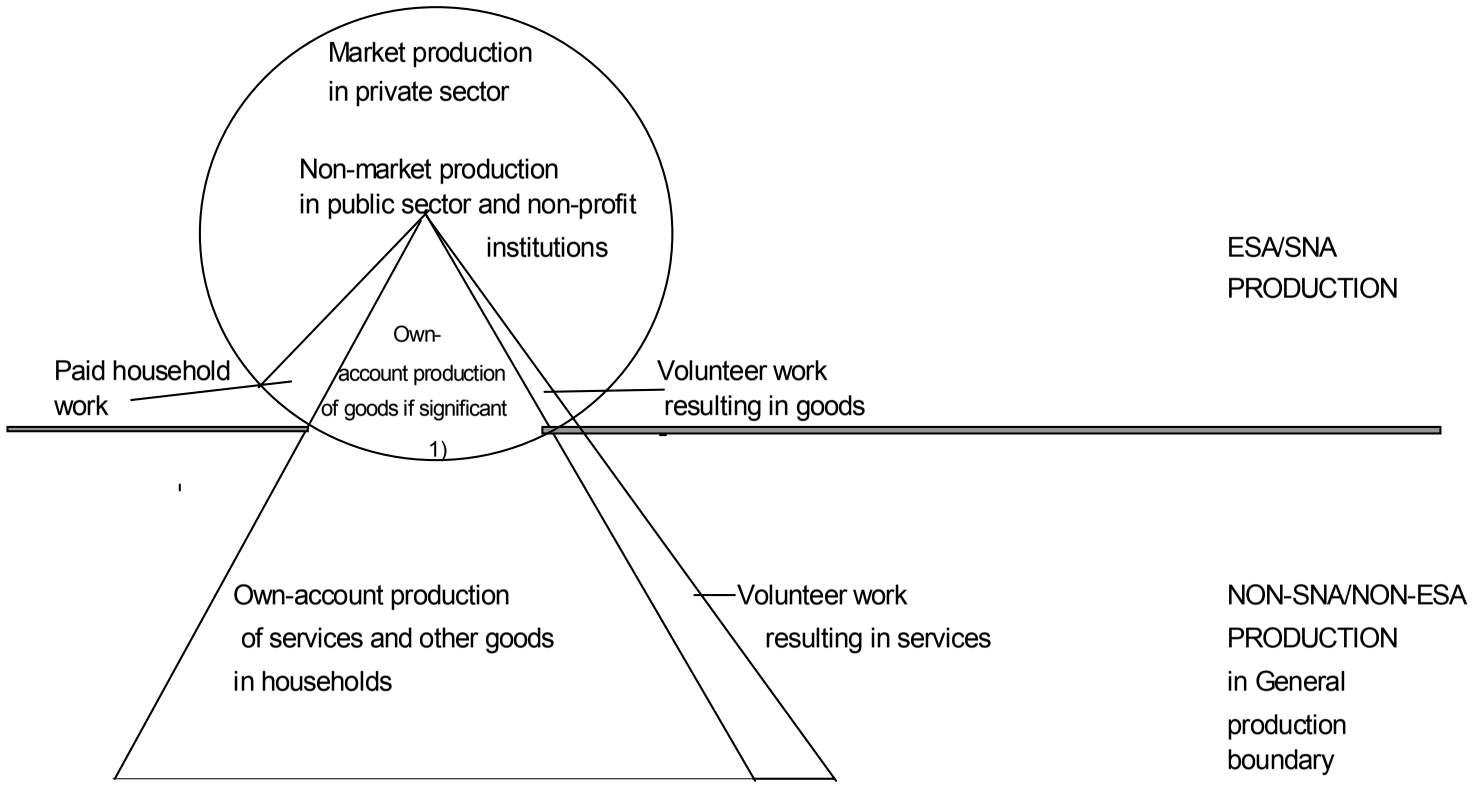
9. Figure 1. illustrates the complex relationship between household production and the national accounts, describing existing definitions of production in relation to national accounts and household production. It also outlines the production intended to be included in a household satellite account.

B. Productive roles of households

10. The 1993 SNA defines a household as a small group of persons who share the same living accommodation, who pool some or all of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food (SNA 4.132). A person living alone can also constitute a household. The concept is totally valid in the satellite account, too.

11. According to the 1993 SNA (2.21) households have several roles. The principal functions of households in a market economy are the supply of labour, final consumption (consumer role) and, as entrepreneurs, the production of market goods and non-financial services. These flows are shown in the national accounts.

Figure 1. Production boundaries



1) Only housing services produced by owner occupiers, own account house construction and renovation, and own account production and processing of agricultural products are considered to be significant in European countries.

12. In the household satellite account this consumer role is expanded to include the producer role. The focus here is on production that benefits households themselves, which in 1993 SNA terms is called own-account production. Households may be regarded as enterprises in which goods and services are produced by household members, who also consume the bulk of goods and services produced.

13. Goods and services produced in households for own use are intended primarily for the satisfaction of household members' basic needs: a place to live, meals, clothing and care are all necessary for physical existence. These services can also be bought from the market.

14. In the household satellite account the main functions of the household are defined as follows:

- providing housing: buying or renting a house or flat, getting it furnished and equipped, cleaning, maintaining, repairing it, etc;
- providing meals: planning, acquiring ingredients, preparing, serving, cleaning the dishes, etc;
- providing clothing: buying clothes or acquiring materials and making clothes, washing, ironing, mending, etc;
- providing care for those in need: children, the sick, frail or elderly household or family members.

15. In order to fulfill these functions households need to perform ancillary activities, such as transportation, shopping, gardening, taking care of pets, planning and organizing things, managing finances, etc. Transportation is regarded as an ancillary activity because transportation does not stand independently. It is always connected to some purpose that the transportation is needed for. If the purpose is to transport a child to school, it is an ancillary activity to childcare. If it is to transport one's mother to a summer cottage, it is helping other adults of the household, i.e. adult care, etc.

16. When households produce or buy these services, they can apply different standards. A dwelling may be large or small, well equipped or poorly equipped, but nevertheless it serves as a dwelling. The same applies to meals, clothing or care: the standards may vary in quantity and in quality. No norms can be set as to what standard is high enough or deficient or excessive in relation to the needs of each household. In the market, too, the quality and quantity of services vary considerably.

17. The activities mentioned are economically productive activities. Many other types of activity related to recreation, rest or having meals, also take place in households. These are called personal care and free time activities. Eating and sleeping are personal, biologically necessary activities. Socializing, hobbies or watching television are free time activities. These are not productive in an economic sense. The distinction between productive activities and non-productive activities is based on the third party criterion.[4]

18. Volunteering as such is not necessary for the household's existence. However, volunteering is work that is done without pay and in this sense it can be compared to household production, even though it benefits households or institutional units other than one's own. In the household satellite account volunteering is one of the principal functions of households.

19. The principal functions of household production are shown in Table 1.

Table 1 : Household production by principal functions

Principal functions	Providing housing	Providing meals	Providing clothing	Providing care	Volunteer work
Outputs (Products)	Accommodation for members of hh Services produced by owner-occupied dwellings	Meal, snacks, drinks for the members of hh	Clothes and their care for the member of hh	The children, the sick, and the elderly care for	Goods and services for other institutions
Activities (codes in bracelet refers to Eurostat time use pilot survey activity categories)	House construction and renovation (3511)	Food preparation (31) Meals/snacks (311) Baking (312) Preserving (314) Hunting, fishing (621) Picking berries, mushrooms, etc. (622)	Producing textiles (334) Handicrafts (335)	Physical care (381) Supervision (382) Reading or playing (383) Teaching the child (385) Accompanying child (386) Adult care (39)	Organizational work (411) Caring for people via an organization as voluntary services (412) Environmental and animal protection (413) Informal helping (new)
Ancillary activities					
Shopping	Buying a dwelling (361) Renting a dwelling (362) Furniture, carpets and equipment for dwelling (361) Household textiles (361) etc.	Appliances for cooking, cooling freezing and storing food (361) Groceries (361) Etc.	Clothing materials (361) Garments Shoes (361) etc,	Toys, books, etc (361) Baby carriages, strollers (361), etc.	
Maintenance	Repairs to dwelling (3512) Repairing equipment, furniture and household goods (352) Heating and water (324) Various arrangements (325)		Care of clothes and shoes (333)	Caring for pets(3422) Waking the dog and other pets (343)	
Gardening	Tending ornamental plants (3412)	Tending edible plants (3411) Tending domestic animals (3421)			
Cleaning	Cleaning dwelling, cellar, garage (321) Clearing yard (322)	Dish washing (313)	Laundry (331) Ironing (332)		
Transportation	Travels related to Household care (932) Vehicle maintenance (353)	Shopping and services (936)		Child care (938) Adult care (939)	Organizational work (941)
Management	Paying bills, decision making, etc. (37)	Planning meals and groceries, etc. (37)	Planning and decision making, etc. (37)	Coordinating children's activities, etc. (37)	
Activities by paid domestic labour	Cleaning, etc. (All above activities when provided by paid labour)	Preparing meals baking, etc.	Laundry, ironing	Child care, babysitting	

C. Operational concepts for household labour

20. Housework is a key element of household production. Time-use surveys provide a reliable way of defining and measuring housework. Time diaries cover all daily activities, which means that activities within the ESA production boundary must be separated from other activities, and further, activities within the ESA boundary must be distinguished from those productive activities that fall outside the ESA production boundary. One of the aims of the project was to evaluate the applicability of the activity classification used in the European Time-Use Pilot Survey 1996/97, and to analyse the quality of diary-keeping for the measurement of unpaid household labour.

21. Pilot studies were carried out in 18 countries. Four of these countries, Italy, Finland, Luxembourg and Slovenia, were chosen for the evaluation. The sample comprised household members over 10 years of age. Time-use data were collected using diaries in which all activities during two days, one weekday and one weekend day, were reported. The time slot was a 10-minute interval. Main activity, simultaneous activity, location and social company were measured. An extra column on helping other households was included. Background information was gathered by individual and household questionnaires. Time-use data were collected in a harmonized way, using similar diaries and coding lists in all countries. (The general quality of the pilot survey has been analysed by Statistics Sweden.)[5]

22. Table 2 describes the activity categories of the European Time-Use Pilot Survey and indicates the corresponding production boundaries.

23. In analyzing critical borderlines between the activities, minor problems were observed. It was observed that kitchen gardening was not distinguished from other gardening and we propose that half of the amount of time be allocated to each of these categories. Additional items need to be included in the questionnaire to make it easier to distinguish between caring for domestic animals vs. pets and between major and minor repairs. There were no other major distinction problems. We propose to include trips related to household activities in the satellite account.

24. The SNA definition requires that volunteer work in which goods are produced should be distinguished from volunteer work producing services, but this is not essential because of the low frequency of volunteer work. It is proposed that this whole category be classified as non-SNA (and non-ESA) productive activity.

25. The relevance of including simultaneous activities in the satellite accounts was also looked at. The additional time spent on housework was insignificant when only activities carried out simultaneously with non-productive activities were counted. Given that there are considerable cross-national differences, it is clear that there are reliability problems in this variable. It is proposed that simultaneous activities should not be included in the satellite account.

26. Based on an evaluation of the pilot data we can conclude that time-use surveys will provide reliable empirical data for valuing household production assuming that the whole year will be covered because of clear seasonal variations.

Table 2. Activity list of Time Use Survey of EUROSTAT and the Production Boundary

0 PERSONAL CARE	0
1 EMPLOYMENT	S
2 STUDY	0
3 HOUSEHOLD AND FAMILY CARE	
31 FOOD PREPARATION	
311 Meal/snacks	**G**
312 Baking	**G**
313 Dish washing	**G**
314 Preserving	**S***
319 Other food preparation	**G**
32 HOUSEHOLD UPKEEP	
321Cleaning dwelling, cellar, garage	**G**
322 Cleaning yard	**G**
323 Disposal waste	**G**
324 Heating and water	**S***
325 Various arrangements	**G**
329 Other household upkeep	**G**
33 MAKING AND CARE OF TEXTILES	
331 Laundry	**G**
332 Ironing	**G**
333 Care of clothes and shoes	**G**
334 Producing textiles	**S***
335 Handicrafts	**S***
339 Other making/caring clothes	**G**
34 GARDENING AND PET CARE	
341 Tending plants	
3411 Tending edible plant	**S**
3412 Tending ornamental plants	**G**
342 Tending animals	
3421Tending domestic animals	**S**
3422 Caring for pets	**G**
343 Walking the dog	**G**
349 Other gardening or pet care	**G**
35 RECONSTRUCTION AND REPAIRS	
351 House construction, repair	
3511 House construction and renovation	**S**
3512 Repairs to dwelling	**G (partly S)**
352 Repairing equipment, furniture household goods	**G**
353 Vehicle maintenance	**G**
354 Production of household goods	**S***
359 Other construction and repairs	**G**

36 SHOPPING AND SERVICES		
361 Purchases		**G**
3611 Consumer goods		**G**
3612 Capital goods		**G**
362 Commercial services		**G**
363 Administrative services		**G**
364 Vehicles services		**G**
365 Medical services		0
366 Other personal services		0
367 Veterinary services for pets		**G**
369 Other shopping and services	**O**	
37 HOUSEHOLD MANAGEMENT		
3701 Computing for hh management		**G**
379 Other household management		**G**
38 CHILD CARE		
381 Physical care		**G**
382 Supervision		**G**
383 Reading or playing		**G**
384 Talking with the child		**G**
385 Teaching the child		**G**
386 Accompanying child		**G**
387 Visiting school/nursery		
389 Other activities of child care	**G**	
39 ADULT CARE		
4 CIVIC AND RELIGIOUS ACTIVITIES		
41 ORGANIZATIONAL WORK OR SERVICES		
411 Organizational work		**G (Party S)**
412 Caring for people via an organization as voluntary service		**G**
413 Environmental and animal protection		**G**
419 Other organizational work or services		**G**
42 PARTICIPATIVE ACTIVITIES		O
5 SOCIAL LIFE AND ENTERTAINMENT		0
6 SPORT PARTICIPATION		
61 PHYSICAL EXERCISE		0
62PRODUCTIVE EXERCISE		
621Hunting, fishing		**S**
622 Picking berries, mushrooms		**S**
629 Other productive activities		**S**
63 SPORTS RELATED ACTIVITIES		0
7 HOBBIES AND GAMES		0
8 MASS MEDIA		0

9 TRAVEL (BY PURPOSE)	
901 Personal care	**0**
911 During work	**S**
912 To/from work	**0**
921 School/university	**0**
922 Additional study	**0**
932 Household care	**G**
934 Gardening/pets	**G**
935 Repairs	**G**
936Shooping and services	**G**
938 Child care	**G**
939 Adult care	**G**
941 Organizational work	**G**
942 Participative activities	0
951 Socializing	0
952 Entertainment and culture	0
960 Sports	0
970 Arts, hobbies and games	0
991 Changing base	0
992 Travel as its own purpose	0
900 Unspecified travel	0

S = Activities belonging to SNA production boundary;
S*= Activities, in practice, excluded from ESA production boundary;
G = Activities belonging to general production boundary, not to ESA;
0 = non-productive activities
Bold: Activities belonging to the household production.

IV. Method for valuing household production

27. In general, production is valued in the national accounts on the basis of output, i.e. the products produced. To be analogous, household production should also be valued on the basis of output, i.e. the goods and services produced. This is not easy, however, because the definition of these goods and services is not as clear-cut as in the case of market goods. There is also no price tag for these products because they are usually consumed by the same unit that produced them. They have to be valued by reference to the prices of similar products available on the market. This can be done on condition that there are similar products available. The absence of established definitions of outputs means that there are also no databases for these outputs.

28. In most studies, the value of household production has been estimated on the basis of inputs, i.e. of the costs of production. This same method is used in national accounts in valuing non-market production by general government and non-profit institutions. In household production the costs comprise the value of labour, taxes less subsidies on production, consumption of household durables and intermediate consumption, i.e. the goods and services used in production.

29. The advantages and disadvantages of both these methods have been extensively discussed.[6] In conclusion it might be said that the output-based method clearly needs to be further improved and developed. The European time-use survey will provide internationally comparable data on the time used

in household production, a valuable data source on labour input. For these reasons the project's recommendations are based on the costs of inputs.

A. Value of labour

30. It is recommended that the time used in household production be valued by the generalist's (i.e. housekeeper's) wage. The advantages of this method are as follows:

- Working conditions are similar to household work, including the simultaneity of activities, the quality of capital goods, the amount of intermediate consumption, etc. This means that productivity is similar to housework in general;
- The content of the work is rather similar to the content of housework;
- The method of valuation is simple and straightforward;

On the other hand, there are some potential problems;

- Even a generalist worker does not perform all the tasks occurring in households. In general, money management, planning and co-ordinating activities, maintaining and repairing the dwelling, servicing vehicles and volunteering are performed only in limited amounts;
- Wages for housekeepers or municipal home helpers are not always available because of problems in compiling statistics on these occupations.

31. There has been some debate on this choice; some feel that the wage is too low, other insist it is too high. The fact of the matter is that in most countries the housekeeper's wage is only 50 to 70 % of the average wage. Those who argue that the wage is too low do not want to see women's low pay levels carried over into the valuation of household production. Those who say the wage is too high argue their case by reference to the low level of productivity and the lack of professional competence in household production. Those who say so, however, may not have thought that housework consists to a large extent of repetitive tasks. People develop routines, which help them complete their tasks faster and precisely according to need. They become professionals in managing their own households.

32. It is also proposed that gross wages rather than net wages be used. This is based on the national accounting recommendation that production for own use shall be valued at the rate that would have to be paid if the product or service were purchased on the market. If household production were purchased on the market, the price paid for the products would include all employer expenses. Moreover, internationally comparable figures for net wages are not generally available, because wage statistics are based on gross wages.

33. The question of whether hourly or monthly wages should be used is more or less a technical matter. It is important to note, however, that when housework is valued on the basis of hours and minutes derived from time-use surveys, these figures only include hours actually worked. But the salaries and wages of the employed also cover non-productive time, i.e. paid holidays, sick leave and training related to work. Thus, at least paid holidays should be included in the wages of housekeepers used as a basis for valuing housework time.

B. Consumption and fixed capital formation

1. Intermediate consumption

34. The next step in the valuation of production is to determine the value of goods and services used in the production process, i.e. the value of intermediate consumption. In the national accounts all products purchased by households in their capacity as consumers are classified as final consumption. In the satellite accounts, households are treated as "entrepreneurs" that produce goods and services for their own use or for others without compensation. Consequently, the goods consumed or transformed during the production process are considered as intermediate consumption, and accordingly household durables are to be treated as fixed assets. It follows that the ESA classification of individual final consumption should be modified. It will be divided into three parts: fixed assets, intermediate consumption, and final consumption.

35. The Classification of Individual Consumption by Purpose (COICOP) is a useful tool for reclassification that is based on the purpose of the good or service.[7] This means that it is not individual goods but rather whole product categories that are classified as final or intermediate consumption goods or capital goods in household production. This simplifies the task of reclassification. For instance, COICOP category 01.1.2 "Meat" is classified to intermediate consumption, because meat products have to be prepared or cooked before they are ready for a meal. Many categories can be allocated to a single use, but some categories of goods are such that they can be used partly in production as intermediate consumption and partly in final consumption. Ice cream, for instance, can either be eaten as such, or it can be used in desserts. In these cases we recommend that the category is allocated according to the purpose of the largest proportion of the good. Ice cream is thus classified as final consumption because most ice cream products are consumed as such. However, there are some categories that have to be broken down. An example is electricity or water. The proportion of the expenses that should be allocated to final consumption vs. intermediate consumption can be decided on the basis of the results of time-use or family budget surveys or other special studies.

2. Formation and consumption of fixed capital

36. For the purposes of calculating capital consumption, data on capital stock and on changes in it are needed. In the national accounts all household durables from cars to refrigerators are classified as final consumption. The only investment recorded is the household's dwelling. Goods used as fixed assets in households must be distinguished from those used in final consumption. A useful tool for this purpose, as in the case of intermediate production, is the COICOP, which has separate categories for household durable and semi-durable goods. There are goods that are used only in household production: these are typically refrigerators, washing machines and other smaller household appliances used exclusively for productive purposes. But there are also goods that are used for both productive and non-productive activities; cars are a case in point. Cars must be treated partly as capital goods and partly as final consumption goods, depending on their productive vs. non-productive use. This can be done on the basis of time-use studies. For instance, if the car is used for travel one hour per day, and twenty minutes from that is used in travel that is related to household production, one third of the expenses of the car are allocated to household production and two-thirds to final consumption. Furniture and textiles in the dwelling can also be divided into productive and non-productive categories according to time-use.

37. In the national accounts, figures for capital consumption are commonly calculated by the Perpetual Inventory Method (PIM). For this model, data are needed on the capital stock, the serviceable

life of capital goods and on the depreciation in their value. Data on the serviceable life of household durables can be obtained from research studies, wholesalers or manufacturers. Two models often used in calculating the depreciation of economic value are the geometric and the straight-line depreciation models. In the latter, a constant amount of value is deducted each year so that goods have no value left when they are withdrawn from stock. For household durables, this model may be appropriate because household appliances are normally in use until they break down and have to be replaced. A suggestion for a list of household durables used as fixed assets and their serviceable lives is presented in Table 3.

3. Dwellings and housing services produced by owner-occupiers

38. Dwellings require special treatment in the satellite accounts. Investments in dwellings are included in the SNA and the ESA as one item which includes both rented accommodation and owner-occupied dwellings. For people who live in an owner-occupied dwelling, that dwelling is an investment, a capital asset; for people who live in rented accommodation, it is not. The rent paid by the tenant is a housing cost, i.e. a production cost insofar as it is used for productive activities. People who live in an owner-occupied dwelling do not have to pay a rent and therefore for the purposes of the national accounts an imputed income is credited to them that corresponds to their estimated rent. They produce housing services for themselves (services produced by owner-occupied dwellings). In the household satellite account, rents and imputed rents must be treated in a similar way, i.e. both must be counted as production costs in so far as the dwelling is used for productive activity. Otherwise differences in the numbers of rented and owner-occupied dwellings would cause differences in the volume of production. Own-account production of housing services of owner-occupiers is different in its nature from other household production (e.g. it does not include significant amounts of labour, it is valued by market rents) and therefore it will be presented separately in the accounts.

4. Taxes and subsidies

39. Some of the taxes paid by households are clearly related to household production; examples are provided by taxes related to housing and vehicle use. These shall be treated in the same way as production costs in market companies. Accordingly, households receive some social transfers that can be regarded as subsidies, such as home care allowances and disability allowances, which are paid out on the grounds that relatives look after the elderly or disabled patient themselves rather than sending them to an institution or nursing home.

C. Production and income generation account

40. Table 4. presents the components of household production in a form of production and income generation account, with hypothetical values given to illustrate the accounting rules.

41. The columns show the breakdown of household own-account production by principal function as well as volunteer work and the total of both. Production by function is divided into two categories according to the proportion of production outside the ESA and the proportion of production that is included in the ESA. On the left-hand side there is a separate column for housing services produced by owner-occupiers.

Table 3. Household durables and semi-durables used in the role of fixed capital				
COICOP-HBS	**HOUSEHOLD DURABLES AND SEMI DURABLES**	**Service life**	**% to Household prod.**	
3	**CLOTHING AND FOOTWEAR**			
03.1.2.	Garments (SD)		0	
03.2.1.	Shoes and other footwear (SD)		0	
5	**FURNISHING, HOUSEHOLD EQUIPMENT**			
	AND ROUTINE MAINTENANCE OF THE HOUSE		Share of time to hhp	
05.1.1.	Furniture and furnishings (D)	15		
05.1.2.	Carpets and other coverings (D)	10		
05.2.1.	Household textiles (SD)	10		
05.3.	Major household appliances whether electric or not (D)			
05.3.1.1.	Refrigerators, freezers and fridge-freezers (D)	12,16,12	100	
05.3.1.2.	Clothes washing machines, clothes drying machine (D)	10,12,15	100	
05.3.1.3.	Cookers (D)	10,17,18	100	
05.3.1.4.	Heaters, air conditioners		Share of time to hhp	
05.3.1.5.	Cleaning equipment (D)	8	100	
05.3.1.6.	Sewing and knitting machines (D)	15	100	
05.3.1.7.	Other major household appliances (D)	15	100	
05.3.2.	Small electric household appliances (D)	7	100	
05.3.1.1.	Glass and crystal-ware, tableware (SD)	5	100	
05.4.1.2.	Cutlery, flatware and silverware (SD)	15	100	
05.4.1.3	Kitchen and domestic utensils (SD)	5	100	
05.5.1.	Major tools and equipment (D)	10	100	
05.5.2.	Small tools and miscellaneous accessories (SD)	10	100	
7	**TRANSPORT**			
07.1.1.	Motor cars (D)	10.7	Share of time to hhp	
07.1.2.	Motor cycles (D)	9	"	
07.1.3.	Bicycles (D)	9	"	
07.2.1.	Spare parts and accessories (SD)		To intermed. Consump.	
8	**COMMUNICATIONS**		Share of time to hhp	
08.1.2.	Telephone and telefax equipment (D)	5	"	
9	**RECREATION AND CULTURE**			
09.1.1.	Equipment for the reception, recording and reproduction of sound and pictures (D)		0	
09.1.2.	Photographic and cinematographic equipment and optical instruments (D)		0	
09.1.3.	Data processing equipment (D)	3	10?	
09.1.4.	Recording media for pictures and sounds (SD)		0	
09.2.1.	Other major durables for recreation and culture (D)		0	
09.3.1.	Games, toys hobbies and small musical instruments		0	
09.5.1.	Books (SD)		0	
12	**MISCELLANEOUS GOODS AND SERVICES**			
12.2.1.	Jewellery, clocks and watches (D)		?	
12.2.2.1.	Travel goods and other carriers (SD, suitcases, trunks, handbags, purses, etc.)		Details from hbs	
12.2.2.2.	Other personal effects (SD, pipes, lighters, baby carriages, sun-glasses, umbrellas, etc.)		Details from hbs	

42. The figures on each line indicate production costs. The top line indicates the labour cost incurred from housework, which is calculated by valuing the working time obtained from time-use studies on the basis of the housekeeper's wage. The following lines indicate the own-account production of items belonging to national accounting (compensation of domestic staff, housing services produced by owner-occupiers, house construction, agricultural production and hunting, fishing, etc. for own use). Since these are valued on the basis of market prices, the figures also include profits from operations.

43. Tables 5 and 6 show three central household satellite accounts as part of an extended total economy. The figures are taken from the ESA publication (Tables A.IV.1 and A.IV.2) and from Table 4 of this article. In Table 5, household production is separated into two parts: column 4 indicates the extension of the total economy and column 5 the own-account production that is included in the ESA total production, but which is transferred into household production through the adjustment column. In addition there are reclassifications for household production in the same column.

44. Table 6 shows the extended total economy, and that part of household production that is not included in the ESA, in relation to the total economy.

V. Household production in the sequence of household accounts

45. For the purposes of the satellite account a number of modifications have been made to the concepts of the central SNA framework: the production boundary has been broadened, the value of labour has been imputed, and the concepts of consumption have been modified. All this yields the value of household production which itself is an important achievement. The production and income generation accounts are central to the household satellite account, but they are also a source for other accounts. The changes made to the production account necessitate corresponding changes in other accounts in the system. These changes are most clearly reflected in accounts for disposable income and wealth.[8] Table 7 shows these modifications in the sequence of accounts for households.

46. When simplified, by adding the net value-added of household production (total output minus intermediate consumption and consumption of capital) to household disposable income, it results in the extended disposable income of households. Accordingly, when the net value-added of household production is added to household consumption, it results in a figure for extended individual consumption, which can be used to describe the level of household welfare more accurately than current final consumption.

47. In Table 7, the satellite accounts for household production have been integrated into the sequence of household accounts as presented in the ESA. The figures in the columns ‘Household accounts by ESA’ correspond to the figures in Table A.IV.6 in the ESA publication.

48. The table shows household production divided by functions but only for the production account, generation of income account and capital account. Because household production makes up only a part of the household as an institutional unit it is not meaningful to present income and outlay accounts by functions. A column ‘Adjustments’ is established to show by how much individual transactions in the sequence of accounts would change when the production boundary is extended to cover household production.

Table 4: COMPONENTS OF HOUSEHOLD PRODUCTION BY PRINCIPAL FUNCTIONS														
Specification	**Providing housing**			**Providing meals**		**Providing clothing**		**Providing care**			**Volunteer work**		**Total**	
	Services of owner-occupied dwellings ESA	**Other ESA**	**NON-ESA**	**ESA**	**NON-ESA**	**ESA**	**NON-ESA**	**ESA**	**NON-ESA**	**ESA**	**NON-ESA**	**ESA**	**NON-ESA**	**Total**
Valued working time			100		500		300		200	1	10	1	1110	1111
Compensation of paid domestic staff		10		20		10		10				50	0	50
Services of owner occupied dwellings	100											100	0	100
House construction		30										30	0	30
Agricultural production, fishing, hunting, etc. for own use				30								30	0	30
Taxes on production		1	1	1								2	1	3
Subsidies on production												0	-2	-2
Value added, net	100	41	101	51	500	10	300	10	198	1	10	213	1109	1322
Consumption of fixed capital	30	5	10	5	25		10		10		2	40	57	97
Value added, gross	130	46	111	56	525	10	310	10	208	1	12	253	1166	1419
Intermediate consumption	20	15	25	20	180		10		20		5	55	40	295
Output	150	61	136	76	705	10	320	10	228	1	17	308	1406	1714
Gross fixed capital formation	35	5	10	7	30	0	15	0	15	0	3	47	73	120
Working time in household production, million hours/year	0	4	10	5	50	1	30	1	20	0	1	11	111	122

Table 5. HOUSEHOLD PRODUCTION (ESA+NON-ESA) AS A PART OF EXTENDED TOTAL ECONOMY

USES									RESOURCES						
		Household production										Household production			
	Extended Total economy	Total	Household production, ESA	Household production, NON-ESA	Modified total economy by ESA	Adjust-ments	Total economy by ESA	Transactions and balancing items	Total Economy by ESA	Adjust-ments	Modified total economy by ESA	Household production, NON-ESA	Household production, ESA	Total	Extended production of total economy
	7(3+6)	6(4+5)	5	4	3(1+2)	2	1		1	2	(1+2)	4	5	6(4+5)	7(3+6)
Goods and services account								Output	3595	-308	3287	1406	308	1714	5001
								Taxes on products	141		141				141
								Subsidies on products	-8		-8				-8
								Imports of goods and services	497		497				497
	2144	295	55	240	1849	-55	1904	Intermediate consumption							
	2464	1714	308	1406	750	-621	1371	Final consumption expenditure							
	2308	1714	308	1406	594	-621	1215	Actual individual consumption							
	156				156		156	Actual collective consumption							
	449	120	47	73	329	-47	376	Gross fixed capital formation							
	28				28		28	Changes in inventories							
	10				10		10	Acquisition less disposals of valuables							
	536				536		536	Export of goods and services							
	5631	2129	410	1719	3502	-723	4225		4225	-308	3917	1406	308	1714	5631
Production account								Output	3595	-308	3287	1406	308	1714	5001
								Taxes less subsidies on products	133		133				133
	2144	295	55	240	1849	-55	1904	Intermediate consumption							
	2990	1419	253	1166	1571	-253	1824	Value added, gross							
	279	97	40	57	182	-40	222	Consumption of fixed capital							
	2711	1322	213	1109	1389	-213	1602	Value added, net							
	5134	1714	308	1406	3420	-308	3728		3728	-308	3420	1406	308	1714	5134
Generation of income account								Value added, net	1602	-213	1389	1109	213	1322	2711
	1872	1161	51	1110	711	-51	762	Compensation of employees							
	238	3	2	1	233	-2	235	Taxes on production and imports							
	-46	-2	0	-2	-44	0	-44	Subsidies							
	649	160	160	0	489	-160	649	Operating surplus/Mixed income							
	2711	1322	213	1109	1389	-213	602		1602	-213	1389	1109	213	1322	2711

Table 6. EXTENDED TOTAL ECONOMY AND HOUSEHOLD PRODUCT(NON-ESA) IN RELATION TO TOTAL CONOMY

USES								RESOURCES						
	Extended total economy	%	Household production NON-ESA	%	Adjustments	Total economy by ESA	%	Transactions and balancing items	Total economy by ESA	%	Household production NON-ESA	%	Extended total economy	%
	4(1+2+3)		3		2	1			1		2		3(1+2)	
Goods and services account								Output	3595	100.0	1406	39.1	5001	139.1
								Taxes on products	141	100.0			141	100.0
								Subsidies on products	-8	100.0			-8	100.0
								Imports of goods and services	497	100.0			497	100.0
	2144	112.6	240	12.6		1904	100.0	Intermediate consumption						
	2464	179.7	1406	102.6	-313	1371	100.0	Final consumption expenditure						
	2308	190.0	1405	115.7	-313	1215	100.0	Actual individual consumption						
	156	100.0				156	100.0	Actual collective consumption						
	449	119.4	73	19.4		376	100.0	Gross fixed capital formation						
	28	100.0				28	100.0	Changes in inventories						
	10	100.0				10	100.0	Acquisition less disposals of valuables						
	536	100.0				536	100.0	Export of goods and services						
	5631	133.3	1719	40.7	-313	4225	100.0		4225	100.0	1406	33.3	5631	133.3
Production account								Output	3595	100.0	1406	28.1	5001	139.1
								Taxes less subsidies on products	133	100.0			133	100.0
	2144	112.6	240	12.6		1904	100.0	Intermediate consumption						
	2990	163.9	1166	63.9		1824	100.0	Value added, gross						
	279	125.7	57	25.7		222	100.0	Consumption of fixed capital						
	2711	169.2	1109	69.2		1602	100.0	Value added, net						
	5134	137.7	1406	37.7		3728	100.0		3728	100.0	1406	27.4	5134	137.7
Generation of income account								Value added, net	1602	100.0	1109	40.9	2711	169.2
	1872	245.7	1110	145.7		762	100.0	Compensation of employees						
	236	100.4	1	0.4		235	100.0	Taxes on production and imports						
	-46	104.5	-2	4.5		-44	100.0	Subsidies						
	649	100.0		0.0		649	100.0	Operating surplus/Mixed income						
	2711	169.2	1109	69.2		1602	100.0		1602	100.0	1109	40.9	2711	169.2

Table 7. SEQUENCE OF EXTENDED HOUSEHOLD ACCOUNTS BY PRINCIPAL FUNCTIONS

		USES									RESOURCES										
Total, extended household accounts	Total	Providing housing		Providing meals	Providing clothing	Providing care	Volun-teer work	Adjust-ment	Household accounts by ESA	Transactions and Balancing items	Household accounts by ESA	Adjust-ments	Volun-teer work	Providing care	Providing clothing	Providing meals	Providing housing		Total	Total, extended household accounts
		Services of owner occupied dwellings	Other housing services														Other housing services	Services of owner occupied dwellings		
Production account										Output	1269	-308	18	238	330	781	197	150	1714	2675
	934	295	20	40	20	10	20	5	-55	694 Intermediate consumption										
	1741	1419	130	157	581	320	218	13	-253	575 Value added, gross										
	99	97	30	15	30	10	10	2	-40	42 Consumption of fixed capital										
	1642	1322	100	142	551	310	208	11	-213	533 Value added, net										
Generation of income account										Value added net	533	-213	11	208	310	551	142	100	1322	1642
	1149	1161	0	110	520	310	210	11	-51	39 Compensation of employees										
	4	3	0	2	1	0	0	0	-2	3 Taxes on production and imports										
	-3	-2	0	0	0	0	-2	0	0	-1 Subsidies										
	492	160	100	30	30	0	0	0	-160	492 Operating surplus/Mixed income										
Allocation of primary income account										Operating surplus/Mixed income	492	0								492
										Compensation of employees	766	1110								1876
	44									44 Property income	134									134
	2458								1110	1348 Balance of primary incomes										
Secondary distribution of income accounts										Balance of primary incomes	1348	110								2458
	570								-1	571 Current transfers	368	-2								366
	2254								1109	1145 Disposable income										
Redistribution of income in kind account										Disposable income	1145	1109								2254
										Social transfers in kind	219									219
	2473								1109	1364 Adjusted disposable income										
Use of disposable Income account										Disposable income	1145	1109								2254
	2089								1093	996 Individual consumption expenditure										
										Adjustments for the change in net s equity of households on pension funds	11									11
	176								16	180 Saving										
Use of adjusted disposable Income account										Adjusted disposable income	1364	1109								2473
	2308								1093	1215 Actual individual consumption										
										Adjustments for the change in Net equity of households on pension funds										
	176								16	160 Saving										
Capital account										Saving	160	16								176
	134	120	35	15	37	15	15	3	-47	61 Gross fixed capital formation										
	-09	-97							40	-42 Consumption of fixed capital										
	4									4 Acquisitions less disposals of land										
	2									2 Changes in inventories										
	5									5 Acquisitions less disposals of valuables										
										Capital transfers, receivable	23									23
										Capital transfers, payable	-5									-5
	148	-23							23	148 Net lending (+)/net borrowing(-)										

49. In the production account and generation of income account, the column 'Adjustments' shows the non-market production of households as defined in the ESA. The cells in the column are negative because these activities have been reclassified to be a part of household production. In the same way as in Table 4, housing services produced by owner-occupiers is presented separately from other "Providing housing" activities.

50. The output of household production is mainly measured as a sum of costs. However, market prices are used for own-account production of agricultural products and house construction. The income of these activities and housing services produced by owner-occupiers are recorded in the row 'Operating surplus/mixed income' in the generation of income account.

51. Some taxes paid by households are regarded as taxes on production. They are recorded as taxes on production in the generation of income account. The balancing correction is recorded as a negative adjustment of current transfers in the use side of the secondary distribution of income account. Correspondingly, some benefits received by households are reclassified as subsidies, and their counter-adjustment appears in the resource side of the secondary distribution of income account.

52. Figures in the accounts down to the use of adjusted disposable income account are mechanically derived from the figures in the production account and generation of income account. What is worth noting is that in the use of disposable income account, the adjustment for individual consumption expenditure consists of the output of household production minus the part of household consumption expenditure which has been reclassified to intermediate consumption and fixed capital formation.

53. The resulting increase in (net) saving equals the increase in the difference between gross fixed capital formation and consumption of fixed capital. The integration of household production leaves the net lending of households unchanged.

VI. Utilization of results

54. The results of these calculations have several important uses:

- to make visible the unpaid but beneficial tasks and make known the share of household production in total domestic production;
- to assess the value of unpaid work for purposes of social policy, for instance in cases of divorce, injury or death;
- to facilitate analyses of the dynamic functioning of the household economy and interactions between the market and public sectors; and
- to provide useful insights into the analysis of private consumption.

55. In the interpretation of the results it should be borne in mind that imputed income and final consumption are more restricted than "normal" income and consumption in the sense that the income can only be used for the "acquisition" of services produced within the household.

56. Both extended disposable income and extended final consumption vary between different types of households. Therefore it would be useful to compile household satellite accounts separately for people living alone, households with no children, and families with children.

57. In order to make the best possible use of the results of the household production satellite account, it should be compiled often enough so that changes occurring in the structure and volume of production can be reliably compared. The satellite account should be compiled regularly at intervals of no more than five years. In the longer term the aim should be to compile the accounts on a yearly basis so that we can monitor the interactions of household production with other aspects of the economy. International comparability of the data produced is an important priority, and therefore it is crucial to have a set of guidelines and recommendations that are universally accepted.

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Endnotes

[1] This article is based on the draft report 'Developing a Satellite Account System of Household Production'. The Household Satellite Project Group at Statistics Finland consists of Johanna Varjonen, Iiris Niemi, Eeva Namunen, Kristiina Huttunen, Hannu Paakkonen and Taru Sandstrom.

[2] Schäfer & Schwarz 1994; Murgatroyd & Neuberger 1997.

[3] ESA 95 is adopted in the form of a Council regulation 2223/96.

[4] The third party criterion was first introduced by Margaret Reid (1934). It has since been used by several researchers with various modifications. The basic idea is that an activity is considered productive if it can be delegated to someone else. For further discussion, see Chadeau 1992; Goldschmidt-Clermont 1994; Schäfer & Schwarz 1994; Statistics Canada 1995, Wood 1997.

[5] Klas Rydenstam and Anders Wadeskog, Evaluation Preliminary Report, Part II, DOC E2/TUS/Pilot/13.2/97.

[6] E.g. Goldschmidt-Clermont 1982; INSTRAW 1995; Ironmonger 1996; Jackson 1996.

[7] The revised COICOP classification is presented in detail in Eurostat's 'Household Budget Surveys in the EU' 1997.

[8] For detailed analysis, see e.g. Lützel 1996.

A proposal for a satellite account for non-market household production

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I. Introduction

1. The 1993 SNA excludes from its production boundary "domestic and personal services [produced] by members of the household for their own final consumption". Paragraphs 6.19 to 6.21 explain the reasons why this type of production is excluded and the reasons are summarized in paragraph 6.22 as "the relative isolation and independence of these activities from markets, the extreme difficulty of making economically meaningful estimates of their values, and the adverse effects it would have on the usefulness of the accounts for policy purposes and the analysis of markets and market disequilibria - the analysis of inflation, unemployment, etc."

2. Together with most users of national accounts statistics, the OECD Secretariat supports the decision to exclude these activities, referred to hereafter as "non-market household production" (NMHP), from the production boundary for the standard national accounts statistics. However, it is clear that "ignoring [non-market household production] completely gives a distorted picture of the magnitude, composition and trends of production activities" (Chadeau 1993); if, as seems likely, the relative importance of NMHP is changing over time, macroeconomic measures that concentrate exclusively on market production will not capture real changes in total household consumption and well-being. There are at least three additional reasons why it seems important to measure NMHP.

3. First, in several Member countries, changes are taking place in the balance between public and private provision of services such as childcare and health care for the sick and elderly. Private provision of these services involves, to a large extent, non-market household production, and the formulation of social policy in these areas may require information on the provision of these services within households. Second, non-market household services are mainly produced by women and the exclusion of NMHP has been seen by women writers as a (possibly deliberate) attempt to downplay the contribution of women to the "totality of economic production" (Ironmonger, 1996; see also Waring, 1988). Third, there have been political initiatives in some Member countries to recognize the non-market production of homemakers as qualifying them to receive social security benefits. A sound statistical basis would be helpful in formulating policy in this area.

4. The purpose of this paper is to present a simple satellite account in which GDP and related aggregates from the standard, or "core" accounts, are modified to bring in the production and consumption of non-market household production. This allows NMHP estimates to be compared with GDP and its main components outside the core accounts.

5. It should be noted that the purpose is not to create a set of accounts that brings together all the productive activities of households. Those activities that are already inside the 1993 SNA production boundary, including the production of goods for own consumption, the services of domestic staff, own-account capital formation and the production of housing services by owner-occupiers, are not affected by the proposals below. These concern only those kinds of productive activities that are presently outside the 1993 SNA production boundary.

6. The proposals below do not contain original ideas. They draw on the extensive body of research listed in the Bibliography with a view to reaching a consensus on what is practical and useful given existing data sources and policy concerns. They respect the standard accounting rules of the 1993 SNA because the objective is to compare non-market household production with those kinds of production already included in the core accounts. It should be noted, however, that they are likely to result in estimates that are less firmly based than most of those included in the core accounts.

II. Proposed satellite account

7. Table 1 shows the derivation of Gross and Net Domestic Product before and after the inclusion of non-market household production (NMHP). It uses the illustrative numbers from the 1993 SNA "Accounts for the Total Economy" but also includes (in bold) illustrative numbers relating to non-market household production (NMHP). These are:

Output of non market household production (NMHP)	1000
Intermediate consumption of goods and services in the production of NMHP	500
Gross fixed capital formation in assets used to produce NMHP	100
Consumption of fixed capital in respect of NMHP assets	80

8. The table brings in GDP and components from the core accounts and shows the effects of including NMHP on output, intermediate and final consumption, capital formation and gross and net domestic product. It is assumed that all goods purchased for use in the production of NMHP are consumed within the accounting period so that there are no changes in inventories in respect of NMHP. This may or may not be a realistic assumption but it seems an altogether necessary one because it is hard to imagine how changes in inventories of household goods could be measured on a regular basis.

9. The following sections deal with the four issues that need to be resolved in order to complete the accounts in Table 1: coverage of NMHP; valuation of NMHP; identification of intermediate consumption and gross fixed capital formation; and consumption of fixed capital. Under each heading there is a brief review of the issues involved followed by suggestions for practical ways to proceed.

III. Coverage of Non-market Household Production

10. Non-market household production is usually distinguished from non-productive activities by reference to the third person criterion (Adler and Hawrylyshyn, 1978; Hill, 1979). Sleeping, listening to the radio and playing the piano are non-productive because a third person cannot be hired to perform these activities on your behalf. Chadeau (1993) has noted that "the third person criterion must, in practice, be applied with reference to normal social practice and standards of the moment. For instance,

bathing a child or dressing a disabled person will be considered as the production of a service, whereas washing and dressing oneself will not, on the grounds that these services are nowadays not usually provided by a third person to healthy adults". The third person criterion also raises some boundary problems notably with regard to childcare, gardening and looking after pets. Many people take such delight in the act of caring for their children, tending their gardens or exercising their dogs that they would no more think of hiring someone else to do these things for them than would amateur pianists pay other people to play their pianos in their stead.

11. Boundary problems of this kind do not undermine the value of the third person criterion but, as elsewhere in statistical practice, they require arbitrary decisions to resolve them. Most studies include childcare and gardening in NMHP (Goldschmidt-Clermont and Pagnossin-Aligisakis, 1995; Jackson, 1996). Proposals by Eurostat for the European Time-Use Survey (ETUS) contain a "Categorization of Activities" which includes the following as major headings (Eurostat, 1994):

- Food related activities;
- Childcare;
- Adult care;
- Making and care of textiles;
- Upkeep of dwelling and surroundings;
- Construction, repairs and maintenance;
- Household management, shopping and services;
- Gardening and pet care;
- Non-market work for the community.

12. Transport services (by bicycle or motor vehicle) are included with the associated function such as shopping or childcare.

13. Several of these major headings include, as sub-items, activities that are included in the 1993 SNA production boundary. For example, "Making and care of textiles" includes "producing textiles" and "Construction, repairs and maintenance" includes "house-construction and renovation". Provided such activities are excluded, the ETUS classification provides a practical framework for defining the coverage of NMHP.

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Table 1. Derivation of Gross and Net Domestic Product Including NMHP

Production approach		Expenditure approach	
Market output	3057	Individual consumption	1243
Output for own use	171	- Intermediate consumption for NMHP	500
Other non-market output	376	- Gross fixed capital formation for NMHP	100
Non-market household production (NMHP)	1000	+ Non-market household production (NMHP)	1000
		= Individual consumption including NMHP	1643
Taxes (less subsidies) on production	133	Collective consumption	156
- Intermediate consumption	1883	Gross fixed capital formation	376
- Intermediate consumption for NMHP	500	+ Gross fixed capital formation for NMHP	100
		= GFCF including NMHP assets	476
= Gross Domestic Product	1854	Changes in inventories	28
= Gross Domestic Product with NMHP	2354	Acquisition (less disposals) of Valuables	10
- Consumption of fixed capital	222	Exports (less imports)	41
- Consumption of fixed capital for NMHP	80	= Gross Domestic Product	1854
		= Gross Domestic Product with NMHP	2354
= Net Domestic Product	1632	- Consumption of fixed capital	222
= Net Domestic Product with NMHP	2052	- Consumption of fixed capital for NMHP	80
		= Net Domestic Product	1632
		= Net Domestic Product with NMHP	2052

IV. Two types of NMHP

14. The NMHP activities included in the ETUS classification can usefully be divided into those which are usually performed by household members (Type I) and those which are usually provided by market producers (Type II). As noted below, this distinction is useful because it has implications for the methods of valuation. Exactly how NMHP activities are divided between Types I and II will depend on social and cultural factors and levels of economic development in individual countries. In most countries Type I activities - those that are usually performed by household members - will include most food related activities, cleaning of dwellings, household management, shopping, gardening and pet care. Type II activities - those that are usually provided by market producers - are likely to include care of infirm elderly people, interior decorating, house painting, servicing motor vehicles, plumbing, and repair of electrical systems and household appliances.

V. Valuation of Non-market Household Production

15. The 1993 SNA already covers various kinds of non-market activities and there are accepted conventions for valuing non-market output. Whenever possible, non-market output is valued at the prices of similar market output. "When reliable market prices cannot be obtained, a second best procedure must be used in which the value of the output of the goods or services produced for own use is deemed to be equal to the sum of their costs of production: that is, as the sum of: intermediate consumption; compensation of employees; consumption of fixed capital; other taxes (less subsidies) on production" (paragraph 6.85). The preferred method is sometimes described as the "output approach"; the second best as the "input approach".

16. When the output approach is used, value added is obtained by deducting intermediate consumption from gross output. Consumption of fixed capital and other taxes (less subsidies) on production are then deducted from value added to arrive at "mixed income", which consists of compensation of employees, consumption of fixed capital and net operating surplus. When the input approach is used, the net operating surplus is missing from gross output, value added and mixed income. It would be possible to estimate an "operating surplus" by applying a rate of return to the value of the capital assets employed but this is not recommended in the 1993 SNA and so neither is it recommended in what follows.

17. Chadeau (1992) notes that NMHP valuation based on the output approach has been tried in France, the United Kingdom and Finland. In the case of France (Chadeau and Fouquet, 1981), the services of restaurants and hotels were taken as being similar to household production of meals and related services, shopping, cleaning, tidying, laundry and repairs to household goods. Other types of market output that may be regarded as similar to the outputs of NMHP include crêche services, laundromat or laundry services, garden maintenance services, vehicle maintenance and interior decorating.

18. Most recent attempts to value NMHP have used the input approach in which a wage rate has been applied to the estimated number of hours spent by household members on different kinds of NMHP. The widespread use of the input approach is no doubt due to the fact that time-use surveys are the principal source for most NMHP estimates. These surveys collect information on labour inputs, e.g., hours spent cooking or washing clothes, rather than on outputs, e.g., number of meals prepared or loads of clothes washed. (In principle, these surveys could also collect information on several outputs of this kind and, if this were done, it would become feasible to make wider use of the preferred "output" approach.)

19. A number of different methods have been used to value time spent on NMHP. Jackson (1996) identifies nearly a dozen different types of wage imputation in the 65 studies included in his survey. One group of imputations uses what is mistakenly referred to as "opportunity cost". This is the wage that a person earns in her or his paid job, or some national average wage in the case of persons who have no paid employment. With certain restrictive and implausible assumptions about labour markets, wages in paid employment might be used to value a person's time in some general sense. In order to value NMHP, however, we do not need a general valuation of someone's time, but rather a specific valuation of the services which she or he has actually produced. This latter can be found by examining the nature of the service actually provided and measuring the wages of market workers who produce a similar kind of service. The alternative group of imputations which seeks to do this is commonly referred to as the "replacement cost" approach. The imputed wages are based on the earnings of persons who could reasonably be presumed to replace, on a market basis, the non-market service produced in the household.

20. There are two main controversies among those who advocate "replacement cost". First there is a choice between using the wages of a specialized service producer, such as a cook, laundry worker or window cleaner, or the wages of a general factotum or housekeeper who is hired to perform a wide range of household duties. Advocates of the latter approach can plausibly argue that household members work more like general housekeepers and that the services they provide are generally of a lower quality than those which a team of specialized workers could provide. Even if the quality is as high, it is clear that specialized workers are more productive than household members because they have more experience in the work and usually have the specialized tools which the amateur either could not afford to buy or would need training to use effectively.

21. The second controversy is whether the market wage rates used to value labour inputs should be reduced by deducting taxes, social security charges and employers' contributions to social security schemes. On this point the SNA rules are clear. If the input approach is used to value non-market output, labour inputs are to be valued as compensation of employees, i.e., they are gross of income tax and other charges and include employers' contributions to social security schemes. This provides the correct measure of the opportunity cost of labour inputs, i.e., the income forgone by the decision to produce for own consumption rather than hiring oneself to produce the services on a market basis. It also ensures that NMHP is valued on a basis comparable with market production.

22. In line with the 1993 SNA guidelines, it is recommended here that, as far as possible, NMHP should be valued at the prices of comparable market output. It is, however, recognized that time-use surveys, which are the usual source of information on NMHP, collect information on labour inputs rather than on outputs. This means that, in practice, the output approach can rarely be used and, in most countries, NMHP will have to be valued by the input approach. For Type I activities, which are rarely provided on a market basis, it is suggested that the market wage rates of a general housekeeper should be used to value time spent on these activities. For Type II activities, where there is a realistic choice between hiring a specialist or doing the work oneself, it is suggested that the time spent should be valued by reference to the market wage rates of the appropriate specialist. However, because specialized workers, nurses, plumbers, decorators, housepainters, car mechanics etc., are almost certain to be more productive and do the work more rapidly than household members, specialists' wage rates will need to be adjusted downwards by a substantial percentage. It will usually be unrealistic to value time spent on Type II activities at more than 70% of the market rate for a specialist worker and 50% may be more appropriate.

VI. Identification of Intermediate Consumption and Gross Fixed Capital Formation

23. In the 1993 SNA, all goods (other than dwellings) and all services bought by households are classified as final consumption expenditures. When non-market household production is brought within the production boundary, expenditures on some of these goods and services must be regarded as intermediate consumption, i.e. as inputs into the production process. In addition, expenditure on some goods will need to be reclassified as purchases of fixed assets and allocated to gross fixed capital formation. COICOP (Classification of Individual Consumption by Purpose) is used in the 1993 SNA to classify household expenditures. This section examines some of the problems in using COICOP to make the three-way split of household expenditures that is now required, namely:

(a) goods and services for final consumption;
(b) goods and services for intermediate consumption in the production of NMHP;
(c) gross fixed capital formation (GFCF) in assets used to produce NMHP.

24. COICOP distinguishes between services on the one hand and three types of goods on the other: non-durable, semi-durable and durable. The "durable" category can be used to identify candidates for classification as GFCF. Of course, not all durables are automatically assigned to GFCF; some will remain in final consumption because they are not used for NMHP. Sometimes the entire good can be allocated to final consumption - a TV set or piano for example - but in other cases it will be necessary to divide the expenditure on durable goods between final consumption and capital formation. Motor vehicles may be the main problem here; they are used for travel to work or to see a football match as well as for the production of NMHP, e.g., for shopping or for taking children to school.

25. The allocation of goods and services to intermediate consumption raises similar problems due to the multi-use nature of many items. For example, expenditures on diapers are clearly intermediate outlays in the production of childcare services, but expenditures on soaps and shampoos may be either final consumption, if they are used for washing oneself, or intermediate consumption if used to clean a child or an invalid.

26. It is important not to exaggerate the difficulties in breaking down household expenditures into the new categories of intermediate consumption and gross fixed capital formation. Ironmonger (1989) has shown how it can be done in his household production input-output tables for Australia. Many, probably most, expenditures by households can be unambiguously assigned to their appropriate category; expenditures on most food items and on all household cleaning products are clearly intermediate to the production of NMHP, most expenditure on clothing is final consumption, and expenditures on kitchen equipment and washing machines is all allocated to GFCF. Where items need to be split between two or more categories, information from time-use surveys or other sources may often be available. If all else fails, arbitrary splits - 50/50, 10/90 etc. - will have to be used. Such approximations are used elsewhere in the national accounts of many countries.

VII. Consumption of Fixed Capital

27. Consumption of fixed capital (CFC) is the fall in the value of the stock of fixed assets from one accounting period to the next. It is required in order to estimate the gross output of NMHP when it is estimated by the income approach. More generally, CFC is needed to move from gross to net concepts of product, income and saving. Estimates of CFC are generally derived by first obtaining an estimate of the stock of fixed assets through the perpetual inventory method (PIM) and then applying some simple formula, such as straight-line or declining balance depreciation, to describe the loss in value of assets over their expected lifetimes. The PIM generates estimates of the stock of assets by accumulating past investments and retiring assets when they reach the end of their serviceable lives. PIM techniques have a long history and there do not seem to be any particular problems in applying them to estimate CFC for

this new category of capital assets which is required for the measurement of NMHP. At least one OECD country (the United States) regularly estimates the stock of consumer durable goods using the PIM and others are known to have made experimental estimates in recent years.

VIII. Summary of proposals

28. Satellite accounts for Gross and Net Domestic Product in which the production boundary has been extended to include non-market household production (NMHP) are a useful complement to the standard national accounts which exclude such production.

29. The "Categorization of Activities" proposed by Eurostat for the European Time-Use Survey (ETUS) provides a practical framework for identifying NMHP.

30. It is useful for purposes of valuation to divide NMHP activities into those which are rarely provided on a market basis (Type I) and those for which there is a genuine choice between hiring a specialist producer or doing the work oneself (Type II).

31. If information is available on the service outputs produced within households, the prices of similar outputs produced on a market basis should be used to value the gross output of NMHP. In practice, the basic data on NMHP usually refers to labour inputs, so that valuation will generally have to be made by the input approach.

32. For Type I activities, labour inputs should be valued using average rates of compensation earned by a housekeeper or general purpose domestic employee. For Type II activities, labour inputs should be valued at some percentage (perhaps between 50-70%) of the wage rates of specialist workers.

33. For both types of NMHP, the rates of compensation used to value labour inputs should be gross of income taxes and social charges and should include employers' social security contributions.

34. COICOP (Classification of Individual Consumption by Purpose) provides a good starting point for identifying those parts of household purchases of goods and services that need to be reclassified either as intermediate consumption or as capital formation for the production of NMHP. Multi-use goods and services cause some difficulties in this reclassification but most goods and services purchased by households can be unambiguously assigned to one of the three categories: individual consumption, intermediate consumption and gross fixed capital formation.

35. Consumption of fixed capital with respect to capital assets used for NMHP can be estimated by a perpetual inventory model.

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Endnotes

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Toward an International Standard Classification of All Activities for the study of economic and social production in satellite accounting frameworks

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I. Introduction

1. A number of international initiatives have sought to bring attention to areas of concern requiring further theoretical and statistical development, such as the role of the informal economic sector, the measurement of unpaid work, further development of services statistics and the concept of time-use. These areas of concern have been singled out for attention because of prevailing theories that people are significantly more productive than may be reflected in the current central framework of the System of National Accounts (1993 SNA). Most notable is the lack of recognition of some types of service provision in the SNA.

2. Whereas own-account production of goods is covered in full in the 1993 SNA, own-account production of services is not covered at all, with two exceptions: (i) own-account production of housing services by owner-occupiers, and (ii) domestic and personal services produced by employing paid domestic staff (see 1993 SNA, paragraph 6.18 (c)). The production of services in the SNA is confined to activities that are capable of being carried out by one unit for the benefit of another, thus making possible the division of labour and the emergence of markets (SNA, para 6.9). This removes from the SNA, for example, all production of domestic and personal services, other than those produced through the employment of paid domestic staff. It also precludes the recognition of all services rendered by an individual for personal consumption.

3. In this paper, we propose that a International Standard Classification of All Activities be developed to give a standard tool for measuring the production of goods and services made through both social and economic arrangements. The basic thesis of this paper is that although the arrangements and purposes of social and economic activity may be different, and may be conducted at different locations, the activities themselves may be similar, if not identical in character. The International Standard Classification of All Activities would provide a common denominator for the study of economic and social activities leading to the production of goods and services.

4. There has been a shift in attention by some economists away from solely measuring and analyzing the production of material goods, to increased attention to the production of services (Voorburg Group 1995, 1996, Goldfinger, 1997). Attention to the growth and development of the service sector has resulted in a need for further development and consideration of concepts and classifications to capture it (Hill, 1998). Some services produced through economic activity are increasingly acknowledged. However, services produced and distributed through own-account activities are still largely ignored in the SNA, and services produced through socially arranged activity remain largely unknown, mainly because

they are produced outside the production boundary of the SNA. A standard classification to compare services produced through economic activity and services produced through socially arranged activity does not yet exist. However, we argue that a standard classification of activities could potentially be developed based upon existing work, and that the common statistical unit to compare these activities would be time-use.

5. The importance of services to economic growth is now recognized. A recent Bulletin of the International Organization for Standardization (ISO), for example, noted that "Services, (both in the private and public sectors) represent between half and two-thirds of total production in the industrialized countries, and between one-third and one-half in the developing countries" (ISO, 1996, p. 8). This shift in emphasis to services has resulted in increased methodological attention to what has been traditionally referred to by economists as the "residual category" of production. Three reasons for the growth in services were described: (i) the increased complexity of social and economic life and the need for services that provide information, expertise and advice; (ii) the increased attention to the need for reduction of risk factors and to regulatory services for health, safety and environmental protection; and (iii) the perceived shortage of time resulting in increasing reliance on time-saving services (ISO, 1996 p.8).

6. In addition to the shift in emphasis by some economists to services, social paradigms have increasingly moved away from largely welfare goals that target "needy" persons for economic compensation, and have moved on to targeted goals of maintaining and even increasing the levels of activity and participation of people in their roles as producers and consumers of services at the individual, family and community level. Social paradigms now are more often oriented to include descriptions of people according to their social arrangements, activity levels, and degrees of participation in the production, provision and consumption of services (see De Jong, 1993 and Etzioni, 1993). This shift in social theory is parallel with the shift in economic theory that is moving beyond the attribution of importance to the production of material goods (or manufacturing) to greater respect for and scientific attention to the role of the production of services in social and economic development (Goldfinger, 1997).

7. It is not easy to compare economic activity with social activity through the comparative estimate of prices, or through the study of economic transactions. This is because social activities are largely unpaid. Objective comparisons are potentially possible, however, through a comparative analysis of time-use. Time-use studies may classify and quantify the time allocated to productive activities of all kinds, both social and economic. Time-use studies may also compare the goods and services produced, according to the amount of time spent on particular activities in order to produce them. In the proposed International Standard Classification of All Activities, the distinction between economic and social activity would not be made explicit in the classification. Such a distinction would be made by adding additional variables, or dimensions, to the activity data, describing whether these activities are economically or socially transacted, by type of transaction, and time invested or spent in doing them.

8. In order to carry out such an analysis, and in order to preserve the integrity of existing and separate work already completed on classifications of economic and social activity, relevant international classifications should be revisited in order to assess their ability to jointly cover the full scope of economic and social activities leading to the total production of goods and services. We define total production as the total economic production within the general production boundary of the SNA and social production outside the general boundary of the SNA. As a first step, we propose that two major international classifications be reviewed, one economic, the International Standard Industrial Classification of All Economic Activities (ISIC) (United Nations, 1990), and one social, the International Classification of Impairments, Disabilities and Handicaps (ICIDH-2) (WHO, 1997), for their potential to develop a common classification, the International Standard Classification of All Activities (ISCA) leading to the production of goods and services. We also propose that the Central Product Classification (CPC) be examined for its potential to describe and classify the wide range of goods and services

produced through social activities and arrangements, as well as those already recognized as produced through economic activities and arrangements.

9. We believe that the areas of concern most likely to be further elaborated would be those of community, social and personal service activities (shown in the broad structure of ISIC under 8 and 9) and those of community, social and personal services produced in the CPC (under Section 9). The further elaboration of the classification would not, however, be limited to these types of activities and services. Table 1 provides an illustrative example of some of the other areas of ISIC and CPC that could potentially be useful for classifying both social and economic activities and their products (services).

10. Later on in the paper, we will argue that the very same activities described as economic in ISIC are similar to activities that are described as social activities in such classifications as the ICIDH, i.e., hunting, fishing, preparing and processing food, making of clothes, making furniture, repairing and maintaining motor vehicles, participating in membership organizations, taking part in recreational, cultural and sporting activities, etc. These may all be described as activities resulting in goods and services, even when conducted outside economic arrangements and transactions.

II. Beyond the production boundary of the System of National Accounts

11. In this paper, we do not argue that the boundaries of the SNA should be broadened to include all general production, and then even further enlarged to include all own-account production of domestic and personal services and then enlarged even further to include all basic human activities such as eating, drinking, sleeping, taking exercise, etc., namely activities leading to the production of services considered in the SNA as "impossible for one person to obtain (hire) another person to perform instead" (1993 SNA para. 6.16). We do argue, however, that total production inside and outside the production boundary of the SNA would include all of these activities, and therefore could be classified in an International Standard Classification of All Activities leading to the production of goods and services, in the broadest sense of the term. Several critical questions remain: What is outside the boundary of the SNA and what do social activities produce?

12. The System of National Accounts is a framework that "provides a comprehensive and detailed record of the complex economic activities taking place within an economy" (1993 SNA, para 1.1). The structure of the SNA has been developed to monitor the economic system of a country. By definition, what is measured is economic production.

13. The SNA defines *general* production as "activity carried out under the control and responsibility of an institutional unit that uses inputs of labour, capital, and goods and services to produce outputs of goods and services. There must be an institutional unit that assumes responsibility for the process and owns any goods produced as outputs or is entitled to be paid, or otherwise compensated, for the services provided." (1993 SNA, para 6.15). One important institutional unit recognized by the SNA is that of households.

Table 1. Illustrative examples of ISIC and CPC codes potentially useful for classifying both social and economic activities and their related products

Economic Activities		Services	
ISIC Ver. 3		**CPC Ver.1**	
0150	Hunting, trapping and game propagation including related service activities	86130	Hunting services
0500	Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing	86150	Fishing services
151	Production, processing and preservation of meat, fish, fruit, vegetables, oils and fats	86311	Food and beverage manufacturing services
154	Manufacture of other food product	86311	Food and beverage manufacturing services
1810	Manufacture of clothes, except furs	86322	Clothes manufacturing services
3610	Manufacture of furniture	86390	Other manufacturing services, except of metal products, machinery, and equipment
5020	Maintenance and repair of motor vehicles	87141	Maintenance and repair services of motor vehicles
5260	Repair of personal and household goods	872	Repair services of other goods
72	Computer and related activities	83	Other professional, scientific and technical services
80	Education	92	Education Services
85	Health and social work	93	Health and social services
91	Activities of membership organizations n.e.c.	95	Services of membership organizations
92	Recreational, cultural and sporting activities	96	Recreational, cultural and sporting services

14. The more *restricted* production boundary of the SNA system, is summarized below (SNA, para 6.18) and comprises:

- Production of goods or services that are supplied to units other than their producers, or intended to be so supplied;
- Own-account production of all goods that are retained by their producers for their own final consumption or gross capital formation;
- Own-account production of housing services by owner-occupiers and of domestic and personal services produced by employing paid domestic staff.

15. The own-account production of domestic and personal services by members of the household for their own final consumption has traditionally been excluded from measured production in national accounts, and includes such services as:

- Cleaning, decoration and maintenance of dwellings occupied by households;
- Cleaning, servicing and repair of household durables or other goods, including vehicles used for household purposes;
- Preparation and serving of meals;
- Care, training and instruction of children;
- Care of sick, infirm or old people;
- Transportation of members of the household or their goods (1993 SNA, paras. 6.18-6.20).

16. Services such as social voluntary work, and recreational activities as well, are excluded. Also excluded are the personal activities of daily living because they are believed in the SNA to be activities that are "impossible for one person to obtain (hire) another person to perform".

17. Activities described by the SNA as own-account production, are arguably difficult to integrate into the System of National Accounts, because it would require economists to "impute values for the outputs, incomes and expenditures associated with the production and consumption of domestic and personal services within households" (1993 SNA, para 6.22). Yet even faced with all these difficulties, the SNA has defined a clear boundary which includes the production of all goods even when it may not be known whether, or in what proportions, the goods produced are destined for the market or for own use (SNA, para. 6.24). In contrast, services have not yet attained such a status, with the exception of services of owner-occupied dwellings and domestic and personal services produced by employing paid domestic staff (1993 SNA paras. 6.26-6.29).

18. It is widely recognized that people may be productive outside the economic production boundary of the SNA. Social activity describes the production of goods and services through social agreements neither described nor included in the SNA framework. Social production includes the socially arranged production of goods and services required for the healthy survival and well-being of people, and for the maintenance and sustenance of their environment. The goals of social activity include the full participation of all household members in the basic activities of daily living (personal care services), health and education services, and community services (community participation services), as well as full participation in economic areas involved in the production of goods and services (healthy and productive labour force participation services). The products of social activities result largely, but are not limited to, the production of services with broad goals, such as long life, maximum health, capable and responsible people; effective and fairly distributed nutritional intake among all persons; well-distributed educational achievement and participation; safe living arrangements; full participation in preventive health measures, in government planning (voting, representation in government), and in family and civic responsibilities.

19. Current proposals to measure the "intangible economy" of services have remained largely within the boundaries of economic production, valued and quantified monetarily (Goldfinger, 1997). In this context, services produced and sold on the market for the completion of daily personal activities such as food preparation, housecleaning or cleaning rooms and buildings, repairing items, laundry and cutting hair, for example, are viewed as part of the economic sector, and within the boundaries of the SNA. These same services, however, when produced through the social arrangements of families and communities are not perceived as part of the economic sector, and should not be. They cannot be directly measured in terms of the price of the transaction (since no money is directly involved), even though they may result in identical service products. This does not mean, however, that they may not be measured or assessed as an important contribution to the total production of goods and services.

20. Social frameworks value productive activities that occur outside the boundaries of the SNA, most notably, the activities of personal care and daily life such as caring for everyday objects and appliances; the procurement and care of necessities; domestic chores; care of dwellings; care of other household or family members; looking after possessions, plants, animals, and other aspects of daily maintenance and repair, washing, bathing, cleaning, toileting, dressing, eating, drinking, caring for own well-being (ICIDH-2-Beta, WHO, 1997). Social activities may also include the productive activities of interpersonal relations, interacting in formal settings; and even romantic or physical intimacy. Social activity is used to manage environmental demands and the circumstances of task completion in the formal settings of school, travel or tourism. The economic skills of recognizing the concept of money, budgeting, and planning expenditures, for example, are also productive social activities. It is worth noting that these activities produce largely services, many of which are already classified for economic purposes in the Central Product Classification (see Table 1). When these same services are produced outside the production boundary of the SNA, or even if provided through own-account production for personal consumption, they are not classified in the CPC as a service. However, we believe that the categories of services of the CPC could be used to describe them, even under conditions where the transactions are socially rather than financially arranged, and even when they are produced on own account for personal consumption.

21. Satellite accounting procedures have been developed to measure and monitor social phenomena using the framework of the SNA. One example is the Social Accounting Matrix (SAM), which is a system that presents the "SNA accounts in a matrix which elaborates the linkages between a supply and use table and institutional sector accounts" (1993 SNA para 20.4). However, the focus of the social accounting matrix has been on the investment of human resources in the economy, using extra breakdowns of the household sector and preparing a desegregated and more detailed description of the labour force. Through the use of a matrix framework, SAM studies the participation of the labour force and the distribution of economic production and consumption among different social groups within the labour force such as male, female, employees, own-employers, literate, illiterate persons.

22. Other satellite accounting procedures, linked to the SNA, have been developed to address selected social concerns such as environmental accounting (United Nations, 1993), or Human Resource Accounting (HRA), implemented jointly by UNSD and the National Statistical Office of Korea (Van Tongeren, 1997). HRA includes the economic items of the household sector accounts of the SNA and additional data needed for the extended analysis of education. The development of these instruments reflects the need to study the interactions between economic and social factors, but they do not go beyond explaining economic activity, and restrict their domain to the description of social issues related to the economic system. However, this newly emerging interest in the household sector using satellite accounting methodology, has opened up the opportunity to study "total production" through satellite accounting methods. Concepts and classifications will need to be revisited for their ability to capture all activities, both economic and social, that produce goods and services. A clearer understanding of the goals of social and economic frameworks and methods, and an appreciation of their differences, as well as their similarities, is needed in order to proceed with satellite accounting frameworks.

23. One major concern leading to the development of household satellite accounting methodology is the need to measure the non-income producing economic activity of women. However, household satellite accounting techniques could go beyond this single goal of developing a framework to study the household production of women, to a broader investigation of social production as a partner to economic production and to a full account of activities that produce goods and services. This would include the social production of all persons, women, men and children.

24. According to Hill, services may be defined as follows: "(1) services involve relationships between producers and consumers; (2) they are not entities that can exist independently of their producer or consumer; (3) they require a change in the condition, material or otherwise, of one economic unit produced by the activity of another unit; and (4) services cannot be stocked, and transference of ownership is not possible from one economic unit to another" (Hill, 1998). These constraints on the location and character of service production in economic environments are similar to the constraints of social environments on families, or other socially arranged groups, who provide personal and community services outside the SNA framework. For example, personal and community services involve relationships between the provider and the recipient; they are not entities that can exist independently of the relationship; they require a change in the condition, material or otherwise, of one socially identified unit produced by the activity of another unit, with the exception that socially arranged services may be produced and received by the same unit (personal services).

25. At the household level, socially arranged services may be described at the individual level, in addition to the household level. The statistical unit may therefore be that of "individual activity" and not only that of "institutional activity" per se. In addition, within the household, individuals may produce services for themselves acting then as producers and consumers of the same services. This is particularly true for the essential services related to activities of daily living. Economically produced services are limited to the household or other institutional unit level.

26. ISIC is a classification of activities where the statistical unit is an institutional unit that can be a household, or a legal, social or economic entity (United Nations, 1990, para 69). What is missing economically is a classification of activities that includes a statistical unit to measure individual economic activity.

27. According to the SNA, there are two main types of units of aggregated individuals that may qualify as institutional units, namely persons or groups of persons in the form of households, and legal or social entities whose existence is recognized by law or society independently of the persons, or other entities, that may own or control them. In the SNA, individual persons are not statistical units. Individual members of multi-person households are not treated as separate institutional units; only in the case where individual persons are in single-person households may individuals be treated, de facto, as separate institutional units. Individual social and demographic characteristics reported in SNA satellite accounting or in SAM as household characteristics only refer to those characteristics of a household "reference person", e.g., characteristics of household heads.

28. In the SNA, individuals may be the de facto statistical unit when describing the activities of single-person resident households, or when reporting the characteristics of household reference persons; however these individuals are included because they represent household units. For the purposes of economic analysis, when measuring the activities of households through censuses and surveys, information may be gathered at the individual level and then aggregated to represent the resident household level, i.e., household income and expenditure. It is the intention of our proposal to move beyond this restriction, and to allow both individuals and households to be described using an activity classification. Both within the SNA framework and outside it, it would be useful to have a standard classification of activity that could describe units such as households, or individuals within households, and their time spent working, or providing services, or producing goods, according to type of standard activity.

29. Especially at the household sector level, social and economic activities are potentially mixed, or are difficult to distinguish. Yet time spent doing activities by various individuals within households, may be clearly distinguished and measured.

30. Figure 1 shows the four components potentially useful in household sector accounting methodology to take into account social as well as economic activity and subsequent production. The four components are: Activity, Context, Product and Output.

31. According to the SNA, production activity is understood to be a physical process, carried out under the responsibility, control and management of an institutional unit, in which labour and assets are used to transform inputs of goods and services into outputs of other goods and services. All goods and services produced as outputs must be such that they can be sold on markets or at least be capable of being provided by one unit to another, with or without charge (SNA, para. 1.20). The classification of activities that we propose would step beyond the production activities described in the SNA and would also include all production activities that are not marketed economically, but are instead socially arranged. An activity would be classified in the International Standard Classification of All Activities on the basis of the description of the activity and not on basis of the context in which it has been conducted.

32. Human activities may be divided into economic activities and "not" economic activities according to the SNA production boundary. This distinction in the boundary of the activity is based not on the type of activity but according to its context (Hoffmann, 1997). For example, food preparation is described as an economic activity and within the boundary of the SNA if the person who does it is paid, but if the same person cooks for his/her family for personal consumption, this activity is outside the boundary of the SNA. It is, however, a socially arranged activity that results in the preparation of food, or food services.

33. The Central Product Classification potentially describes many of the services produced through social arrangements. However, in order to be used to classify the total production of services, both socially and economically, it would need to be expanded to include a wider range of personal services, including the provision of personal services of daily living. This would then incorporate into the analysis, an assessment of services produced outside the boundary of the SNA. A set of basic social services and a minimum basket of goods required for survival could potentially be identified as a subset of the CPC, to better monitor the impact of socially arranged activities on total production.

34. Outcomes may be either social or economic, or both. For example, the simple activity of personal hand washing, with soap and water, by an individual, without the assistance of another person, is described in social models as an "activity of daily living". Yet, this simple activity has been shown historically, to be a powerful force in the reduction of mortality worldwide. It is also related to growth in the GDP, through, for example, increases and/or decreases in nosocomial (hospital-induced) infections caused by the unclean treatment and care of hospitalized persons who have been cared for by physicians or other health care staff who did not regularly use soap and water for hand washing. The simple act of personal hand washing, potentially influences both GDP and life expectancy. Yet, it would not be recognized in the SNA as an economic activity. It would be recognized in social models as a personal activity of daily living.

Figure 1. Four major components for the study of total production of goods and services in a satellite accounting framework

Activity	Context	Product	Outcome
Standard Classification of all Activities	Production boundary of SNA	Central Product Classification (CPC)	Economic and Social Indicators
ISIC (economic activities)	Institutional unit	Essential basket of goods and services	Economic Gross Domestic Product (GDP)
ICIDH (social activities)	No. of persons involved	Basic social services	Demographic Life Expectancy
	Type of transaction	Personal care services Services of daily living	Quality of life, including time-use. Life expectancy status

35. Social and economic frameworks each have their own set of assessment and related measurement tools to measure outcomes. Whereas, for example, the indicator of Gross Domestic Product (GDP) is used to crudely measure total economic production, life expectancy or life expectancy status is used demographically to mesure total social production (time spent alive, and time spent actively living in certain states of living).

36. In order to develop a conceptual framework that can be used to measure the social and economic activity leading to toal production, it is important that the two elements described in Figure 1, that is the list of activities and the context fo the analysis used, remaind distinct. A conceptual framework that does not keep this two elements distinct, would limit its use only to the measurement of production that is based on the contets used to described the activities (i.e. paid and unpaid work). We think that the proposed International Standard Classification of All Activities that would describe the type of activity and would leave the context to another level of analysis, would be more flexible and would therefore allow for a broader use of household satellite accounting methodology in such areas as women's participation in unpaid work, studies of child labour, participation of the elderly in social and economic

areas, or the integration of marginalized groups and so on. The main point of Table 2 is to such that even when the description of the activity is identical, it may be placed into the framework of the SNA differently, according to subsidiaries attributes such as those illustrated in Figure 1.

Table 2. Illustrative example of the context of activities provided by the SNA framework.

Total production of goods and services		
Economic Within the *General* Production Boundary of the SNA (SNA 6.15)		**Social** Outside the *General* Production Boundary of the SNA
Inside the Production Boundary of the SNA (SNA 6.17)	Outside the Production Boundary of the SNA	Own-account services and personal services for individual consumption
Hunting and trapping Food preparation etc.	Hunting and trapping Food preparation etc.	Hunting and trapping Food preparation etc.

III. Time-use as a tool to measure social activity

37. Services produced within the boundaries of economic activities are ultimately valued and quantified fiscally (monetarily). Thus, the services for the completion of activities of daily living such as preparing food, cleaning rooms and buildings, repairing items, laundry and cutting hair may be estimated through the price of their purchase through the economic sector or may be estimated through imputed valuation. These same services may, however, also be acquired through the socially productive activity of families or other social arrangements, and the transactions may include barter, or time-sharing arrangements.

38. Socially and economically produced goods and services may be measured comparatively according to the value of the products when purchased, or they may be measured through the amount of time taken to produce them, as well as through a description of the number of persons involved and the type of location where the activity occurred, and according to whether it was primarily economically or socially arranged. The measurement unit of the activity in metric terms would be expenditure of time, or time-use.

39. It is well-recognized that not all goods and services produced through social arrangements are economically transacted. Other types of transactions are possible, namely the provision of goods, or shares of time. In addition, imputed values may not be considered appropriate for estimating the value of services which are socially transacted. The social value, for example, of a father or mother who provides

care for his/her own children for long periods of time, may be very differently valued than would be a person who is paid to take care of another's children. The activities needed for taking care of personal family well-being may have a "social market" in a socially transacted arrangement that establishes the "value" of the service provided, but this value may not correspond to the price that the economic market might assign to the same services.

40. Socially produced services may be estimated in terms of the investments of time that were taken to produce them, thus moving from valuation through price, to valuation through time-use budgets. For example, whereas the value of an occupation may be described through salaries, the value of life itself may be described through the statistical measurement of life expectancy states, or years spent living in certain states (i.e., with independence, or without disability, unemployed, or as a member of the labour force). In addition, time can provide a common tool for the collection of fundamental comparative data not otherwise obtainable.

41. At the broadest level of time-use, populations may be described through their life expectancies, and their time spent doing particular activities. Populations may also be described through life-expectancy states; i.e., years of total life (or proportion of remaining life) lived in health, free from chronic conditions; in the labour force; in a conjugal relationship; institutionalized, etc. (United Nations, 1977, Sanders, 1964, Rogers and alt., 1989, Robine and alt. 1987). These activities take on value as "time spent", within the expected life span, or proportion of total life that is lived in any particular state of health or social state. Researchers may take account of "time spent" in productive or other types of activities, in the same way that they may take account of other types of expenditures, such as "proportion of total money spent" to purchase services or goods (consumption expenditures according to purpose, costs of transactions).

42. Expenditures of time are often estimated through demographic methods such as the construction of life-tables. The average number of years lived by populations is calculated in this way. The average number of years spent married, in the labour force, as a widow or widower, or in any state of health, may be estimated for populations using multiple-decrement life table techniques. Another more detailed way to assess time-use is through 24-hour surveys of population or household activities.

43. Social accounting frameworks require statistical methods to assess them, and life-table analysis is an important methodology in social accounting frameworks, using demographic techniques. There is a well-known expression that is frequently quoted, namely, that "Time is money". Time-use is a dimension quantified and analyzed by demographers. The larger demographic framework considers fertility, mortality, migration and population composition for its impact upon population change and growth. The probability of survival at any age and the calculation of years spent in various life states are critical ways to measure time-use in demographic analysis.

44. Social activities are often studied using demographic techniques, such as life-table analysis. One major and unique product of social activity is that of production (through reproduction) of people. Interestingly, even this activity is recognized to have both social and economic components. Reproduction is a service that can actually be purchased through the health and medical system infertility clinics, for example, or reproduction can be a service provided through social arrangements. The proportion of all goods and services generated through social activities is not known. Moreover, estimates of the range of the proportion contributed by social activity are lacking. In contrast, the proportion of people produced through social activity is largely known, or at least well estimated demographically.

45. Similarly, infant feeding may be completely socially arranged as a service activity (breast feeding) and as a product or good (breast milk); it can also be an economically arranged activity (milk production by cows on farms) and product (cows' milk). This suggests that socially arranged activities

and their products may be very different from economic activities and products, yet competitive, or at times even superior.

46. Time alive is finite at the individual level, and relatively predictable at the group level. Time spent living in certain states of health, or doing certain activities, may be included into an accounting framework similar in ways to economic accounts of economic transactions for consumption or investment. In many respects, the demographic equivalent to the economic indicator of GDP is that of life expectancy. Life expectancy is a powerful socio-demographic index estimating a nation's average amount of time spent living. This time spent living may also be qualified using accounting and life-table techniques, to estimate healthy life expectancy, and life expectancy in other states.

47. Annex 2 provides an illustrative example of activities showing how the same activity can be classified as social or economic according to the context in which the activity is carried out. Economic activities are reported according to ISIC (United Nations, 1990). Social activities are reported according the ICIDH-2 (WHO, 1997). All activities can be measured in terms of time spent doing them. Activities classified as being economic, reported in the first column, can be valued monetarily. Activities classified as being social, cannot necessarily be valued monetarily. The products of economic activity can be described using the Central Product Classification. The products of ICIDH-2 may also be described using CPC categories, and may also be valued according to the quantity and quality of the product; however the value of the product would need to be described in terms of quantities other than price. It is important to note that both ISIC and ICIDH-2 activities may be measured according to time-use. Similarly, both may be compared for the resultant type and quantity of products (in tons, kilos, numbers of services received over a specified amount of time, etc.), as common units of measurement of output.

IV. International Standard Classification of All Activities and time-use

48. As early as 1979, the Statistical Commission of the United Nations recognized that high priority should be given to statistics on time-use (United Nations, 1979). Recently other international initiatives such as the Fourth World Conference on Women (United Nations, 1995) recognized the urgency of developing a classification to describe the non-monetary production of household activities carried out by women not currently covered in the concept of the labour force. The United Nations is currently working to develop a classification of time-use that would more specifically focus attention on the issue of women's participation in the informal sector (United Nations, 1997). More recently, however, the description of social activities has broadened to include a measurement of the social participation of all people including women, men, children, persons with disability, retired individuals, as well as people who are economically active, etc.

49. Although prepared for a specific health classification purpose, the proposed revision of the International Classification of Impairments, Disabilities, and Handicaps, namely ICIDH-2, Beta draft (WHO, 1997) includes a classification of activities of daily living, and also a classification of participation in life situations that could be usefully applied in the preparation of a standard classification of all activities.

50. The ICIDH (WHO, 1993), an international classification developed in the 1970's and published by the World Health Organization for trial use in 1980, originally had as its goal the identification of people who experience limitations in terms of body structure (impairments or I), functional abilities (disabilities or D), and social roles (handicaps or H). This international classification is currently under revision, and following this revision, we think there is a useful link between the ICIDH and a possible International Standard Classification of All Activities.

51. The newly drafted ICIDH-2 (WHO, 1997) moves from the three concepts of I, D, and H to the concepts of Impairment (I), Activity (A) and Participation in life situations (P). The current list of A and P, provided for the testing of the proposed new ICIDH (see Annex 1), covers the main aspects of human activity upon which a standard classification of all activities might focus.

52. The newly-proposed ICIDH-2 maintains an active and productive view of people and their capabilities. In this context, the ICIDH has become a classification of social activity, no longer linked solely to the idea of measuring "restriction on performing activities". Although the ICIDH was initially developed to measure the consequences of diseases, recent developments show that it is moving in a wider direction, covering a more global perspective of human activity and participation. As can be seen for example in Annex 1, the broad categories of Participation in ICIDH-2 cover areas that can be used to study the integration not only of people with disability, but of all people, thus squarely addressing the analytical issues of participation and integration of persons in education, work, home and daily living activities. We think that the two currently independent processes of (1) developing a new time-use classification; and (2) revising the ICIDH, should be linked in order to be consistent and allow for future significant comparison.

V. Social activities from a perspective of social production

53. We have proposed that one standard classification of social and economic activity be prepared, primarily for purposes of time-use measurement. We also stress the importance of utilizing time-use comparisons for estimating the different contributions of economic and social activity to the total production of goods and services (products). It has been proposed by some researchers that socially arranged activities, primarily of women, such as caring for dependents, rearing and educating children and preparing meals, be included in aggregated economic indexes reflecting the economic production of a country, such as GDP (Hedman and Perucci, 1997). However, socially arranged activities should not be considered solely in the context of economics.

54. Including social activities in the economic framework of the SNA necessarily means that they must be economically valued or have imputed value. We do not deny that it is economically meaningful to do so, but it is not necessarily socially relevant. Whereas social contributions have a dimension that money cannot capture, time is a dimension that cuts across both social and economic activities.

55. In addition, combining social and economic production through price estimates of value-added could be misleading. There is a trade-off in quality between resources employed in social and economic activities. If for example a person is not engaged in any economic activity, he/she might be very productive in social areas such as taking care of children or preparing meals.

56. The implications of variations in types of production upon the magnitude and quality of total production needs further study. They should also be compared for their ultimate impact on the total production of goods and services and the resultant quality of life and well-being of people. People may be largely engaged in the labour force and have a very high level of economic production but at the same time have a very low level of social production, or the reverse may be true. Countries, for example, with a very low participation of people in the labour force and a high participation in social activities might theoretically have the same "total production" as countries with high participation in the labour force and low participation in social activities. It is important for policy purposes that the two types of production be differentiated, measured, analyzed and compared using a common framework and common units of measurement, i.e., time-use, for their impact upon total production and ultimately upon the quality of life.

57. Such an analysis provides a picture of the capacity of the people of a country to provide basic services that would otherwise need to be provided through market transactions. If, for example, people

spend less time in the direct provision of care services to children or the elderly, then the alternative may be to purchase these same services, or to not provide them at all. It is important therefore that the capacity of a society to produce its basic national services of daily life, including communication, transportation, repair and maintenance, etc. be analyzed, and the social and economic production of these services be considered.

58. Although it is possible to say that a product which costs $5 has less value than another one which costs $10, we cannot choose without a precise goal, for example, the comparative value of two hours spent taking care of children versus two hours listening to a concert or preparing a family dinner. In the economy we have a market where the supply of and the demand for a product decides its monetary "value"; however, in the social sphere there is no mechanism for assigning an absolute monetary value to an activity.

59. If we wish to measure social production, economic factors may not always be the appropriate reference. What is socially productive? It could be argued, for example, that every human activity results in a product, including, for example, sleeping. Perhaps, from an economic perspective sleeping is not considered a productive activity, but in terms of personal health and well-being, it may be very productive. We can establish mechanisms that can measure the degree of productivity according to specific goals. In terms of production, however, "less" or "more" mean very little unless we know of what. If, for example, the goal is family care, activities such as the care of children and the elderly, the preparation of meals, communication with family members, housecleaning services to members of the labour force, etc. may be perceived as more "productive" than watching television or reading a newspaper. If, on the other hand, the goal is to study how society produces services to maintain its own physical well-being, activities such as exercising, or taking walks or playing outdoors may be highly valued and considered very productive.

VI. Conclusion

60. Evaluating and measuring the total production of goods and services through the contribution of human activity is complex. The existing framework of the SNA, especially in its satellite accounting methodology, acknowledges the importance of social issues to economic outcomes. However, social production reflects other aspects of activity that may not be measured entirely within economic frameworks using traditional economic methodology; other methodologies such as the demographic analysis of life expectancy and methods of time-use may be necessary.

61. Social activity and economic activity may be objectively and commonly measured in terms of expenditures of time. To achieve this goal, we propose the development of an International Standard Classification of All Activities that would describe the type of activity without characterizing its economic context and with no direct reference to the production boundary of the SNA. The fact that an activity can be performed within the production boundary or not, is a separate dimension that should not be confused with the description of the activity itself. Two United Nations' standard classifications, the ISIC (economic activity) and ICIDH-2 (social activity), are believed to be good starting points for the development of a standard classification of activities, since they describe a complete set of complex activities in economic or social contexts that are already well-established.

62. It is the thesis of this paper, that an International Standard Classification of All Activities is potentially useful for the classification and study of time-use, and that this may provide a common tool for the measurement and comparison of economic and social production. However, due to the diversity of the outputs and valuation tools of social and economic analysis, a global index intended to summarize total production, both economic and social in one aggregate measure, would be difficult to interpret. It seems more policy-relevant and more methodologically appropriate to develop a standard framework

where a series of indicators in their specificity can address social and economic contributions to the production of goods and services.

Annex 1: ICIDH-2 (Beta-1 version, in draft): Selected codes to describe social activities

1. Activities

Chapter 1-A: Seeing (000-009)

Chapter 1-B: Hearing (010-019)

Chapter 2:	**Learning, Applying knowledge, and performing tasks (100-199)**
140-149	Acquiring knowledge and applying knowledge
160-169	Problem solving
Chapter 3:	**Movement Activities (200-299)**
220-229	Walking and related activities
250-289	Manipulating and moving objects
Chapter 4:	**Moving around (300-399)**
300-309	Moving around in the general environment
350-359	Using transportation
Chapter 5:	**Daily Life Activities (400-499)**
400-410	Washing oneself
410-419	Care of body parts, teeth, nails and hair
430-439	Dressing
440-449	Eating and drinking
460-469	Caring for own well-being
470-479	Dealing with everyday objects and appliances
Chapter 6:	**Care of Necessities and Domestic Activities (500-599)**
500-509	Procuring and taking care of daily necessities
500	Procuring and /or selecting items (includes shopping)
501	Dealing with the activity of paying
502	Getting water
505	Getting fuel for cooking, heating
504	Transporting selected items to home or other place of use
506	Storing food appropriately
510	Obtaining clothing and footwear
511	Looking after clothing and footwear
520-529	Procuring and looking care of shelter
520	Selecting appropriate living quarters
521	Appropriately furnishing and choice of arrangements within living quarters
530-539	Taking care of meals
531	Handling food
532	Preparing food
533	Cooking using heat e.g. baking, frying
534	Handling liquids
535	Serving food
540-549	Laundry and caring for clothes
540-541	Hand washing
542	Washing of clothes with a washing machine

544	Ironing clothes
545	Making and repairing clothes
550-559	Care of dwelling
550	Cleaning
551	Putting away trash, disposing of garbage
552	Washing dishes
560	Maintaining one's living space
561	Maintaining/repairing domestic appliances
570-579	Taking care of other household or family members
570	Taking care of well-being of household members
571	Feeding household members or helping with eating/drinking
572	Dressing household members or helping with dressing
573	Washing household members or helping with washing
574	Helping household members with toileting
560-569	Looking after possessions, plants, animals and other aspects of daily
562	Maintaining/repairing vehicles
563	Taking care of plants, including gardening and growing food
576	Feeding animals
577	Cleaning/grooming animals, cleaning cages, exercising animals

Chapter 8: Interpersonal behaviors (700-799)

700-709	General interactive behaviors
730-739	Maintaining close personal relationships
740-749	Maintaining relationships with friends and peers
750-759	Interacting with persons in formal settings
770-779	Romantic or physical intimacy

Chapter 9: Responding to and dealing with particular situations (800-899)

840-849	Work and school related behaviors
850-859	Work acquisition and retention
850	Seeking employment
860-879	Social activities
860	Playing inside
861	Playing outside
862	Receiving visitors
863	Informal socializing
865	Taking part in sport activities
866	Following artistic pursuits
xxx	Taking part in religious activities
867	Traveling/tourism
870-879	Economic skills
871	Budgeting, planning expenditures
872	Using banking or other services to assist in management of money
873	Performing complex monetary transactions

2. Participation

Chapter 1:	**Participation in the area of personal maintenance (000-099)**
000-009	Personal care
010-019	Health maintenance
020-029	Nourishment
030-039	Housing and shelter
080	Other aspects of personal maintenance
Chapter 2:	**Participation in the area of Mobility (100-199)**
100-109	Environment mobility
110-119	Mobility immediate outside home
120-129	Mobility in wider environment
180	Other dimension mobility
Chapter 3:	**Participation in Exchange information (200-299)**
200-209	Spoken and non-spoken exchange of information
210-219	Written exchange of information
220-229	Exchange of information by symbols and signs
230-239	Exchange of information by public symbols
240-249	Exchange of information through telecommunication
280	Other ways of exchange of information
Chapter 4:	**Participation in the area of Social Relationships (300-399)**
300-309	Family relationships
310-319	Intimate relationships
320-329	Relationships with friends and acquaintance
330-339	Relationships with peers and unfamiliar persons
340-349	Other social relationships
380	Other relationships
Chapter 5:	**Participation in the area of education, work, leisure and spirituality (400-499)**
400-409	Education
410-419	Work
420-429	Recreation and leisure
430-439	Spirituality
480	Other occupations of time
Chapter 6:	**Participation in the area of economic life (500-599)**
500-509	Economic transitions
Chapter 7:	**Participation in Civic and Community Life (600-699)**
600-609	Citizenship
610-619	Community
680	Other aspects of civic and community life

Annex 2: An example of activities that can be considered from an economic and social prospective

Social activities	Economic activities	
Social classification: ICIDH-2	Economic classification: ISIC	Products according to CPC
A530-539 Taking care of meals	5520 Restaurants, bars and canteens	63210 Meal serving services with full restaurant services
A873 Performing complex monetary transactions	7412 Accounting, book-keeping, tax consultancy	91112 Financial and fiscal services
A563 Taking care of plants, including gardening and growing food	0140 Agricultural and animal husbandry service activities, except veterinary activities	86112 Gardening services
A504 Transporting selected items to home or other place of use	6412 Courier activities other than national post activities	64240 Miscellaneous delivery services
A540-549 Laundry and caring for clothes	9301 Washing and (dry-) cleaning of textile and fur products	97130 Other textile cleaning services
A412 Taking care of hair or scalp	9302 Hairdressing and other beauty treatment	97210 Hairdressing and barbers' services
A865 Taking part in sport activities		96610 Services of athletes
A772 Performance of consensual sexual acts	9309 Other services activities	97910 Escort services
TIME-USE		
	PRICE	

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Valuation as an issue in national accounting and policy analysis

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I. Foreword

1. The presence of a theoretical economics paper in a volume otherwise devoted to more technical and methodological issues related to Household Satellite Accounting requires some explanation as to its relevance. Three justifications can be cited in this respect. First, given that understanding the concept of value is core to new attempts at more socially and environmentally sensitive data gathering and analysis, a review of how this term is variously interpreted is needed for an informed debate. Second, the paper examines how the term "value" might be properly elucidated in the context of the push to value women's work. While acknowledging the limitations, as pointed out by respected feminist scholars, of the general equilibrium model in economics in adequately recognizing the institutions and social structures within which women and men work, and of the real consequences this leads to, the paper points out that the alternative posed - relying on monetary imputation based on time-use studies to determine the value of women's work - is not consistent with the marginalist approach as developed by the followers of Jevons, Walras, and Menger. In this respect, and finally, the paper points out, through a brief review of the market process and public choice literature, that the value debate might better be focused on how the types of social innovations sought by feminists and others can be better posed through institutional reform rather than addressed in the context of the SNA.

II. Valuation in theory and practice

2. Recent debates over how to capture the value of various forms of social activity and common environmental resources call for a thorough examination of the concept of value itself. Of late, advocates for various social and environmental causes have remonstrated that since the value of productive work outside the market or of environmental resources is incompletely or inadequately gauged through systems of national accounting, policy-making, which uses these as an input, is set back. This is seen to result in harmful real consequences. Groups that claim to represent the interests of the world's women, for example, assert that "women's work," which is typically performed at home or exchanged in venues other than money mediated markets, is not adequately valued in traditional measures of national statistics. Similarly, groups that seek to represent environmental concerns have posited that the degradation of forests, air and water represents a net loss to our collective wealth and that aggregate measures of the same should be revised downwards to reflect this loss. The issues raised by these advocates revolve extensively around the issue of valuation. Accordingly, a thorough examination of the modern concept of value is indispensable to an informed debate on statistical possibilities and policy alternatives.

3. This paper will inform the reader of both the economic concept of value and the political economy of valuation. The task accordingly is divided into two parts. The first deals with the theory of value, its history in economic thought and of how value systems develop and evolve (chapter III.). The second deals with valuation as a issue in policy analysis. This section will be illustrated with reference to developments surrounding the push to value women's work (chapter IV.).

4. The concept of value has been the subject of considerable scholarship in economics. In this century, the neoclassical concept of value, as developed in axiomatic form by Debreu, Arrow, and Hicks,

forms much of the core of public policy-making. Indeed, this tradition provides the theoretical foundations for National Income Accounting standards as developed and promulgated by the United Nations system. Given that national accountants are already familiar with this background, this paper explores in greater detail the theory and implications occasioned by relaxing some assumptions of the standard theory.

5. Value today, through the work of thinkers within the so-called Austrian tradition, is a well-understood theoretical construct. It may be most easily grasped by considering the simple case of two individuals who engage in an exchange. *Each is willing to engage in the trade because each appraises what will be given up to be valued less than that which is to be received.* The process which goes into each person's valuation of the good or service in question in turn depends on his or her perceived uses for it within his or her knowledge base, the institutions (social, political, economic) within which he or she operates and the available or relevant physical capital available at the present or forecast at some future time. Since each person's knowledge base and his or her institutional and physical circumstance is unique, the foundations which guide each individual's value framework differs: *value is inherently subjective.*

6. As such, and strictly speaking, there is no exact measure of the value of commodities, the popular belief that money provides this function notwithstanding. There is no known alternative to using the measuring rod of money in dealing with relative value in complex exchange; yet, as Alfred Marshall noted, monetary prices can be only a first approximation to value. Money only appears as an intermediary in any transaction - a good that is acquired not for use in consumption or in production of itself, but so that it may be given away in a further act of exchange. Given that we exchange something we value less for something we value more, the market price at which this transaction is made only crudely reflects the value placed on the items exchanged by the parties to the transaction.

7. Further, the subjectivist understanding leads to the understanding that the value we place on some good or service depends on its perceived use within our framework of plans. Thus, the value of a piece of specialized machinery or human skill is meaningful only within the context of such a set of plans. In a market, however, there are a host of such conflicting plans, often with the success of one resting on the failure of another; markets are characterized by rivalrous competition and, with the exception of an equilibrium situation, which never exists in the real world, the future value of some purveyor's particular good or service is often dependent on the loss of value of another's. The significance of this intuition in turn provides a note of caution as to how we may interpret aggregated data on value. It should be noted that this implication arises when we leave the equilibrium framework assumptions that underlie the traditional neoclassical approach to dealing with value. We have to be cautious therefore in making interpretations based on adding up all prices consequent to market transactions in a particular economy to obtain an overall measure of value.

8. This is particularly so since policy advice and planning are often based on the faith that aggregate measures of the value of goods and services can be calculated. More, it is often held that better planning and more enlightened policy-making is possible only if more comprehensive statistical information is made available. Arguments for improved collection of data on the paid and unpaid work that women do, for example, rest on this assumption[1]. While it is true that public policy is being conducted in abysmal ignorance of its likely consequences and the lack of complete information does largely explain the policy ineffectiveness and failures that we observe, it has to be borne in mind that improving the scope for planning and policy-making through better coverage of statistical data through aggregation of value has its limits.

9. Additionally, the literature in Public Choice economics points out that the theory linking better policy and planning with improved statistical data makes the assumption that policy makers are entirely benevolent, selfless and public-spirited. Amending this hypothesis to consider that policy makers are no less self-seeking than the rest of the population provides new insights into the scope and nature of policy development and execution in relation to those values that individuals hold or those values that particular groups seek to spread. Indeed, as this paper later explores, relating valuation to policy rests more on developing institutional constraints wherein policy makers reflect more closely on the interests and values of their constituency. It also depends on designing such institutions to remain attentive to changing values and mores.

III. The economic theory of value

10. The following section is intended to initiate the reader into important theoretical developments in the economic theory of value. As such, it makes no claims to be comprehensive. Indeed, its selective focus, in keeping with the purpose of this paper of acquainting the reader with the implications for policy and practice of the notion of value in a non-stationary and non-equilibrium world, leans more to introducing such scholarship as is relevant to this task. Nevertheless, recognition is given to the tradition on which standard practices in National Accounting have been developed.

11. Although the notion of value is critical and central to understanding economics, it was not clearly grasped until the inception of marginal analysis in the late 19th century. This paradigm shift involving the introduction of marginal analysis is the foundation for modern economics. Although post-marginalist economists may differ on issues and interpretations, they all refer to marginal analysis as basic equipment in their analytical tool kit. Contemporary discussions on value however continue to invoke the Labour Theory of Value, a pre-marginalist notion. For this reason, the paper will provide adequate background on this to enable the reader to follow such debates.

12. The paper also will introduce the reader to current deliberations on the concept of value. Although the modern subjectivist concept of value precludes the measurement of the value of goods and services aggregated over the entire economy as an input to policy analysis, in recognizing that market exchange takes place within particular institutions, it encourages reflection on how those institutions, social and political, may be structured so that they reflect evolving community standards by mediating competition among norms and values.

A. The development of value theory

13. We start by taking a quick walk through the history of economic thought on the subject of value. We begin with Adam Smith and David Ricardo in the Classical Period, examine the legacy of these thinkers on Karl Marx, and finally move on to the implications of the Marginal Revolution, the legacy of the Neoclassical school and, finally, the contributions of the Austrian School in establishing concepts of value in economics. This will then prepare us to reflect in part B of this section on some of the current thinking among Austrian economists about the social-institutional aspects and the evolution of value systems.

1. The classical period

14. *Adam Smith:* Smith dealt with several aspects of the concept of value: He attempted to address the problem of value in *use* versus value in *exchange,* to distinguish between the notion of an *underlying* value against *fluctuations* around this basis, as well as to contrast the *cause* of value with the *measure* of value. While Smith contributed significantly to economic analysis, particularly in the understanding of competition, he was not successful in resolving a notion of value that could accommodate all its aspects as he saw them. The result has been a legacy of confusion on the issue. It was not until the revolution in marginal analysis and, in particular, the contribution of Menger and his intellectual descendants, that an understanding of value has emerged that is coherent with the remainder of his programme of classical liberalism.

15. In his *Wealth of Nations*[2], Smith identified the use versus exchange problem of value in the following terms: The word value ... has two different meanings, and sometimes expresses the utility of some particular object, and sometimes the power of purchasing other goods which the possession of that object conveys. The one may be called "value in use"; the other, "value in exchange." The things that have the greatest value in use have frequently little or no value in exchange; and on the contrary, those that have the greatest value in exchange have little or no value in use[3].

16. Smith illustrated this paradox by showing that while water had much value in use, it was priced low while diamonds, which are of relatively little practical use, are highly priced. This *diamond-water paradox* remained unresolved in Classical economics; its explanation had to wait about a hundred years for the marginal revolution in economics.

17. Smith also saw a dichotomy between the natural and market price of commodities. Market prices were seen as determined by the interaction of supply and demand in the short run. The natural price, on the other hand, was seen as driven by long-run costs of production. Smith recognized that demand is a crucial determinant of value because what people are willing to pay for something is reflective of the intensity of their desire for it. Still, to Smith's mind, the market price had to cover the costs of production over the long run and so value had to be a function of the resources used in production. In discussing the determinants of value in a primitive economy where labour is the only factor of production, Smith noted that the relative values of deer and beaver would be determined by the relative quantities of labour required to obtain them[4]. In this respect, Smith saw labour as the common denominator underlying the supply-oriented elements of value

18. This is perhaps why Smith's discussion of labour as the measure of value has often been confused with an identification of its cause. Smith, however, deals with these as separate issues in his *Wealth of Nations.* As to the measurement of value, Smith notes: "The value of any commodity ... to the person who possesses it, and who means not to use or consume it himself, but to exchange it for other commodities, is equal to the quantity of labour which it enables him to purchase or command. Labour, therefore, is the real measure of exchangeable value of all commodities." [5]

19. The idea expressed here is that in contemplating an exchange, the individual weighs up how much of his own labour he is willing to put in as an exchange for some other good. Smith clearly distinguished this issue from the problems of measuring value based on the inputted labour: "It is often difficult to ascertain the proportion between two different quantities of labour. The time spent in two different sorts of work will not always determine this proportion. The different degrees of hardship endured, the ingenuity exercised, must likewise be taken into account. There may be more labour in an hour's hard work than in two hours of easy business; or in an hour's application to trade which it cost ten years labour to learn, than in a month's industry in an ordinary and obvious employment. But it is not easy to find any accurate measure either of hardship or of ingenuity."[6]

20. Smith recognized that value emerges on the demand side when one gauges how much, in terms of one's own effort, one is willing to offer in order to get the proposed exchange. He also understood the problems inherent in interpersonal comparisons of value based on expended labour hours. However, by not abandoning the notion of an inherent or long-term value, he left unresolved a clear understanding of the concept of value - a legacy that persists to the present.

21. *David Ricardo:* Ricardo felt that a labour theory of value, with several qualifications, provided the best general explanation of relative prices and that Smith's restriction of the labour theory to a "primitive economy" was unnecessary.[7] Value and labour time expended in production had a straightforward relationship for Ricardo: "Every increase of the quantity of labour must augment the value of that commodity on which it is exercised, as every diminution must lower it."[8] His first qualification to this theory of value was for cases of rare or non-reproducible objects; "there are some commodities, the value of which is determined by scarcity alone. No labour can increase the quantity of such goods, and therefore their value cannot be lowered by an increased supply." Such things as rare paintings or bottles of wine were to Ricardo "wholly independent of the quantity of labour originally necessary to produce them, and varies with the varying wealth of those who are desirous to possess them."[9]

22. A more significant exception to the labour theory of value was made regarding the role of capital. Capital, as indirect or embodied labour, could be separated, he held, into its fixed, or slow consumption, and circulating, or rapidly perishable, forms. Ricardo based value on the real costs of labour as well as capital. However, from an empirical standpoint, he maintained that the relative quantities of labour used in production were the major determinant of relative values: "I shall consider all the great variations which take place in the relative value of commodities to be produced by the greater or less quantity of labour which may be required from time to time to produce them."[10]

23. In shorthand, we might say that Ricardo's labour theory of value means that Vh/Vs = Lh/Ls. That is, the market value of some item, say a hat (h), expressed in terms of a standard commodity (s), equals the quantity of labour required to produce the hat relative to the quantity of labour required to produce a unit of the standard commodity. However, also inherent in Ricardo's model is that the value of a hat in the two industries is equal to the relative amounts of capital necessary to production in the two industries [Vh/Vs = Ch/Cs]. This means that Ricardo's theory is as much a labour theory of value as a capital theory of value. Given the assumption of labour-capital uniformity, the relative values of the two commodities can be *measured* by counting either the labour or capital inputs but neither can be regarded as *determining* their relative value.[11] Since labour and capital are joint inputs in production, the addition of more labour will not by itself create more value. Nevertheless, this labour theory of value has been used to argue that the quantity of value created in an economic process is determined by the quantity of labour employed in it and that more value is produced if more labour is used.

24. In addition to the theoretical problems this generates, the assumption of labour-capital uniformity is empirically incorrect. Although Ricardo was aware of this, he argued that they could be considered as a satisfactory *working approximation.* Once this assumption was made, however, it was subsequently lost sight of and this labour theory of value became the core proposition of pre-marginalist nineteenth century social science and social philosophy.

25. Although the Classical theorists made significant contributions to analyzing the nature of competition, their explanations of value came up short. Even if the role of other inputs to production are granted greater weight than Ricardo allowed, classical value theory still suffers in that it focuses upon sellers rather than on buyers in market transactions.

2. Nineteenth century economics

26. *John Stuart Mill:* In his *Principles of Political Economy,* Mill asserts the centrality of the theory of value in the activities of individuals in an industrial society. He notes, however, that "happily, there is nothing in the laws of value which remains for the present or any future writer to clear up; the theory of the subject is complete …."[12] Mill here is referring to the Ricardian theory of value, which he accepted uncritically. As Gordon puts it, Mill's estimate of the merits of Ricardian value theory "qualifies as one of the biggest howlers in the history of the social sciences. Far from being complete and needing no revision, the explanation of market values by Ricardo was the most serious flaw in the classical economic model."[13] However, it continued to be used until it was replaced by developments in marginal analysis.

27. *Karl Marx:* In the first volume of *Capital*[14], Marx developed his analysis along Ricardian lines. He rejected the notion that the usefulness of commodities was central to determining their values, other than in day-to-day fluctuations about some core. He held that long-run fundamental values were determined by the conditions of production. In turn, the determining conditions of production were held to consist solely of the relative quantities of labour that were required in the production of commodities. "A commodity has value", notes Marx "because it is a crystallization of social labour. The *greatness* of its value, or its *relative* value, depends upon the greater or less amount of that social substance contained in it; that is to say, on the relative mass of labour necessary for its production". [15]

28. Marx noted the problem of the heterogeneity of labour and labour productivity but swept it under the rug in an early passage in the first volume of *Capital.* Here he makes an elliptical allusion to a reduction from concrete labour to abstract labour by a social process that goes on behind the backs of producers. He goes on to say that henceforth he will refer only to unskilled labour to "save ourselves the trouble of making the reduction." More, Marxian theory of value does not include all human effort as labour. To count as value-creating it must be devoted to the production of "useful" goods and must not occupy more time than strictly necessary [16.]

29. Marx also downplayed the role of Land and Capital as value-generators: If a factor of production is not the product of human labour, it transfers no value to the product. It helps create use-value without contributing to the formation of exchange-value. In this class are included all means of production supplied by nature without human assistance, such as land, wind, water, metals *in situ,* and timber in virgin forests. [17]

30. Capital such as buildings and machinery are seen to transfer to the finished commodity the embodied crystallized labour but make no additional contribution to value. Marx's notion of machines as congealed labour and thus equal in value to the cost of the labour that produced them denies the fact that machines can be productive in themselves and thus valuable in amounts that are in excess of the labour involved in their own manufacture. Modern economists refuse to accept Marx's view on this point.

31. While Ricardo can be understood to have proffered that labour is the best *measure* of value, Marx went further in seeing labour as also the *cause* of value. As such, labour could be divided into that which is "socially necessary" and that which is over and above this. While the former determines the wage rate, the latter was seen as the basis for capitalism. This "surplus value" did not arise in exchange but in production; the aim of the capitalist was to expropriate the extra value created by labour - this, then, was the basis for exploitation. Marx's conclusions, and the basis for much socialist rhetoric, were based on a misunderstanding of the concept of value - a legacy of classical economics. The Marginal Revolution in economics and the explanation of the subjective nature of value that followed did much to clear up the confusion created. Indeed, Karl Marx himself completely abandoned further work on *Capital* after grasping the works of the marginalists - Jevons and Menger.[18]

3. The advent of marginalism

32. It is a curious multiple in the history of science that the concept of what is now called marginal utility was put forward more or less simultaneously by three economists in England, Switzerland, and Austria. William Stanley Jevons, Léon Walras, and Carl Menger each independently came up with the solution to Adam Smith's Diamond-Water Paradox. Their analysis showed that the high utility of water and the low utility of diamonds were consistent with a low price for water and a high price of diamonds. This was because transaction in the market takes place in small unit quantities of commodities. Thus, for a particular consumer, the question at hand is not whether water is more valuable for sustaining life than diamonds but what the marginal utility of an additional liter (or other unit) of water is. If he or she were at the point of dehydration, the extra bit of water would be valued very highly. If the same person were watering the lawn, it would likely not be worth that much to him or her. It is misleading, therefore, to talk of the overall quantity of water that is consumed; rather, attention should be paid to how much the consumer values an additional unit of the liquid.

33. The classical theory of value and its theoretical heirs were unable to explain how consumer preferences can affect the value of what is offered for sale. They had also not developed a coherent account for how market price mechanisms could relay this information to producers. The development of the subjective theory of value had to await the revolution in marginal analysis and, as we shall see, the contributions of Menger and his intellectual heirs that make up the Austrian school of economics. Marginalism also ushered in the development of general equilibrium models of prices and markets. It is to these neoclassical concepts and their interpretation of value that we first turn.

4. Neoclassical (orthodox) economics

34. *Formalization of economic theory:* Discussions of value in economic theory developed from the inclusive "real value" base of classical political economy to the "abstract value" reductionism of equilibrium oriented economics of the mid-20th century. Given that this period, with the end of the Second World War and the start of decolonization, coincided with the building of a host of new institutional structures, the legacy of economic thought in this period continues to be of relevance today, imbedded as it is in our rules and practices. Among the institutions which emerged in the post-war era is the United Nations and many of its practices, including the core system of national accounts, are still based on theories developed in this period.

35. As we have noted, the theoretical treatment of value in this period was extremely abstract, with human and other material elements of the "real world" handled in terms of mathematical symbols and/or imaginary idealized conditions. As Debreu put it in the preface to *Theory of Value:* "The theory of value is treated here with the standards of rigor of the contemporary formalist school of mathematics. ... Allegiance to rigor dictates the axiomatic form of analysis where the theory, in its strict sense, is logically entirely disconnected from its interpretations." In this scheme, the theoretical treatment of value became synonymous with the consideration of price within conditions of an imaginary and idealized equilibrium. Indeed, this lack of holistic real-value orientation provided grounds for the characterization of an economist as one who "knows the price of everything and the value of nothing." We look in particular at the contributions of Gerard Debreu, Kenneth Arrow, and John Hicks as representative of this tradition in economics.

36. *John Hicks, Gerard Debreu and Kenneth Arrow:* Hicks, Debreu and Arrow's central contribution to economics lay in developing and proving, mathematically, the existence of equilibrium-creating prices. This enterprise is related to the work of Léon Walras, the nineteenth-century inventor of the general equilibrium theory. Walras believed that one can prove the existence of simultaneous equilibrium in all

markets of an economy by counting the equations and unknowns to make sure that one has as many known demand-and-supply equations as unknown prices to be determined. A rigorous proof of this had eluded economists before Arrow and Debreu further developed the ideas of Hicks in this regard.

37. In his well-known monograph, *Value and Capital* (1939), Hicks presented a complete economic model with aggregated markets for commodities, factors of production, credit, and money. This theory involved a number of innovations including a further development of theories of consumption and production and the formulation of conditions for multi-market stability, among others. While Hicks used differential analysis as his mathematical tool, later work on equilibrium analysis by Arrow and Debreu invoked a mathematical theory of convex sets to enhance the simplicity and generality of the analysis. Debreu, along with Arrow, designed a mathematical model of a market economy where different producers planned their output of goods and services and thus also their demand for factors of production in such a way that their profit was maximized. In this way, Debreu was able to generate connections within the model between the supply of goods and the demand for factors of production, on one hand, and all prices, on the other. By making additional assumptions about consumer behaviour, Debreu and Arrow generated demand functions or "correspondences" between prices supplied and quantities demanded, and used these to prove the existence of equilibrium prices. Following this pioneering work, Debreu, in *Theory of Value; An Axiomatic Analysis of Economic Equilibrium* (1959) showed, in a very compact book, how the general equilibrium model integrates a theory of location, a theory of capital, and a theory of economic behaviour under uncertainty.

38. In the real world, unique prices and quantities are determined in markets through processes that bear little resemblance to the complex equations of the general equilibrium theory. Nevertheless, neoclassical economists working on abstract models of the real world needed to know that their general equilibrium model possessed a solution in order to confidently apply their analysis. The pioneering work of Hicks, Debreu, and Arrow is considered to have provided this missing theoretical link. In the perfect world of equilibrium models, net demand equals total resources and price corresponds with value.

39. While acknowledging that general equilibrium models yield a mathematically logical model, its critics have pointed out that the real world is different from the elegant one of mathematical formalisms. Feminist scholars have, in particular, been very articulate in pointing out the lack of institutional robustness in models of orthodox neoclassical economics. More, they have very usefully demonstrated the implications of this approach on policy formulation and subsequent consequences. Indeed, as is obvious, the real world is one where conditions of equilibrium have never held, where information is imperfect and incomplete and where value does not perfectly correspond with price. It has often rested with economists outside the orthodoxy to point out the limitations of the logically satisfying but empirically unrealistic formalisms of economic high theory.

5. Austrian economics

40. The Austrian tradition, which begins with Carl Menger, who, as we have already noted, was one of the co-discoverers of Marginalism, also noted the limitations of the neoclassical high theory in developing an intuitive theory of value. A summary of the contributions of Menger and other "Austrians" follows:

41. *Carl Menger:* As noted immediately above, Carl Menger was the Austrian among the trio who had simultaneously but independently come upon the insight of marginal analysis. Menger's analysis also emphasized the interconnectedness of production. To illustrate this notion, he noted that if the taste for tobacco disappeared, this would lead to a causal sequence of effects whereby tobacco stocks, capital specialized to the manufacture of tobacco products, and labour employed in the farming of the leaf, etc.

would all lose their "goods-character"[19]. By emphasizing the complementarity and interdependence of goods from lower order to final consumer goods, Menger demonstrated that shifts in consumer tastes could alter the value of all the intermediate products and inputs. Significantly, this means that there is nothing inherent in these goods that makes them economic or non-economic; their character changes with changes in supply or consumer requirements. Value is also context-dependent with the value placed on particular capital equipment reliant on where it fits into the productive process. According to Menger, a good is said to have value if economizing individuals perceive that the relative satisfaction of their needs depends on their command over the good.

42. Menger also was the first to articulate clearly that different things provide different levels of satisfaction to individuals.[20] He emphasized that within the same class of goods, some may be considered more valuable than others. As such, people could be expected to satisfy urgent needs before attending to less pressing ones. Menger established the proposition *(equimarginal principle)* that given scarce means, individuals will arrange their various consumptions so that at the margin the satisfaction gained from each is equal. Hence, it is the least urgent satisfaction obtainable from a given stock of goods that give it its value.[21] What does this mean? In terms of our water example, this states that though water can be put to many uses, a person can be considered to not value it much if he or she can water the lawn without adverse repercussions for its alternative uses. One of Menger's most important contributions to economics is thus the notion of *opportunity cost*. As Menger put it, the value of a particular good is equal "to the importance (an individual) attaches to the satisfactions he would have to forego if he did not have command of it."

43. Finally, Menger is credited with elaborating the standard economics conjectural history of the development and use of money in exchange. Menger, in *Principles*[22], holds that money evolved from a barter economy when innovating individuals used a third, more salable substance as a temporary stand-in or intermediary when the presentation of or search for the actual good to be bartered was cumbersome or otherwise problematic. When other individuals saw the usefulness of this, this activity was imitated. When there was a general agreement on the intermediate good (beads, shells, gold, paper currency etc.) money was born.

44. *Friedrich von Wieser:* Wieser, who is credited with inventing the term "marginal utility" made important additional contributions to value theory. While Menger had argued that it is the use to which the last unit of a stock of goods is put that represents the value of any unit of a homogenous stock, Wieser held that this is taken at the point when the total value of the stock increases by less than the price paid for additional units of the good. He also noted that exchange value depends not only on utility but on purchasing power as well. Thus luxury items will be produced for those who can afford their fancies while the needs of the poor may be ignored.[23] Real world prices, therefore, do not ordinarily reflect the marginal utility valuations that would exist if purchasing power were equal for all consumers.

45. *Eugen von Böhm-Bawerk:* Along with his colleague, Wieser, Böhm-Bawerk was early to adopt Menger's approach to value theory. He clarified the work of Menger and Wieser by showing how the different subjective valuations affect buyers and sellers in the determination of price and objective value.[24] Böhm-Bawerk emphasized the discrete and discontinuous nature of supply and demand functions in the real world in contrast to the smooth curves of Marshallian analysis. Buyer and seller may each have an idea of the range of prices for which they are willing to make the exchange and the actual price arrived at depends on how much each thinks the other will bear or accept. In a practical exchange situation, the evaluations of the buyer and seller come into play; it is these pairs of buyers and sellers who determine the price. The value of a good or service is thus only realized through the process of exchange. [25]

46. *Ludwig von Mises:* Mises also pointed out that the concept of the value of a good or service cannot be divorced from the circumstances of its exchange. In an exchange, he noted, an individual abandons one thing in order to obtain another. That which is abandoned is the cost or price paid for attaining the other; the value of the price paid at the point of transaction is the cost. In relating the concept of value to the process of exchange, Mises added that the basis of modern economics is the cognition that it is precisely the disparity in the value attached to the objects exchanged that results in their being exchanged. People buy and sell only because they appraise the things given up less than those received. Thus the notion of a measurement of value is in vain. An act of exchange is neither preceded nor accompanied by any process that could be called a measuring of value. An individual may attach the same value to two things; but then no exchange can result. But if there is a diversity in valuation, all that can be asserted with regard to it is that one *a* is valued higher, that it is preferred to one *b*. Values and valuations are intensive quantities. They are not susceptible to mental grasp by the application of cardinal numbers.[26]

47. *Friedrich von Hayek:* Hayek is probably the best known of Menger's intellectual descendants. The concept of value is difficult to grasp, noted Hayek, because it suggests a violation of the laws of conservation in seeming to create something from nothing.[27] While the creation of some object by physical or muscular activity is tangible, he observed, individuals have, through history, been suspicious of merchants and traders who engaged in the transformation of the non-material in altering the value of goods. As Hayek put it in *The Fatal Conceit,* an increase in value, crucial in exchange and trade, is indeed different from increases in quantity observable by our senses. Increase in value is something for which the laws governing physical events, at least as understood within materialist and mechanistic models, do not account. Value indicates the potential capacities of an object or an action to satisfy human needs, and can be ascertained only by the mutual adjustment through exchange of the respective (marginal) rates of substitution (or equivalence) which different goods or services have for various individuals. Value is not an attribute or physical property possessed by things themselves, irrespective of their relations to men, but solely an aspect of these relations that enables men to take account in their decisions about the use of such things, of the better opportunities others might have for their use.[28]

48. Value is therefore inherently subjective. Valuation is expressed through the process of economic exchange and the entrepreneurial function rests on conjecturing how useful the things that they or others possess or command would be as resources to themselves or others in satisfying the wants and needs of each. Things can be valued either as an end in themselves or as a means to some end. In turn such valuations will change with the development of an individual's knowledge framework and the gain of information within such structures. As Hayek concludes, That the utility of an object or action, usually defined as its capacity to satisfy human wants, is not of the same magnitude to different individuals, now seems so obvious that it is difficult to understand how serious scientists should ever have treated utility as an objective, general and even measurable attribute of physical objects. That the relative utilities of different objects to different persons can be distinguished does not provide the least basis for comparisons of their absolute magnitude.[29]

6. Closing the circle

49. The subjective approach to value, developed within the Austrian school, emphasizing the satisfaction of the wants of individuals within particular market structures, is closely related to the central enterprise of Classical Political Economy. As any keen reader of *The Wealth of Nations* will recognize, the characteristic behavioural element in a market order - Adam Smith's central endowment to economic thought - is that in seeking to satisfy others through producing something of marketable value, and as an indirect means of seeking things that one values, participants can select from among a set of pre-existing goods but can also innovate, creating new goods of potential exchangeable value.

50. In other words, according to the classical scheme, the individual's task rests in creative activity through the exercise of imagination - that is, individuals may be thought to picture what it is that others might value. Market participants thus enter a competition to offer goods and services - on a conjectural basis - based on what they think may be of adaptive value to others, so that they can in turn procure things that they value and thus improve their own well-being. In this respect, Classical Political Economy emphasizes the importance of market activity within commonly understood rules or conditioning constraints - what Smith called "the laws of Justice." When classical notions of competition theory are combined with a subjectivist theory of value, classical liberalism becomes a theoretically whole and unified enterprise.

B. Structure and change in value systems

51. Within economics, scholars devoted to modern institutional analysis and continuing thought in the Austrian tradition study the rule structures within which subjective evaluations are formed, the frameworks within which formal and informal exchange occurs, as well as the interrelationships between the two. As such, their insights can provide a base on which to understand how values that shape initiatives in personal behaviour and attitudes, as well as values that condition social exchange, are formed and selected. While an adequate survey of the relevant literature would lie beyond the scope and purposes of this paper, the brief summary attempted below may give the reader some flavour of current investigations in these areas.

52. What are the bases on which we value the things that we do value and on how we might manipulate those conditions to reflect changing norms and standards? In this, what role do social, moral, and legal restrictions have in influencing each individual's values? Given that an individual's entire value scale is not determined anew at the point of each new market or social interaction, what is the structure of value reappraisal? A fleeting analysis of this issue may be broken down into three steps: The first step involves a look at the institutional function of shared values. The second step develops a model of the structure of core and derived values. This leads to the final step, which affords a glimpse at how such value structures evolve.

53. The literature in New Institutional Economics points to the importance, variously, of cultural and legal systems as fostering a spectrum of informal to formal common understandings of rules and values that serve as loci of coordination and cooperation among interacting individuals. Langlois[30] suggests that by constraining the range of possible actions, institutions foster the possibility of forming reasonable conjectures of others' actions and thereby heighten the possibility of coordination. Institutions also structure human interchange so as to provide incentives such that individuals cooperate rather than cheat in certain types of interactions. Just as a prominent physical landmark can serve as a spontaneous meeting point for individuals, a core or commonly shared perceptions of value or norms[31] can act as a nucleus of coordination and cooperation. Such core values may be inculcated at an early age through socialization. Religion, family traditions, and participation in civic activities, etc., play an important role in the development of a common core of standards, outlooks and expectations of behaviour. In turn, this promotes the ability of each to engage the other cooperatively; this is the cement of society. [32]

54. Beyond this closely shared set of core values, one may consider secondary and tertiary sets of values that are derived from the core. These can be thought of, as in Lakatoš' terminology, in terms of a core and surrounding protective belts of value appreciations. [33] In making a value judgment, individuals may treat core values as being intrinsic, natural, or God-given. That is to say, in order to be able to make interpretations about our surroundings that are meaningful, we provisionally accept certain things as

given and build our knowledge upon them.[34] Or in other words, our day-to-day value judgments can be thought to rest on more fundamental value conceptualizations whose basis we may take for granted.

55. Core beliefs which constitute the framework for action can thus be thought to serve as the context within which each individual, or (if shared) groups thereof, may extend more day-to-day value judgments and conjectures as to how others may value objects, concepts, relationships, and so forth. In turn, these derived value conjectures may be revised based on the perceived success or failures of these extensions. If the value guidelines that are generated from a set of beliefs continually provide poor guidance, then the constituting core which generates such beliefs may itself undergo a reevaluation.[35] This may happen when the values derived from such more implicit fundamental value systems are at some point themselves found by any subset of the population, based on their own shared developed value judgments, to be of limited use in market exchange or social relationships or if new innovations are held to be superior to standards in existence. In such cases, such individuals or groups may begin to question and seek to revise commonly held values. The nature of such reappraisals, whether continuous or discrete, however, depend on how the modalities of re-evaluation are themselves structured. It follows therefore that in order to be perceived as legitimate and to gain acceptance, advocacy for such changes must take place within the commonly understood terms of constitutional re-evaluation.

56. In review, therefore, we have noted that value systems are being thought of by modern social scientists as being structured in tiers of deeply held values and beliefs that are generated from these relative givens. This structure of value and value derivation can be thought to exist within individual minds and shape how individuals perceive, innovate and modify their valuation of objects and relationships. Similarly, a shared core of rules and institutions, formal or informal, religious or social, form the basis for social coordination through shared values. Changes in these core values are based on mechanisms of selection which seek to reflect on their usefulness.[36] These changes - the comparison between what exists and the proposed innovation - are however conditioned by the existing framework of values. In the case of social values, such innovations in and reappraisals of existing value systems may be spurred on by groups in society that seek to introduce new ways of thinking to replace certain elements of shared beliefs. As such, new social virtues, such as being environmentally minded or valuing certain types of labour, are placed in comparison with older belief systems. In such a competition, the rules under which alternative value systems are compared gain significance. We may conclude then that if particular groups seek to change elements of society's value framework, they must do so within these rules of competition or risk a loss of credibility.

IV. Value and statistics in policy analysis: the case of 'women's work'

57. Having come to grips with the notion of value both in terms of the possibility of its measurement and in its aggregation on one hand, and the notion of the institutional role that shared value systems play, we next turn our attention to how this distinction pertains to current policy debates. We illustrate this distinction with reference to the call by some feminists and others to more fully value women's work in policy-making through the use of more comprehensive national statistical data. We proceed as follows: First we consider an overview of the arguments and political and theoretical efforts put forward by those who seek to have policy makers recognize the value of the economic contributions that women make and which is not currently captured in national statistical data. We then critically examine the political, and theoretical and statistical, underpinnings of these arguments. Following this, we suggest how an appreciation of the institutional nature of value can enable a movement towards the eventual aim of those who currently advocate more interventionist policies to value women's work.

A. Valuing women's work

58. A central theme pervading the current feminist literature on valuing women's work is that current policy-making suffers from a serious lack of detailed knowledge of what is really going on in those parts of formal and informal economy where women's participation is disproportionate. It is, therefore, their contention that policies are being implemented in ignorance of their consequences on women. Moreover, it has been argued that goals in a variety of policy-making initiatives are not being fully met since they ignore how such policies work through these feminized parts of the economy.[37] It is held then that, if properly informed, policy makers will appropriately revise their policies. In making these arguments, feminist scholars implicitly make the assumption that national economic planning based on detailed collected information, and mediated by concerned policy makers, is possible.

59. Following this line of reasoning, some international feminist movements have been pressing various national statistical agencies and the United Nations system to foster the development of more detailed information on the paid and unpaid work that women perform. In this regard, the Fourth World Conference on Women in Beijing (1995) called for the development of "suitable statistical means to recognize and make visible the full extent of the work of women and all their contributions to the national economy, including their contribution in the unremunerated and domestic sectors, and to examine the relationship of women's unremunerated work to the incidence of their vulnerability to poverty." One major response to the call of this Beijing conference has been to estimate, by monetary imputation, the value of productive non-market work that is contributed by women. This approach hopes to portray in vivid terms the substantial but unrecognized contributions that women make to the economy. As such, these data would have, among other uses, a significant rhetorical function; it is hoped that policy makers will, impressed by the magnitude of the contributions of women, be more sensitive to issues of interest to women.

1. What is women's work?

60. What constitutes the unremunerated and domestic sectors of the economy in which women's contributions are so concentrated? Below is a list of selected activities, associated with the household economy, that have commonly been identified as falling into this category:

- Motherhood - child-rearing and nursing;
- Education - socialization of children;
- Food production - farming, subsistence agriculture, shopping;
- Food preparation - cooking, winnowing, sifting;
- Sanitation - fetching water, house-cleaning;
- Clothing - weaving, stitching, laundry;
- Fuel gathering - collecting wood;
- Health care - nursing of the sick and elderly;
- Transport;
- Personal cleaning;

Typically, many of these activities are juggled simultaneously.

61. Goldschmidt-Clermont and Pagnossin-Aligisakis[38] divide non-economic activity into that which is personal and that which is productive. Since Kuznets and other economists, productive household activities are held to be distinguished by the use of the third person criterion. This says that an activity is productive if someone can do it other than the person who gains the final benefit from it. That is, if it is possible to hire someone to perform a certain activity for you, that activity is deemed production. In this way, such things as preparing meals, cleaning, laundry, and so forth are to be considered productive. On the other hand, sleeping and participation in sports or entertainment would not be considered to be productive enterprises[39].

2. Gender and work

62. Scholars who identify themselves as Feminist[40] have sought to establish their arguments around the concept of gender as a separate analytical category in macroeconomics. As Cagatay, Elson, and Grown put it, "Feminist analysis emphasizes gender in addition to class and race. It aims at presenting alternative visions of economic processes and using these visions to transform economic and social life so as to reduce gender, race, and class inequalities and promote the expansion of people's capabilities to lead satisfying lives". This paradigm seeks to center economics around the concept of "the provisioning of human life"[41] emphasizing those things considered as required for a "meaningful" life. In as much, these economists seek to look beyond the traditional male-dominated scope of economics to activities such as unremunerated labour at home and social and community work.

63. In this task, the concept of gender is seen as the premier tool of analysis. Social and economic activity is filtered through the lens of sex-based differentiation; gender is seen as the basis for a fundamental division of labour. As such, a distinction is made in the literature between productive and reproductive activities[42]. Whereas the former relates to income generating activities that are largely linked to the market, the latter is defined to include "unpaid responsibility for the care and development of people, including children, the elderly, the sick, and able-bodied adults"[43]. Reproductive labour includes the sorts of household and nurturing activities listed at the beginning of this section. Feminists note that these activities have, through history, been borne disproportionately by women.

3. Policy implications of the better measurement of women's work

64. As we have just noted, some feminist economists refer to the productive non-income producing activity of women as the reproductive economy. They have argued that the invisibility of women's work, together with traditional biases regarding the proper work roles of men and women in society, have led to an under-appreciation of women's economic contributions. Feminists note that as reproductive services are not a part of the formal or price-based market exchange of goods and services, the value they add to the economy is not represented in aggregate indicators.

65. In particular, since unremunerated work is not included in national income statistics, women's issues do not get as much attention at the policy-making levels as they deserve, it is contended. Some have reasoned that this is because policy makers are not sufficiently impressed by the size of the contribution of this segment of labour. As a result, it is claimed, issues of importance to women are not given the weight due them at state and national levels of decision-making.[44] It is further argued that women and those sympathetic to the concerns of women are poorly represented in policy-making.[45] Because of these factors, it is held, women are denied comparable access to credit and other economic resources. More, it is held that to the extent that development policies are driven by statistical information, they fail to adequately address issues of particular relevance to women.[46]

66. It is therefore core to the socialist-feminist argument that the development of statistical techniques and the resultant valuations of the contributions of women in the informal sectors of the economy will enlighten policy makers to be more sensitive to their needs. Additionally, it is proposed that women's concerns will be better served if more women, along with sensitized men, held positions in policy-making as women inherently understand the problems of women better. Both these elements are in turn premised on the model of a policy maker who is interested in improving the welfare of his or her public, and that he or she would act in an enlightened way if he or she were properly informed of the facts. Many such feminists see the monetary imputation of the value of women's informal work as an important rhetorical tool towards the realization of these interim goals.

4. Policy recommendations

67. Some scholars in the Feminist tradition have used the idea of engendered economics to motivate certain policy conclusions and to pursue certain agendas. In analyzing gender discrimination in the labour market they have promoted comparable worth and pay equity schemes, and in pointing out the differential impact on women of trade and structural adjustment policies, they have argued for social programs and income and property redistribution schemes.[47] However, in pointing out that women's work remains undervalued, they have not spelt out any particular policy prescription other than to seek to inform policy makers better. Rather, they have claimed to seek to parlay the rhetorical impact of statistics on the monetary imputations on the value of women's non-remunerated activities into a higher profile for women's issues in policy-making. It is felt that in these ways, development policies and social institutions can, through policy coercion, be made to reflect better the social and developmental concerns that they believe to be of relevance to women.

68. Thus, although placing a monetary value on women's unremunerated but productive work will in itself only act to enhance the rhetorical arsenal of those who argue for causes they believe to be of relevance to women, the expected impact of this statistical undertaking is to boost prospects for the sorts of policy prescriptions that feminists have long advocated. What sorts of plans are mooted in this respect? The 1995 Human Development Report identifies several implications of adequately valuing women's work. The first deals with a redistribution of income and assets based on the contribution in labour; "The inescapable implication is that the fruits of society's total labour should be more equitably shared."[48] Second, a radical reconfiguration of legal and property rights is envisaged, and finally, social programming is called for in such areas as childcare, care of the elderly and community affairs. As the report concludes, "such restructuring is unavoidable to liberate both men and women from artificial and restrictive social roles."

69. In terms of its rhetoric - the exploitation of women, its form of analysis - gender as a class, and its policy prescriptions - coercive redistribution and planning - this variety of feminist economics is close to socialist economics.[49] It is perhaps therefore not surprising that it seeks to measure the contributions of women using Ricardian-Marxian notions of value. Whereas Marxian economics sees the exploitation of

labour's surplus value by capitalists, Feminist economics sees the exploitation of the value of "reproductive services" by the male dominated institutions of society.

5. The United Nations in the push for value measurement

70. The push by some Feminists to include measurements of women's work in national accounts statistics can be traced back to 1975 which was designated by the UN as International Women's Year. This was followed by the United Nations decade for women (1976-85). The World Plan of Action for the Implementation of the Objectives of the International Women's Year, adopted in Mexico City in 1975, highlighted the importance of employment and gave priority to the collection of adequate data and information. Through this period, various local studies were attempted to assess the economic value of unpaid work. Significant among these were contributions by the International Labour Organization.[50] However, the UN expressed in its 1985 agenda for the World Conference to Review and Appraise the Decade for Women, that domestic work cannot accurately be measured.[51]

71. Pressure from the delegates to the World Conference held in Nairobi (1985) to commemorate the end of the Women's Decade overturned this stance. The UN Economic and Social Council accepted guidelines for valuing women's work as set out in the document *Forward Looking Strategies*[52], which noted that the remunerated and, in particular, the unremunerated contributions of women to all aspects and sectors of development should be measured and that these contributions should be reflected in national accounts and economic statistics, and in GNP. Concrete steps should be taken to quantify the unremunerated contribution of women to agriculture, food production, reproduction, and household activities.

72. In 1989, the United Nations' World Survey on the Role of Women in Development[53] acknowledged that non-monetary production had to be recognized and "valued in monetary terms prevailing in the market." However, in recognition of the problems inherent in making such valuations, the UN Expert Group on the Measurement of Women's Income and their Participation and Production in the Informal (uncounted) Sector proposed that such commitments could be made good in satellite accounts, separate from statistics compiled under the System of National Accounts. The Expert Group concluded that "value added by home-makers ... should be covered in separate supplementary estimates and that research on the calculation of Gross Domestic Product by sex should be left to individual countries." The practical application of the principle was left to the individual member states.

73. In succeeding years, workshops on collecting statistics on women's economic and social contributions were held under UN auspices in Africa, Latin America, and Asia. In 1991, UNIFEM participated in the publicity campaign behind the Indian census that was amended to ask probing questions regarding the work done by women. Statistical agencies in Canada and various countries in Scandinavia among others, had already long begun to use various techniques to estimate unremunerated domestic work.

74. In 1995, the Beijing conference on women again raised the valuation issue, calling for "suitable statistical means" to "recognize and make visible"[54] the full extent of women's contribution to their national economies. Under this mandate, UN agencies have been asked to evaluate the various techniques used by member countries in attempting to set up a world standard for measuring and valuing women's work. Timely completion of this task, it is hoped, will assist countries in preparing for their next round of census-taking so as to enable a statistical "photograph" of the contributions of women worldwide. Coinciding with the Beijing conference, the United Nations Development Programme's (UNDP) Human Development Report for 1995 estimated, using the Labour Theory of Value based monetary imputations of time-use studies, that the unreported value of women's work world wide is US$11 trillion a year. This

figure, since widely cited, has to be seriously re-evaluated in light of the past century of developments in Marginalism and Austrian economics.

6. Imputing the value of women's work

75. The imputation of the monetary value of women's contribution to the economy for inclusion in satellite accounts to the formal System of National Accounts all rely on the Labour Theory of Value. Such imputations have been proposed along three tracks: These have been called the *net, input* and *output* methods[55].

76. *Net and Input methods:* The Net and Input methods are grouped together for consideration since they both seek to impute value in monetary terms based on time-use data. Whereas the Net approach takes account only of working time and its value, the Input method considers other inputs into household production such as intermediate consumption, capital costs and wages. Again, in both cases, time-use statistics are used to measure the value of labour input with labour seen as a source of value. A monetary value of time spent is derived from one of two techniques:

77. In the first technique, the number of hours spent in household activities is used to derive the associated value. This is done by comparing the total time spent on household work with that which a *generalist,* such as a professional housekeeper, would charge for the full array of duties performed. In the second procedure, the tasks associated with household work are disaggregated and the matching charges of *specialists* in each field are applied. For example, for hours spent on childcare, the rates of a professional nanny might be used and for time spent cooking, the charges of a chef might be inserted.[56] The third approach is the *opportunity cost* method where value is imputed based on what the person might otherwise earn in the marketplace in the time spent on carrying out domestic work. [57]

78. Even among those who accept the logic of the time-use imputation methodology, there is dispute as to how these can be consistently applied. For example, Benería[58] finds that the generalist method will give a low estimate (since domestic workers are held to be poorly paid), the specialist method will give a high estimate (though this requires the disaggregation of simultaneously performed work) and the opportunity cost method will give a widely variable estimate (since the value imputed is based on what the woman's earning power in the market would be). Another feminist economist, Lewenhak finds time-use a "patently inadequate" method of measuring unpaid work. She notes that this methodology omits the skill of the worker, the energy used, and the hazards encountered.[59] Finally, Acharya has sought to use an ad hoc combination of techniques to determine the value of women's work in Nepal but it is as yet unclear how such principles can be consistently applied.[60]

79. Another point to consider is the manner in which time-use surveys are conducted. As Anker and others[61] have noted, the way in which questions about economic activities are posed to respondents shape the answers provided, and hence the statistical outcomes. One may also consider that in some cultures, women and men may provide answers that they think will please their questioners. In still others, detailed questioning of household activities may be viewed with suspicion and hostility; accurate answers may not be forthcoming.

80. *Output based methods:* This method seeks to gauge the value in money terms of work done in the household by comparing the value of what is produced at home to market counterparts.This is seen as problematical by those who have attempted to do it due to the difficulty of gathering appropriate data.[62] While such things as meals cooked can be linked to a market-based counterpart, how does one value things that are not? For example, how does one determine the value to society of raising a healthy and well-adjusted child?

81. Also, there are difficulties in this approach in allowing for variation in quality and in the capital inputs used in the production of outputs. Is the badly cooked meal to be valued on par with a gourmet feast if the output category is "meal"? And is the monetary value of clothes washed by hand on a river bank on a par with the value of clothes washed by a machine if the output in question is "clean clothes". Moreover, production technologies and outputs and the use and value placed on them vary from culture to culture, making data collection difficult and its analysis and comparison problematic at best. The same article may have different applications in different societies. For such reasons, those who wish to estimate an imputed dollar value of women's work have themselves not pursued this path. Rather, in seeking a monetary measure of women's productive non-market activity, Feminists and others have concentrated on time-use methods.

82. Beyond these operational problems, the product method, at a more fundamental level, does not recognize value as something realized through the exchange process.

83. *Conclusion:* Economic theory linked to the Neoclassical and Austrian school does not support using time-use analysis as a basis for imputing the monetary value of work done outside the market. Indeed, the use of the Labour Theory of Value in this context is seen as being somewhat out of date in economic discourse. Different statistical studies have employed time-use surveys and translated them into value correspondents variously using the charged time of specialists per task or of a generalist for all tasks. No recommendation can be made between these approaches given our appreciation of the theoretical and rhetorical limitations of the Labour Theory of Value.

B. Agency and knowledge problems

84. Although one may have sympathy with the ultimate objectives of those in the women's movement on the issue of the increased responsiveness of policy makers to certain issues pertaining to gender, there are basic practical reasons why the aggregation of value as promulgated by some feminist scholars (even if somehow accomplished) will not advance these aims. These can be referred to as the *agency problem* and the *knowledge problem.* We deal with them in turn.

1. The agency problem

85. Standard neoclassical economic theory as well as the Feminist literature is premised on the notion of a benevolent government whose agents want to and are capable of executing policy to the benefit of the public. In this scenario, it is the role of the analyst to formulate policy, taking into account the best and most comprehensive information available. Standard development theory is thus formulated as advice to a benevolent government. It is held that growth with equity, and other associated considerations, could proceed if only policy makers had fuller knowledge and accepted the relevant policy frameworks. In contrast, Public Choice economists assume that policy makers - political entrepreneurs and bureaucrats - are no less self-seeking than the rest of the population.[63] Unless appropriately constrained, actions taken by governments are seen to reflect on the conscious will of their own personnel or of wealthy or powerful special interests more than the will of society as a whole. Given that the government has a monopoly on coercive power, groups in society struggle to gain control over the instruments of power in pursuit of their own agendas. If we stray away from the model of the perfect government agent, we must consider that policy makers will not be fully persuaded by statistical data in themselves. Indeed, policy makers may seek to manipulate how data is collected and analyzed so as to use the resulting numbers to argue for policies that might suit particular constituents.

86. In deviating from the model of the perfect government agent, we must also consider that policy makers engage in an exchange process like everyone else. Policy makers gain real and psychological income from the pay, perks, and privileges given to office holders. In return, it is traditionally assumed

that citizens will expect that their concerns will be given due attention, and appropriate policies developed and implemented. Yet there is increasing awareness of the unequal access that special interests - influential trade unions, business leaders and so on - have with policy makers and of how this affects the direction of policy-making. These groups are influential because they are able to overcome problems of collective action.[64] Smaller groups with clearly identified interests face lower costs of mutual identification and organization than large dispersed groups and can thus more clearly articulate their needs and concerns to policy makers. In contrast, there are those such as homeworkers, numerous and isolated, who are not able to overcome these costs of organization.

87. What it comes down to is this: policy makers respond to those who they most engage with; they place value on concerns brought before them as a result of this exchange. In exchange for the financial and political support they receive, they respond with policy initiatives to help these constituents. In pursuit of this, policy makers may demand statistics to aid them in forming and enacting such special interest policy. The development of the scope and character of statistical data is therefore reflective of the demands of policy-makers who participate in this political exchange. If this is accepted, then it follows that supplying statistical information on the welfare of women will, in and of itself, not enlighten and spur appropriate policy.

2. Aggregation and the knowledge problem

88. Proponents of planning often misconstrue the difficulty encountered in policy development as a mere shortage of statistical data instead of the more fundamental knowledge problem. Any planning agency could, given an adequate budget, collect mountains of data. However, the question is whether the data that it is feasible to collect correspond to the knowledge of value assessments that would need to go into making economic decisions. Knowledge relevant to economic decision-making (the process by which individuals judge value in the items they transact and of how this judgment of value undergoes reappraisal) exists dispersed among the minds of the millions of individuals who make them. This knowledge is affected by an individual's life experiences, the institutional constraints he or she faces and perceptions on the availability and structure of capital, present or forecast. Knowledge is not the same as data and this knowledge cannot be articulated. Thus the type of information that would be needed to make policy can never completely be captured.[65]

89. We noted earlier that money value corresponds roughly with subjective value assessments. Indeed, the money value of all the capital goods owned by an individual firm could be added to give a meaningful number since these are part of a single plan. Aggregating these numbers across an economy, however, causes the combined total to lose significance since the plans of rival firms may include mutually incompatible plans. The widespread use of money prices as the common denominator by which such aggregation is performed could only be legitimate in an equilibrium context where all plans are perfectly coordinated with each other. In the real world, the value of one firm's capital may be dependent on the loss of value of that of a rival, and this is the situation that exists in the real world. Determining the total value of capital in an economy based on money value has as much meaning as adding the value of a bridge to the value of the bomb that is being built to blow it up. The very process of aggregation necessarily involves a loss of information.

90. Indeed, within particular settings for exchange, the only numbers that are of relevance to individuals who are actually engaged in the economy are money prices and accounting exercises which are based on each entrepreneur's understanding of the present and future conditions of the market. Concrete economic decisions made by players in the economy are rarely made in terms of the overall value of, say electrical machinery. Rather they are made in terms of specific pieces of machinery at particular times destined for particular uses within particular structures of capital. Changes in such aggregates as the Gross National Product are by-products of myriad human activities each of which is

undertaken with respect to the particularities of time and place. To be meaningful, each transaction can only be interpreted in the context of related transactions.

91. In contrast to the general equilibrium neoclassical conception, the Austrian tradition would consider the economy as characterized by the outcome of millions of individual plans whose complete consistency can never be achieved. No complete map of all this can ever be drawn. Thus, even if we were able to overcome somehow the agency problems surveyed above, aggregated data collected in a real non-equilibrium world carries little information of relevance to the development of wise policy advice.

C. Valuation in the absence of a theory guide

92. We have noted that economic theory does not provide a guide in the choice of a valuation technique and that the political process provides a default selection mechanism. While frustrating what some regard as a means of achieving sustainable and gender-conscious development, economic theory, however, need not abandon us in our aim. Indeed, the theoretical dead-end of monetary value imputation points us instead to this question: How can we construct political institutions such that they reflect values and recognize the contributions of women and other citizens? Alternatively we may ask: Can we, instead of convincing policy makers of the wisdom of particular forms of action, constrain them so that they act in ways that can be seen to reflect on sustainable development. Given that political interests choose among policy initiatives based on self-interest, how can this selection process itself be conditioned and constrained at a more fundamental level? Framing the problem in this way acknowledges the politics inherent in the discussion and seeks policy solutions at this level.

93. Before we try to answer these questions, let us look at attempts at valuation in other contexts.

1. Selection mechanisms for policy in the absence of defining criteria

94. The imputation of non-market activities or commodities, such as for use in litigation and in environmental accounting, reveals not only the limitations of the valuation methodologies but also exposes more starkly how such approaches have come to be chosen. This (dis-)connection between theory and chosen practice is perhaps best brought to light in its application in divorce settlements and in wrongful injury or death litigation. Fischer, in examining how forensic economists determine compensation in such cases from among the replacement and opportunity costs methodologies surveyed above, finds that they choose that strategy which is most persuasive with juries and judges rather than that which is theoretically well-grounded. As to the future of valuation techniques, he notes, "ideally, change in forensic economics would be guided by sound research. However, if the past can be taken as a guide to the future, changes in forensic economics may be more reflective of the interplay between opposing councils, jurors and judges in determining the outcome in open court."[66]

95. Another forum where monetary value imputation is encountered is in environmental accounting. Parallel to the arguments of some feminists regarding valuing women's work, certain environmentalists suggest that current national accounting systems do not adequately capture the value of natural resources, and that, as a result, development strategists are deprived of critical data that would result in policies favorable to environmental conservation. As Lutz and Munasinghe note, "improved measurement of economic performance should in turn lead to better economic decision-making."[67] Environmentalists hope that by showing environmental loss as an economic cost, policy-making behaviour will change.

96. The issue of how to translate environmental loss into an economic cost that can be reflected in the satellite accounts to a national system of income accounts is far from settled. Environmentalists (a) contend that systems of national accounting are deficient in that they do not count as national wealth such

things as clean air or forests; (b) note that national accounting counts the depreciation of man-made capital but not the exhaustion of natural capital; and (c) maintain that while the cleaning-up of environmental damage adds to the national product, environmental loss is not subtracted from the same account. The issue in the environmental case, as in the gender context, is how to objectify the value of something that is inherently subjective, the pleasure that a virgin patch of woodlands provide, for example. As El Serafy acknowledges, aspects of the environment that lie outside the market place cannot be properly valued in money terms. Furthermore, he notes that "the medium of national accounts, powerful as it may be, is not a suitable one for providing a comprehensive picture of the state of the environment or its change over time."[68]

97. With no theoretical guideline on how to choose among alternative ways of conducting the valuation,[69] the selection among alternate ways of imputation in environmental accounting then comes to reflect on the relative strengths of competing political interests in the different outcomes that various procedures are conjectured to produce. While in the legal case, the choice of valuation methodologies is made by attorneys based on how well it sells to judge and jury, in the environmental case, selection is by default made through the political process[70]. As we have explained, there is no basis in economics for choosing among the various methodologies in considering how to value aspects of our environmental heritage or women's useful non-market work. While it would be nice if theory could select a means of value imputation that would directly inform the actions of responsive politicians, this analysis suggests that in the absence of a theoretical guideline and given the self-interest assumption, it is the particular constellation of political interests that will pick which valuation methodology best suits its present needs.

98. In responding to political pressures, policy makers frequently rely on social statistics to provide the public interest justification for private interest initiatives. The manipulation of the size and nature of statistical measures is, therefore, often critical in political decision-making. Given that statistics can be strongly influenced by the assumptions underlying them, competition among groups in promulgating alternate policies often filter down to a rivalry in selecting among alternative methodologies.[71] As a result, it is often difficult to pin credibility to statistical aggregates, even as those who seek to influence policy try to exploit the numbers for their seeming objectivity. The superior resolution to addressing the welfare of women, as the case may be, rests in changing the constraints within which public policy is made rather than engaging in this dubious game of statistical football.

2. Judging value constraints

99. We earlier raised the question of how we can frame the way in which policy is carried out so that it evolves while reflecting the struggle among competing values. How are we as a society to judge which value claims are superior? In beginning to answer such a question, we have to be guided by certain meta-normative principles. These are in themselves certain core values that we all might share. In this regard we might consider that we should value the principle that the goodness of social and economic situations has to be judged in terms of the evaluations of the relevant individuals. This principle, called *Normative Individualism,* holds that we consider that individuals are sovereign in matters of choice and this is the foundation of a liberal social order. If we can agree that individuals are sovereign, we can attempt to work out a comparison of types of social arrangements. What, however, may the analyst take as an indication of the individual's evaluation of social conditions? In the case of a *market transaction,* the goodness is established by virtue of the individual's voluntary participation in the exchange. In order to qualify as voluntary, such participation must be within the bounds of mutually accepted rules, be marked by an absence of force or fraud, and should refrain from imposing undesirable externalities on third parties.

100. A second type of relation subject to individual level evaluation is the on-going relationship inherent in a *corporate* structure. This order is characterized by an inclusive multilateral exchange such as that within a family, club, firm, or political unit. In these situations, individuals choose (explicitly or implicitly) to submit to certain conditions in exchange for the benefits, which they could not otherwise realize. Particular individuals may hold that such benefits may be fulfilled only over the long run. Coercive action in this context might reflect mutually agreed upon, self-inflicted constraint, enforced by establishing contingencies of reinforcement. While the terms by which the evaluation of goodness in the market situation is expressed are relatively easy to monitor, it can be less clear in the corporate case. The challenge then is to consider social arrangements within which such evaluations can be more easily made and acted upon and which in turn make such arrangements more responsive.

101. Just as *consumer sovereignty,* the idea that producers compete through the sole channel of being responsive to consumers, can serve as a guide to policy when discussing how to constrain markets, the concept of *citizen sovereignty* can be invoked to encompass the notion that political entrepreneurs should compete by being responsive to citizen interests[72]. One form of such competition is where residents choose among packages of institutional features proffered by alternate jurisdictions. Here the competing jurisdictions can be based on various combinations of temporal (concurrent, overlapping, or sequential,) geographical and legal elements. The Swiss constitution which allows parts of cantons to join others (internal secession) and the American system of checks and balances are two examples of such constraining mechanisms.

102. Thus, going beyond the level of particular policies, current investigations in public policy consider how one might structure the political framework such that it remains responsive to the shifting values, concerns and attitudes of all its citizens. As such, it is an integrated approach that includes learning and adjustment in the evaluation of various levels of governing institutions: at the personal level with respect to policy constraints, at the policy-making level with respect to institutional constraints, and at the institutional level with respect to structured competition among alternative jurisdictions. We have to acknowledge that the policy maker may not be swayed so much by the brilliance of the analyst's data but by the political exigencies set up by the existing institutional structures. Truly sustainable human development involves more than impressing, with the appropriate rhetoric, the odd bureaucrat or policy maker of the wisdom of one's perspective. Rather, it involves making responsiveness systemic.

103. Thus rather than attempt to measure value, those interested in changing social policy should instead concentrate on changing the value framework within which policy is made. Rather than trying to create statistics which then impress benign policy makers to act in an enlightened manner, consideration should be given, particularly in recognition of the impossibility of such a calculation and the imperfectness of policy makers, as to how social institutions might be structured such that they reflect changing attitudes and values. In turn, the design of these institutions should be such that they reflect the basic shared meta-values of human rights, democracy and equality and should reflect a strategy to more actively engage political agents in considering the interests of all segments of the population when formulating and implementing policy.

V. Summary and conclusion

104. The debate so far on value, as we have seen, has been focused mainly on the contrast between that derived from idealized equilibrium neoclassical models of the economy and on pre-marginalist theories. Indeed, there is much confusion on the subject; this may partly be excused because the concept of value has had a tortured history in economic thought. Classical economists, without the benefit of the tools of marginal analysis, were confounded between the use value of a good versus its exchange value. This is illustrated in the diamond-water paradox where it was wondered why water, which is so much more precious for life, is priced so much less than diamonds. The other misconception harbored by the classicists involved the concept of underlying value. While fluctuations in value were considered to occur due to the forces of supply and demand, it was felt that the long-run value of a good was based on some inherent factors.

105. Adam Smith considered that in a primitive economy where labour was the only productive input, value would be determined, i.e. caused by its labour content. However, as interpreted by David Ricardo, the primitive economy caveat was ignored and determination was mistaken for measurement. Marx, in particular, picked up on Ricardo's argument and held that the labour input was the source of all value. This then served as the basis for his theory of capitalist exploitation. The classical theory of value and its immediate successors were unable to explain how consumer preferences affected the value of goods, nor could they account for how market price mechanisms could relay this information to producers. Marginalism in economics, we have seen, led in two directions: one pointed to the highly formal and mathematical theory of Hicks, Debreu and Arrow based on assumptions of equilibrium and perfect markets. Here, given perfect information, value was considered synonymous with price. The other legacy of Marginalism, as fostered by Carl Menger and the Austrian School, enables a more intuitive concept of value. According to this tradition, value is understood to be inherently subjective. Valuation is expressed through the process of economic exchange - either through particular markets or through informal forums of exchange such as households. Such an exchange process involves individual(s) conjecturing as to what others will covet so that they may in exchange obtain something that they value. This may be mediated by money in formal market exchange situations. Exchange may be manifested either in a visible transaction or in a stream of services over a period of time. Particularly in informal exchange situations, an account of who has transferred what to whom in the exchange relationship is extremely difficult to determine.

106. The conclusion of this paper is thus that Austrian appreciations of "value" can, as against the neoclassical or pre-marginalist conceptions, refocus attention on how to deal practically with the fundamental causes of issues associated with valuation. This paper has pointed out that value cannot be successfully aggregated with any precision due to the idiosyncratic nature of knowledge and the subjective nature of value. Even if this aggregation were somehow possible, we have shown that relaxing the assumption of benign policy makers and introducing special interest groups into the model casts doubt as to whether policy makers will respond adequately to issues which various advocacy groups seek to highlight. The paper points out, furthermore, that rather than trying to create aggregate measures of value,

advocacy groups which seek to change our social values should focus on realigning the social, political and constitutional constraints within which policy makers and others operate so that they reflect more such concerns. At the same time, it should be realized that if such a process is to conserve certain principles of a liberal order, the evaluation among competing value judgments should proceed within established rules that reflect higher principles or frameworks of shared meta-values.

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Endnotes

[1] This was the underlying assumption behind the recent UNDP "Workshop on Integrating Paid and Unpaid Work into National Policies," held in Seoul, ROK, May 28 - 30, 1997.

[2] Smith, A. (1981) *An inquiry into the nature and causes of the wealth of nations.* Indianapolis: Liberty Press. (Original work published 1776.)

[3] *ibid.,* p.28

[4] *ibid.,* Book I, Chapter VII

[5] *ibid.,* p. 30

[6] *ibid.,* p. 31

[7] Ricardo, D. (1886) *The works of David Ricardo I.* London: J. Murray

[8] *ibid.,* p. 13

[9] *ibid.,* p. 12

[10] *ibid.,* p. 36-37

[11] For example, the number of oxygen molecules in a beaker of water provides a measure of the number of water molecules. However adding more oxygen will not add more water as hydrogen atoms are also required; the presence of oxygen atoms by itself is not therefore a determinant.

[12] Mill, J.S. (1987) *Principles of political economy: with some applications to social philosophy III.* Fairfield NJ: A.M. Kelly. (First published in 1909.) 1,2.

[13] Gordon, S. (1993) *The history and philosophy of social science.* London: Routledge. p. 176

[14] Marx, K. (1932) *Capital, the Communist Manifesto and other writings.* New York: Modern Library.

[15] Value, Price and Profit, 1865.

[16] *Capital,* I, Ch. 7

[17] *Capital,* I, Ch. 8

[18] Hayek notes that this is pointed out in the Introduction of Joachim Reig's translation into Spanish of Böhm-Bawerk's essay on Marx's theory of exploitation. Marx's wisdom in abandoning this line of argument is not yet reflected in the considerations of today's socialist-feminists, as we shall see in part IV.

[19] Menger, C. (1976) *Principles of economics.* New York: New York University Press. p. 65

[20] *ibid.,* p.123

[21] *ibid.,* p. 132

[22] *op cit.* p. 259

[23] Wieser, F. von (1971) *Natural Value.* New York: Augustus M. Kelly. p. 58.

[24] Böhm-Bawerk, E. Von. (1960) Value and price. In *Positive theory of Capital, Capital and Interest Vol. III*. South Holland IL: Libertarian Press.

[25] See also in this respect, J.M. Buchanan's (1969) classic *Cost and choice: An inquiry in Economic Theory*. Chicago: University of Chicago Press. Buchanan notes that "cost is that which the decision-taker sacrifices or gives up when he makes a choice. It consists of his own evaluation of the enjoyment or utility that he anticipates having to forego as a result of selection among alternate courses of action"(43) He further notes that "cost is subjective; it exists in the mind of the decision-taker and no where else" and that "cost cannot be measured by someone other than the decision-taker because there in no way that subjective experience can be directly observed"(44).

[26] Mises, Human Action pp. 204

[27] Also see: Mirowski, P. (1990) "Learning the Meaning of a Dollar: Conservation Principles and the Social Theory of Value in Economic Theory." *Social Research,* Vol. 57, No. 3. Mirowski notes that "the success of classical political economy was bound up with its image of value as an embodied substance, shuttled hither and yon by the market. This substance was conserved in exchange, allowing the increase of value to be quantified in production and its decrease to be likewise quantified in consumption. ... The notion of value was transformed in the 1870s. ... Value was no longer conserved ion the older classical sense, particularly because neoclassical wished to argue that trade increased people's utility and thus their realized value; but that did not mean that conservation principles had been relinquished altogether" (698).

[28] Hayek, F.A. von (1988) *The fatal conceit: The errors of socialism.* Collected works of F. A. Hayek (W. Bartley, Ed.) London: Routledge. p. 32

[29] *ibid.,* p. 97

[30] A survey by Richard Langlois (1986): "The New Institutional Economics: An Introductory Essay,"as well as other essays in New Institutional Economics can be found in *Economics as a process, Essays in New Institutional Economics,* Cambridge, Cambridge University Press.. Also see Uskali Mäki's (1993)essay, "Economics with Institutions: Agenda for Methodological Inquiry" in Mäki, Gustaffson and Knudsen (Eds.) *Rationality, Institutions and Economic Methodology.* London: Routledge. Here Mäki provides a useful summary of the various flavors of New Institutional Economics.

[31] See: Coleman, J.S. (1987) Norms as social capital. In G. Radnitzky and P. Bernholtz (Eds.) *Economic Imperialism - the economic approach applied outside the field of economics.* New York: Paragon House Publishers.

[32] See: Elster, Jon. (1989) The cement of society, A study of social order. Cambridge: Cambridge University Press.

[33] Lakatoš, I. (1970) *The methodology of scientific research programmes.* Cambridge: Cambridge University Press.

[34] For example, the Cartesian view of the world, which many take for granted, has been a useful tool in the development of civilization. It is however based on a perception that has not always been universally shared. Eskimos, for example, before interaction with Europeans, did not have the concept of a straight line. Similarly, before Arab traders introduced the Indian concept of the zero, it did not form a part of European thought.

[35] The architecture of thought and its evolution, considered in terms of competition among mental models while conditioned by more fundamental levels of mental representations, has been advanced by the psychologist Holland and others. See for example: Holland, J.H., Holyoak, K.J. Nisbitt, R.W. & Thagard, P.R. (`986) *Induction - Processes of inference, learning and discovery.* Cambridge MA: The MIT press.

[36] Evaluation of the social usefulness of certain norms is complicated by the public goods problem and by the unequal access to public forums for expression of such evaluations.

[37] See: Background papers for the recently held UNDP "Workshop on Integrating Paid and Unpaid Work into National Policies." In, particular note papers by Dr. Isabella Bakker and Dr. Maria S. Floro.

[38] UNDP Occasional Papers No. 20, HDR Reports Office.

[39] The use of the third-person criteria is limited by the extent to which complex exchange relationships exist in the particular society. In a relatively simple economy where exchange is less specialized and complex, finding a corresponding market equivalent or substitute to perform the work for you may not be feasible The fact that certain types of activities *are* carried out within particular market settings implies that individuals who offer such services conjecture that others find this to be of value. How productive or efficient they are in provisioning these can be gauged in comparison with other competitors. Similar comparisons are difficult to make in an economy characterized by more rudimentary exchange where it is not possible to find others who, in rivalry, carry out similar activity. However, this does not mean that such work is not valuable or productive; it is just difficult to gauge. Comparisons of productivity between individuals who toil in economies characterized by a wide variance in the integration of exchange relationships also cannot be meaningfully made.

[40] We distinguish between 'liberal-feminism' and 'socialist-feminism': Liberal-feminists analyze the status of women on the assumption that society should accommodate women on an equal basis with men. For example, according to Boserup [(1970) *Women's role in economic development.* New York: St. Martin's Press], economic development will lead to increased specialization of labour, and alongside, increasing opportunities for women to participate in the market economy. Socialist-feminists, on the other hand, hold that gender inequality is deeply rooted in the male-dominated institutions of society. More, some who subscribe to this school see capitalistic development as exacerbating pre-capitalistic gender inequalities. As such, they advocate radical reform in social institutions, advocating, among other things, set-asides for participation in political fora.

[41] *op. cit.,* 1827.

[42] See: Cagatay, N., Elson, D., and Grown, C. (1995) Introduction. *World development,* 23(11):1827-1836.

[43] *ibid.*

[44] See: Benería, L. (1992) Accounting for women's work: The progress of two decades. *World development* 20(11): 1547-1560.

[45] The 1995 Human Development Report notes that the extent of participation by women in political institutions and their contribution to the advancement of women is a subject of extensive research. Although it acknowledges that no relationship has been established in this respect, it calls for a 30% female membership in political institutions to provide enough leverage to exert policies considered to be of import to women. (pp. 31, 41, 49)

[46] See Benería, L. (1995) Towards a greater integration of gender in economics. *World development* 23 (11): 1842

[47] *ibid.,* pp. 1846-1848.

[48] UNDP: New York. p. 98.

[49] As Benería (1995, 1841) notes, "In particular, the Marxian focus on exploitation, inequality and the market=s systemic tendency to generate social hierarchies seemed to be more conducive than the neoclassical framework to answer the questions raised by feminists." Alternatively we might consider that Marxian economics provided the most convenient justification for the Feminist policy initiatives

[50] The ILO has presented an entire series of publications on women, work, and development.

[51] See: United Nations (1995) *Methods of measuring women's economic activity* for a review of the involvement of the UN and its agencies in valuing women's work.

[52] United Nations. (1986) *The Nairobi forward-looking strategies for the advancement of women.* Adopted by the World Conference to Review and Appraise the Achievements of the United Nations Decade for Women: Equality, Development, Peace. Nairobi: 15-26 July, 1985. New York.

[53] United Nations (1989) United Nations Office at Vienna, *World survey on the role of women in development.* New York.

[54] Platform for Action, Fourth World Conference on Women - Beijing (1995). New York: United Nations

[55] For a review of literature on the valuation of women's work through output and input methods, see: INSTRAW (1995) *Measurement and valuation of unpaid contribution; Accounting through time and output.* Chs. 4, 5. Although there have been wide ranging attempts at valuing women=s work, none of these regrettably reflect an understanding of the concept of value

[56] See. Vihavainen, M. (1995) "Calculating the value of household production in Finland in 1990." Statistics Finland Working Papers No. 6. Using this technique, estimates of the value of household work range from 40 to 50% of GNP.

[57] Benería, 1992, 1554

[58] *ibid.*

[59] Lewenhak, S. (1988) *The reevaluation of women's work*. London: Earthscan Publications Ltd. p. 11.

[60] Acharya, Meena (1997) "Time budget studies for measurement of human welfare." Paper prepared for presentation at the UNDP Workshop on Integrating Paid and Unpaid Work into National Policies May 28 - 30.

[61] Anker, R. and Ruth Dixon-Muller (1989) "Assessing women's economic contributions to development." World employment programme: Paper No. 6. Geneva: ILO. Also see Anker, R., Khan, M.E. and Gupta, R.B. (1988) Women's participation in the labour force: A methods test in India for improving measurement. *ILO Series on Women, Work and Development,* 16. Geneva. The volume provides an useful discussion of practical problems associated with soliciting information on the activities of women in the last Indian census.

[62] Benería (1992, 1554) notes: "The problem again is to decide which market goods and services are equivalent to those produced in the household, and what price to impute to inputs such as labour and raw materials produced at the household level..."

[63] See: Mueller, Dennis C., (1989) Public Choice II. Cambridge: Cambridge University Press.

[64] See: Olson, Mancur. (1971) *The Logic of Collective Action.* Cambridge MA: Harvard University Press.

[65] See: Hayek, Friedrich (1948) *Individualism and Economic Order.* Chicago: University of Chicago Press. The volume contains a collection of Hayek's most important and influential essays on knowledge and economics.

[66] Fischer, C.C. The valuation of household production: Divorce, wrongful injury and death litigation. *American journal of economics and sociology,* 53 (2). p. 220.

[67] Lutz, E. and Munasinghe, M. (1991) Accounting for the environment. *Finance & Development*.

[68] El Serafy, S. (1995) Measuring development: the role of environmental accounting. *International social science journal,* 47, p. 65

[69] Even those, such as Hartwick, who try to come up with a formula to account for environmental degradation, realize that the "move from our abstract ideal valuations to actual evaluations is very difficult." While one may come up with some formula to translate the subjective to the objective, the crucial issue of how weigh the coefficients remains unresolved.
Hartwick, J.M. (1991) Degradation of environmental capital and national accounting procedures.

[70] For example, environmental issues - depletion of tropical forests - have been seized on by politicians in the US and elsewhere to justify protection of domestic industry against imports from poor countries

[71] An example of this phenomenon can be seen in the debate over recent recommendations on the revision of the Consumer Price Index in the United States. The battle over methodology in this case reflects competing political interests in forestalling the expected cuts in welfare entitlements that reducing the CPI by about one percentage point would entail and in balancing the budget by means of this legerdemain.

[72] See: Vanberg, V. and Kerber, W. (1994) Institutional competition among jurisdictions. *Constitutional Political Economy,* 5(2), 193-219.

4. Human Resource Accounting

Human resource accounting (HRA) for integrated socio-economic analysis

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I. Introduction and summary

1. Below are presented the conceptual and data features of a satellite framework for Human Resource Accounts (HRA), which integrate the economic analysis of household sector accounts based on the 1993 SNA with the social analysis of households and individuals belonging to those households. The satellite framework is structured with the help of a coordinated set of classifications of households by sub-sectors: workers belonging to the households by occupational groups (ISCO, ICSE) and by industries in which they are employed (ISIC), level of education (ISCED) of students enrolled, workers, heads of households, and expenditures made by households and other sectors towards social concerns, classified by purpose (COICOP, COFOG, COPNI and COPP). The classifications of households and individuals identify selected social concerns addressed by the HRA, but are supplemented with social indicators for concerns that are not reflected in the classifications.

2. The design of the framework is mainly based on the experiences of a joint project between the UN Statistics Division (UNSD) and the National Statistical Office (NSO) of the Republic of Korea to develop Human Resource Accounts for Korea (KORHRA). The UNSD-NSO programme aims to integrate a very large and existing survey database into a reconciled database for socio-economic analysis. The integrated database makes use of four types of survey data: household surveys of income and expenditures, small-scale establishment surveys, demographic surveys and labour force surveys. A more limited application of the HRA is being implemented in Mozambique, using only the data of an integrated household survey.

3. The HRA work has been initialed as part of an approach to developing household sector accounts on the basis of independent data sources. Residual compilation or indirect estimation of data for this sector through counterpart information on other sectors has still been the general practice in most countries until now. This practice has the serious disadvantage that, generally, sub-sectoring of the household sector cannot be carried out, which is an obstacle to carrying out studies of poverty and other topics related to the social conditions of households. It is in this vein that an independent compilation of household sector accounts based on separate data sources is suggested and that such a separate compilation is extended to include social data through the compilation of HRAs.[2]

4. Section II presents the features of a comprehensive framework of an SNA extended to HRA satellite accounting (section II A and Table 1 and the annex) and those of a reduced framework of household sub-sector accounts extended to include the social characteristics of households and household members (section II.B and Table 2). Furthermore it shows how to design classifications and cross-classifications that structure the HRA framework (section II.C and Table 3). Section III explains which data sources are used for different segments of the HRA (Table 4) and how those data sources are adjusted and reconciled in order to arrive at an integrated database for socio-economic analysis (Table 5). Section IV presents the type of analyses that could be based on the data included in the HRA framework.

It starts with the main type of HRA analysis (section IV.A and Table 6) which, by way of illustration, assesses the effectiveness of educational policies with regard to employment, productivity and household income. Section IV.B and Table 7 show how IO and SAM (Social Accounting Matrix) analyses could extend the HRA analysis to further study interactions with the rest of the economy. Finally, section IV.C provides a first orientation on how the incorporation of time-use data would help to improve the HRA analysis by replacing disposable income with so-called "welfare vectors" for sub-groups of households. The "welfare vector" would include disposable income together with physical indicators of time-use, and would thus be closer to measuring welfare than the single indicator of disposable income.

II. A framework for Human Resource Accounts (HRA) analysis

5. The HRA is built around the household sector accounts of the 1993 SNA, and also includes features of Social Accounting Matrices (SAMs). Data limitations in Korea have been taken into account to some extent, when defining the scope and detail of the household sector segment in Table 2. As many of these data limitations, however, do not only apply to Korea, but are more generally valid, a similar accounting framework as presented here may be used by other countries when developing HRAs.

6. When reviewing the detailed data content of the HRA framework introduced through its classifications and social dimensions, one should keep in mind that the system was designed for socio-economic studies of education[3]. The data content would change, of course, if other concerns were addressed, such as health, as in the case of studies initiated by the Pan-American Health Organization (PAHO),[4] or poverty, which is the focus of a future HRA study in Mozambique[5]. Furthermore, data limitations may result in a different data content of the HRA. For instance, the scope and classification detail of the Mozambique HRA may be more limited because the household survey does not include very elaborate economic information on the household sector accounts.

A. The comprehensive accounting framework of the HRA

7. Table 1 presents the comprehensive accounting framework of the HRA. The table is directly related to the 1993 SNA, but includes satellite extensions dealing with education, this being the concern that is addressed by the HRA framework in Korea. The reduced format of the HRA dealing with the household sector and reviewed in the next section on the basis of Table 2 is part of this integrated framework, and is identified through the shaded areas of Table 1. For the time being only this limited scope of the household sector accounts of the HRA is being implemented by the NSO in Korea. However, at the end of the HRA compilation, it is envisaged that selected data sets of the limited HRA will be reconciled with the household sector data of the national accounts compiled by the Bank of Korea (BOK). At that point the compilation of a comprehensive HRA as presented in Table 1 will be possible and a broader range of analytical uses will become available.

8. The comprehensive satellite accounts framework of Table 1 was described in detail in two earlier documents on integrated satellite accounting and human resource accounting[6] It includes the three main component elements of the 1993 SNA, i.e. the Supply and Use Table (SUT), the Integrated Economic Accounts (IEA) and the Cross-Classification by Industries and Sectors (CCIS) of elements that are common between the SUT and IEA. The specific elements of socio-economic analysis that are relevant to HRA are shaded in the table. The core of this socio-economic analysis includes the economic items of the household sector accounts that are presented in the shaded column on the right hand side of the three segments of the table, covering compensation of employees and mixed income, final consumption expenditure and actual final consumption of households, i.e. the items related to production by households included in the CCIS, and household sector accounts included in the IEA.

9. To this economic core of data are added several other shaded components that are needed in an extended analysis of education in the HRA. These include:

- Social data on households that constitute the so-called "social balance" at the top of the shaded column. They include indicators that describe educational and related social characteristics of heads of households and household members;
- The so-called "SAM link", covering compensation of employees and mixed income by occupational groups, which is presented twice in the table, i.e. once as part of the industry column of the SUT, where this income is generated and cross-classified by occupational groups and industries, and once as part of the column of the household sector where this income is used and cross-classified by occupational groups and sub-sectors of households. The data of the "SAM link" are needed in order to show how occupational groups, reflecting different levels of skills and education, generate their income in different industries and how this impacts on income and ultimately saving of different classes of households;
- An *"of which"* row of expenditures, which identifies expenditures on education in the columns of industries, in capital formation and in final consumption expenditures of households, government and NPISHs, and which is also reflected in the separate identification of actual final consumption of households;
- Finally, there is included among the shaded elements of the table, a separate column for the industries producing educational services, which includes among others, measures of value added and employment in these industries.

10. A number of deviations from 1993 SNA concepts should be noted in this satellite analysis. The first one concerns the concept of actual final consumption of households, which is only partially identified in the table. By adding together the *"of which"* items of final consumption expenditures on education by households, government and NPISHs, actual final consumption of households on education is derived. By adding these expenses on education by government and NPISHs to final consumption expenditures of households, actual final consumption of households as defined in the 1993 SNA (see 1993 SNA 9.86-89) is only approximated. It does not cover all so-called "individual" consumption expenditures by government and NPISHs, for instance on health, as these are not within the scope of the investigation of the present HRA for Korea. On the other hand, actual final consumption of households may include some "collective" expenses as long as they correspond with the scope of the present investigation. Thus, in the case of Korea, the general administrative expenses of the Ministry of Education are also included, as they are relevant when measuring the effectiveness of economic policies towards education. The approximate concept of actual final consumption is also identified, through shading, in the lower part of Table 1, i.e. in the use of adjusted disposable income account of households.

11. Another deviation from 1993 SNA concepts concerns expenditures by enterprises on education. In principle, final consumption expenditure of households on education should reflect all expenses by enterprises on education in support of their employees. This would be the case in practice, if enterprises pay educational expenses for employees to follow courses in vocational schools, universities, etc. that are external to the enterprise. These expenses are in the 1993 SNA as social benefits other than social transfers in kind (see 1993 SNA 7.35-36, 8.80) and are thus reflected in the income of households as well as in their final consumption expenditures. Enterprises, however, may also have internal training departments, in which case the 1993 SNA is less explicit. If the courses given to their employees are of a general nature and clearly an extension of outside education, the expenditures for each student presumably should be considered, as before, as social benefits other than social transfers in kind. However, if these courses are closer to "on the job" training, it may be inferred from what is stated in some paragraphs in the 1993 SNA (1993 SNA 1.51, 6.136) that they be treated as part of intermediate consumption. In practice, none of these internal costs of education of the enterprise and the constituting

establishments may be identified separately, because of statistical limitations. For the purposes of the present HRA, this is not satisfactory, as such education in enterprises may be important and should be considered together with educational efforts elsewhere. Therefore, all educational expenditures by industries are identified in the table as *"of which"* items and they are dealt with together with the expenses by government, NPISHs and households on education, and identified in the same row of *"of which"* items in Table 1. There is the further complication, that the internal expenses on education thus identified correspond to ancillary activities in enterprises, which are normally not treated as separate establishments in the 1993 SNA. For the purpose of the present HRA, however, these activities should be treated as separate establishments; the output value of these ancillary activities (1993 SNA 5.9) would need to be estimated by adding all related cost components. As a consequence, the *"of which"* item presented in the table under intermediate consumption of industries includes the imputed output of ancillary activities of enterprises on education, covering not only intermediate consumption, but also labour costs and other components of value added corresponding to the internal educational activities of the enterprise.

12. Gross fixed capital formation in equipment and buildings for educational purposes is also presented as an *"of which"* expenditure item in Table 1. These expenditures, which are generally large, should be identified when assessing the economic response to the educational concern. However, in the analysis they should be kept separate and not added to the *"of which"* items of intermediate and final consumption on education. The reason is that, in principle, the accumulated value (i.e. the value of the stock) of schools and other educational equipment is reflected in consumption of fixed capital and thus already included in the value of the *"of which"* items of intermediate and final consumption.

B. Reduced format of HRA

13. Table 2 is an amplified and slightly amended version of the shaded column on the right of Table 1 referring to the household sector. It includes *"of which"* categories dealing with education. In the primary allocation of income account they refer to the receipt by households of educational support through their compensation of employees, and to payments of interest on student loans by households. Education is also identified in *"of which"* categories of actual final consumption and corresponding current transfers in kind, and several *"of which"* categories pertaining to student loans, i.e. interest on student loans, accumulated debt on student loans, conversion of student loans to grants and vice versa, default on student loans, and price adjustments applied to student loans. Capital formation in schools and other educational equipment paid for by government, NPISHs and corporations, is also recorded as separate information to be included in the capital account of households. However, as the capital account is not comprehensive, no counterpart imputations are made to affect saving of the household sector

14. The accounting framework of Table 2 does not cover all the shaded elements of Table 1. It is largely limited to what can be directly compiled for the household sector. In particular the production accounts of industries that produce educational services are omitted from the reduced format of the HRA. They are dealt with when compiling the comprehensive framework of Table 1. It is only at that stage that is possible to identify within the ISIC breakdown of industries, those industries that produce educational services. On the other hand, the reduced framework does include the expenses of government, NPISHs and corporations on educational services, in order to arrive at an adapted concept of actual final consumption by households (see paras 5).

15. Not all accounts are covered fully in the reduced HRA of Table 2. The accounts up to and including the use of income accounts are fully incorporated. For those accounts all transaction categories are to be estimated on the basis of the data sources used, and further detail is included on the *"of which"* categories related to education. For the remaining accounts, however, it is suggested that only education-

related data are compiled, and not all transactions, flows and stocks of the accounts. The latter limitation is introduced, as household surveys generally do not include detailed data on capital and financial transactions and balance sheets. Also, these data are little relevant to the type of analysis intended. Many segments of the capital and financial flow and stock accounts pertain to the capital formation of unincorporated enterprises, which is not the focus of the present study. It is thought sufficient when dealing with education to include in the study all income, consumption and saving items of the household sector, and only those capital and financial flows and stocks relevant for the analysis of education that can be obtained from the records of other sectors such as the government and financial sector. The latter include data on capital formation and accumulated capital stock in schools and educational equipment, and data on student loans. As they are selected items, they are not sufficient to allow the development for the household sector of complete capital, financial and balance sheet accounts.

16. The reduced HRA refers to the household sector, including the production units managed by this sector. In the case of Korea, the scope of the latter is assumed to include those with four or fewer employees. The legal distinction between corporate and unincorporated units was not used in the case of Korea, as it was thought that such a distinction would be further removed from the 1993 SNA distinction mentioned. This coverage of household production units based on a size criteria was thought to approximate closely to the scope of the 1993 SNA in which household production units are included that are fully integrated with the households in their income and financial management (see 1993 SNA 4.139-150). There is no ultimate guarantee for this, though. Thus in the case of Korea some larger household units fully integrated with the household sector may be omitted, while some other establishments that are included may be units of larger corporations. This difficulty in measuring the exact scope of household production should be taken into account when considering the data on mixed income, which is one of the income sources of the household sector, together with compensation of employees, property income and current transfers. Thus, as the scope of the household production units may not be reliable, estimates of mixed income will be deficient as well, and as this is an important source of income, particularly in many developing countries such as Mozambique, household sector saving cannot be estimated in a reliable manner.

17. Throughout the paper it has been assumed that household and informal sector production activities are the same, and that the distinctions between formal and informal and corporate (including quasi-corporate) and unincorporated activities are equivalent. In view of this, the terms household and informal production activities are used interchangeably in the paper. There are a number reasons for proceeding in this manner. In the case of Korea, and also in the case of Mozambique, data on production do not permit the making of a further distinction within household production activities between informal and other. Also, there is no international consensus on the scope of informal activities, as the ILO Conference of Labour Statisticians developed a definition which allows great flexibility, and therefore no firm support for one scope or another. In addition, the classification of income sources does not identify income generated through informal activities. The only sources distinguished are mixed income, which is exclusively generated by household production units including informal production units, compensation of employees, which is broken down by receipts from the corporate sector and from production units of the household sector, property income, which is mainly received from the corporate sector, and social and other current transfers which are mainly received from the government and NPISHs sectors. If the formal-informal distinction were introduced, it could be done in two ways. First, it could be reflected first in a further breakdown of household production units within the ISIC classification of those units. Second, it may be introduced as a further sub-sectoring of the household sector, including in the sub-sector those households that receive most of their income as mixed income from informal sector production units.

C. Classifications and cross-classifications

18. An essential element of the overall framework of integrated satellite accounts and the HRA subset are the classifications used to detail the data included. Since many classifications are used in parallel or as cross-classifications in the analysis, the present paper has developed a procedure for structuring the classifications as an integrated set, the details of which are described below.

19. First we determine what type of classifications are needed and the manner in which they are to be cross-classified. They are identified in Table 2 and include the following:

- *A classification of households by sub-sectors* is applied to all transactions in the framework, including data on small-scale production, income and use of income data, and also to selected data on capital formation as well as financial and balance sheet data referring to education;
- *A classification by occupational groups based on ISCO and ICSE* is used to break down two income elements of households, i.e. compensation of employees and mixed income received by households from small-scale (informal) production activities, and also compensation of employees received by households from production units in the (formal) corporate sector. Also included in the data classified by occupational groups are employment and wage rate data underlying the data on compensation of employees;
- *ISIC* is used to classify data on small-scale (informal) production activities carried out by households, and to classify compensation of employees, wage rates, employment and mixed income of occupational groups by industries in which those incomes are generated, covering employment in the household as well as in the corporate sector;
- *A classification of expenditures by purpose* is applied to all transactions on education that are identified as *"of which"* categories in the framework. This includes all data on household final consumption expenditure, actual final consumption of households, which also covers the final consumption expenses on education by government, NPISHs and corporations from which households benefit. Also classified by purpose are selected items on education included in capital formation and accumulated capital stock in schools and other educational equipment owned by government, NPISHs and corporations. In addition, the purpose classification is applied to other transaction categories of the household sector dealing with education, including education grants received by households from government, NPISHs and corporations, educational support incorporated in compensation of employees, all data on student loans, i.e. student loans received during the accounting period, accumulated debt resulting from student loans, interest payments, conversion to and from grants, defaults on student loans and price adjustments of student loans;
- *CPC* is used to classify the educational services and other products that are included in actual final consumption by households on education, and is also applied to capital formation on education imputed to households from government, NPISHs and corporations.

20. Several classification links are incorporated in the HRA of Table 2, in order to integrate the information into the satellite framework of Table 1, and in particular into the SUT at a later stage(see section 42). Thus, the ISIC breakdown of the data in the production and generation of income accounts of small-scale household production activities forms part of the ISIC breakdown of all economic activities, including the production activities of the formal sector, that are included in an extended SUT. The ISIC classification of compensation of employees and mixed income received by households through the employment of household members in informal (i.e. household) and formal (i.e. corporate) production activities, as recorded in the primary allocation of income account, is one of the classifications used to define the so-called "SAM link" between the income generated in industry production and the income available to households for use in consumption. Furthermore, the CPC breakdown of actual final consumption and capital formation on education is introduced in order to establish the links between household consumption and the supply of products.

21. Household sector transactions in Table 2 are not only classified by single classifications. Several classifications are applied at the same time, in the form of cross-classifications. These include cross-classifications of:

- Data on the output, intermediate consumption and value added of small-scale production units of the (informal) household sector classified by the sub-sectors of households and ISIC categories to which the production units belong;
- Compensation of employees, wage rates, employment data pertaining to employment of households in the formal corporate as well as informal household sectors, and also data on mixed income which households receive from informal production activities, by the sub-sectors of households that are recipients of this income, the occupational groups which generate the income, and by the ISIC categories corresponding to the formal and informal production units in which this income is generated. These cross-classifications define the "SAM link" referred to above;
- Actual final consumption on education and imputed capital formation on education by a classification of expenditure by purpose, CPC groupings and by sub-sectors of households. The remaining categories dealing with education, including current transfers and data related to student loans, are only cross-classified by purpose categories of expenditures and sub-sectors of households.

22. The cross-classifications determine the analytical potential of the HRA. In order to render it more effective as an analytical instrument, the categories defining the classifications that are used in cross-classifications should be closely coordinated. This implies that existing international classifications should not be applied mechanically, but adjusted to the specific objective addressed by the satellite accounts, which in the case of Korea is education. Cross-classifications may not use all the detail of the single classifications because of data limitations (see para. 26).

23. The identification and adaptation of the standard international classifications is illustrated in Table 3. The rows refer to the international classifications and groupings that are used as building blocks to develop the classifications used in the framework, and the columns present the classifications and groupings that define the HRA. The international classifications and groupings that are used to construct the classifications of the HRA cover a very wide range. They include (I) ISIC and CPC, which deal with the classification of industries and products, (ii) COFOG and COICOP, which are purpose classifications of expenditures applied to government and households, (iii) ISCO and ICSE, which deal with occupation and employment, (iv) the ISCED, which identifies levels of education, (v) the household sub-sectors of the 1993 SNA, which identify household groups with different sources of income, and also groupings based on gender and the urban-rural distinction.

24. The details of the international classifications are presented in the first column of the table. Amended details that are relevant for the HRA are allocated to the respective columns of the table referring to the classifications of the HRA. They are used as *building blocks* to *construct* the classifications of the HRA. Thus the building blocks are in the middle of the table and the ultimate classifications of the HRA that are *constructed* are at the bottom of the table. In principle, the latter are cross-classifications of the building blocks, but in order to limit the number of categories, the cross-classification principle has not been fully applied. As a result of this consolidation of *building blocks,* the HRA includes 10 sub-sectors of households per region, 11 occupational categories, 2 gender categories, 8 categories reflecting the level of education, 16 categories of economic activities, and finally 7 categories of expenditures dealing with education. The product breakdown presented in Table 2 has not been identified in Table 3, as the CPC has only one category (92) for educational services.

25. There is a close relation between the social data elements that are included in the *social balance* presented as the first *box* of HRA in Table 2, and the sub-sectors of households that are distinguished. As

the latter refer to the social dimensions of households, there is no need to include data items describing the social characteristics of households that are already reflected in the classification of households. Thus, there is no need to include social indicators describing the level of education of the head of the household or whether the household is in a rural or urban area. On the other hand, the social classification of households does not refer to individual household members and therefore their social characteristics may need to be reflected in separate indicators: e.g. the average number of household members that are literate, have different educational degrees, or are male and female.

III. Data sources, compilation and integration

26. It is suggested that four main types of data source be used to compile the HRA, i.e. establishment surveys (ES), labour force surveys (LFS), household surveys (HS) and demographic surveys (DS). Their data content and potential for classifying the data are indicated schematically in Table 4. Each of the data sources includes different information, and is often based on different units for which the information is available. Thus, establishment survey data are based on establishments as units of information. Labour force and occupational survey data refer to the individuals employed. Household surveys generally use households as units of data collection, but may also include some information on individual household members. Finally, demographic surveys gather data on individuals, not only covering those that are employed and included in the labour force survey, but also others including students, retirees, the unemployed, etc. Demographic surveys may also include some information on households.

27. The classifications and cross-classifications presented in Table 4 for each of the data sources are, in principle, the same as those that structure the reduced HRA framework in Table 2. However, data limitations may impose a limit on the detail of the cross-classifications. For instance, in the case of Korea, detail of the household sub-sectors has been limited to three categories only (i.e. agricultural, non-agricultural rural, non-agricultural urban), when applied in cross-classifications of the data on employed individuals and employment in the DS and LS respectively. The reason is that the number of cells in the cross-classifications would be too large to be supported by the limited sample of the two surveys; too many empty or near empty cells would result, and therefore analytical interpretations would be difficult. It would be also difficult to process the data and handle them thereafter in full detail.

28. The surveys mentioned are not the only ones that may be used in the compilation of the HRA. Some additional information is needed from non-household sectors that cannot be obtained from these data sources. This applies to data on educational expenses, which are not only incurred by households, but also by government, NPISHs and corporations, including data on final and intermediate consumption of educational services and capital outlays on schools and educational equipment by government, NPISHs and corporations, and also capital transfers and financial data on education relating to the same sectors and also to the financial sector. This information on education may be obtained from specialized data sources, e.g. from the Ministry of Education. Also, in the case of Korea, some data on education are included in the national accounts. The latter is a preferred source, as the use of such data would constitute a first step towards the integration of the HRA data with the national accounts.

29. In a first stage, the compilation for each data source should aim to establish separate databases that are internally consistent. Only in a second stage should these separate databases be integrated into the reduced format of the HRA of Table 2, and in a much later (third) stage into the comprehensive framework of Table 1. The integration into the reduced HRA may be based on common data that are available in the four data sources mentioned.

30. Table 5 above shows that the common data element between Establishment surveys (ES), Labour force surveys (LFS) and Household surveys (HS) is compensation of employees. It is directly available in

two of the three data sources mentioned (i.e. in ES and HS), and can be derived from the data on employment and wage rates in the LFS. Thus, the integration of the data in the Demographic surveys (DS) with those of the other surveys would have to be done through the LFS, as data on employment are available in both data sources. In the process of integrating the data, two other elements should also be taken into account,. i.e. data on the number of individuals in households and on the number of employed members of households, which are available in two of the data sources, i.e. the DS and HS. The detail in which the two common elements are available is also indicated in the Table 5. Thus for the LFS and HS, data on compensation of employees are available in cross-classification by ISIC and occupational categories. The same item of ES is only classified by ISIC categories. For LFS and DS there is a cross-classification of employment by ISIC and occupational categories. In addition, employment and compensation of employees in the LFS and employment in the DS are classified by sub-sectors of households. Gender is also identified as a separate dimension in the classification based on three of the data sources (LFS, HS and DS).

31. The common elements for each classification or cross-classification category may be used as reconciliation factors. For instance, if data on employment and compensation of employees in the LFS are assumed to be the most reliable data, they should be used to adjust proportionally all other data in the ES. This should be done in the detail of each of the classification and cross-classification categories that are common for the LFS and ES. Compensation of employees, however, is not the only reconciliation factor to be used in adjusting the data of the HS and DS. With regard to the latter two data sources, the number of individuals in households in the DS may be a more reliable factor in adjusting the data of the HS. This is particularly appropriate, when the HS sample is taken from the universe of the DS. In this case, first the data on the HS may be reconciled with data on the DS on the basis of the number of individuals per household, thereafter further adjustments may be applied to both sources in order to arrive at a reconciled data set on employment and compensation of employees based on the LS data.

32. The third stage of integration is the integration of the data of the reduced HRA of Table 2 with those of the national accounts, in order to arrive at the comprehensive HRA of Table 1. In this integration, it should be taken into account that some of the national accounts data on household sector accounts are compiled in an indirect manner, i.e. based on the data of counterpart sectors. For instance, data on property income and financial transactions may have come from the records of banks and other financial institutions, data on social transfers may have been based on government records, and capital formation estimates may have been based on construction statistics and building permits. As these indirect data sources are different from the four data sources used in the direct compilation of the reduced HRA, the indirect and direct estimates may differ and need to be reconciled.

33. In the case of Korea the reconciliation may require adjustments of the BOK national accounts data, on which the NSO and BOK would need to agree, as they would have repercussions for future compilations of the national accounts. Obviously such adjustments can only be done with expert help available in the Bank of Korea. The extent to which adjustments are needed in the third stage of reconciliation depends on the extent to which independent data have been used. Thus, if the NSO used GDP and other production data compiled by the BOK as the benchmark for the production accounts estimates of the household sector, and also used BOK data as a basis for estimating the specialized data on education which are identified as *"of which"* items in Table 2 (see para. 27), there would be less need for reconciling the HRA data with those of the national accounts, than if data were used that are independent of the BOK data.

IV. HRA analysis

34. This last section deals with analyses of the HRA. While it is the last section, it is not the least important. On the contrary, prior to defining the format and content of the HRA, as was done in the previous two sections, it should first be decided what type of issues to address and then how to use the data in analyses that would support policies aimed at socio-economic development. Based on this, classifications and cross-classifications should be designed and indicators selected that together define the HRA framework and analysis. Thus, prior even to compiling the data, the orientation of the final analysis could be determined. This would help to adjust again (iteratively) the HRA framework, so that all data play a role in the predetermined analysis. Prior design of the analysis would also help guide the processing of the survey data that are used in the analysis, so that the latter can more effectively support the final analysis than is the case at present. The analyses may be based on the measurement of indicators of past trends or involve projections of past trends to the future through modeling. Indicator analyses would help policy makers to evaluate the impact of their past policies, and modeling projections may assist them in determining the impacts of policies in the future. As will be shown in future work on the HRA of Korea, indicators may also be used for simple projections of past trends.

35. In the case of Korea, it was explicitly decided prior to designing the HRA, that issues related to education would be addressed. When data sets became available and indicators needed to be defined, the analysis was extended to also include issues related to employment and productivity. These are the elements on which education has an impact and by which the effectiveness of educational policies can be determined. Furthermore, the type of analysis pursued in the Korean programme is indicator analysis of past trends, as the database which results from the programme is only a limited one, covering the period 1990-95. It does not allow the development of an extensive model for future projections. The special focus of the HRA analysis of Korean data may illustrate how other types of analyses may be developed along similar lines, such as poverty studies in the case of the Mozambique programme, and studies based on health accounts as developed by the Pan American Health Organization (PAHO) in cooperation with the Harvard School of Public Health.

36. Presented below is an outline of the HRA analysis (section A) and of two possible extensions (sections B and C). A final version of the HRA analysis will be presented in a forthcoming report of KORHRA as soon as final data are available.

A. Main HRA analysis

37. The indicators selected for the HRA analysis in Korea are presented in the second column of Table 6. They are linked to specific policies identified in the first column, and in the third column it is shown that they are available in a detailed classification by sub-sectors of households, ISIC categories of industries in which household members are employed, educational groupings based on an ISCED classification of those employed (working persons), students enrolled and educational expenses. Gender has also been identified in the breakdown of some of the indicators.

38. Together the indicators define an analytical and circular link between household income (including income in kind), expenditures on education, enrollment of students, improvements in the educational achievements of the population at large, level of employment, improvements in the educational achievements of the economically active part of the population, the professional achievements of those that are employed, productivity in each of the industries in which they are employed, and the increases in income that households receive as a result of labour participation based on their share in improvements in productivity.

39. Most of the indicators presented are obvious measures. This applies in particular to the indicators reflecting the relations between disposable income and final consumption of households, and between final consumption of households and expenses on education by households, the relation between government consumption on education and total government consumption, the relation between educational expenses of households and total (actual) consumption by households, government and NPISHs together, the ratio between current and capital expenses on education, etc. These are indicators that define the priority of education in the behaviour of households and the strategy of the government. Also included are two measures that reflect the effectiveness or result of educational policies , i.e. *"indices of educational and professional achievement"*. The *"educational achievement index"* is defined as a weighted average of the (log of) ranks accorded to each level of education achieved or in which students are enrolled, with weights being the number of individuals to which the ranks are applied. The ranks are based on the number of years of schooling. The educational achievement index is applied to the total population, the working population, students enrolled, and heads of households. Similarly, a *"professional achievement index"* is defined as the weighted average of the (log of) ranks accorded to different levels of the ISCO classification, with weights being the number of individuals employed in each level of occupation.[7] Also included is an indicator for the average cost of education, defined as the ratio between actual consumption on education by households, government and NPISHs and the number of students enrolled. This indicator may be used to convert educational expenses into the number of students that can be funded on the basis of these expenses. The link between the total population which benefits from educational expenses and the working population, which ultimately translates those expenses into higher productivity and higher incomes, is reflected in the percentage relation between the working population and the total population. Finally there are indicators measuring labour productivity, per capita labour income and inflation (GDP deflator).

40. The values of the indicators can be used to explain the ultimate impact of educational expenses on productivity and the income of households, and changes in the indicators would alter those impacts. The indicators selected for HRA analysis are those that define so-called *"behaviourial"* functional relationships for separate sub-sectors of households, industries and groupings of individuals (workers, students, etc.). The indicators are to be based on the *"vertical data vectors"* in Table 2, to be established for each of the groupings. Data vectors may include monetary as well as physical data. This avoids the difficulties of introducing valuations in instances where there is no market, while at the same time it still permits measurement of the indicators defining the *"behaviourial"* functional relations. This orientation

of the HRA differs from the traditional one in national (economic) and also satellite accounting, which mainly focuses on measuring macro and per capita aggregates based on such aggregates as GDP, capital formation, final consumption, disposable income, saving, etc. These are all summary measures reflecting the performance of the total economy, even though very detailed data sets are developed in order to compile these macro measures. The aggregate measures furthermore require the valuation of all components, so that they can be added up to the macro aggregates. This is avoided in the present analysis, which allows for the incorporation of data in physical terms.

41. The indicator values may be compared over time and also across countries, if similar data become available at different times in different countries. When making these comparisons for households, two types of over-time change or across-country differences may occur. In the first place, there may be changes or differences in the *"behaviour"* of each household sub-sector, resulting from changes in final consumption on education by households, changes in the transfers in kind of educational services by government and NPISHs to households, changes in educational support included in compensation of employees, or changes in the extent to which education is financed by student loans. On the other hand, individual household *"behaviour"* may *"move"* from one sub-sector to another in the course of time, or when comparing countries. The latter are changes that are distributional in nature and may be measured through so-called *"distributional"* indicators, such as the % distribution of households between sub-sectors of households or the % distribution of labour income or value added between industries. These *"distributional"* indicators, which are not included in the table, are only indirectly affected by policies, i.e. through changes in the *"behaviouristic"* indicators of sub-sectors and/or individual households. How this detailed analysis would take place will be explained in a forthcoming report of the HRA project in Korea that will be prepared as soon as a detailed data set is available.

42. Instead of simple comparisons of the indicators between sub-sectors of households, over time, and/or between countries, more sophisticated types of regression analyses may be based on time series for each sector separately, or involve more sophisticated techniques such as those developed for panel data or other analytical techniques that are applied to the comprehensive data set covering all household sub-sectors over time and between countries. The more sophisticated techniques may also identify parameters of inter-temporal relationships, which cannot be easily captured through the descriptive approach illustrated above. The selection of analytical techniques would depend on the availability of data and resources to carry out such work.

43. When specifying the behaviouristic relations for each sub-sector of households, it should be noted that the data set of the reduced HRA, as described in the previous sections, is partly governed by 1993 SNA accounting relations (identities). This applies to the data elements of the 1993 SNA accounts for the household sector and sub-sectors that are covered by the production, generation of income, primary allocation and secondary distribution, and use of income accounts. The accounting relationships do not hold, however, for the data of the capital, financial and balance sheet accounts, which only cover selected data elements, as was explained above (para. 14) The accounting restrictions also do not apply to the social indicators included on the social balance.

B. IO and SAM analysis to assess the impact on the total economy

44. The analysis based on the reduced HRA framework of Table 2, as described above, focuses entirely on relations existing within the household sector. In order to link this analysis with the comprehensive HRA framework of Table 1 additional relations need to be included and these are based on three classifications that are included in Table 2, i.e. the ISIC breakdown of industries in which individuals of households are employed, the CPC classification of products on which actual final consumption and capital formation on education are spent, and thirdly the occupational breakdown of

employment of individuals belonging to households. These are the elements in the reduced format HRA that permit the assessment of the effects of strategies on the rest of the economy, through IO and so-called "SAM (Social Accounting Matrix) links". How the two analytical links are used is schematically represented in Table 7 and briefly described below.

45. The IO link is defined with help of the CPC breakdown of final consumption and gross capital formation. On the right-hand side of the table, the two elements are cross-classified by categories of the CPC, purpose classification of expenditures, and sub-sectors of households. On the left-had side the same elements are cross-classified by CPC and industry categories, and this information is ready for use in IO analysis. Also, the three dimensional matrix on the right hand side of the table is included in the reduced HRA of Table 2.

46. The so-called "SAM link" is represented in the lower part of Table 7, with regard to compensation of employees, mixed income and employment. The three elements are cross-classified on the right-hand side of the table by sub-sectors of households, occupational groups and gender, and on the left-hand side by occupational groups, gender and industries. All four dimensions of the two classifications are represented in the HRA of Table 2. Thus, once this information is compiled, the link is established between the HRA and the IO analysis on the left hand side of the table.

47. Three of the four matrices shaded in Table 7 are reflected in the reduced HRA of Table 2 and one, represented by the two shaded blocks on the upper left hand side of the table, is included in the comprehensive HRA of Table 1. Thus, with the help of these data sets, analytical links can be established between the HRA analysis as described in the previous section (IV.A) and IO analysis that is included in the comprehensive HRA of Table 1. The links could be used, after conversion of the four data matrices into matrices of coefficients or indicators, to assess implications of changes in the HRA. One type of analysis would follow the cause-effect arrows presented in Table 7; starting in the upper-right hand corner of Table 7, the analysis would proceed as follows. Changes in current and capital expenditures by government, NPISHs, corporations and households translate into additional demand for products and thus, through IO links into additional employment, mixed income and compensation of employees; The additional employment and income then would translate into additional employment and income of sub-sectors of households. Thus, through the SAM and IO links an indirect link is established between two distinct elements of the HRA data vector for each social class, i.e. between the expenses on education benefiting different sub-sectors of households and the revenues from which these expenses are paid. Of course, revenues could be changed between the sub-sectors of households by causes that are external to the educational effort, and in that case, the above analysis would proceed in the opposite direction.

C. Incorporation of time-use data to improve welfare measurement in the HRA

48. The HRA analysis may be extended to time-use studies by incorporating elements of time-use in the data vector for each sub-sector of households. How to do this is briefly described below. However, a few introductory remarks are necessary on how the information in time-use studies has been utilized up to now and how these approaches could be simplified by following the analytical approach of the HRA.

49. Disposable income plays a major role in the analyses described in section A above. Disposable income is an economic concept which in the case of the household sector is the one that is closest to a measure of well-being, because it includes not only income generated directly in the production process through the use of the labour of household members, as reflected in compensation of employees and mixed income, but also income that is redistributed to households through property income and transfers. However, the major limitation of disposable income of households as a welfare measure is that all elements included are expressed in monetary terms and in most instances reflect market transactions. The 1993 SNA, basing itself on traditional national accounting practices, has gone somewhat beyond the

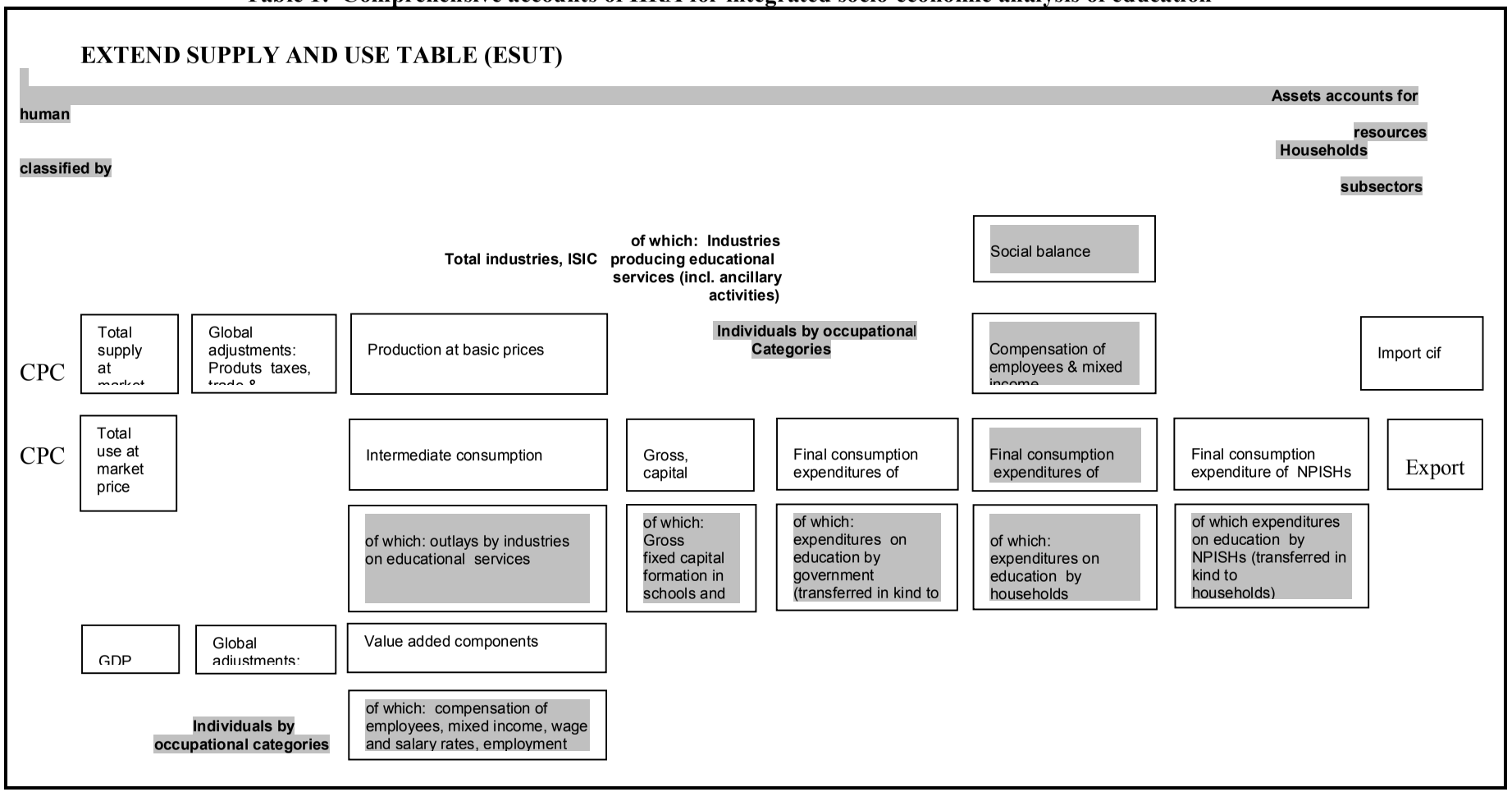
money economy and has included imputed income which is not received through monetary transactions, such as "income" from subsistence farming and fishing and the collection of forestry products including berries and other wild plants, and firewood, water carrying and the ownership of dwellings. Thus, the concept gets closer to a welfare concept, but does not quite reach the ideal welfare measure. Also the introduction of the actual final consumption concepts described above (paras.9, 10), in which government and NPISH final consumption on education is added to expenses on education made by households, is an effort to get closer to a welfare concept, within the restrictions of flows that are valued in the market.

50. It is in this context that many have suggested including other activities taking place within the household in a similar way to including subsistence farming, etc. There is considerable literature about this, including operational estimates of non-market activities that have been made and added to market activities included within the production boundary of the 1993 SNA. The 1993 SNA itself only briefly refers to such a satellite extension of the production boundary (1993 SNA 21.39). These approaches raise at least two questions. The first one has to do with valuation. As non-market transactions are added to market transactions, non-market labour and also the output of the activity need to be valued, and as there are many alternatives for doing so, there is much controversy about the details of these approaches. The other issue is an analytical one. As the imputed values are not only included in value added and GDP, but also in final consumption of households, disposable income and final consumption of households become closer to each other in value. This affects the analytical meaning of the two concepts in relation to each other, and in particular the saving measure, which is the difference between the two.

51. The HRA approach based on the analysis of data vectors for sub-sectors of households may provide an alternative, which would avoid these two problems. Instead of imputing a value for labour and output, it is suggested that we extend the analytical data vector to include information on non-market activities from time-use studies. The sub-vector including disposable income and indicators from time-use studies, may be called a "welfare vector", as it would approximate more closely a measure of welfare than disposable income alone. The information from time-use studies is incorporated in physical terms and therefore, the problem of valuation is avoided. Use of the welfare vector may actually improve the reliability of the indicators that are obtained from the data vector for each household sub-sector. Why this is so, may be illustrated as follows. A data vector including disposable income may be used to explain, through regression of time series data over different households, the changes in the educational characteristics of households. However, a part of the changes may be due to the time used by household members to instruct student family members. As these activities are not captured in disposable income, the latter would be an unsatisfactory explanatory factor. Thus, if time-use data reflecting these activities are included, the regression analysis may provide a closer fit.

52. What time-use data to include and in what format may need to be further studied. Suggestions for an alternative approach, may be opportune, however, as at present discussions are being started about the classifications of time-use activities.[8] Once a time-use classification is finalized, the appropriate time-use activities can be selected for inclusion in the "welfare vector", i.e those that are closely related to the issue addressed by the HRA. Thus, in the case of the HRA for Korea, time-use activities to be included would have to be related to non-market "education, study and training" activities and even include "social, arts and cultural" activities.[9]

Table 1: Comprehensive accounts of HRA for integrated socio-economic analysis of education



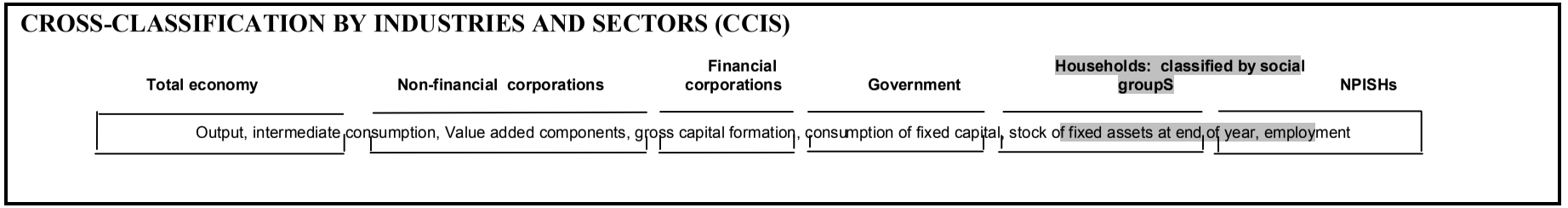


TABLE 1: COMPREHENSIVE ACCOUNTS OF HRA FOR INTEGRATED SOCIO-ECONOMIC ANALYSIS OF EDUCATION (continued)

INTEGRATED ECONOMIC ACCOUNTS (IEA)

Total necessary	Non-financial corporations	Financial corporations	Government	Households classified by social groups	NPISHs	Rest of the word
Production account Gross domestic product (GDP)	Production account Value added	Production account Value added	Production account Value added	Production account Value added	Production account Value added	External accounts of goods and services External balance of goods and services
Generation of income accounts Operating surplus	Generation of income accounts Operating surplus	Generation of income accounts Operating surplus	Generation of income accounts Operation surplus	Generation of income accounts of which: compensation of employees & mixed income Operating surplus	Generations of income accounts Operating surplus	External account of primary incomes and current transfers
Allocation of primary income accounts National Income	Allocation of primary income accounts Balance of primary income	Allocation of primary income accounts balance of primary income	Allocation of primary income accounts Balance of primary income	Allocation of primary income accounts Balance of primary income	Allocation of primary income accounts Balance of primary income	
Secondary distribution of income account National disposable account	Secondary distribution of income account Disposable income	Secondary distribution of income account Disposable income	Secondary distribution of income account Disposable income	Secondary distribution of income account Disposable income	Secondary distribution of income account Disposable income	
			Redistribution of income in kind account Social transfers in kind Adjusted disposable income	Redistribution of income in kind account Social transfers in kind	Redistribution of income in kind account Social transfers in kind Adjustable disposable income Saving	Current external balance
Use of disposable income account National saving	Use of disposable income account Saving	Use of disposable income account Saving	Use of disposable income account *Final consumption expenditure* Saving	Use of disposable income account *Final consumption expenditure* saving	Use of disposable income account *Final consumption expenditure* saving	
			Use of adjusted disposable income account *Actual final consumption* Saving	Use of adjusted of disposable account *Actual final consumption* Saving	Use of disposable income account Actual final consumption Saving	
Capital account Changes in net worth due to saving and capital transfers Net lending	Capital account Changes in net worth due to saving and capital transfers Net lending	Capital account to saving and capital transfers Net lending	Capital account Changes in net worth due to saving and capital transfers Net lending	Capital account Changes in net worth due to saving in capital transfers Net lending	Capital account Changes in net worth due to saving and capital transfers Net lending	External capital account Changes in external net worth due to saving and capital transfers Net lending to abroad
	Financial account Net lending	Financial account Net lending	Financial account Net lending	Financial account Net lending	Final account Net lending	External financial account Net lending to abroad

Table 2: Reduced format of the HRA

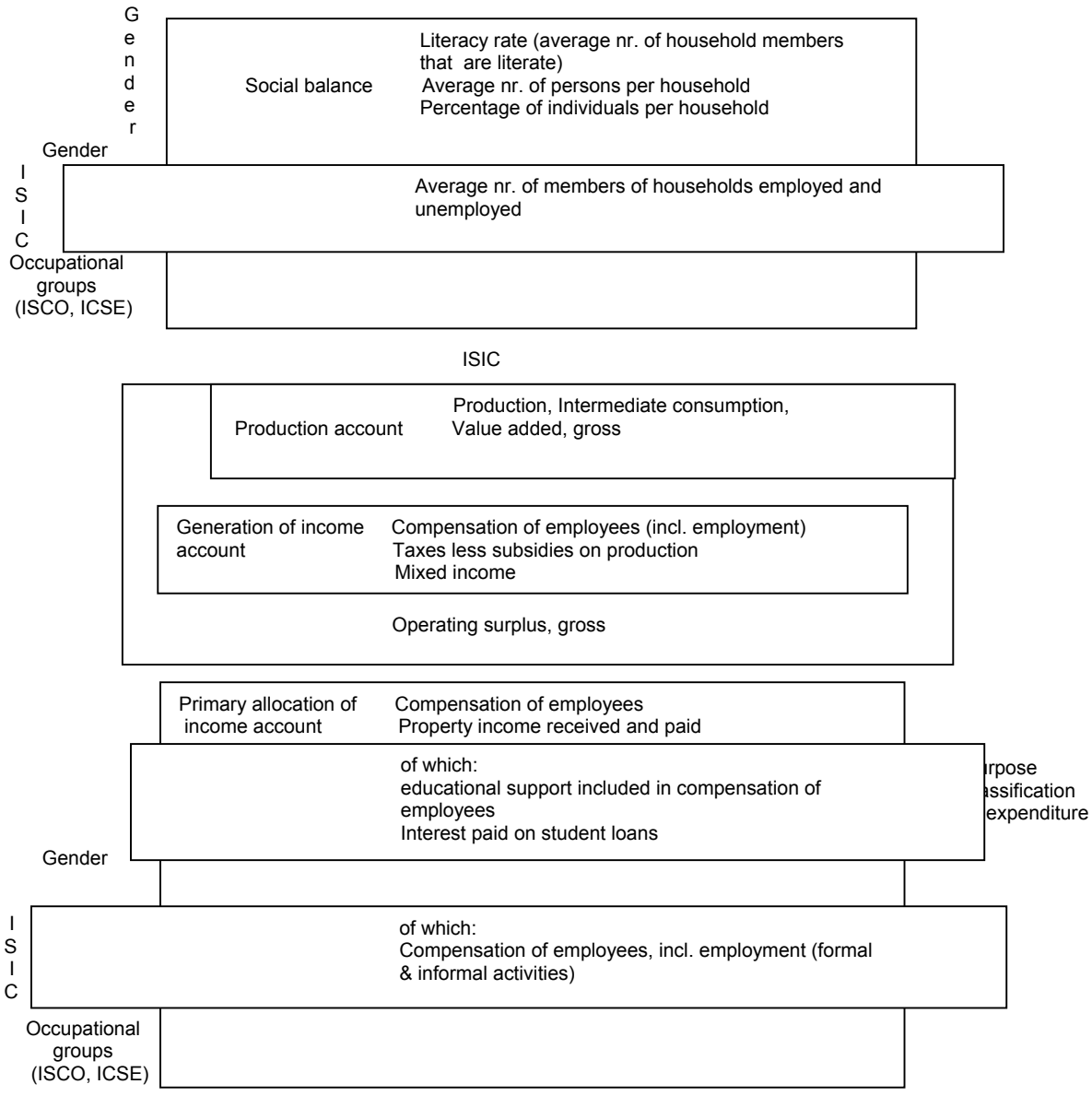


Table 2: Reduced format of the HRA (continued)

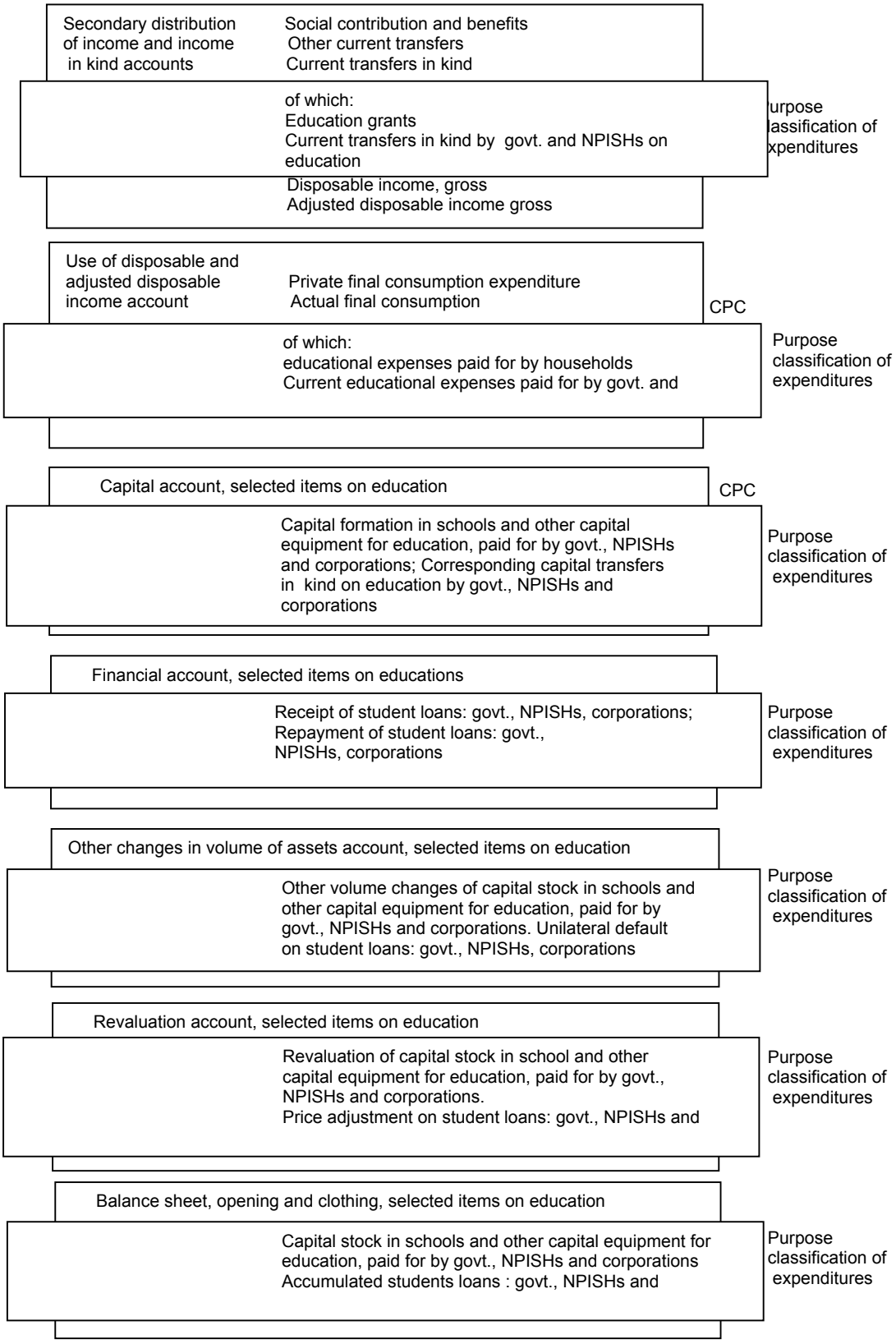


Table 3: Classifications and groupings of HRA, and their relation to international classifications

International classifications and related groupings	Classifications and related groupings adjusted to the HRA Social classes of households identified by characteristics of the reference person	Occupational groups	Gender	Economic Activities	Purpose classification of expenditure
	Building blocks of the classifications and related groupings used in the HRA				
ISIC A. Agriculture, hunting and forestry 01. Agriculture, hunting and related service activities 02. Forestry. logging and related service activities B. Fishing C. Mining and Quarrying D. Manufacturing E. Electricity, gas and water F. Construction G. Wholesale and retail trade; repair of motor vehicles, motor-cycles and personal and household goods H. Hotels and restaurants I. Transport, storage and communication J. Financial intermediation K. Real estate, renting and business activities L. Public administration and defence, compulsory social security M. Education N. Health and social work O. Other community, social and personal service activities P. Private households with employed persons Q. Extra-territorial organizations and bodies		Agricultural, hunting and fishing (corr. to A01, B) Non-agricultural (Other than A01, B)		A. Agriculture, hunting and forestry 01. Agriculture, hunting and related service activities 02. Forestry, logging and related service activities B. Fishing C. Mining and Quarrying D. Manufacturing E. Electricity, gas and water F. Construction G. Wholesale and retail trade. repair of motor vehicles, motor-cycles and personal and household goods H. Hotels and restaurants I. Transport, storage and communication J. Financial intermediation K. Real estate, renting and business activities L. Public administration and defence, compulsory social security M. Education N. Health and social work O. Other community, socia and personal service activities P. Private households with employed persons Q. Extra-territorial organizations and bodies	
CPC 0. Agriculture, forestry and fishery products 1. Ores and mineral, electricity, gas and water 2. Food products, beverages and tobacco, textiles, apparel and leather products 3. Other transportable goods, except metal products, machinery and equipment 4. Metal products, machinery and equipment 5. Construction work and construction; land 6. Trade services, hotel and restaurant services 7. Transport, storage and communications services 8. Business services; agricultural, mining and manufacturing services 9. Community, social and personal services 92. Education services 91, 93-99 Other					0. Agriculture, forestry and fishery products 1. Ores and mineral, electricity, gas and water 2. Food products, beverages and tobacco, textiles, apparel and leather products 3. Other transportable goods, except metal products, machinery and equipment 4. Metal products, machinery and equipment 5. Construction work and constructions; land 6. Trade services, hotel and restaurant services 7. Transport, storage and communications services 8. Business services; A Agricultural, mining and manufacturing services 9. Community, social and personal services 92. Education services 91, 93-99 Other

Table 3: Classifications and groupings of HRA, and their relation to international classifications (continued)

International classifications and related groupings			Classifications and related groupings adjusted to the HRA Social classes of households identified by the characteristics of the references person	Occupational groups	Gender	Economic Activities	Purpose classification of expenditures	
COICOP (draft 96)	9.5.1	Books					9.5.1	Books
	10.1.1	Pre-primary and primary education					10.1.1	Pre-primary and primary education
educational Services, 10.1	10.1.2	Secondary education					10.1.2	Secondary education
	10.1.3	Tertiary education					10.1.3	Tertiary education
	10.1.4	Education not definable by level					10.1.4	Education not definable by level
COFOG	04.1	Pre-primary and primary education affairs and services (ISCED O and 1)					04.1	Pre-primary and primary education affairs and services (ISCED O and 1)
education affairs and Services, 04 (categories on education	04.2	Secondary education affairs and services (ISCED 2 and 3)					04.2	Secondary education affairs and services (ISCED 2 and 3)
linked to ISCED, draft 1996)	04.3	Tertiary education affairs and services (ISCED 4, 5 and 6					04.3	Tertiary education affairs and services (ISCED 4,5 and 6)
	04.4	Education services not definable by level (ISCED 7)					04.4	Education services not definable by level (ISCED 7)
	04.5	Subsidiary services to education					04.5	Subsidiary services to education
	04.6	Education affairs and services n.e.c.					04.6	Education affairs and services n.e.c.
ISCO-88	1.	Legislators, senior officials and managers	1.	Legislators, senior officials and managers				
	2.	Professionals	2.	Professionals				
	3.	Technicians and associate professionals	3.	Technicians and associate professionals				
	4.	Clerks	4.	Clerks				
	5.	Services workers and shop and market sales workers	5.	Services workers and shop and market sales workers				
	6.	Skilled agricultural and fishery workers	6.	Skilled agricultural and fishery workers				
	7.	Craft and related trade workers	7.	Craft and related trade workers				
	8.	Plant and machine operators and assemblers	8.	Plant and machine operators and assemblers				
	9.	Elementary occupations	9.	Elementary occupations				
	10.	Armed forces	10.	Armed forces				
ICSE-93	1.	Employees	1.	Employees				
	2.	Employers	2.	Employers				
	3.	On account workers	3.	Own account workers				
	4.	Members of producers'	4.	Members of producers'				
	5.	Contributing family members	5.	Contributing family members				
	6.	Workers not classifiable by status	6.	Workers not classifiable by status				

Table 3: Classifications and groupings of HRA, and their relation to international classifications (continued)

International classifications and related groupings		Classifications and related groups related grouping adjusted to the HRA Social classes of households identified by characteristics of Occupational groups the reference persons	Gender	Economic Activities	Purpose classification of expenditure
ISCED draft April 96	0. Education preceding the first level 1. Education at the first level 2. Education a at the lower second level 3. Education at the upper second level 4. Post secondary, not third level 5. First stage of the third level 6. Doctoral studies 7. Education not definable by level (added category)	Non or low-skilled (ISCED 0-2) Medium skilled (ISCED 3-4) Highly skilled (ISCED 5-6)			0. Education preceding the first level 1. Education at the first level 2. Education at the lower second level 3. Education at the upper second level 4. Post secondary, not third level 5. First stage of the third level 6. Doctoral studies 7. Education not definable by level (added category)
Households sub-sectors, SNA 1993	1. Employers 2. Own account workers 3. Employees 4. Recipients of property and transfer income 4.1 Recipients of property 4.2 Recipients of pensions 4.3 Recipients of other transfers incomes	1. Employers 2. Own account workers 3. Employees 4. Recipients of property and transfer incomes			
Gender	Male Female		Male Female		
Rural/urban	Rural Urban	Rural Urban			
Regions	Metropolitan regions Other regions	Regions Other regions			

Table 3: Classifications and groupings of HRA, and the relation to international classifications (continued)

International classifications and related groupings	Classifications and related groupings adjusted to the HRA				
	Social classes of households identified by the characteristics of Occupational groups The reference person		**Gender**	**Economic Activities**	**Purpose classification of expenditures**
	Classification defining the HRA framework after merger of the building blocks				
	(10 categories)	**(11 categories)**	**(2 categories)**	**(16 categories)**	**(7 categories)**
SNA household subsectors. ISIC/CPC, ISCED/ISCO, COFOG/COICOP, gender, rural/urban	Agricultural (Rural), including forestry	Employees (ICSE 1)	Male Female	A. Agriculture, hunting and forestry B. Fishing	Books (COICOP 9.5.1) Pre-primary and primary education affairs and services (ICSED 0 and 1, COFOG 04.1, COICOP 10.1.1) secondary education affairs and services (ICSED 2 and 3, COFOG 04.2, COICOP 10.1.2) Tertiary education affairs and services (ISCED 4,5 and 6, COFOG 04.3, COICOP 10.1.3) Education services not definable by level (ISCED 7, COFOG 04.4, COICOP 10.1.4) Subsidiary services to education (COFOG 04.5) Education affairs and services n.e.c. (COFOG 04.6)
	Employees	Legislators, senior officials and managers (ISCO 1)		C. Mining and Quarrying	
	Other (employers, own account workers)	Professional and technicians and associate professionals (ISCO 2-3)		D. Manufacturing	
	Non-agricultural	Craft and related trade workers, plant and machine operators (ISCO 4.5.7.8)		E. Electricity, gas and water F. Construction	
	Rural	Economically active (employers, own account workers employees, SNA household sector class)		G. Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	
		Non or low-skilled (ISCED 0-2)	Skilled agricultural and fishery workers (ISCO 6)	H. Hotels and restaurants	
		Medium skilled (ISCED 3-4)	Elementary occupations (incl. agriculture, fishery and related workers), armed forces (ISCO 9 and 10)	I. Transport, storage and communication	
		Highly skilled (ISCED 5-6)	Self-employed (ISCE 2,3,4&6)	J. Financial intermediation	
		Economically active (recipient of property and transfer incomes, SNA)	Legislators, senior officials and managers (ISCO 1)	K. Real state, renting and business activities	
			Professionals and technicians and associate professionals (ISCO 2-3)	L. Public administration and defence, compulsory social security	
	Urban	Economically active (employers, own account workers, employees SNA households sector class)	Clerk, service workers, shop and market sales workers, craft and related trade workers,	M. Education	
		Non or low-skilled (ISCED 0-2)	plant and machine operators (ISCO 4,5,7,8)	N. Health and social work O. Other community, social and personal service activities	
		Medium skilled (ISCED 3-4)			
		Highly skilled (ISCED 5-6)	Skilled agricultural and fishery workers (ISCO 6)	P. Private households with employed persons	
		Economically active (employers, own account workers, employees, SNA Household sectors class,)	Elementary occupations (incl. agricultural, fishery and related workers), armed forces (ISCO 9 and 10)		
			Contributing family members (ISCE 5)		

Table 4: Scope, content and classification of data used to compile the HRA

Household sector

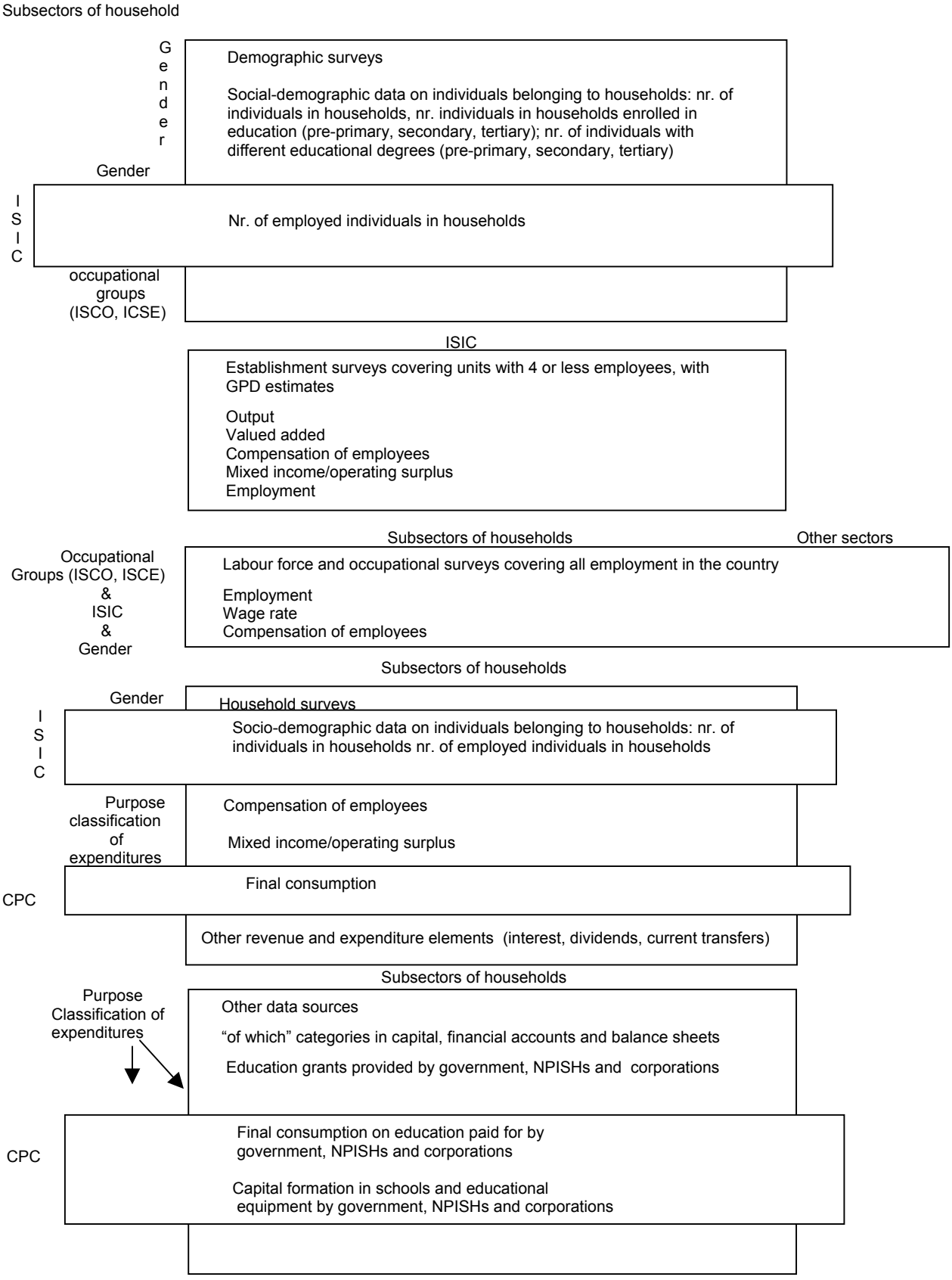


Table 5: Common elements in surveys used to integrate data for the HRA

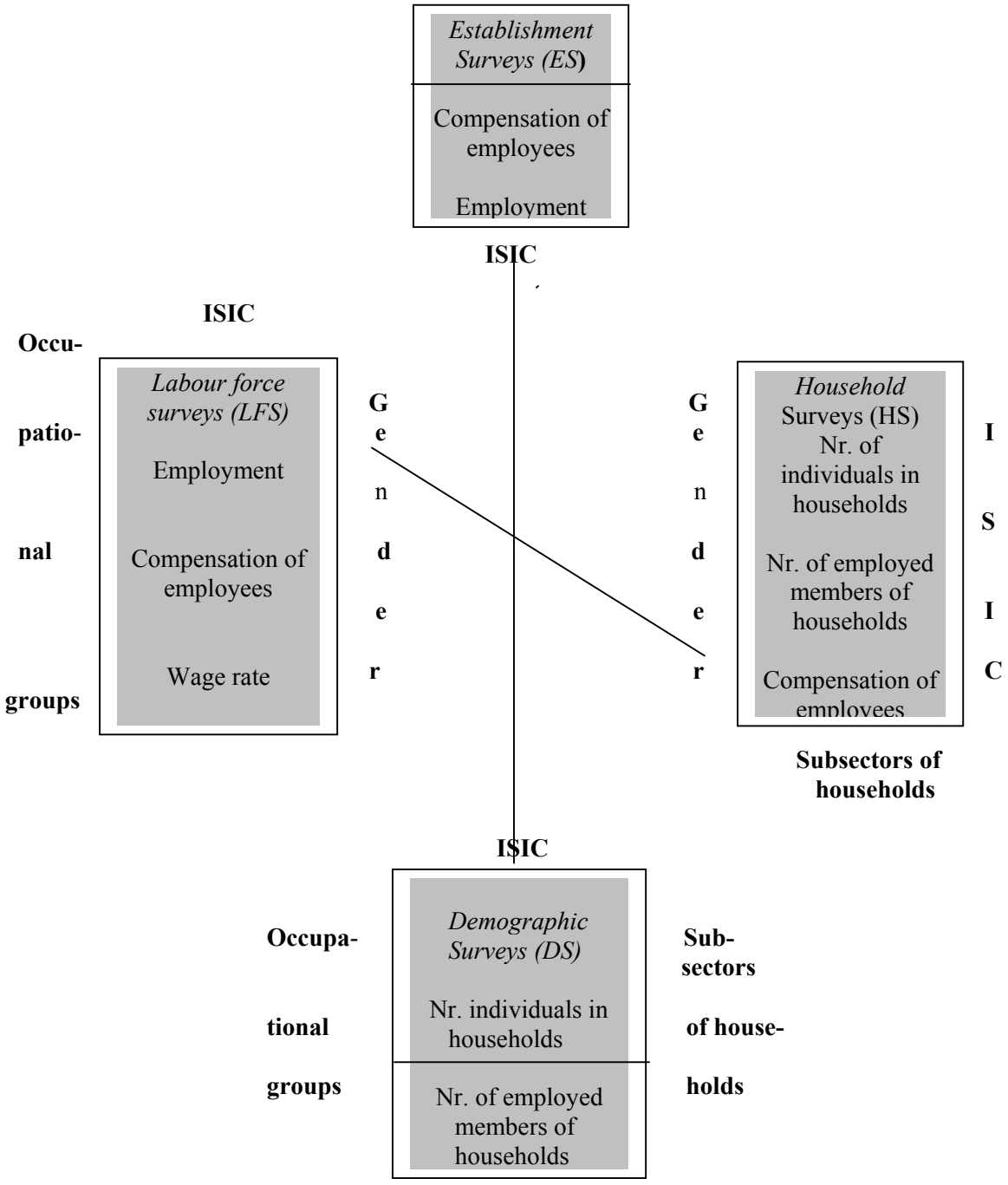


Table 6: Policies and indicators to monitor implementation

Policy objective	Indicators to measure policy implementation	Classifications used in presenting the indicators
Priority of education in family behavior and government policy	* Final consumption expenditure of households as % of household disposable income * Final consumption expenditure on education as % of final consumption expenditure of households * Government consumption on education as % of total government consumption * Government and NPISH consumption on education as % of total consumption expenditures * Total capital formation on education as % of actual (=total) final consumption on education	Sub-sectors of households
Cost of education	* Actual consumption on education/number of students enrolled	Sub-sectors of households X Purpose classification of expenditures (ISCED) X Gender
Effectiveness of educational programmes	* Index of educational achievement of students enrolled * Index of educational achievement of population, 15 years and older * Index of professional achievement of working persons * Index of educational achievement of working persons	Sub-sectors of households X level of education (ISCED) X Gender Sub-sectors of households X Gender X ISIC
Level of employment	Working persons as % of total population, 15 years and older	Sub-sectors of households X Gender
Productivity and labour income	*Labour productivity, i.e. value added in constant prices per working person *GDP/value added deflator *Per capita labour income, adjusted for price changes (based on the GDP/value added deflator)	ISIC

Table 7: I-O and SAM links between households and industries

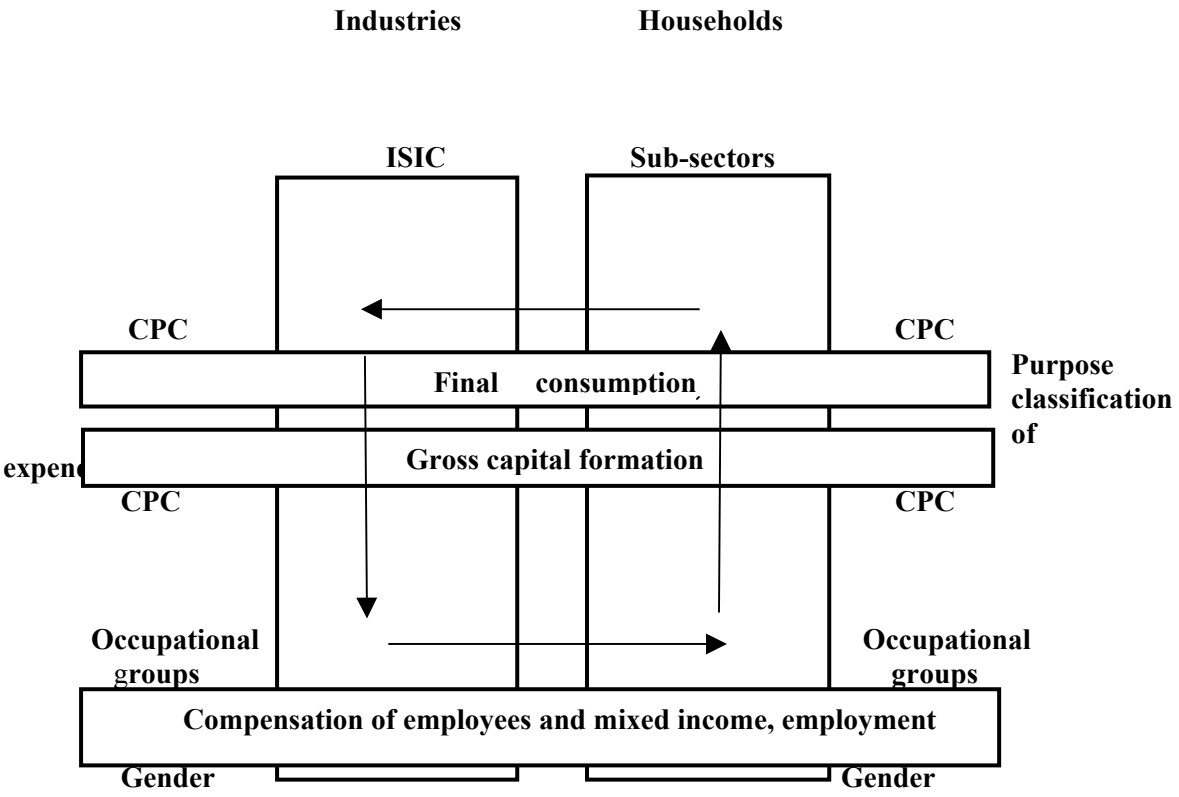


Table 8: Human Resource Accounting in Korea: Indicators of 'educational and professional achievement'

In a programme on Human Resource Accounting in Korea a data base on household sector accounts with social extensions for the period 1990-95 is being developed. The data base aims at establishing a relation between income, expenditures on education, 'educational achievement' or level of education, 'professional achievement' of those employed, productivity and labour income. In establishing these relations, use has been made of economic data and indicators on income, educational expenses and productivity; there is a need to develop social indicators to measure 'educational and professional achievement'.

The two indicators summarizing the 'educational and professional achievement' are to be based on the use of ISCED and ISCO categories respectively. This should take into account that there is a conceptual link between ISCO and ISCED, as ISCO categories are defined in relation to ISCED skills. The indicators, when applied to those employed, are computed for different industries, based on the ISIC classification.

The indicator of 'educational achievement' of those employed is defined as:

IE = (Ne1*E1 + Ne2*E2 + ...Nen*En)/(Ne1+Ne2+....+Nen)

and the 'indicator of professional achievement' is defined as:

Ip = (Np1*P1 + Np2*P2 + ...Npn*Pn)/(Np1+Np2+....+Npn)

in which

E1, E2, …, En	refer to the relative ranks of ISCED categories:
Ne1, Ne2, …, Nen	are the number of individuals corresponding to each level of education, as defined by ISCED
P1, P2, …, Pn	refer to the relative ranks of ISCO categories
Np1, Np2, …, Npn	are the number of individuals corresponding to each professional level of ISCO

Use is made of log scales for the relative ranks accorded to main ISCO and ISCED categories, as illustrated in table 8 with Korea data. In the case of ISCO the ranks simply reflect the numerical order of the ISIC categories. In the case of ISCED, the ranks are determined by the number of years of schooling for each level. They are then normalized to a level of 10 for the graduate school level, so that the magnitude of ISIC and ISCED ranks are comparable.

Index of professional status (1995; Korea labour force data)

ISCO (1988) categories	absolute ranks (Np1 .... Npn)	'log' ranks (log Np1 ..... Npn)	weights: nr. of individuals (1000) per rank	weighted log ranks
legislators, senior officials	10	1.00	525	525.42
professionals & technicians	9 & 8	0.93	2,783	2586.80
service workers	6	0.78	1,528	1188.66
clerks, skilled agricultural workers, crafts and related workers, plant and machine operators	7,5,4 & 3	0.68	11,384	7703.36
elementary occupations & others	2 & 1	0.18	2,208	388.73
	Weighted average of ISCO log Ranks			0.67
	Corresponding ISCO rank (Index of professional status)			4.70

Index of educational level (1995 Korea population census data)

ISCED (1993) categories	ranks (Ne1 ... Nen), i.e. nr. of years of schooling, normalized to 10 for graduate school	'log' ranks (log Ne1... log Nen)	weights: nr. of individuals (1000) per rank	Weighted log ranks
Graduate school	10	1.00	411	411.00
college or university	9	0.95	3,131	2970.84
junior college	8	0.89	932	830.28
high school	7	0.82	7,564	6232.05
middle school	6	0.74	2,528	1882.67
primary school	3	0.44	2640.00	1171.36
never attended school	1	- 0.26	153.00	-39.06
	Weighted average of ISCED log ranks			0.78
	Corresponding ISCED rank (index of educational level)			10.73

References

[1] The content of the present document has not been cleared with the UN Statistics Division and therefore does not necessarily reflects its views. The presentation of this conceptual framework in the present paper should be considered in relation to another paper dealing mainly with data issues regarding the HRA in Korea, i.e. Eun Pyo Hong, Human Resource Accounts for Korea, October 1997.

[2] See also Graham Pyatt, SAMs, the SNA and National Accounting Capabilities, Review of Income and Wealth, Series 37, No. 2, June 1991.

[3] Analytical and policy orientation of the HRA in Korea (extract from project document): At this stage only a relatively simple objective for analysis was chosen. This is to measure the effectiveness of government policies aimed at improving the educational quality of Korea's population, determine the impacts of such policies on the level and quality of employment and on the extent to which the economically active population is able to support the inactive members which include the young that are being educated, the elderly that are retired, the unemployed and others who do not seek employment. At a later stage when the HRA instrument has been well tested in practice, it may be further refined for use in more complex policy studies, including those that deal with the social impact of non-market activities of households covered in time use studies, and studies dealing with other social issues such as health issues, poverty, etc. It is furthermore intended to prepare on the basis of the classifications available in the proposed HRA, intermediate studies dealing with gender issues and informal sector activities respectively.

[4] Ravindra P. Rannan-Eliya & Peter Berman, National Health Accounts in Developing Countries: Improving the Foundation, Harvard School of Public Health, August 1993.

[5] Carmen Reyes, Use of household survey data in the compilation of household sector accounts in Mozambique, October 1997.

[6] Jan W. van Tongeren, Human Resource Accounting (HRA) for Korea, draft, April 1996 and Integrated Programme of SNA Compilation and Application in Analysis and Policy Making, October 1997.

[7] The definition and calculation of the educational and professional achievement indices is illustrated in an annex 8 to this paper with help of selected Korea data. It should be considered as a first and tentative attempt to design summary measures based on a large set of data on education and occupation by workers, students and heads of households.

[8] See also Joan Vanek, Trial International Classification for Time Use Activities, UN, October 1997
Mary Chamy and Angela Me, Measuring Social Activity: Implications for Future Work on Statistical Classifications, UNSD, New York, October 1997.

[9] See proposed classification in Trial International Classification for Time Use Activities.

Human resource accounts for Korea

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I. Introduction

1. One of the advantages of the 1993 System of National Accounts (1993 SNA) is the introduction of satellite accounts for certain applications as an extension of the central framework. The human resource accounts (HRA) are an example of such an application as an integrated economic and socio-demographic accounting system for households.

2. The objective of this paper is to extend the framework of the HRA (Becker and Hong, 1997; and Hong and van Tongeren, 1997) to the Korean economy and subsequently to compile human resource accounts for Korea (KORHRA) from 1990 to 1995. As economic accounts for the household sector within the HRA framework would be compiled independently and directly, they would allow the breakdown of the household sector into various sub-sectors and consequently studies of changes in income and expenditure distribution over time. Furthermore, by linking the economic accounts to socio-demographic data largely based on population censuses, they would allow studies of the interaction between socio-demographic and economic developments. Finally, independently compiled economic accounts for the household sector might serve as a means of evaluating the present household sector accounts of the national accounts of the Bank of Korea, which are largely compiled in an indirect manner, i.e. based on data from other sectors.

3. The focus of the present KORHRA is on education so that the development of KORHRA would provide policy makers with a more efficient analysis of the economic and socio-demographic impact of educational investment by the public and private sectors. This focus can always be extended to other issues such as health, pensions, etc. In order to carry out the compilation more efficiently, we first reviewed all the related surveys thoroughly and found gaps and limitations in the household statistics for Korea on which estimation methodologies have largely been based. Then, we created independent databases for the same types of data sources. Finally, the databases were reconciled and integrated to obtain integrated economic and socio-demographic accounts for the Korean household sector.

4. One of the great difficulties in the estimation of KORHRA arises from data gaps. For example, most of the establishment surveys deal with corporations with at least five employees, while establishments which belong to the household sector are ones with less than five employees. This problem of insufficient information applies to other surveys as well. Thus, we have been forced to make assumptions for the compilation of KORHRA. Furthermore, most of the information is stored on tapes which require a significant amount of time to work with. This requires making special arrangements with the database division of the National Statistical Office (NSO) a couple of months in advance since all the facilities at the NSO are always fully booked.

5. This paper describes the integrated economic accounts for KORHRA for the years 1990 to 1995. The accounts consist of the production account and generation, distribution and use of income accounts.

The production and generation of income accounts of households are based on surveys of small-scale industries and agricultural units that are generally managed by the household sector.

6. The data for the income and use of income accounts are based on household surveys, which include data on current revenues and expenditures of households. They cover, on the revenue side, four types of revenues, i.e. so-called "mixed income" from their own production units, compensation of employees, property income and social security and other social and current transfers received from government, including benefits from pension and life insurance schemes.

7. The accounts do not include any information on financial transactions or accumulated stocks of financial assets and liabilities. The reason is that this information is difficult to obtain for the household sector in an independent manner. Furthermore, the financial operations of the household sector may not play a very important role in the analysis intended, as many of the policies that would affect household behaviour would be financed through the government budget.

8. KORHRA is extended with social and demographic information, which it is suggested be obtained from the 1990 and 1995 population and housing censuses. This information is mainly available for individuals and some of the data are also available for households. It is important that in the design of the framework a decision be taken about the most appropriate statistical unit for classifying the social and demographic data. As data from household surveys is only available by household, when designing the accounting framework of the HRA for integrated economic and socio-demographic analysis, there is a need to define a link between the social and demographic data of individuals and households and the economic data of households. The link should be reflected in the structure and detail of the classifications.

9. In order to understand the overall context, section II presents the accounting framework of the KORHRA, including classifications. It then discusses in section III the data sources and gaps, and methodologies for compilation and integration of KORHRA. Finally the preliminary results are presented and analyzed in section IV. Attached as annexes are the classification and framework of databases (Annexes A), the preliminary data set for 1995 (Annex B), the compilation methodologies (Annex C), the presentation of databases (Annex D), and finally the reconciliation of databases (Annex E).

II. Accounting framework of KOHRA

10. The accounting framework of the HRA can be presented as a satellite extension of the 1993 SNA (Becker and Hong, 1997; Hong and van Tongeren, 1997). It is shown that the general extensive framework of the HRA can easily be reduced to the KORHRA by taking into account data limitations in Korea. These data limitations, however, are not exceptional and therefore the reduced framework may also apply to other countries, if they develop HRAs.

11. Another important factor for the reduced framework of KORHRA is its focus, which for the present version of KORHRA, is on education. Therefore, this KORHRA should serve as an efficient tool in analyzing the impact of educational expenditure or institutional sector subsidies on the structure and level of education of the Korean population or on changes in productivity, etc.

12. The classifications and the framework of databases for KORHRA are presented in two separate tables in annex A. Table A1 shows the classifications of KORHRA and Table A2 the scope, contents and classifications that are included in the databases for KORHRA.

A. The classification of KOHRA

13. Table A1 presents the classification of KORHRA in relation to international classifications. There are four independent groups of classification in KORHRA: social classes of reference persons of households, occupational groups, ISIC, and the classification of expenditure by purpose. As elaborated in the papers by Becker and Hong (1997) and by Hong and van Tongeren (1997), the design of the classifications for KORHRA is mainly based on a coordination of a wide range of international classifications, ISIC, CPC, ISCO, ICSE, ISCED, COFOG, and COICOP. ISIC and CPC deal with the classification of industries and products, COFOG and COICOP are purpose classifications of expenditures applied to government and households, ISCO and ICSE deal with occupation and status in employment, ISCED classifies types of education, the household sub-sectors of the SNA identify different income groups, and finally there are groupings based on sex, on the urban-rural distinction and on a breakdown of economic activity status.

14. Amended details that are relevant for KORHRA are allocated to the respective columns of Table A1. KORHRA includes 9 social classes of households per region, 11 occupational categories, 17 categories of economic activities, 2 categories of the CPC, i.e. one identifying educational services and another covering the rest, and finally 7 categories for the classification of expenditure by purpose. Some of the categories may need to be further adjusted, either because of data limitations, or in order to provide a better link between KORHRA and the present national accounts of Korea, with which the HRA may ultimately be reconciled.

15. There is a close relation between the social data elements that are included in the social balance and the social classes that are distinguished. As the latter refer to the social dimensions of households, there is no need to include data items describing the social characteristics of households, as these are already reflected in the classification of households. Thus, there is no need to include social variables describing the level of education of the head of the household or whether the household is in a rural or urban area and in which region the household is located. On the other hand, the classifications do not refer to individual household members and therefore their social characteristics may be included: e.g. average number of household members that are literate, have different educational degrees, or the number of household members that are male and female.

B. The framework of the database for KOHRA

16. Table A2 presents the framework of the database to be used in the compilation of the integrated economic accounts for KORHRA. Five types of data source will be used. These are on demographics, establishments, the labour force, households, and other related surveys regarding education. Their content and potential for classification are presented in schematic format in Table A2. Each of the data sources includes different information, generally corresponding to different units for which the information is available.

17. Demographic surveys, mainly population censuses, contain information on social indicators for the social classes of household and employment by ISIC, occupational groups and social classes. Establishment surveys provide data on output, value added, compensation of employees, mixed income/operating surplus, and employment by ISIC based on establishments as units of information. Labour force surveys provide information on employment and wage rate by ISIC, occupational group and social class for individuals not only employed but also others, e.g. students, retirees, unemployed, etc. Household surveys use households as their units of data collection and contain information on

compensation of employees, mixed income/operating surplus, expenditure and other income by social class. Finally, other data sources provide information related to education for other institutional sectors.

III. Data sources and gaps, compilation and integration

A. General discussions on data and compilation

18. Once the framework (i.e. scope and classifications) for compilation has been determined, or, in other words, once the macro stage has been set, the challenge is to collect the necessary data building blocks at the micro and meso level (see also Becker/Schweinfest/van Tongeren 1996). Each of the data sources will be used independently in the construction of independent databases.

19. Traditionally, household data are gathered from inquiries, which yield comprehensive data not only on their economic and other activities but also on the demographic and social aspects of households, as well as on their overall living conditions. Those inquiries are generally surveys based on population censuses which provide the sampling frame for the more detailed household surveys. Most common are Household Income and Expenditure Surveys (HIES) and Labour Force Surveys (LFS). They are described in detail in the literature (UN 1991; ILO 1987-92), so that a brief description here seems to be sufficient.

20. The HIES is considered to be the main data source for income and consumption. The HIES also serves other purposes such as providing data for assessing living conditions and the cost of living; e.g. it is generally used to determine the weights for the construction of consumer price indices. In special modules, the HIES may provide information on special aspects of living conditions such as nutritional status, housing, health status, etc. It can reveal the redistributive effects of taxes and of social benefits on various types of households. Household production activities may also be covered, e.g. the output and inputs of self-employed activities.

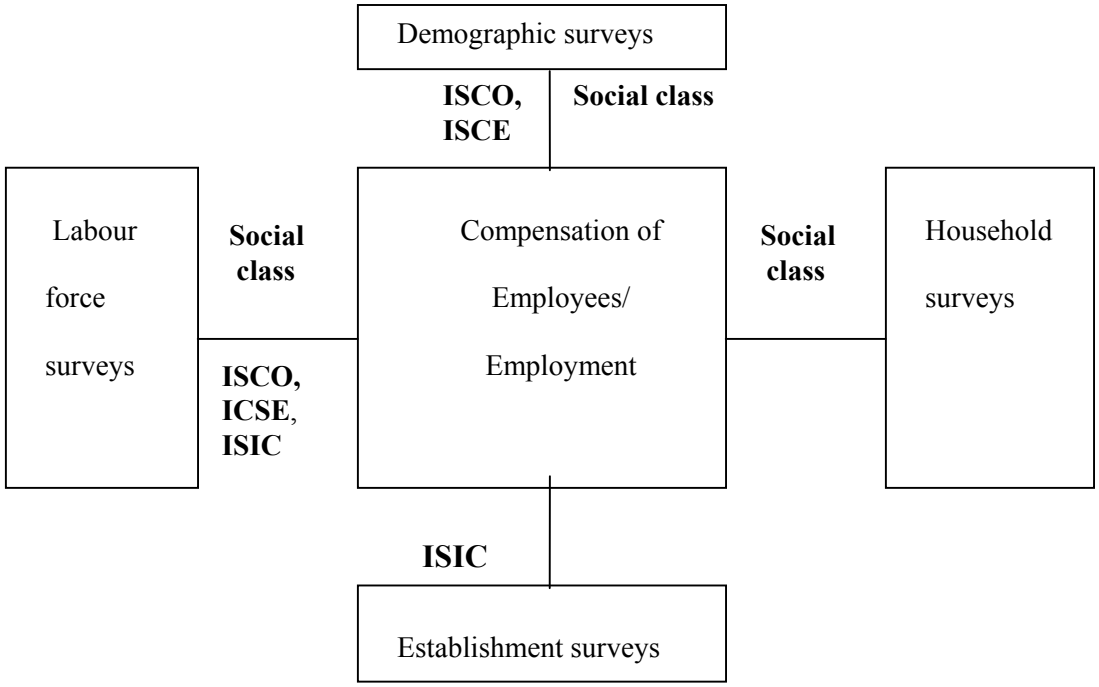
21. The contents of the HIES makes it the prime source of information for household satellite accounting. However, this type of survey requires very detailed questionnaires as well as an elaborated data collection and processing infrastructure. Since human and financial resources are scarce, the typical HIES does not cover the whole scope mentioned above and is not carried out on a yearly basis. Labour Force Surveys are more geared towards the economically active population and provide data such as on the type of economic activity, occupation, status in employment, working conditions (working hours, overtime, etc.), salary, etc. In many countries LFS and HIES are carried out independently, sometimes even by different authorities.

22. Other important aspect of the compilation of the HRA for Korea is the integration of the data obtained from the four main types of surveys and the supplementary data on other sectors obtained from the national accounts or from other sources. The main integrating factors between the four data sources are compensation of employees of individuals and employment, which should be obtained from all four data sources mentioned, and in each of them classified in a different manner. The totals and also the breakdowns should coincide between the four different surveys. The adjustment factors should be applied not only to compensation of employees but to all other information that is contained in the surveys. The results of establishments surveys may be adjusted on the basis of compensation of employees and employment in the labour force surveys.

23. Similarly some information in household surveys, e.g. wages and salaries, may be adjusted on the basis of under- or over-coverage of compensation of employees recorded in household surveys as compared with similar data in labour force surveys and establishment surveys.

24. The second type of integration to be pursued in the future is integration with the national accounts of the Bank of Korea. The Bank's data on the household sector are most probably compiled in an indirect manner from counterpart sectors. The household sector data based on the KORHRA are direct data which could be used to assess the Bank of Korea data in the national accounts. If agreement could be reached between the NSO and the Bank of Korea, the latter data may be adjusted on the basis of the HRA results and such adjustments may be worked through the other sectors of the national accounts. Obviously the latter can only be achieved in cooperation with the Bank of Korea.

Figure: Integrating scheme for databases of KORHRA



B. Data sources and gaps

1. Establishment surveys

25. The 1993 SNA defines producer units within the household sector as all 'unincorporated enterprises', even though this terminology is admittedly cumbersome when applied to the smaller, or highly specialized, producer units.

26. In Korea, over 50% of total sales or revenues of unincorporated establishments is generated by firms with five or more employees in 1995, and more than 10% is produced by ones with 30 or more workers. This result suggests the need for clearer or more practical criteria for defining producer units within the household sector. It seems to be appropriate to use both size and legal criteria to clarify the boundary for household establishments, which are unincorporated establishments with four or fewer workers.

27. Establishment surveys include data on output, value added, and value added components such as compensation of employees, mixed income/operating surplus and employment, all needed for the compilation of the production and generation of income accounts of the 1993 SNA. Not included is any information on depreciation, capital stocks and capital formation. The units found in establishment surveys are classified by the ISIC categories corresponding to their economic activities.

28. A list of data sources and gaps for the establishment surveys for producer units within the household sector is presented in Tables B1 and B2, respectively. Most of the surveys are annual except the industrial census and the establishment census, which are carried out every five years. However the latter is only available for the period up to 1991 because it was replaced by the census on basic characteristics of establishments in 1993. Each survey has its own scope and coverage so that most of the economic activities of the establishments which belong to the household sector can be characterized. It should, however, be noted that the NSO adopted ISIC-1989 for the compilation of establishment surveys in 1992 so that there exist some discontinuities in the establishment surveys for the period of 1990-1995: the surveys for 1990 and 1991 are compiled in ISIC-68; for 1992-1995 in ISIC-89. Although most of discontinuities in the time series of the establishment surveys caused by this revision could be solved, we still had to make some adjustments based on estimates.

29. For mining and manufacturing industries, the industrial census is a major source of information on household establishments. This census is now conducted every five years, replacing the mining and manufacturing survey, which was carried out annually for establishments with five or more workers. In 1993, the census produced information on the value of output, shipment and inventories for firms with four or fewer workers.

30. The construction survey covers all construction establishments except for unlicensed ones owned by individuals. This means that this survey accounts for only a part of the construction work by household establishments. It provides information on the number of workers, value of construction, value added by all construction establishments for 1990-1995. It also provides very comprehensive information on non-household establishments with five or more workers in the construction industry.

31. For the wholesale and retail trade, the repair of consumer goods, hotels and restaurants, real estate and service industries, three major sources are available: the wholesale and retail trade survey, the service industry survey and the survey of the wholesale and retail trade and service industry. The first survey

covers the wholesale and retail trade, the repair of non-durable goods, and the hotel and restaurant industries. The second covers real estate and service industries. In 1994, the first two were consolidated into the third by which the wholesale and retail industries and the service industry are surveyed. These surveys consist of information on the number of workers, value of sales and purchases for the industries mentioned above. For 1991 the establishment census provides relatively reliable information on household units.

32. Besides those specialized surveys, one should mention as well the establishment census and the census on basic characteristics of establishments. The former is available only until 1991 since it was substituted by the latter in 1993. These surveys include data on the revenues and sales generated by unincorporated establishments with four or fewer paid workers for all economic activities and are fully utilized whenever no other information is available from other specialized sources. For the latter, only data for 1994 and 1995 are utilized in our work since it was still at the experimental stage in 1993.

2. Household surveys

33. Household surveys include data on compensation of employees, mixed income/operating surplus, consumption, and other revenue and expenditure elements such as interest, dividends and current transfers, all of which are needed for the compilation of the distribution and use of income accounts of the 1993 SNA. The units found in the household surveys are classified by ISCO and ICSE of the head of the household except for consumption which is classified by the purpose classification of expenditures. In addition, a classification by the social class of the head of the household is available as well.

34. A list of data sources and gaps for the household surveys is presented in Tables B1 and B3. The national survey of family income and expenditure is a quinquennial survey, while the others are annual surveys. The two most important surveys for the compilation of income and expenditures for non-farm households are the family income and expenditure survey and the national survey of family income and expenditure. Although the family income and expenditure survey consists of very comprehensive information on urban wage and salary earners of households with two or more family members for 1990-1995, this survey does not provide enough information on income and expenditures for other groups such as those with one family member or those residing in rural areas or for urban non-wage and salary earners, etc.

35. On the other hand, the national survey of family income and expenditure consists of extensive information for all household groups for 1991, and for 1996. The farm household economy survey consists of comprehensive information on farm households. However, it does not provide a gender classification. Some of the gaps could be filled other sources such as the one on social indicators or the population and housing census of 1990 and 1995.

3. Labour force surveys and demographic surveys

36. An important supplementary data source on revenues is the labour force survey. It provides information on labour inputs in production processes, generally in physical terms, but sometimes also including data on wage rates. This source can be used as the link between data on labour by industry and revenues from labour received by households. It can thus serve as a link between income generated in production and income used by households, which is studied in Social Accounting Matrices (SAMs). The labour force, occupational and employment surveys are also a link with population surveys as they include social and demographic data on the economically active population.

37. Labour force surveys include data on employment, wage rates and compensation of employees. These surveys provide information on the most comprehensive classifications: ISIC, occupational groups and social classes of households, which are mainly useful for the reconciliation of data with different classifications among databases.

38. Currently, two different organizations provide statistics on the labour market: the NSO and the Ministry of Labour (MOL). The NSO collects information on labour from households while the MOL collects it from establishments. Thus, the NSO provides information on both the employed and the unemployed, while the MOL provides information for the employed only. The compilation of KORHRA, however, needs information on all members of households, regardless of whether they are employed or not, or whether economically active or not. Therefore, surveys from the NSO are more suitable for our purpose.

39. Table B1 presents data sources for labour force surveys as well. Only a couple of sources are available for labour force surveys: the annual report on the economically active population and the survey report on wage structure. The former is a monthly survey and contains very comprehensive information for members and heads of households, whether economically active or inactive. Therefore, this survey will be used as the main source of information for the compilation of the labour force database. The labour force survey compiled by the MOL contains information on wage rates for establishments with 10 or more employees. These wage rates will be used to compute compensation of employees.

40. The population and housing census, which is a quinquennial survey, is unique and is the most reliable source for demographic information. It includes data on social indicators by social class and employment by ISIC, occupational group and social class. Thus, the population and housing census provides sufficient information for the compilation of KORHRA.

4. Other sources

41. The above mentioned surveys are statistical tools which have a long history, while others such as time-use studies or informal sector surveys are recent developments responding to recent shifts in political priorities. Time-use studies address the question of how household members spend their time in economic and non-economic activities. In the last decade, several countries have carried out this type of survey, the results of which are very useful for household satellite accounts. For example they give detailed indications on non-economic household activities such as caring for children and older persons, preparing meals, education, leisure time, etc. They are also instrumental in capturing the gender-dimension of household statistics.

42. The surveys mentioned are not the only ones that will be used in the compilation of KORHRA. There is some additional information that cannot be obtained from the data sources mentioned but only from non-household sectors. This refers to the data needed to cover all educational expenses not only by households but also those incurred by government, NPISHs and corporations. In order to provide an optimal basis for integrating the HRA data with the national accounts of the Bank of Korea, the data on other sectors will be obtained as much as possible from the national accounts. Where such data are not available, use will be made of government records, special surveys, etc. The same principle will be applied to capital transfers and financial data on education, which are not readily available from household surveys.

C. Compilation methodologies

1. Establishment surveys

43. None of the data for separate industries are based on one survey only. Combinations of surveys are used to identify the household production units as presented in Table C1. For the estimation of output produced by establishments, the reference information is the output data as they are compiled by the NSO in the development of Gross Regional Domestic Product (GRDP) estimates. The general approach to compiling output data for the household sector is to multiply GRDP by the share of household establishments of total output or sales/revenues depending upon data availability. However, for the agricultural, forestry and fishing, and construction industries the residual approach is applied since the production activities of household establishments for those industries are not easily identifiable in Korea.

44. As the survey data refer to sales instead of output, adjustments for changes in inventories have been applied to the data. The adjustments are based on the ratio between output and changes in inventories as they appear in the IO tables compiled by the Bank of Korea. Once the output data for household industries have been obtained in this manner, the GRDP structure for each industry is used to estimate household production data on value added and its complements, including compensation of employees, and mixed income/operating surplus.

2. Household surveys

45. Table C2 shows the procedure used in the compilation of the data based on household surveys. Combinations of surveys are used to identify household income and expenditure with different characteristics classified or cross-classified by gender, ISCO, ICSE, and social class. As was mentioned above, the national survey of family income and expenditure and the family income and expenditure survey are the most important sources for the compilation of information on non-farm households, while the farm household economy survey is the basis for farm households. For non-farm households, the first survey is utilized as basis for compilation and the second is used for calculation of the annual growth rates of income and expenditure.

46. Two fundamental assumptions are made in the estimation: the growth rates of income and expenditure for households with one family member and with two members are different, while they are the same for the same types of household; the marginal propensities to consume are the same for the different types of household. For compilation purposes, households are grouped into five blocks: urban households with one family member (UO), urban households with two or more family members (UT), rural households with one family member (RO), rural households with two or more family members (RT) and farm households (FH).

3. Labour force surveys and demographic surveys

47. The procedures used in the compilation of databases for both surveys are reasonably straightforward since most of the information is available throughout the estimation period. However, as was mentioned above, the survey report on wage structure provides wage rates for establishments with 10 or more employees only. Thus, in order to compute compensation of employees for the labour force survey, we are forced to make the assumption that average wage rates are the same for all establishments in Korea.

IV. Preliminary results

48. We have compiled four databases for KORHRA from 1990-1995. The preliminary results for 1995 only are presented in annex D. In spite of the limitations mentioned in the previous sections, annex D shows some interesting results. According to the establishment surveys in Table D1, producer units within the household sector, unincorporated establishments with four or fewer workers, produced about 80.7 trillion won, about 21.9% of total value added, in 1995. Households in the agricultural, hunting and forestry industry produced the largest part of total for that industry with 96.6%, followed by those in fishing with 84.1%. Of course, in residential housing private households with employed persons were 100%. In hotels and restaurants and the wholesale and retail trade industries, households produced 69.2% and 42.4%, respectively. On the other hand, it has been shown that the household sector produced only 3.2% of total value added in the manufacturing sector. Furthermore, the financial intermediation and electricity, gas, and water industries had virtually no representative from the household sector.

49. Three tables in Table D2 present preliminary data based on the labour force survey in 1995. The first and second tables show employment and compensation of employees by urban/rural, employment status and ISIC for the total economy and the household sector, respectively. The total number of workers employed by the household sector is about 9.7 million, which is 47.5% of the total economy, and compensation of employees paid by establishments in the household sector is about 29.7 trillion won or 17.6% of the total economy. The share of employment in urban households to the total economy is 77.2% while that of the total household sector is 66.9%. The last table presents employment and compensation of employees by the classifications of occupational groups and ISIC. Most of the self-employed and contributing family members are employed in the household sector with 91.7% and 94.9%, respectively. The household sector, however, has only 20.4% of the employees in the whole economy.

50. Table D3 presents annual income and expenditure for all household members broken down by the social class of the head of household in 1995. There are about 13 million households in total in Korea: about 10 million or 77.4% are in urban areas, while 2.9 million are in rural areas. The heads of households in urban areas have a higher level of education than those in rural areas: In urban areas 15% are educated up to elementary school and 29.6% have college or higher education while in rural areas 50.5% have elementary school or lower education and 9.8% have college or higher degrees. Urban households share 79.5% of total income, 274.5 trillion won, in 1995. Koreans spent about 15.4 trillion won, 8.9% of the total consumption of about 172.7 trillion won, on education in 1995.

51. Table D4 presents the data based on the demographic survey for 1995. The table consists of information on social indicators by social class and employment by cross-classification between social classes, occupational groups and ISIC. According to the category of the number of household members over 23 years old with different education, males are more educated in Korea than females. This difference is more significant in rural than in urban areas. However, it is less significant for the younger generation since the difference between the proportion of males and females with higher education aged between 6 and 23 is smaller than that for the over 23s.

52. The last table compares the results of compensation of employees between establishment and labour force surveys. The difference of compensation of employees for the total economy between establishment and labour force surveys is only 3 trillion won which is less than 2%, while that for the household sector is 7.6 trillion or about 30%. For labour force and household surveys, the difference is about 1 trillion won, which is less than 1%.

Annex A: Classification and framework of data bases for KORHRA

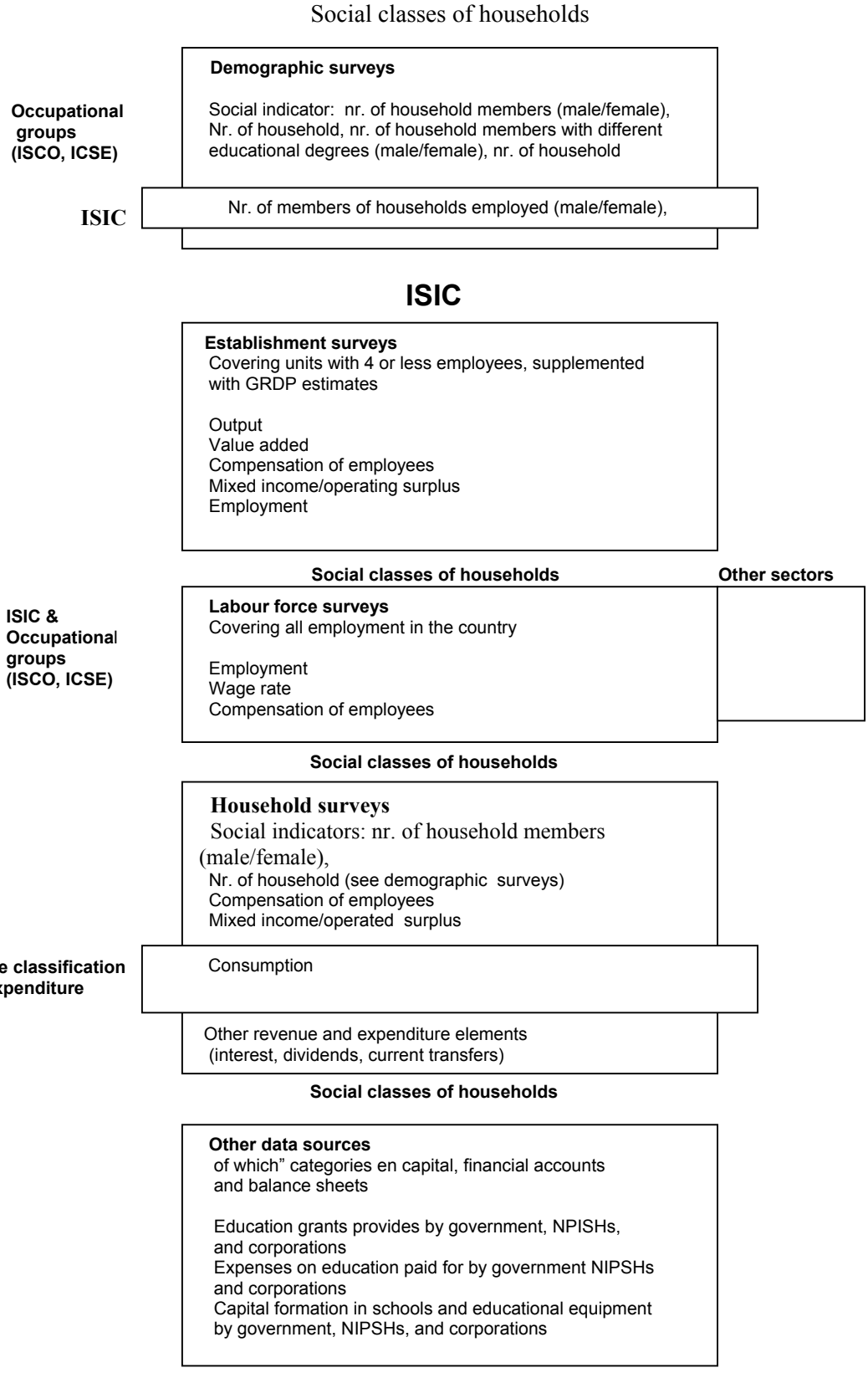
Table A1: Classifications of KORHRA and their relation to international classification

International classification	Classifications of KORHRA			
	Social classes of households (9 Categories)	**Occupational groups (11 Categories)**	**Economic activities (17 Categories)**	**Classification of expenditure by purpose (7 Categories)**
Household sector of SNA, ISIC/CPC, ISCED/ISCO, ICSE, COFOG/COICOP, rural/urban	**Agricultural (rural),** including forestry and logging **Non-agricultural** **Rural** Economically active (employers, own account workers, employees, SNA household sector class) Non or low-skilled (ISCED 0-2) Medium skilled (ISCED 3-4) Highly skilled (ISCED 5-6) Economically inactive (recipient of property and transfer income, SNA household sector class) **Urban** Economically active (employers, own account workers, employees, SNA household sector class) Non or low-skilled (ISCED 0-2 Medium skilled (ISCED 3-4) Highly skilled (ISCED 5-6) Economically inactive (recipient of property and transfer income, SNA household sector class)	**Employees (ICSE1)** Legislators, senior officials and managers (ISCO1) Professionals & technicians and associate professionals (ISCO2-3) Clerks, service workers, shop and market sales workers, craft and related trade workers, plant and machine operators (ISCO4,5,7,8) Skilled agricultural and fishery workers (ISCO6) Elementary occupations (incl. agricultural, fishery and related workers), armed forces (ISCO 9&10) **Self employed (ICSE 2,3,4&6)** Legislators, senior officials and managers (ISCO1) Professionals & technicians and associate professionals (ISCO 2-3 Clerks, service workers, shop and market sales workers, craft and related trade workers, plant and machine operators (ISCO4,5,7,8) Skilled agricultural and fishery workers (ISCO6) Elementary occupations (incl. agricultural, fishery and related workers), armed forces ISCO 9&10) **Contributing family members (ISCED 5)**	A. Agricultural, hunting and forestry B. Fishing C. Mining and quarrying D. Manufacturing E. Electricity, gas and water F. Construction G. Wholesale and retail trade, repair of motor vehicles, motor cycles and personal and household goods H. Hotels and restaurants I. Transport storage and communication J. Financial intermediation K. Real estate, renting and business activities L. Public administration and defence, compulsory social security M. Education N. Health and social work O. Other community, social and personal service activities P. Private households with employed persons Q. Extra-territorial Organizations	Books (COICOP 9.5.1) Primary education affairs and services (ISCED 0 & 1, COFOG 04.1, COICOP 10.1.1) Secondary education affairs and services (ISCED 2 & 3, COFOG 04.2, COICOP 10.1.2) Tertiary education affairs and services (ISCED 4, 5 & 6, COFOG 04.3, COICOP 10.1.3) Education services not definable by level (ISCED 7, COFOG 04.4, COICOP 10.1.4) Subsidiary services to education (COFOG 04.5) Education affairs and services n.e.c. (COFOG 04.6)

Note: Social classes of households are identified by the characteristics of the reference person

Table A2: Framework of databases for KORHRA

Household sector



Annex B: Preliminary data set for KORHRA

Table B1: Surveys used in the compilation of KORHRA data base

	Name of the surveys	Years	Periodicity
Establishment surveys	- Census on basic characteristics of establishments	'93, '94, '95	Annual
	- Industrial census	'93	Quinquennial
	- Construction works survey	'90-'95	Annual
	- Wholesale and retail trade survey	'90-'93	Annual
	- Survey of services	'90-'93	Annual
	- Survey of wholesale and retail trade and service industry	'94	Annual
	- Establishment census	'91	Quinquennial
	- Gross regional domestic product	'90-'94	Annual
Household surveys	- Family income and expenditure survey	'90-'95	Annual
	- National survey of family income and expenditure	'91	Quinquennial
	- Social indicators in Korea	'90-'95	Annual
	- Farm household economy survey	'90-'95	Annual
Labour force surveys	- Annual Report on the Economically Active Population survey	'90-'95	Annual
	- Survey Report on Wage Structure	'90-'95	Annual
Demographic surveys	- Population and housing census	'90, '95	Quinquennial

Table B2: Data gaps in Establishment surveys

Types of Surveys	Individual surveys by economic activities						CBCE	
Years	90	91	92	93	94	95	94	95
Agriculture, hunting and forestry, fishing							x	x
Mining and quarrying				x			x	x
Manufacturing				x			x	x
Electricity, gas and water							x	x
Construction	x	x	x	x	x	x	x	x
Wholesale and retail trade		x	x	x			x	x
Hotels and restaurants		x	x	x	x		x	x
Transport, storage and communication							x	x
Financial intermediation							x	x
Real estate, renting and business activities			x	x	x		x	x
Residential housing							x	x
Education and health			x	x			x	x
Social and similar service activities			x	x			x	x
Private household with employed persons	x	x	x	x	x	x	x	x

* CBCE: The Census on Basic Characteristic of Establishments
* "Social and similar service activities" include Education, Health and Social work

Table B3: Data gaps in Household surveys

Data sources	ICSE	Number of members	Income	Expenditure	Gender
family income and expenditure survey ('90-'95)	wage and salary earners' household	1			
		2 or more	x	x	X
	non-wage and salary earners' household	1			
		2 or more		x	x
national survey of family income and expenditure ('91)	wage and salary earners' household	1 member	x	x	x
		2 or more	x	x	X
	non-wage and salary earners' household	1 member	x	x	X
		2 or more	x	x	X
farm household economy survey ('90-'95)			x	x	

Annex C: Compilation methodologies

Table C1: Compilation methodologies for establishment surveys

(1) Output for H'H sector

Industry	methodology
agriculture, forestry and fishery	Output for agriculture, forestry and fishery = GRDP output - (sales revenue + changes in inventories) of establishments owned by non-h'h sector ° GRDP output: yearly GRDP output for agriculture, forestry and fishery sector ° (sales revenue + changes in inventories) of establishments owned by non-h'h sector - estimated by the '94 and '95 Census on Basic Characteristics of Establishments - for '94 and '95, use the sales revenue and inventories of the agriculture, forestry and fishery establishments (The establishments run by h'h sector of the agriculture, forestry and fishery sectors are excluded in the Census on Basic Characteristics of Establishments) - for '90, '91, '92, '93, average of (sales revenue + changes in inventories) in '94 and '95 * yearly GRDP output growth rates for the agriculture, forestry and fishery sector
Manufacturing and mining	° Output for manufacturing and mining = GRDP output * share of h'h establishments for total output for the industrial census ° GRDP output: yearly GRDP output for the manufacturing and mining sector ° share of h'h establishments for the total output for the industrial census output of establishments with 4 or less workers = ---------- total of output of all establishments from industrial census ° Output of establishments with 4 or less workers - for '93, output of establishments with 4 or less workers from '93 Industrial Census and Mining and Manufacturing Survey - for '90, '91, '92, '94, '95, output of establishments with 4 or less workers from '93 Industrial Census was extended by the growth rates of GRDP output for each year
Electricity, gas and water	° Output for electricity, gas and water = GRDP output * h'h establishments' share of value of sales ° GRDP output: yearly GRDP output for the electricity, gas and water ° h'h establishments' share of value of sales - estimated by the '94 and '95 Census on Basic Characteristics of Establishments - for '94 and '95, value of sales for individual establishments = ---------- value of sales for all establishments - for '90, '91, '92, '93, use the average of '94 and '95□□
Construction	° Output = GRDP output - value of construction for non-individual construction company ° GRDP output: yearly GRDP output for the construction sector ° value of construction for non-individual construction company - estimated by the yearly construction worker survey - the value of construction for company construction and other corporation

Table C1: Compilation methodologies for establishment surveys (continued)

Industry	Methodology
Wholesale and retail trade	◦ Output for wholesale and retail trade = GRDP output & h'h establishments' share of the value of (sales - purchase changes in inventories) ◦ GRDP output: yearly GRDP output for the wholesale and retail trade sector ◦ h'h establishments' share of value of (sales - purchase + changes in inventories) - estimated by the '92 and '93 Wholesale and retail trade survey - for '92 and '93, value of (sales - purchase + inventories) for individual establishments = ---------- value of (sales - purchase + inventories) for all establishments - for '90, '91, '94, '95, use the average of '92 and '93
Restaurants	Output for restaurants = GRDP output * h'h establishments' share of value of (sales - purchase) GRDP output: yearly GRDP output for the restaurants sector h'h establishments' share of value of (sales - purchase) - estimated by the '92 and '93 Wholesale and retail trade survey - for '92 and '93. value of (sales - purchase) for individual establishments = ---------- value of (sales - purchase) for all establishments - for '90, '91, '94, '95, use the average of '92 and '93
Hotels	Output for hotels = GRDP output * h'h establishments' share of value of sales GRDP output: yearly GRDP output for the hotels sector h'h establishments' share of value of (sales - purchase) - estimated by the '92 and '93 Wholesale and retail trade survey - for '92 and '93. value of (sales - purchase) for individual establishments = ---------- value of (sales - purchase) for all establishments for '90, '91, '94, '95, use the average of '92 and '93
Transportation Communication	Output for transportation (communication) = GRDP output * h'h establishments' share of the value of revenue GRDP output: yearly GRDP output for the transportation (communication) sector h'h establishments' share of value of revenue - estimated by the '94 and '95 Census on Basic Characteristics of Establishments - for '94 and '95. value of revenue for individual establishments = ---------- value of revenue for all establishments - for '90, '91, '92, '93, use the average of '94 and '953

Table C1: Compilation methodologies for establishment surveys (continued)

Industry	Methodology
Finance and insurance	◦ Output for finance and insurance = GRDP output & h'h establishments' share of the value of revenue ◦ GRDP output: yearly GRDP output for the finance and insurance sector ◦ h'h establishments' share of value of revenue - estimated by the '94 and '95 Census on Basic Characteristic of Establishments - for '94 and '95, value of revenue for individual establishments = ---------- value of revenue for all establishments - for '90, '91, '95, use the average of '94 and '95
Real estate and business services	◦ Output for real estate and business services, community, social and personal services (excluding residential housing) = GRDP output & h'h establishments' share of the value of revenue ◦ GRDP output: yearly GRDP output for the real estate and business services, community, social and personal services (excluding residential housing) ◦ h'h establishments' share of value of revenue - estimated by the '92, '93, and '94 Survey of Services revenue for individual establishments = ---------- revenue for all establishments - for '90, '91, '95, use the average of '92, '93 and '94
Residential housing	◦ Output for residential housing = GRDP output for residential housing
Education, health and social work	◦ Output for education (health and social work) = value of revenue for individual establishments - estimated by the '90, '92, and '93 Survey of Services - for '90, '92 and '93, use the value of revenue for the individual establishments - for '91, 94, '95, estimated by the result of '90, '92 and '93
Private h'h	◦ Output for housekeeping = GRDP output for housekeeping

(2) value added = output * ratio of value added to yearly GRDP by the industry

(3) compensation of employees = value added * ratio of compensation of employees to yearly GRDP by industry

(4) mixed income/operating surplus = value added * ratio of mixed income/operating surplus to yearly GRDP by industry

Table C2: Compilation Methodologies for Household Surveys

° (3),(4),(8) monthly income or expenditure per H'H for '90~'95 (FIES) * 12 months * number of H'H in each group

° (7) - '91 yearly income of '91 per H'H (NSF91) * AF * number of H'H

Adjustment Factor (AF) = '91FIES / '91NSF

'91FIES yearly income of '91 for urban wage and salary earners H'H with two or more family members (FIES)

'91NSF yearly income of '91 for urban wage and salary earners with two or more family members (NSF)

- '90, '92~'95

income for previous year + the amount of income increased in current year in (8)

the amount of income increased in current year in (8)

$$= \frac{\text{amount of consumption increased in current year in (8)}}{\text{MPC of current year (FIES)}}$$

° (11),(12),(15),(16) '91 FIES of (11),(12),(15),(16) * AF * annual growth rates of (3),(4),(7),(8) * number of H'H in each group

° (1),(2),(5),(6) '91 FIES of (1),(2),(5),(6) * AF * annual growth rates of (3),(4),(7),(8) * number of H'H in each group

° (9),(10),(13),(14) '91 FIES of (9),(10),(13),(14) * AF * annual growth rates of (11),(12),(15),(16) * number of H'H in each group

° (17) yearly income or expenditure per H'H (FHES) * number of farm H'H

<Data source and Strategic groups for compilation>

		one member of H'H		two or more members of H'H	
		income	expenditure	income	expenditure
Urban	Wage and salary earners H'H	(1) NSF('91)	(2) NSF('91)	(3) FIES('90~'95) NSF('91)	(4) FIES ('90~'95) NSF('91)
	non-wage and salary earners H'H	(5) NSF ('91)	(6) NSF ('91)	(7) NSF ('91)	(8) FIES ('90~'95) NSF ('91)
Rural	wage and salary earners H'H	(9) NSF('91)	(10) NSF('91)	(11) NSF('91)	(12) NSF('91)
	non-wage and salary earners H'H	(13) NSF('91)	(14) NSF('91)	(15) NSF('91)	(16) NSF('91)
	farm H'H	(17) FHES ('90~'95)			

Note: FIES: The Annual Report on the Family Income and Expenditure Survey ('90~'95)
NSF: The National Survey of Family Income and Expenditure ('91)
FHES: The Report on the Farm Household Economy Survey ('90~'95)

Annex D: Presentation of databases
Table D1: Database for establishment surveys in 1995(bil. won, %, persons)

		Economic Activities	Output	Value-added	Compensation of employees	Mixed income/ operating surplus	Employ-ment
TOTAL ECONOMY		Total	**810,719**	**367,885**	**171,842**	**121,866**	
	A.	Agricultural, hunting and forestry	29,494	20,774	2,528	16,608	
	B.	Fishing	4,157	2,706	1,166	1,040	
	C.	Mining and quarrying	1,991	1,062	569	213	
	D.	Manufacturing	373,674	108,092	47,994	26,785	
	E.	Electricity, gas and water	15,737	7,897	1,651	3,559	
	F.	Construction	97,993	43,402	29,463	9,067	
	G.	Wholesale and retail trade, repair……	61,137	35,718	10,964	20,573	
	H.	Hotels and restaurants	7,185	4,376	2,143	1,217	
	I.	Transport, storage and communication	45,179	26,089	12,397	7,300	
	J.	Financial intermediation	31,583	22,952	14,706	5,546	
	K.	Real estate, renting and business activities	65,491	44,795	7,898	24,641	
		- Residential housing	25,036	18,636	0	18,459	
	L.	Public administration and defense compulsory social security	25,293	15,598	14,874	0	
	M.	Education	20,962	17,578	15,903	509	
	N.	Health and social work	8,729	4,394	2,580	1,090	
	O.	Other community, social and personal Services activities	20,949	11,286	5,839	3,717	
	P.	Private households with employed persons	1,166	1,166	1,166	0	
HOUSEHOLD SECTOR		Total	**133,073**	**80,685 (21.9)**	**22,048**	**49,582**	
	A.	Agricultural, hunting and forestry	28,495	20,071 (96.6)	2,442	16,045	
	B.	Fishing	3,495	2,275 (84.1)	980	874	
	C.	Mining and quarrying	43	23 (2.2)	12	5	
	D.	Manufacturing	12,133	3,510 (3.2)	1,558	870	
	E.	Electricity, gas and water	5	2 (0.0)	0	1	
	F.	Construction	15,464	6,849 (15.8)	4,650	1,431	
	G.	Wholesale and retail trade, repair……	25,922	15,145 (42.4)	4,649	8,723	
	H.	Hotels and restaurants	4,972	3,028 (69.2)	1,483	842	
	I.	Transport, storage and communication	2,864	1,654 (6.3)	786	463	
	J.	Financial intermediation	79	57 (0.3)	37	14	
	K.	Real estate, renting and business activities	30,012	21,854(48.8)	971	19,219	
		- Residential housing	25,036	18,636 (100)	0	18,459	
	L.	Public administration and defence, compulsory social security	0	0 (0.0)	0	0	
	M.	Education	1,942	1,629 (9.3)	1,473	47	
	N.	Health and social work	1,953	983 (22.4)	577	244	
	O.	Other community, social and personal service activities	4,529	2,440 (21.6)	1,262	804	
	P.	Private households with employed persons	1,166	1,166 (100.0)	1,166	0	

Table D2: Database for labour force surveys in 1995

(1) Total economy

			Urban				Rural			
Variables	ISIC	Total	Subtotal	Employees	Self-employed	Contributing family members	Subtotal	Employees	Self-employed	Contributing family members
Employment (persons)	total	20,377,498	15,730,842	10,954,910	3,796,231	979,701	4,646,656	1,780,906	1,895,508	970,242
	A	2,424,086	344,604	3,083	205,168	96,353	2,079,482	80,414	1,237,938	761,130
	B	116,854	60,363	,707	19,695	3,591	56,491	19,344	26,458	10,689
	C	26,655	10,990	,078	2,912	0	15,665	13,382	1,104	1,179
	D	4,772.832	4,050,127	,421,384	489,105	139,638	722,705	617,499	76,129	29,077
	E	9,181	58,520	7,699	821	0	10,661	10,661	0	0
	F	,896,169	1,605,977	1,317,272	271,369	17,066	290,192	239,142	45,828	5,222
	G	,763,430	3,250,110	1,481,001	1,329,134	439,975	513,320	154,732	264,354	94,234
	H	,594,828	1,317,924	644,323	498,225	175,376	276,904	108,250	119,019	49,635
	I	,068,433	919,643	662,722	248,676	8,245	148,790	106,168	40,942	1,680
	J	19,090	630,647	601,627	28,507	513	88,443	84,689	3,294	460
	K	15,925	863,678	646,585	191,734	25,359	52,247	31,470	17,496	3,281
	L	44,614	505,175	505,175	0	0	139,439	139,439	0	0
	M	,010,394	912,424	717,841	181,326	13,257	97,970	87,873	9,920	677
	N	02,105	279,533	248,737	29,309	1,487	22,572	19,311	2,413	848
	O	45,428	724,324	376,381	289,142	58,801	121,104	58,579	50,395	12,130
	P	90,976	180,305	169,427	10,838	40	10,671	10,453	218	0
	Q	6,498	16,498	16,498	0	0	0	0	0	0
Compensation of employees (billion Won)	total	168,852	146,259	146,259	0	0	22,593	22,593	0	0
	A	1,091	413	413	0	0	678	678	0	0
	B	706	46	46	0	0	660	660	0	0
	C	301	118	118	0	0	183	183	0	0
	D	52,779	45,158	45,158	0	0	7,621	7,621	0	0
	E	1,002	877	877	0	0	125	125	0	0
	F	21,962	18,816	18,816	0	0	3,146	3,146	0	0
	G	21,030	19,100	19,100	0	0	1,930	1,930	0	0
	H	8,045	6,948	6,948	0	0	1,097	1,097	0	0
	I	11,117	9,632	9,632	0	0	1,485	1,485	0	0
	J	8,518	7,459	7,459	0	0	1,059	1,059	0	0
	K	9,109	8,698	8,698	0	0	411	411	0	0
	L	9,970	7,781	7,781	0	0	2,189	2,189	0	0
	M	12,181	10,900	10,900	0	0	1,291	1,291	0	0
	N	3,407	3,181	3,181	0	0	226	226	0	0
	O	5,890	5,042	5,042	0	0	848	848	0	0
	P	1,517	1,422	1,422	0	0	95	95	0	0
	Q	229	229	229	0	0	0	0	0	0

(2) Household sector

Variables	ISIC	Total	Urban				Rural			
			Sub-total	Employees	Self-employed	Contri-buting family members	Sub-total	Employees	Self-employed	Contri-buting family members
Employ-ment (persons)	total	9,672,252	6,467,546	2,194,429	3,371,723	901,394	3,204,706	108,015	1,846,788	949,903
	A	**2,369,088**	**318,633**	**22,317**	**201,008**	**95,308**	**2,050,455**	**57,979**	**1,235,180**	**757,296**
	B	**69,517**	**23,003**	**5,727**	**14,561**	**2,715**	**46,514**	**9,968**	**25,857**	**10,689**
	C	**1,28**	**813**	**333**	**480**	**0**	**469**	**0**	**448**	**21**
	D	**1,017,981**	**867,295**	**421,610**	**343,465**	**102,220**	**150,686**	**67,218**	**60,721**	**22,747**
	E	**1,331**	**1,331**	**510**	**821**	**0**	**0**	**0**	**0**	**0**
	F	**578,690**	**494,857**	**301,669**	**179,011**	**14,177**	**83,833**	**48,993**	**30,645**	**4,195**
	G	**2,587,739**	**2,171,875**	**488,186**	**1,257,411**	**426,278**	**415,864**	**95,467**	**259,350**	**91,047**
	H	**1,198,831**	**966,170**	**343,974**	**460,270**	**161,926**	**232,661**	**73,053**	**113,815**	**45,793**
	I	**325,540**	**276,853**	**30,868**	**238,284**	**7,701**	**48,687**	**8,548**	**39,084**	**1,055**
	J	**38,832**	**31,518**	**759**	**24,246**	**513**	**7,314**	**3,635**	**3,219**	**460**
	K	**332,613**	**302,881**	**107,167**	**172,454**	**23,260**	**29,732**	**9,700**	**16,751**	**3,281**
	L	**35,943**	**27,072**	**27,072**	**0**	**0**	**8,871**	**8,871**	**0**	**0**
	M	**291,248**	**271,409**	**95,403**	**166,732**	**9,274**	**19,839**	**9,323**	**9,839**	**671**
	N	**81,691**	**74,197**	**48,040**	**24,699**	**1,458**	**7,494**	**4,233**	**2,413**	**848**
	O	**551,240**	**459,624**	**125,657**	**277,443**	**56,524**	**91,616**	**30,574**	**49,248**	**11,794**
	P	**190,686**	**180,015**	**169,137**	**10,838**	**40**	**10,671**	**10,453**	**218**	**0**
Compen-sation of Employ-ees (bil. won)	total	29,685	25,049	25,049	0	0	4,637	4,637	0	0
	A	**657**	**183**	**183**	**0**	**0**	**474**	**474**	**0**	**0**
	B	**168**	**64**	**64**	**0**	**0**	**104**	**104**	**0**	**0**
	C	**5**	**5**	**5**	**0**	**0**	**0**	**0**	**0**	**0**
	D	**5,180**	**4,433**	**4,433**	**0**	**0**	**747**	**747**	**0**	**0**
	E	**9**	**9**	**9**	**0**	**0**	**0**	**0**	**0**	**0**
	F	**4,722**	**4,061**	**4,061**	**0**	**0**	**661**	**661**	**0**	**0**
	G	**6,682**	**5,883**	**5,883**	**0**	**0**	**800**	**800**	**0**	**0**
	H	**4,135**	**3,435**	**3,435**	**0**	**0**	**700**	**700**	**0**	**0**
	I	**517**	**402**	**402**	**0**	**0**	**115**	**115**	**0**	**0**
	J	**131**	**88**	**88**	**0**	**0**	**43**	**43**	**0**	**0**
	K	**1,433**	**1,305**	**1,305**	**0**	**0**	**128**	**128**	**0**	**0**
	L	**435**	**307**	**307**	**0**	**0**	**128**	**128**	**0**	**0**
	M	**1,426**	**1,301**	**1,301**	**0**	**0**	**126**	**126**	**0**	**0**
	N	**585**	**535**	**535**	**0**	**0**	**50**	**50**	**0**	**0**
	O	**2,085**	**1,620**	**1,620**	**0**	**0**	**466**	**466**	**0**	**0**
	P	**1,514**	**1,419**	**1,419**	**0**	**0**	**95**	**95**	**0**	**0**

(3) Classifications of Occupational groups and ISIC

			Employment (persons)		Compensation of employees (bil. won)	
			Total economy	H'H sector	Total economy	H'H sector
Occupational groups	Total		20,377,498	9,672,252 (20.4)	168,852	29,685
	Employees	Sub-total	12,735,816	2,602,444	168,852	29,685
		ISCO 1		5,355	6,018	146
		ISCO 2,3	2,302,432	231,061	40,377	3,709
		ISCO 4,5,7,8	8,180,234	1,756,848	104,776	20,768
		ISCO 6	45,460	14,148	542	159
		ISCO 9,10	1,986,032	595,032	17,140	4,904
	Self-employed	Sub-total	5,691,739	5,218,511 (91.7)	0	0
		ISCO 1				0
		ISCO 2,3	480,810	437,286	0	0
		ISCO 4,5,7,8	3,203,591	3,003,267	0	0
		ISCO 6	1,482,081	1,473,119	0	0
		ISCO 9,10	221,495	216,620	0	0
	Contributing family members		1,949,943	1,851,297 (94.9)	0	0
ISIC	Total		20,377,498	9,672,252 (47.5)	168,852	29,685 (17.6)
	A. Agriculture, hunting and forestry					657 (61.9)
	B. Fishing		116,854	69,517 (59.5)	706	168 (23.8)
	C. Mining and quarrying		26,655	1,282 (4.8)	301	5 (1.7)
	D. Manufacturing		4,772,832	1,017,981 (21.3)	52,779	5 ,180 (9.8)
	E. Electricity, gas and water		9,181	1,331 (1.9)	1,002	9 (0.9)
	F. Construction		1,896,169	578,690 (30.5)	21,962	4,722 (21.5)
	G. Wholesale and retail trade, ...		3,763,430	2,587,739 (68.8)	21,030	6,682 (31.8)
	H. Hotel and restaurants		1,594,828	1,198,831 (75.2)	8,045	4,135 (51.4)
	I. Transport, storage, ...		1,068,433	325,540 (30.5)	11,117	517 (4.7)
	J. Financial intermediation		719,090	38,832 (5.4)	8,518	131 (1.5)
	K. Real estate, renting ...		915,925	332,613 (36.3)	9,109	1,433 (15.7)
	L. Public administration ...		644,614	35,943 (5.6)	9,970	435 (4.4)
	M. Education		1,010,394	291,248 (28.8)	12,181	1,426 (11.7)
	N. Health and social work		302,105	81,691 (20.8)	3,407	585 (17.2)
	O. Other community, social ...		845,428	551,240 (65.2)	5,890	2,085 (35.4)
	P. Private households ...		190,976	190,686 (100.0)	1,517	1,514 (100.0)
	Q. Extra-territorial organizations ...		16,498	0 (0.0)	229	0 (0.0)

Note: The figures in the parentheses are ratio to the total.

Table D3: Data base for household survey in 1995

Social classes of H'H				Total	Urban					Rural				
					Sub-total	Economically active			Economically inactive	Sub-total	Economically active			Economically inactive
						Non/low skilled	Medium skilled	Highly skilled			Non/low skilled	Medium skilled	Highly skilled	
social indicator-	nr. Of H"H members (thou. Person)		total	44,553	34,992					9,562				
			male	22,357	17,596					4,762				
			female	22,196	17,396					4,800				
	nr. of H'H (thou. households)			12,958	10,032	1,500	5,560	2,973		2,926 (1,499)	1,478	1,162	286	
economic indicator (billion won)	INCOME	Total		274,548	218,173	25,297	111,073	81,804		56,375 (33,545)	24,560	24,507	7,308	
		compensation of employees		167,892	133,439	13,682	64,899	54,857		34,453 (8,083)	13,039	15,847	5,567	
		Mixed income/ operating surplus		84,356	64,773	7,266	37,326	20,181		19,583 (18,761)	10,003	8,032	1,549	
		Other Revenue	Sub-total	22,300	19,961	4,349	8,884	6,766		2,339 (6,701)	1,518	628	192	
			Interest and dividends	2,826	2,357	339	1,142	877		469 (442)	132	236	100	
			current transfers	19,474	17,604	4,010	7,706	5,898		1,870 (6,258)	1,386	392	92	
	EXPENDITURE	Total		200,874	164,447	19,895	83,818	60,734		36,336 (22,970)	16,187	15,135	5,015	
		COMSUMPTION	Sub-total	172,665	141,184	17,497	72,102	51,585		31,481 (22,163)	14,449	13,343	3,689	
			EDUCATION sub-total	15,377	13,131	1,330	6,587	5,214		2,246 (2,328)	1,131	906	208	
			ISCED 0,1											
			ISCED 2,3											
			ISCED 4,5,6											
			ISCED 7											
			subsidiary …											
			n.e.c											
			others	157,288	128,053	16,167	65,515	46,371		29,235 (19,835)	13,318	12,437	3,481	
		Other expenditures		28,119	23,263	2,398	11,716	9,149		4,855 (807)	1,738	1,792	1,326	

Note 1: Information on economically inactive population are included in ones on economically active population
Note 2: The figures in parentheses are ones for farm households

Table D4 : Data base for demographic survey in 1995 (thou. persons, %)

Social classes of H'H				Total	Urban					Rural				
					Sub-total	Economically active			Econo-mically inactive	Sub-total	Economically active			Econo-mically inactive
						Non/low skilled	Medium skilled	Highly skilled			Non/low skilled	Medium skilled	Highly skilled	
		Total		**44,553**	**34,992**	**10,4854**	**17,327**	**7,180**		**9,562**	**4,689**	**4,042**	**831**	
	nr. of H'H members	male		22,357	17,596	,633	8,462	4,501		4,762	1,951	2,229	580	
				(50.2)	(50.3)	(44)	(49)	(63)		(49.8)	(42)	(55)	(70)	
		female		22,196	17,396	5,852	8,865	2,697		4,800	2,738	1,812	251	
				(49.8)	(49.7)	(56)	(51)	(37)		(50.2)	(58)	(45)	(30)	
	nr. of H'H (households)			12,958	10,032	1,500	5,560	2,973		2,926	1,478	1,162	286	
Social indica-tors	nr. of H'H members over 23 yrs. old w/ different education	sub-total	total	26,150	20,092	3,677	1,335	5,079		6,058	3,139	2,409	512	
			male	12,770	9,883	1,043	5,475	3,365		2,887	1,144	1,373	370	
				(48.8)	(50)	(28)	(48)	(66)		(48)	(36)	(57)	(72)	
			female	13,380	10,209	2,634	860	1,714		3,171	1,995	1,034	142	
				(51.2)	(50)	(72)	(52)	(34)		(52)	(64)	(43)	(28)	
	nr. of H'H members bet'n 6 and 23 yrs. old enrolled in different level of education	sub-total	total	14,337	11,541	3,448	5,992	2,101		2,796	844	1,633	319	
			male	7,427	5,928	1,805	2,987	1,136		1,499	433	856	210	
				(51.8)	(52)	(52)	(50)	(54)		(54)	(51)	(52)	(66)	
			female	6,910	5,613	1,643	3,005	965		1,297	411	777	109	
				(48.2)	(48)	(48)	(50)	(46)		(46)	(49)	(48)	(34)	
		elementary (6-12yrs)	total	4,523	3,640	3,406	234	0		883	819	64	0	
			male	2,356	1,904	1,782	122			452	420	32		
				(52.1)	(52)	(52)	(52)			(52)	(51)	(50)		
			female	2,167	1,736	1,624	112			431	399	32		
				(47.9)	(48)	(48)	(48)			(48)	(49)	(50)		
		secondary (13-18yrs)	total	4,762	3,785	24	3,637	124		977	13	943	21	
			male	2,446	1,958	13	1,880	65		488	7	469	12	
				(51.4)	(52)	(54)	(52)	(52)		(50)	(54)	(50)	(57)	
			female	2,316	1,827	11	1,757	59		489	6	474	9	
				(48.6)	(48)	(46)	(48)	(48)		(50)	(46)	(50)	(43)	
		tertiary (19-23yrs)	total	5,052	4,116	18	2,121	1,977		936	12	625	299	
			male	2,625	2,066	10	985	1,071		559	6	354	199	
				(52.0)	(50)	(56)	(46)	(54)		(60)	(50)	(57)	(67)	
			female	2,427	2,050	8	1,136	906		377	6	271	100	
				(48.0)	(50)	(44)	(54)	(46)		(40)	(50)	(43)	(33)	
Employ-ment	occupa-tional groups	employees self-employed contributing family members												
	ISIC	A. Agriculture, hunting… B. Fishing C. Mining and quarrying D. Manufacturing E. Electricity, gas, water F. Construction G. Wholesale and retail... H. Hotels and restaurants I. Transport, storage J. Financial intermediation K. Real estate, renting ... L. Public administrations.. M. Education N. Health and social work O. Other community ... P. Private households ... Q. Extra-territorial ...												

Note 1: Information on economically inactive population are included in ones on economically active population.
Note 2: The figures in the parentheses are ratios to the total.

Annex E: Reconciliation of databases for KORHRA in 1995

Compensation of employees and social indicators

			Compensation of employees (bil. won)				
			(1)	(2)	(3)	(1) – (2)	(2) – (3)
ISIC	Total economy	**Total**	**171,842**	**168,852**		**2,990**	
		A	2,528	1,091		1,437	
		B	1,166	706		540	
		C	569	301		268	
		D	47,994	52,779		4,785	
		E	1,651	1,002		649	
		F	29,463	21,962		7,501	
		G	10,964	21,030		10,066	
		H	2,143	8,045		5,902	
		I	12,397	11,117		1,280	
		J	14,706	8,518		6,188	
		K	7,898	9,109		1,211	
		L	14,874	9,970		4,904	
		M	15,903	12,181		3,722	
		N	2,580	3,407		827	
		O	5,839	5,890		51	
		P	1,166	1,517		351	
		Q	0	229		229	
	H'H Sector	**Total**	**22,048**	**29,685**		**7,637**	
		A	2,442	657		1,785	
		B	980	168		812	
		C	12	5		7	
		D	1,558	5,180		3,622	
		E	0	9		9	
		F	4,650	4,722		72	
		G	4,649	6,682		2,033	
		H	1,483	4,135		2,652	
		I	786	517		269	
		J	37	131		94	
		K	971	1,433		462	
		L	-	435		435	
		M	1,473	1,426		47	
		N	577	585		8	
		O	1,262	2,085		823	
		P	1,166	1,514		348	
		Q	0	0		0	
Social class	**Total economy**			**168,852**	**167,892**		**960**
	Urban	Total economy		146,259	133,439		12,820
		H'H sector		25,049			
	Rural	Total economy		22,593	34,453		2,926
		H'H sector		4,637			

(1) establishment survey; (2) labour force survey; (3) household survey

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Endnotes

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Household sector accounts by socio-economic categories: Methodology and results for Colombia 1984 and 1994

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I. Introduction

1. The United Nations' System of National Accounts (1993 SNA) has put emphasis on the analysis of the household sector, the subject of economic and social policies, in its dual role of consumer and producer. Household accounts are prepared annually in the current Colombian national accounts, together with non-profit institutions serving households, in particular in presenting gross operating surplus, the income and expenditure account, and capital accumulation for this sector.

2. At the end of 1994, DANE's National Accounts and Synthesis Division launched the "1984 and 1994 Household Accounts by Socio-economic Categories Project". Its purpose is to prepare household accounts using direct data sources and integrating them into the Colombian system of national accounts. DANE's Income and Expenditure Surveys carried out in 1984-1985 and in 1994-1995 are used as the main statistical source for income and expenditures for this institutional sector.

3. The aim is to determine income sources and levels, consumption structures, the dynamics of redistributive transactions, and to determine the economic relations between households and business as well as government. Additionally, the household accounts allow the measurement of the economic changes of the various groups within this sector. For instance, the classification of households by occupational categories, by geographical location, or by socio-demographic characteristics will make it possible to measure monetary transfers from one household to another. For example, distinguishing households which have their own businesses allows the measurement of production and revenue generation in household-owned unincorporated enterprises.

4. The Colombian Household Accounts Project is developed in two phases. The purpose of the first is not only to prepare the sector's main accounts, but also to design the household accounts methodology based on data from the Income and Expenditure Survey (IES) of 1984-1985. The second phase of the project uses the data of the Income and Expenditure Survey (IES) of 1994-1995, which is currently being prepared, together with other DANE basic data sources: the National Household Survey (NHS), the Multisector Economic Census of 1990, and the Mine Census of 1988. The purpose of household accounts for the base year of 1994 is to compile the production account, distribution of income account, and use of income account.

5. This paper comprises the following chapters:[1] Chapter II defines and delimits the household sector by socio-economic category from the IES data, focusing on household classification by occupational category, by geographical area and by branch of activity, analyzing the advantages and disadvantages found when using the IES as a data source.

6. Chapter III summarizes the survey methodology from the viewpoint of the national accounts. Based on conceptual differences existing between the IES and the 1993 SNA it makes a methodological proposal for the conversion of the survey data into the national accounting scheme.

7. Chapter IV presents the results of the household accounts for 1984, compiled from the 1984-1985 IES: primary distribution of income account, secondary distribution of income account, and use of income account. A comparison is made between households in large cities and other urban households with respect to income distribution by household activity, by income from wage earners, and by income received in kind. Finally, it includes the results of the households' economic behaviour, in particular with regard to changes in the income and consumption structure by occupational category for 1984 and 1994.

II. Household sector accounts by socio-economic categories

A. The household sector in the SNA

8. A household is defined as "a small group of persons sharing the same dwelling, who share all or part of their individual wealth, and who collectively consume certain types of goods and services, mainly food and dwelling".[2,]

9. There are two categories of households with quite different economic behaviours: persons living permanently in institutions and others living in households as described above. The former represent institutions or communities where people share their dwelling for long periods of time: hospices, penitentiaries, religious communities, etc. In practice, a large portion of those are recorded into government accounts, such as penitentiaries and hospices. However, in the Household Accounts by Categories Project, only the latter households' accounts are considered, due to the lack of adequate information on persons living in institutions.

10. This definition adopted by the Project coincides in general with that of the 1993 SNA. The household members are identified with the dwelling in which they normally live, in spite of temporary absences due to working commitments, vacations or for health reasons. Tenants and boarders[3] are not a part of the household in which they live, since they represent an independent expenditure unit. Household servants do not belong to the regular household either. Even though they receive room and board as payment in kind, they do not have any income rights or rights over their employer's wealth; as such, they are considered as separate households. On the other hand, boarders are considered as household members provided they have lived there for more than three months.

B. Types of sub-sectoring of the household sector

11. Households include persons with diverse socio-economic characteristics. Consequently, more homogeneous household groups can be formed through sub-sectoring, depending on socio-demographic and economic criteria and on geographic location. The 1984 and 1994 household accounts provide for sub-sectoring according to three main criteria: occupational category, geographic area, and by the activity from which the income is generated.

1. Sub-sectoring by occupational category

12. s recommended in the 1993 SNA, all households may be grouped into sub-sectors according to the type of income they receive, mainly: employers' mixed income, mixed income of self-employed workers, wages and income for property income and transfers.[4] These income groups allow the classification of households by the occupational category to which they belong: employers' households, households of self-employed workers, households of wage earners, and households whose main source of income comes from property income or transfers.

13. Another sub-sectoring method requires that the reference person for each household be identified, defined as "the household member who in general has the highest income, although he can also be the one making the important household decisions."[5] According to the definition prepared by the IES, the household head is the person "covering most of the household's expenditure."[6] In adopting this criterion, all households can be additionally divided according to this person's characteristics, such as sex, branch of activity, educational level, etc., the same characteristics applying to the person contributing the largest portion of the income.

14. In DANE's Household Accounts Project, classification by occupational categories is based on the reference person, identified as the household head. Three large household groups are considered:

Households of wage earners;
Households of independent workers;
Other households.

15. The wage earners group is divided into three sub-groups: government employees, employees of private companies, and household servants. The independent workers' group is formed of employers' households and of households of self-employed workers, while the group "others" includes those households which are headed either by unemployed or inactive persons.

16. It should be noted that household sub-sectoring by occupational categories from the IES has some limitations, as explained below.

17. The first limitation consists in the fact that the IES was basically designed to study income receivers, and as such is adequate for the identification of labour by occupational categories, mainly workers, employees, household servants, employers, and self-employed workers. It completely excludes household helpers who do not receive pay, since they do not receive any income.

18. The second limitation is that it is not possible to accurately determine the line dividing unemployed persons (who by definition belong to the economically active population) and inactive persons from the IES;[7] as both these two categories are included in the same group of "other households". Both are only identified by their income type: both inactive and unemployed persons state that they do not receive income on account of paid work or for independent work, and that their income comes mainly from transfers, occasional payments, and capital rents. On a conceptual level, the main difference between these groups lies in the fact that unemployed persons are currently looking, or have been looking for a job, while inactive persons do not need to work or cannot work. The only way to tell unemployed persons from inactive persons would be to ask the household head at the time the survey is being made whether he or she is (or has been) looking for a job; however, the IES questionnaire does not include this question.

19. The third limitation is that it is not possible to make a difference between the various types of inactive persons, such as pensioners, rent receivers, or receivers of other transfers.

2. Sub-sectoring by regional criteria

20. In classifying all households by regional criteria, a distinction can be made between households located in large cities, households located in other urban areas, and rural households. Household sub-sectoring by geographic location for national accounts was done by taking into account the Income and Expenditure Survey's coverage: the 1984-85 IES was carried out in 15 large cities, and the 1994-1995 IES covered 23 cities. As such, there are three household subsets in the household accounts: resident

households in large cities, households from the rest of the urban areas, and households from rural areas. Accounts for large cities are compiled directly from the survey, while accounts from the rest of the urban areas and from the rural areas are estimated. Nevertheless, no accounts were prepared for the rural areas for 1984, since at the time there was no data available on the income and expenditure of rural households.

21. The methodology used to estimate the income and expenditure variables for the rest of the urban areas consists of the following processes: All the population is classified as either urban or rural, according to the rural definition in DANE's Household Survey. According to this definition, rural municipalities are those that, in the first place, have a population under 10,000 inhabitants, and municipalities with populations over 10,000 inhabitants at the municipality's capital, but with an agricultural economically active population higher than 50%, or a number of residents 50% lower than the entire municipality.[8] Results obtained indicate that the distribution of urban/rural population in 1984 was 56% urban and 44% rural, while according to the traditional definition this relationship was 67% and 33% in 1985.[9]

22. The National Household Survey definition of rural areas was adopted for household accounts in the national accounts due to the fact that this is the only source with which to measure income in rural areas from 1992 on. As such, it is necessary to keep the identity between the NHS definition and the national accounts.

3. Sub-sectoring by type of economic activity

23. The classification by type of economic activity used in the household sector comprises 35 branches. The classification was cross-classified with income received, allowing us to identify the activity from which a specific revenue comes. It should be noted that this income was classified according to the activity of the household head.

III. Data sources for compiling household sector accounts

24. The data for the household sector accounts is mainly provided by household surveys. In Colombia, DANE carries out two of these surveys: the IES, and the NHS. The IES measures household income both by source and structure and by its use for the purchase of various goods and services. The NHS includes detailed data on the characteristics of the labour force, and also provides some data on household income. The 1984-85 IES was used for the Household Accounts Project of 1984, from which the three accounts were compiled: the allocation of primary income account, secondary distribution of income account, and use of income account. The main source of data for the 1994 household accounts is the 1994-95 Income and Expenditure Survey.

25. The Multisector Economic Census of 1990 and the Mine Census of 1988 were used to measure the productive activity of unincorporated household enterprises. The production account for household businesses was prepared from the census, taking 1990 as the base year for the industry, commerce, construction, services, and transportation sectors; the production account for mining households was based on the year 1988.

26. The NHS is a survey to measure changes in employment and unemployment levels, as well as other variables related to the labour force. Additionally, the NHS allows the study of socio-demographic characteristics such as household sector structure by sex, by age, by family relationship, by marital status, by education, etc. It is carried out quarterly and covers seven cities.

27. From a national account viewpoint, the NHS's scope as a data source is quite limited compared to the IES. First, the NHS covers only seven metropolitan areas representing only 65% of the urban population. Second, the NHS investigates income variables in an aggregated manner, measuring economic revenues from work, payments in kind, profits, and other non-wage related economic revenues. Finally, the NHS does not provide any data on households consumer expenditures.

28. Nevertheless, this is the only investigation currently available in DANE that measures rural household income from 1992, from the rural module applied annually in September. Consequently, the NHS is used as a data source which allows us to reinforce the household accounts in the following ways:

As a data source for revenues of the rural portion of the population;
As a basis with which to extrapolate urban household revenues from 1985 to 1993, and from 1995 onwards, taking the 1984 and 1994 accounts as base years;
As a source allowing the periodic measurement of changes in income structure.

A. The 1984-1985 IES as a data source for household sector accounts

29. The 1984-85 Income and Expenditure Survey has an immediate goal, namely the study of household expenditure structure, used to calculate the family budget. The Consumer Price Index is implemented from this budget, and price variations are measured for items in this budget. For national accounts (and particularly for household sector accounts), the 1984-85 IES not only provides data with which to measure household expenditures, but is also the best source of data on Colombian household income. It allows us to know in detail the composition of the income, relating its distribution with household socio-economic characteristics, and especially to classify revenues by occupational categories and by the activity of the household head. Additionally, the IES facilitates the collection and measurement of economic issues that are specific to Colombian households, such as payments in kind, own-account production of certain goods and services, etc.

30. The 1984-85 IES' methodological design, and that of the more recent 1994-95 IES, are coherent with the 1968 SNA income and expenditure measurement parameters.[10] However, it is necessary to adjust the survey's concepts of income and expenditure to the national accounts methodology in line with the new version of the System of National Accounts (1993 SNA).

31. Both the 1984-85 IES and the 1994-95 IES were concluded within 52 weeks, from March 1 until February 28 of their respective years. The first one covered 15 cities with populations of over 100,000, providing a good sample of the country's various regions and climates. The second one covered 23 cities.

B. Conceptual differences between the 19841985 IES and the SNA

32. Due to various levels in the management of the survey data generating microeconomic data, on the one hand, and the national accounts handling macroeconomic aggregates on the other, the concepts defined in the IES do not always correspond to the accounts' variables. The following are the main aggregates, according to the 1993 SNA, involved in household accounts; some conceptual differences between the Income and Expenditure Survey and the accounts are established afterwards.

33. First: the difference between the IES and the 1993 SNA concepts lies in the IES coverage compared to that of national accounts: while the national accounts are compiled for the whole nation, the survey only covers a portion of the universe, corresponding to 15 cities (in 1984 the population of 15 cities represented 40% of the country's, and 72% of the urban population). As such, in order to establish

aggregates on a national basis, it is necessary to estimate variables from the rest of the urban area and from the rural population.

34. Second: there is a difference in that the IES adopted the expanded household definition, in which tenants and household servants with their children are a part of the household. In contrast, the SNA household concept excludes both household servants and tenants. This definition of household was adopted in the household accounts.[11]

35. Third: there is a difference in the concept of primary income between the 1984-95 IES and the national accounts: while the first assigns to primary income all revenues from work (paid work and the wages of independent workers) and rent, in the national accounts this concept is broader and includes not only income from work, but also property income.

36. Fourth: there is a significant difference in the treatment given to rent: for the IES both imputed rent and real rent are a part of primary income. However, according to the 1993 SNA, imputed rent contributes to gross operating surplus, while real rents are a part of the household's mixed income.[12]

37. Fifth: the IES only considers variables reflecting both phases of the distribution process and of the income redistribution process: distribution of primary income and distribution of secondary income. Transfers between households, tax payments and social security payments by households, social security cash payments received by households from other institutional sectors correspond to the latter. Nevertheless, the purpose of the accounts and of the 1993 SNA is to reflect the process of income redistribution in its third phase, namely the redistribution of income in kind, through social transfers in kind, with an important component represented by social benefits in kind.[13] According to the national accounts' methodology, the latter are recorded in a sub-account for this purpose: "Redistribution of income in kind account".

38. Sixth: the result of the second redistribution phase is disposable income. According to the survey, disposable income is the maximum income level that a household may have in order to satisfy its needs. From the viewpoint of the 1993 SNA, the households' income increases because of social transfers in kind. The result is adjusted disposable income, determined by disposable income plus social transfers in kind.

39. Seventh: transactions of used goods, from the viewpoint of the national accounts, are considered as negative consumption for the household selling, and positive consumption for the household buying. Nevertheless, for the survey these transactions generate an expenditure for the household, and as such are recorded as any other purchase made by the household (the sale is recorded as an occasional cash entry).

40. Eight: the concept of household investments in the survey is more limited: considered as such are house purchases in cash, and the first installment paid for a house purchase (or land purchases), although depending on the accounts' methodology, investment expenditure includes both the cost of the initial installment and the cost of the financed portion, and is recorded in full in the year in which the purchase is made.

C. Compiling the IES data

41. The compilation of household accounts independently from household surveys requires the prior conversion of their variables to macroeconomic aggregates, according to the 1993 SNA definitions. This process involves adjusting the period and the analysis unit of the IES coverage on a national accounts level, and standardization of the survey's monetary variables with the forms of the national accounts.

42. The IES yearly adjustment to the national accounts' year consists in converting the IES year beginning in March 1 and ending in February 28 of the following year to the accounts' calendar year, i.e. from January 1 until December 31 of that same year. In order to avoid a periodicity problem in the compilation of the household accounts, data from the IES's conformed file was used, in which all of the data is converted to monthly values. Being average values representative of any of the year's months, the seasonality problem of income and expenditure is avoided. The monthly IES data is multiplied by 12 months to bring them to a calendar year.

43. The next step is to adapt the concept of the IES's analysis unit to the definitions in the household accounts. It was decided to record the income and expenditures of households based on the IES's "expenditure unit", this being the most adequate according to the definitions of the national accounts. By definition, the concept of the IES's "expenditure unit" is practically identical to that of "household", as described in the 1993 SNA.

44. The adjustment of the IES's geographical coverage consists of estimating variables from the rest of the urban area and compiling the accounts for rural households. Consequently, household accounts are prepared for the following subsets: large cities and the rest of the urban areas, also used for the entire urban area, and accounts from rural areas. The main difficulty lies in compiling the distribution account and the use of income account of rural households, since this part of the universe requires some estimates.

45. The next step is to standardize the variables of income and consumption according to the national accounts. It should be noted that the conversion of consumption variables requires the use of methods that are entirely different from those used for converting income variables. The methodology for the conversion of monetary variables (consumption and income) is explained below.

46. *Consumption.* The IES handles some 800 items for consumption of goods and services, which are used to prepare the Colombian household budget. However, this degree of detail does not correspond to the national accounts' nomenclature, which handles more aggregated data. Consequently, a conversion table was prepared for the household accounts, including the IES items (both for 1984-85 and for 1994-95) and including three separate classifications: the United Nations Classification of Individual Consumption by Purpose (COICOP) in its last 3-digit version of 1996; the 4-digit Central Product Classification (CPC), adapted for Colombia; and finally, the 4 and 6-digit International Classification by Activity (ICA; see Table 1 in the annex).

47. *Income.* Those IES income variables with disaggregation higher than that of items in the accounts are aggregated according to the SNA definitions. This is particularly the case for wages and salaries, and for payments in kind. Wages and salaries in kind are an element from item D.1 "Paid work" from the allocation of primary income account. Salaries and wages include basic salaries, overtime, cash subsidies, representation expenditure, tips, premium payments, bonus payments, and others. Payments in kind include elements such as food, dwelling, clothing, education, transportation, and own-account production (see Table 2). Instead, when the IES variables mix various income items belonging to different macroeconomic variables, from the viewpoint of the accounts, these items have first to be broken down into their primary elements, for later inclusion in the accounts form. For example, mixed income includes not only those income elements defined in the IES as "income from independent work", but also values from real household rent, as well as a portion of the "Profits and gains from investments". Table 2 summarizes the conversion methodology of the IES variables into items of the national accounts.

48. The next step is to estimate those variables which were not covered, or were only partially covered, by the IES (see Table 2). Some of these estimates were made from variables in this survey, such

as severance payments,[14] calculated on cash salaries and wages, while some others were obtained using data sources other than the IES (for instance, DANE's public administration accounts are used for taxes on lotteries and for gambling,).

IV. Results of the Colombian household sector accounts

49. In 1984, the Colombian population was approximately 28.9 million people, with an urban population of 56% and a rural population of 44% (Table 3). The urban population, additionally, is divided into that of the 15 large cities[15] and that of the rest of the urban area, with 11.6 million (72%) and 4.6 million people (28%) respectively.

50. The 2,332,715 households from the 15 cities are classified by occupational categories (Table 4): 49% are households whose heads receive wages, 38% are households with independent heads, and 12% represent "other households" whose heads are either inactive or unemployed. Within these groups, households with more homogeneous characteristics stand out: households of wage-receiving heads are divided into workers' households (9%), employees (39%), and household servants (0.6%). Households of independent heads are divided into self-employed workers (32%) and employers (7%).

51. The amount of primary income for the entire urban area is 2,569,679 million pesos for 1984 (Table 5), from which paid work accounts for 44%, mixed income 37%, gross operating surplus 17%, property income received 2.6%, and paid property income 0.8%. Paid work is divided into wages and salaries (41%, including severance payments) and employers' social contributions (3%). The distribution of primary income by category indicates that 50% is received by wage earners, 41% by independent workers, and 9% by "others".

52. Further results on the secondary distribution of income account are given in Table 6.

53. The "use of disposable income account" shows how households divide their disposable income between consumption and savings. It is worth noting that expenditures on final consumption do not include expenditures on valuables or on house purchases, since these are considered gross fixed capital. For the disaggregation of final consumption, the 1984 Household Accounts Project applies COICOP, separating out ten end-user groups. The balance of this account is household savings, representing 23,588 million pesos for the entire urban area (see Table 7). It should be noted that savings amount to only 1% of the entire household disposable income. This figure reflects some household revenue elements such as transfers and property income, which the IES underestimates.

54. The distribution of primary income between the 15 cities and the rest of the urban area is 77% and 23%, respectively, whereas 72% of the population live in the 15 cities and 28% in the rest of the urban area (Table 8).

55. Further results for 1984 on the distribution of household income by occupational category are given in Tables 9 and 10.

56. The Income and Expenditure Survey allows us to make broader studies of the household sector, and particularly to identify changes in the composition of income and consumption during a 10-year period, taking 1984 and 1994 (years during which the survey was conducted) as reference points. Tables 10 to 15 summarize household income and expenditure data for 1984 and 1994 by household occupational category.

57. The distribution of households by large groups of occupational categories in 1984 was 49.18% wage earners, 38.20% independent workers, and 12.62% “others” (inactive and unemployed), while in 1994 these percentages were 46.89%, 39.62%, and 13.49% respectively (see Tables 10 and 11).

58. The structure of income by type is the following: income from paid work, 37% in 1984, compared with 41% in 1994; income in kind came down from 3% to 1%; income from independent work increased from 28% to 30%; capital income dropped from 8% to 5% and transfers increased from 8% to 9% between 1984 and 1994, respectively. During these 10 years, monetary income from paid work increased by 9% (its relative weight went from 37% to 41%), income in kind decreased by 2/3, and capital income decreased by 30%.

59. The structure of final consumption expenditure by occupational category in 1984 was the following: 48% was consumed by wage earners, 41% by independent workers, and 11% by “others”. A slight change can be seen when comparing those results with the 1994 data which show 46%, 40%, and 14%, respectively for the same groups (see tables 12 and 13).

60. The consumption expenditure structure indicates that the main consumption items in 1984 were food, gross rent, and transportation/communications, with 26%, 24%, and 11%, respectively, while in 1994 these percentages were 24%, 23%, and 12%. Expenditure on food fell from 1984 to 1994, while transportation and communications expenditure increased, as well as that on hotels, cafes and restaurants (see again tables 12 and 13 and for more consumption details tables 14 and 15).

Table 1: Conversion of IES consumption variables to COICOP, the CPC (as per DANE's National Accounts) and ICA3

Code	EIG (1994 - 1995) item	1993 SNA	New Base - National Accounts	ICA 3
1000	Markets without specifying products	1.1.9	19.08	1549
1010	Pre-cooked foodstuff (pastries, pies)	1.1.1	19.09	1549
1011	Salt	1.1.9	09.02.01	1422
1012	Seasoning (cumin, pepper, food colors, cinammon, cloves, nutmeg)	1.1.9	19.07	1549
1013	Tomato sauce and paste	1.1.9	19.07	1549
1014	Mayonnaise	1.1.9	19.07	1549
1015	Mustard	1.1.9	19.07	1549
1016	Chili sauce, hot chilli	1.1.9	19.07	1549
1017	Vinegar	1.1.9	19.06	1549
1018	Yeast and essences, chocolate paste for cakes	1.1.9	19.08	1549
1019	Jams and marmalades	1.1.8	19.01.04	1513
1020	Guava paste candy	1.1.8	19.01.04	1513
1021	Arequipe	1.1.4	19.09	1549
1022	Sweets, candies, caramels, chocolates, bonbons	1.1.8	18.03 - 18.04	1543
1023	Fried food: potato chips, banana chips, others.	1.1.7	19.09	1549
1024	Honey	1.1.8	16.04	1542
1025	Jelly, puddings, flan.	1.1.8	19.04	1549
1026	Powdered fresh drinks (Tang, Cool Aid, etc.)	1.1.8	19.08	1549
1027	Powdered ice cream	1.1.8	14.06	1520
1028	Ready to eat ice creams (ice cream bars, cones)	1.1.8	14.06	1520
1029	Ice, in blocks and cubes	1.1.8	20.05.03	1554
1030	Preserves and pickles (capers, olives, cucumbers, pickles in general)	1.1.6	19.01.01	1513
1031	Soups: vegetables, cereals, meat, chicken, fish, broths, concentrated, canned.	1.1.2	19.05	1549
1032	Other prepared sauces for pasta, meats, pizzas, etc.	1.1.9	19.07	1549
1033	Other prepared seasoning, including kitchen's herbs	1.1.9	19.07	1549
1034	Dehidrated and cristalized fruits (plums, grapes, pears, and prunes)	1.1.6	19.01.03	1513
1035	Preserved fruits, canned (apricots, pineapple, figs, etc.)	1.1.6	19.01.03	1513
1036	Fresh or processed fruit juice (carton, can, jar, bag), fruit pulp, etc.	1.1.6	19.01.02	1513
1037	Baby food (mashed, purées, creams)	1.1.6	19.09	1549
1038	Vegetables, canned: beans, peas, corn, salads, asparagus, string beans)	1.1.7	19.01.01	1513
1039	Peanuts (uncooked and cooked)	1.1.6	19.01.03	1513
1041	Panela (a hard sweet bar made from sugar cane)	1.1.8	16.03	1542
1042	Refined sugar	1.1.8	16.02	1542
1043	Raw or natural sugar	1.1.8	16.01	1542
1051	Ground coffee (bag)	1.2.1	17.02	1549
1052	Instant coffee (jar)	1.2.1	17.02	1549
1053	Coffee in grain	1.2.1	17.01	1549
1061	Chocolate in tablets	1.1.8	18.01	1543
1062	Cocoa and chucula (powdered chocolate or in balls)	1.2.1	18.01	1543
1063	Tea and dry herbs	1.2.1	19.02	1549
1064	Other chocolate products: Milo, chocolate beverages, etc..	1.2.1	18.01	1543
1071	Baskets with various food products	1.2.3	20.02	1551
1111	Rice	1.1.1	15.02	1531
1112	Rice, soup	1.1.1	15.02	1531
1113	Oats, canned, boxed or loose	1.1.1	15.01	1531
1114	Barley	1.1.1	15.03	1531
1115	Barley soup	1.1.1	15.03	1531
1116	Corn soup	1.1.1	15.03	1531
	Continues to code 9312 "Money saved in the previous month"			

Table 2: Conversion of income variables in the IEST to the national accounts forms

	National Accounts	1984-85 IES Variable
D.1	Compensation of employees	
D.11	Wages and salaries, including severance payments, of which	
	In cash	Wages and salaries (excluding technical bonuses and commissions) overtime, cash subsidies, representation expenditure, tips, bonuses.
	In kind	Food, dwelling, clothing, education, transportation, self-supply and self-consumption of goods, other revenues in kind.
	Severance payments	Total amount
D.12	Employers' social contributions, of which:	
D.121	Employers' actual social contributions	Excluded from the IES due to the impossibility to obtain this data from households
D.122	Employers' imputed social contributions	Excluded from the IES due to the impossibility to obtain this data from households. Estimated
B.2	Operating surplus	Self-valuation of the dwelling's rental value, of imputed leases taken as transfers.
B.3	Mixed income	Income from pensions, net real estate and machinery leases, 40% investment profits, value of actual housing leases, revenues from work, services provided, other services provided.
D.4	Property income	
D.41	Interest	
	received	Severance interests, 50% of the "Interests and dividends" item, 40% of the "Other periodical capital revenues"
	paid	Interests paid for consumer loans
D.42	Distributed income of corporations	
D.421	Dividends	50% of the "Interests and dividends", 10% of the "Investment profits", 40% of the "Other periodical capital revenues"
D.422	Withdrawals from income of quasi-corporations	50% of the "Investment profits"
D.43	Reinvested earnings on direct foreign investments	Not obtained from the IES
D.44	Property income attributed to insurance policy holders	Not obtained from the IES
D.45	Land rents and royalties	20% of the "Other periodical capital revenues"
D.62	Social benefits other than social transfers in kind	
D.621	Social security benefits in cash	Disability pensions, retirement pension, old-age pension, etc., cash received for upbringing of children under 12 years
D.622	Private funded social benefits	No data from the survey
D.623	Unfunded employee social benefits	No data from the survey
D.624	Social assistance benefits in cash	No data from the survey

Table 3: Total population, urban and rural 1984

Number of people	Total persons	% Participation
NATIONAL TOTAL	**28,948,721**	**100.00**
Urban total, of which (1)	16,194,650	55.94
Population in 15 cities	11,588,436	40.03
Rest of urban area	4,606,214	15.91

(1) Estimate based in the National Household Survey definition of rurality

Table 4: Classification by occupational categories 1984

15 cities	*Wage earners*	*Independent workers*	*Other households*	*Total households*
Number of households	1,147,306	891,114	294,295	2,332,715
Percent	49.2	38.2	12.6	100.0
Number of people	5,755,763	4,548,392	1,284,281	11,588,436
Percent	49.7	39.2	11.1	100.0

Table 5: ALLOCATION OF PRIMARY INCOME ACCOUNT - URBAN TOTAL
Million current pesos of 1984 – ANNUAL

		Wage earners	Independent workers	Other households	Total households	Percent participation
	RESOURCES					
B.2	Gross operating surplus	175,150	177,100	74,960	427,210	16.63
B.3	Mixed income	183,342	707,238	64,590	955,169	37.17
D.1	Compensation of employees	913,847	160,066	66,430	1,140,343	44.38
D.11	Wages and salaries, including severance payments	846,504	149,337	60,890	1,056,731	41.12
	Of which:					
	In cash	746,232	114,148	50,049	910,429	35.43
	In kind	38,085	25,677	6,670	70,432	2.74
	Severance payments	62,186	9,512	4,171	75,869	2.95
D.12	Employers' social contributions	67,344	10,729	5,540	83,612	3.25
D.121	Employers' actual social contributions	37,249	5,934	2,598	45,782	1.78
D.122	Employers' imputed social contributions	30,094	4,794	2,942	37,831	1.47
D.4	Property income	24,068	26,993	16,897	67,958	2.64
D.41	Interest	14,675	8,336	7,833	30,845	1.20
D.42	Distributed income of corporations	9,211	18,453	8,917	36,580	1.42
D.421	Dividends	5,971	7,570	6,345	19,887	0.77
D.422	Withdrawals from income of quasi-corporations	3,239	10,883	2,572	16,693	0.65
D.43	Reinvested earnings on direct foreign investments	0	0	0	0	0.00
D.44	Property income attributed to insurance policy holders	0	0	0	0	0.00
D.45	Rent	182	204	147	533	0.02
	USES					
D.4	Property income	12,271	7,946	784	21,001	0.82
D.41	Interest	12,271	7,946	784	21,001	0.82
D.45	Rent	ND	ND	ND	ND	ND
B.5	Balance of primary income	1,284,136	1,063,450	222,093	2,569,679	100.00
	% row	49.97	41.38	8.64	100.00	

Table 6: SECONDARY DISTRIBUTION OF INCOME ACCOUNT - URBAN TOTAL
Million current pesos of 1984 – ANNUAL

	ITEM	*Wage earners*	*Independent workers*	*Other households*	*Total households*
	RESOURCES				
B.5	**Balance of primary incomes**	***1,284,136***	***1,063,450***	***222,09 3***	***2,569,679***
D.61	**Social contributions**	0	0	0	0
D.611	Actual social contributions	0	0	0	0
D.6111	Employers' actual social contributions	0	0	0	0
D.6112	Employees' social contributions	0	0	0	0
D.62	Social benefits other than social transfers in kind	22,458	24,524	55,425	102,408
D.621	Social security benefits in cash	22,458	24,524	55,425	102,408
D.622	Private funded social benefits	-	-	-	-
D.623	Unfunded employee social benefits	-	-	-	-
D.624	Social assistance benefits in cash	-	-	-	-
D.7	Other current transfers	*99,891*	*92,238*	*60,006*	*253,120*
D.71	Net non-life insurance premiums	58,832	41,864	11,442	112,137
D.75	Miscellaneous current transfers	40,766	50,187	48,509	140,414
	Current transfers between households (domestic or abroad)	37,136	46,966	43,138	127,208
	Other miscellaneous current transfers	2,400	2,061	5,205	10,650
	Prices for lotteries and games	1,231	1,160	166	2,557
	USES				
D.5	Current taxes on income, wealth	*29,235*	*4,965*	*1,940*	*36,139*
D.51	Taxes on income	14,400	1,007	545	15,953
D.59	Other current taxes	14,834	3,958	1,395	20,187
D.61	**Social contributions**	*77,236*	*12,305*	*5,387*	*94,928*
D.611	Actual social contributions				
D.6111	Employers' actual social contributions	37,249	5,934	2,598	45,782
D.61111	Compulsory employers' actual social contributions	-	-	-	-
D.61112	Voluntary employers' actual social contributions	-	-	-	-
D.6112	Employees' social contributions	9,893	1,576	690	12,159
D.61121	Compulsory employees' social contributions	-	-	-	-
D.61122	Voluntary employees' social contributions	-	-	-	-
D.6113	Social cont. by self- and non-employed persons	-	-	-	-
D.612	Imputed social contributions	30,094	4,794	2,099	36,988
D.62	Social benefits other than social transfers in kind	0	0	0	0
D.622	Private funded social benefits	0	0	0	0
D.7	Other current transfers	*26,404*	*38,307*	*8,142*	*72,855*
D.71	Net non-life insurance premiums	ND	ND	ND	ND
D.75	Miscellaneous current transfers	26,404	38,307	8,142	72,855
B.7	ADJUSTED DISPOSABLE INCOME	1,273,611	1,124,636	322,055	2,721,285
	% ROW	46.80	41.33	11.83	100.00

Table 7: USE OF DISPOSABLE INCOME ACCOUNT - URBAN TOTAL
Million current pesos of 1984 – ANNUAL

	ITEM	Wage earners	*Independent workers*	*Other households*	*Total households*	*% Structure*
	RESOURCES					
B.6	DISPOSABLE INCOME	*1,273,611*	*1,124,636*	*322,055*	*2,721,285*	*100.00*
D.8	Adjustments for change in net equity of households on pension funds.	ND	ND	ND	ND	
	USES					
P.3	Final consumption expenditure	1,277,662	1,106,740	313,295	2,697,697	99.13
P.31	Individual consumption expenditure	1,277,662	1,106,740	313,295	2,697,697	99.13
B.8	SAVINGS	*-4,051*	*17,896*	*8,760*	23,588	*0.87*

Table 8: Household income distribution between 15 cities and the rest of the urban area
Million current pesos of 1984 – ANNUAL

Elements of income	Urban total	15 cities	Rest of the urban area
Monetary income for paid work	910,429	701,528	208,901
Row percentage (%)	100.0	77.1	22.9
Wages and salaries	762,082	582,619	179,464
Overtime	17,321	14,849	2,472
Cash subsidies	30,527	23,547	6,981
Representation expense, tips, etc.	11,997	9,501	2,495
Bonus (service, Christmas, vacation, etc.)	79,139	64,324	14,815
Bonifications	4,960	4,292	668
Other items related with paid work	4,403	2,397	2,006
Income in kind	70,432	52,897	17,535
Row percentage (%)	100.0	75.1	24.9
Food	42,560	32,621	9,939
Dwelling	19,484	15,056	4,428
Clothing	722	475	247
Education	563	452	111
Transportation	3,601	3,457	144
Other income in kind	3,502	836	2,666
Mixed income	955,169	727,811	227,358
Row percentage (%)	100	76	24
Income for pensioners	4,864	3,215	1,649
Real estate and machinery rents (without maintenance expenses)	116,380	93,725	22,655
40% profit from investments	13,376	9,405	3,971
Cost of dwelling rent - real rent	118,127	92,954	25,173
Independent work in commercial production activities	463,971	352,924	111,048
Services provided	233,200	171,609	61,591
Other items related with independent work	5,252	3,980	1,272
Gross operation surplus	427,210	335,960	91,251
Row percentage (%)	100	79	21
Self-valuation of use of dwelling value taken as a transfer	24,283	17,831	6,452
Self-valuation of use of dwelling value	378,100	301,703	76,397
Self-supply and self-consumption	24,827	16,426	8,401

Table 9: Distribution of household income by occupational category - URBAN TOTAL
Million current pesos of 1984 - ANNUAL

Elements of income	Wage earners	Independent workers	Other households	Total households	Structure %
Monetary income for paid work	746,232	114,148	50,049	910,429	-
Row percentage (%)	82.0	12.5	5.5	100.0	-
Wages and salaries	618,848	99,767	43,467	762,082	83.7
Overtime	15,300	1,260	761	17,321	1.9
Cash subsidies	25,217	3,728	1,582	30,527	3.4
Representation expense, tips, etc.	10,573	1,220	204	11,997	1.3
Bonus payments (service, Christmas, vacation, etc.)	67,621	7,696	3,822	79,139	8.7
Bonifications	4,375	389	196	4,960	0.5
Other items related with paid work	4,298	88	17	4,403	0.5
Income in kind	38,085	25,677	6,670	70,432	-
Row percentage (%)	54.1	35.5	10.4	100.0	-
Food	22,204	16,293	4,063	42,560	60.4
Dwelling	8,713	8,424	2,347	19,484	27.7
Clothing	256	353	113	722	1.0
Education	373	132	57	563	0.8
Transportation	3,313	227	60	3,601	5.1
Other income in kind	3,225	247	30	3,502	5.0
Mixed income	183,342	707,238	64,590	955,169	100.0
Row percentage (%)	19.2	74.0	6.8	100.0	-
Income for pensioners	1,571	3,129	164	4,864	0.5
Real estate and machinery rents (without maintenance expenses)	31,413	45,972	38,995	116,380	12.2
40% profit from investments	2,595	8,718	2,062	13,376	1.4
Cost of dwelling rent - real rent	57,261	52,347	8,519	118,127	12.4
Independent work in commercial production activities	45,842	409,986	8,143	463,971	48.6
Services provided	43,121	183,397	6,681	233,200	24.4
Other items related with independent work	1,539	3,688	25	5,252	0.5
Gross operation surplus	175,150	177,100	74,960	427,210	100.0
Row percentage (%)	41.0	41.5	17.6	100.0	-
Self-valuation of use of dwelling value taken as a transfer	11,168	8,599	4,516	24,283	5.7
Self-valuation of use of dwelling value	159,965	148,516	69,619	378,100	88.5
Self-supply and self-consumption	4,017	19,985	826	24,827	5.8

Table 10: Households' income structure by large groups of occupational categories in 15 cities 1984

Elements of income	Wage earners	Independent workers	Other households	Total households	Percentage structure of income			
					Wage earners	Independen workers	Inactive and unemployed	Total households
Percent distribution of number of households	49.18	38.20	12.62	100.00				
Monetary income from paid work - row %	81.73	12.76	5.52	100.00	64.54	11.63	16.89	37.17
Income in kind - row %	54.06	36.79	9.16	100.00	3.18	2.50	2.09	2.77
Income from independent work - row %	13.96	83.80	2.24	100.00	8.25	57.13	5.14	27.81
Capital income - row %	27.37	43.83	28.80	100.00	4.54	8.38	18.50	7.80
Transfers and current benefits - row %	25.13	24.08	50.78	100.00	4.13	4.57	32.39	7.74
Imputed rent - row %	43.30	38.54	18.15	100.00	5.37	15.79	24.99	16.71
Total income - row %	47.07	40.79	12.14	100.00	100.00	100.00	100.00	00.00

Table 11: Households' income structure by large groups of occupational categories in 15 cities 1994

Elements of income	*Wage earners*	*Independent workers*	*Other households*	*Total households*	Percentage structure of Income			
					Wage earners	*Independent workers*	*Inactive and Unemployed*	*Total households*
Percent distribution of number of households	*46.89*	*39.62*	*13.49*	*100.00*				
Monetary income from paid work - row %	**79.89**	**13.12**	**6.99**	*100.00*	**69.93**	**13.34**	**20.50**	*40.53*
Income in kind - row %	**77.06**	**16.57**	**6.37**	*100.00*	**1.24**	**0.31**	**0.34**	*0.74*
Income from independent work - row %	**12.14**	**83.47**	**4.39**	*100.00*	**7.84**	**62.57**	**9.51**	*29.90*
Capital income - row %	**27.50**	**39.20**	**33.30**	*100.00*	**3.26**	**5.39**	**13.22**	*5.48*
Transfers and current benefits - row %	**22.37**	**22.63**	**55.01**	*100.00*	**4.40**	**5.17**	**36.32**	*9.12*
Imputed rent - row %	**43.40**	**37.08**	**19.52**	*100.00*	**13.33**	**13.22**	**20.10**	*14.22*
Total income - row %	*46.31*	*39.88*	*13.81*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*

Table 12: Households' consumption structure by large groups of occupational categories in 15 cities 1984

Elements of income	Wage earners	Independent workers	Other households	Total households	Percentage structure of income			
					Wage earners	Independent workers	Inactive and Unemployed	Total households
Percent distribution of number of households (row %)	49.18	38.20	12.62	100.00				
Food, beverages and tobacco - row %	49.69	39.01	11.30	100.00	26.39	24.57	25.25	25.52
Clothing and footwear - row %	50.68	39.49	9.83	100.00	7.85	7.26	6.40	7.45
Gross rent, fuels and electricity - row %	44.50	40.24	15.26	100.00	22.14	23.75	31.96	23.92
Furniture, accessories, household furnishings, and house care row %	49.27	40.72	10.01	100.00	6.84	6.70	5.84	6.67
Expenses in medical care - row %	52.40	36.15	11.45	100.00	5.58	4.57	5.14	5.12
Transportation and communications - row %	46.90	44.79	8.31	100.00	10.41	11.79	7.76	10.67
Leisure, entertainment and cultural activities - row %	49.55	41.56	8.89	100.00	7.91	7.87	5.97	7.67
Education - row %	46.81	41.90	11.29	100.00	3.35	3.55	3.40	3.44
Hotels, cafes and restaurants - row %	49.58	42.85	7.57	100.00	3.98	4.08	2.56	3.86
Other goods and services - row %	46.84	41.67	11.49	100.00	5.54	5.85	5.72	5.69
TOTAL FINAL CONSUMPTION EXPENDITURE - row %	48.06	40.52	11.42	100.00	100.00	100.00	00.00	100.00

Table 13: Households' consumption structure by large groups of occupational categories in 15 cities 1994

Elements of income	Wage earners	Independent workers	Other households	Total households	Percentage structure of income			
					Wage earners	Independent workers	Inactive and Unemployed	Total households
Percent distribution of number of households (row %)	*46.89*	*39.62*	*13.49*	*100.00*				
Food, beverages and tobacco - row %	45.73	40.05	14.22	*100.00*	24.21	24.44	24.87	*24.39*
Clothing and footwear - row %	48.65	40.41	10.94	*100.00*	7.90	7.56	5.87	*7.48*
Gross rent, fuels and electricity - row %	44.42	38.74	16.84	*100.00*	21.90	22.03	27.43	*22.72*
Furniture, accessories, household furnishings, and house care – row %	45.65	40.08	14.27	*100.00*	6.10	6.18	6.30	*6.16*
Expenses in medical care - row %	53.31	35.36	11.33	*100.00*	6.24	4.77	4.38	*5.39*
Transportation and communications - row %	42.59	43.84	13.57	*100.00*	11.47	13.61	12.08	*12.41*
Leisure, entertainment and cultural activities - row %	47.41	39.83	12.77	*100.00*	5.48	5.30	4.87	*5.32*
Education - row %	50.43	38.72	10.85	*100.00*	4.24	3.75	3.01	*3.88*
Hotels, cafes and restaurants - row %	48.72	39.55	11.74	*100.00*	5.70	5.33	4.53	*5.39*
Other goods and services - row %	45.51	40.93	13.56	*100.00*	6.76	7.02	6.66	*6.85*
TOTAL FINAL CONSUMPTION EXPENDITURE - row %	*46.08*	*39.97*	*13.95*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*

Table 14: Structure of household consumption in 15 cities 1984

Expenditure components of final consumption	*Percentage structure of expenditures*			
2 dígits COICOP	*Wage earners*	*Independent workers*	*Others*	*Total households*
1. FOOD, BEVERAGES AND TOBACCO	**26.39**	**24.57**	**25.25**	**25.52**
1.1 Food	23.57	21.75	23.04	22.77
1.2 Beverages	2.24	2.30	1.72	2.21
1.3 Tobacco	0.57	0.52	0.49	0.54
2. CLOTHING AND FOOTWEAR	**7.85**	**7.26**	**6.40**	**7.45**
2.1 Clothing	5.85	5.45	4.78	5.57
2.2 Footwear	2.00	1.81	1.62	1.88
3. GROSS RENT, FUELS AND ELECTRICITY	**22.14**	**23.75**	**31.96**	**23.92**
3.1 Gross rent	18.08	19.09	26.75	19.48
3.2 Dwelling maintenance and repairs	0.91	0.78	0.92	0.86
3.3 Other dwelling-related services	1.25	1.47	1.86	1.41
3.4 Electricity, gas and other fuels	1.89	2.41	2.42	2.17
4. FURNITURE, ACCESSORIES, HOUSEHOLD FURNISHINGS AND HOUSE CARE	**6.84**	**6.70**	**5.84**	**6.67**
4.1 Furniture, accessories, etc.	1.25	1.05	0.69	1.10
4.2 Household textile products	0.74	0.68	0.52	0.69
4.3 Cookware and heating appliances	0.93	0.73	0.58	0.81
4.4 Glassware, china and utensils	0.30	0.31	0.24	0.30
4.5 House and garden tools	0.18	0.17	0.17	0.18
4.6 Goods and services for regular household maintenance	3.43	3.76	3.65	3.59
5. EXPENSES IN MEDICAL CARE	**5.58**	**4.57**	**5.14**	**5.12**
5.1 Medical products	1.33	1.44	1.55	1.40
5.2 Medical services	1.74	2.03	2.20	1.91
5.3 Hospital services	0.53	0.74	0.71	0.63
5.4 Health and accident insurance	1.98	0.36	0.68	1.18
6. TRANSPORTATION AND OMMUNICATIONS	**10.41**	**11.79**	**7.76**	**10.67**
6.1 Vehicle purchases	3.01	3.27	1.60	2.95
6.2 Personal transportation equipment	3.86	5.43	3.33	4.44
6.3 Transportation services	3.55	3.09	2.83	3.28
7. LEISURE, ENTERTAINMENT AND CULTURAL SERVICES	**7.91**	**7.87**	**5.97**	**7.67**
7.1 Equipment and accessories, with repairs	2.65	2.38	1.82	2.45
7.2 Entertainment and cultural services	2.93	3.07	2.28	2.91
7.3 Periodicals, magazines, books and stationery	1.30	1.14	0.96	1.20
7.4 Vacation programs	1.03	1.28	0.91	1.12
8. EDUCATION	**3.35**	**3.55**	**3.40**	**3.44**
8.1 Education services	2.39	2.65	2.64	2.53
8.2 Educational materials	0.53	0.53	0.51	0.53
8.3 Ancilliary educational services	0.42	0.37	0.25	0.38
9. HOTELS, CAFES AND RESTAURANTS	**3.98**	**4.08**	**2.56**	**3.86**
9.1 Food and beverages	3.59	3.61	2.44	3.47
9.2 Accommodation services	0.39	0.47	0.12	0.39
10. OTHER GOODS AND SERVICES	**5.54**	**5.85**	**5.72**	**5.69**
10.1 Personal care	2.96	2.74	2.82	2.85
10.2 Personal belongings	0.88	0.86	0.52	0.83
10.3 Communications	0.92	1.18	1.22	1.06
10.5 Financial services	0.12	0.15	0.09	0.13
10.6 Other services	0.67	0.92	1.07	0.82
TOTAL CONSUMPTION EXPENDITURES	**100.00**	**100.00**	**100.00**	**100.00**

Table 15: Structure of household consumption in 15 cities 1994

Expenditure components of final consumptions 2 digits COICOP	Percentage structure of expenditures Wage earners	Independent workers	Others	Total households
1. FOOD, BEVERAGES AND TOBACCO	**24.21**	**24.44**	**24.87**	**24.39**
1.1 Food	21.39	21.52	21.83	21.51
1.2 Beverages	2.45	2.59	2.69	2.54
1.3 Tobacco	0.37	0.33	0.35	0.35
2. CLOTHING AND FOOTWEAR	**7.90**	**7.56**	**5.86**	**7.48**
2.1 Clothing	6.02	5.78	4.49	5.71
2.2 Footwear	1.87	1.78	1.38	1.77
3. GROSS RENT, FUELS AND ELECTRICITY	**1.90**	**22.03**	**27.43**	**22.72**
3.1 Gross rent	18.26	17.99	22.81	8.79
3.2 Dwelling maintenance and repairs	0.80	0.79	0.91	0.81
3.3 Other dwelling-related services	1.09	1.21	1.46	1.19
3.4 Electricity, gas and other fuels	1.75	2.04	2.24	1.94
4. FURNITURE, ACCESSORIES, HOUSEHOLD FURNISHINGS AND HOUSE CARE	**6.10**	**6.18**	**6.30**	**6.16**
4.1 Furniture, accessories, etc.	0.73	0.65	0.43	0.66
4.2 Household textile products	0.69	0.59	1.06	0.70
4.3 Cookware and heating appliances	0.68	0.68	0.50	0.65
4.4 Glassware, china and utensils	0.35	0.30	0.28	0.32
4.5 House and garden tools	0.11	0.12	0.09	0.11
4.6 Goods and services for regular household maintenance	3.54	3.84	3.93	3.71
5. EXPENSES IN MEDICAL CARE	**6.24**	**4.77**	**4.38**	**5.39**
5.1 Medical products	1.63	1.68	1.74	1.67
5.2 Medical services	1.53	1.61	1.29	1.53
5.3 Hospital services	0.33	0.43	0.30	0.37
5.4 Health and accident insurance	2.75	1.05	1.04	1.83
6. TRANSPORTATION AND COMMUNICATIONS	**11.47**	**13.61**	**12.08**	**12.41**
6.1 Vehicle purchases	2.58	4.84	3.38	3.60
6.2 Personal transportation equipment	3.51	4.32	3.43	3.82
6.3 Transportation services	5.38	4.45	5.28	4.99
7. LEISURE, ENTERTAINMENT AND CULTURAL SERVICES	**5.48**	**5.30**	**4.87**	**5.32**
7.1 Equipment and accessories, with repairs	2.67	2.68	2.90	2.71
7.2 Entertainment and cultural services	1.70	1.53	1.27	1.58
7.3 Periodicals, magazines, books and stationery	0.98	1.00	0.62	0.94
7.4 Vacation programs	0.12	0.10	0.07	0.10
8. EDUCATION	**4.24**	**3.75**	**3.01**	**3.88**
8.1 Education services	3.29	2.86	2.51	3.01
8.2 Educational materials	0.65	0.65	0.37	0.61
8.3 Ancilliary educational services	0.30	0.24	0.13	0.25
9. HOTELS, CAFES AND RESTAURANTS	**5.70**	**5.33**	**4.53**	**5.39**
9.1 Food and beverages	5.55	5.11	4.47	5.22
9.2 Accommodation services	0.15	0.22	0.07	0.16
10. OTHER GOODS AND SERVICES	**6.76**	**7.02**	**6.66**	**6.85**
10.1 Personal care	3.65	3.69	3.38	3.63
10.2 Personal belongings	0.78	0.75	0.43	0.72
10.3 Communications	1.27	1.45	1.76	1.41
10.5 Financial services	0.17	0.25	0.07	0.19
10.6 Other services	0.89	0.89	1.02	0.91
TOTAL CONSUMPTION EXPENDITURES	**100.00**	**100.00**	**100.00**	**100.00**

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Endnotes

[1] This document is a summary of a document presented during the National Accounts Latin American Seminar in Buenos Aires, Argentina during October 20-24, 1997.

[2] System of National Accounts 1993, Chapter IV "Institutional units and sectors", New York, Paris, Washington D.C., 1993, p. 105.

[3] DANE's NHS defines: boarders are tenants paying for both room and board.

[4] 1993 SNA, op. Cit. Chap. IV "Institutional units and sectors", pp. 87-112.

[5] 1993 SNA, op. Cit. Chap. IV, p. 108

[6] DANE, Income and Expenditure Survey, March 1984, February 1985, "Collection Manual", Bogotá, January 1984, p. 35.

[7] Two large groups form all of the labour force: the economically active population and the economically inactive population. The active population is divided into employed and unemployed persons. Unemployed persons are those who, even though not currently hired, are looking for a job, have looked for one, or are waiting for an answer to an application already filed. Inactive persons are those who do not need, cannot, or are not interested in working, and include housewives, students, pensioners, rent receivers, invalids, etc. DANE, National Household Survey, Phase 94, Santafé de Bogotá, November 1996.

[8] "Recuperation Project of the Historical Series of the National Survey of Households." November 1994, pp. 20-21.

[9] This is the definition of the Colombian population census considering all the population in the municipality's main city as urban. Figures for 1985 are given, on which the population projections were based.

[10] System of National Accounts, Revision 3, document Series F, No. 2, United Nations, New York, 1970.

[11] Within the household, and as a concept reduced in its scope, the IES includes that of the expense unit, which is the same as the set of persons forming the household, minus household servants, tenants and pensioners. This exclusion is made only to investigate members from the expense unit.

[12] System of National Accounts, 1993, op. cit. Ch. 4 "Institutional Units and Sectors", p. 107 and Ch. VI "Production Account", pp. 121-156.

[13] Social benefits in kind are services provided to households by public administration entities or non-profit organizations serving households to satisfy some specific needs, mainly sanitation or education.

[14] Severance payments represent 1/13 of monthly wages and salaries, including bonuses, retained each year by a severance fund. They may be collected by the worker only in case of lay-off or resignation.

[15] The population of 15 cities corresponds to the 1984-85 Income and Expenditure Survey' universe, and includes Bogotá, Medellín, Cali and Yumbo, Barranquilla and Soledad, Bucaramanga, Manizales y Villamaría, Pasto, Cartagena, Cúcuta, Pereira, Ibagué, Montería, Valledupar, Neiva, Villaviciencio, with their respective metropolitan areas.

5. SAMs and SESAMEs

Accounting for welfare with SESAME

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I. Introduction

1. Applied economic analysis of the household sector and its links with the rest of the economy are often seriously hampered by the lack of a consistent, comprehensive data framework. In many countries, it is not so much a lack of data *per se* that is the problem. Official statistics tend to comprise a wealth of information, laid down in many different publications. The main difficulty relates to the lack of integration of these statistics, so that all kinds of events that are interrelated in reality can only be studied in isolation. In particular, this applies to the interactions between economic development and social change.

2. Of course, the lack of integration of statistics hardly applies to economic data, as the national accounts function as a coordinating information system for these data. In fact, one aim of this paper is to demonstrate that the basic principles of national accounts can and should be extended to a wider range of statistics, notably social and environmental statistics. For this purpose, a so-called System of Economic and Social Accounting Matrices and Extensions (SESAME) is set out.

3. *A SESAME is a detailed statistical information system in matrix format, from which a set of core economic, social and environmental macro-indicators is derived.* Although it is impossible to capture socio-economic development in a single indicator, it is equally clear that a prime task of national statistical offices is to condense the countless numbers they collect to a manageable "executive" summary. Such a summary typically describes trends in main indicators (e.g. Gross Domestic Product, population size, (un)employment, inflation, balance on current account of the balance of payments, income inequality, environmental indicator(s), daily calorie intake of the poorest sub-group, average number of years of schooling). Consistent indices covering distributional aspects can also be derived for all variables included in the SESAME, because the system registers both the national total value and its distribution among socio-economic household groups, categories of employed persons, etc.

4. Whatever set of aggregates is preferred, they would all share two crucial features: first, every indicator is computed from a single, fully consistent, statistical information system, and secondly, each indicator uses the most suitable measurement unit for the phenomenon it describes. In essence, SESAME meets the concern expressed in a United Nations' [1977] report: "It is recognized by all that it is not practicable to make a direct measure of the welfare of a community in monetary or in any other terms. The best that can be done is to measure a number of factors that are generally supposed to contribute to or detract from welfare, not forgetting that the distribution of the aggregate among individuals may be as important from the welfare point of view as the aggregate itself."

5. A SESAME goes beyond the more familiar Social Accounting Matrix (SAM) by providing a conceptual and numerical linkage of related monetary and non-monetary phenomena. It breaks down money values in the traditional national accounts into price (changes) and volume (changes). The linkages with other data are thus typically established in non-monetary units such as hours, calories, gigajoules and "volume" changes.

6. The idea of a SESAME has already been sketched in the SAM-chapter of the 1993 System of National Accounts (1993 SNA) [United Nations et al., 1993: Section XX.C.1].[1] The rest of this paper can be seen as an elaboration of that text.[2] First, it is shown how the circular flow of income is represented in a SAM, then the extension of a SAM into a SESAME is set out, followed by a discussion of the applications of the SESAME and compilation issues, and finally various conclusions are drawn.

II. The circular flow of income in the social accounting matrix

7. A SAM is a matrix presentation of a sequence of monetary accounts that each show a certain economic process and the relation of this sequence to other economic processes.[3] It is this presentation in a matrix format that enables the use of the most suitable statistical unit and classification of units in each account. This is a definite advantage as not all economic processes involve the same kind of economic agents. For instance, consumption is largely a household affair, but most income is generated by individuals. Within a corporation, many production decisions are made by the business units, while financing decisions are usually made at the head office. Recording the interactions between economic processes that involve different types of agents requires a matrix format. The alternative, double-entry bookkeeping (or so-called t-accounts), serves well in presenting all transactions plus a balance sheet for a single agent or group of agents, but is less suitable for portraying the interlinkages among the transactions of different types of agents. An additional advantage of the matrix format is that the whole accounting system can then be portrayed and analyzed by means of a single table, unlike the 1993 SNA's central framework, which is a hybrid between (supply, use) matrices and t-accounts (for the institutional sectors).

8. A distinguishing characteristic of all SAMs, except the most aggregate ones, is that they show the entire circular flow of income at a meso-level. This is illustrated for the case of a closed economy in Figure 1. This figure shows the familiar interdependence between production, income generation, income (re-)distribution and consumption. A representation of this simple economy already requires the distinction of four types of statistical "units": 1. products, 2. business units (in SNA terms: establishments), 3. primary input units (e.g. employed persons), and 4. institutional units (largely based on legal units such as households, companies and government units). Individual units cannot be presented as part of an economywide statistic. Instead, units must be grouped so that the interrelations between these categories can be shown and analyzed.

9. Table 1 serves to demonstrate how this circular flow of income is actually depicted in a SAM.[4] As usual, incomes are presented in the rows and outlays in the columns, so that each cell depicts a money flow from the group of actors in the column heading to the group of actors in the row heading. Because total income (or output or demand) always equals total outlays (or input or supply), the totals of the same row and column are also equal. Since Table 1 presents a "real" SAM, it is in some ways more consolidated than the "ideal" SAM shown in Table 20.5 of the 1993 SNA.[5] This divergence illustrates the flexibility of the SAM concept and demonstrates as well that actual compilers of a SAM must design the precise framework on the basis of both the intended uses and the available data (cf. also Keuning and De Ruijter, 1988).

10. At the top of the circular flow of income in Figure 1, production by industries has been selected. This production is shown in row 2, submatrix (2,1) of Table 1. For instance, the output of food and food products by the food agriculture industry and the food processing industry equalled 17,502 billion Rupiah (cell 2A,1A).

11. Next, column 2 contains inputs by industry and in submatrix (3,2) the second part of the circular flow of income is depicted: the generation of income by primary input categories. In other words, in relation to production in each industry, income is generated by the production factors labour and capital, including non-produced capital. For instance, from row 3G it appears that professional and managerial employees earned 33 billion Rupiah in the food agriculture and the food processing industry (cell 3G,2A), and 2,679 billion Rupiah in "other" services, including business services and non-market services (cell 3G,2E).

12. Submatrix (3,2) presents a decomposition of GDP, at factor cost, by primary input category and by industry. Compensation of employees is shown for four occupational categories, and separately for paid and unpaid workers. In the latter case, this concerns an imputed compensation. In practice, these imputations have been calculated at a quite disaggregated level, based on the hours worked of the self-employed, and on the average hourly wage rate of employees with the same background and job characteristics in the same industry.

13. The remuneration for the input of assets in production is split into consumption of fixed capital (row 3K) and a residual, which has been assigned to private national, and public & foreign proprietors. The public & foreign proprietors receive more non-produced capital income than the private national group; cf. the total of rows 3I and 3J. This is largely the result of the enormous profits in (oil) mining; see cell (3J,2C).

14. The allocation of primary income to institutional sub-sectors is presented in columns 3A-3K. This is the third element of the circular flow of income (income distribution). For instance, professional and managerial employees earned 3,152 billion Rupiah in total (cf. row and column total 3G). In submatrix (4_6,3) it becomes clear that more than half of this income ended up with non-agricultural, urban higher-level households (cell 4_6F,3G). The figures in submatrix (4_6,3) also demonstrate that all household groups have multiple sources of income from production. For instance, the households of agricultural labourers acquire only half of their generated income in the form of wages and salaries earned by those agricultural workers.

15. Rows 4_6 contain not only generated income but also other current receipts of the institutional sub-sectors: property income, taxes on income, wealth, etc. and current transfers. Those revenues are received and paid in submatrix (4_6,4_6). That submatrix thus shows the redistribution of income. For instance, dividends and part of the interest flow from corporations to households and to other corporations; see vector (4_6A-4_6G,4_6G). In fact, these receipts mainly accrue to higher-level urban households.

16. Current taxes on income, wealth, etc. are recorded in vector (4_6H,4_6A-4_6G). The lion's share of these levies is borne by (oil) corporations. This vector also includes a small part of land rent, paid by households to the government. Social assistance benefits are fairly insignificant; cf. vector (4_6A-4_6F,4_6H).

17. The rest of the intersectoral current cash transfers (social contributions, other social benefits that are not in kind, non-life insurance premiums and claims, and other transfers) have been consolidated or considered negligible, if they did not involve a household as one of the transactors.[6] For the household

sub-sectors, they have been recorded on a net basis, directly from the paying sub-sector to the receiving sub-sector. In other words, intermediaries such as social security funds, pension funds and insurance corporations have been skipped, except for their service charges, which were recorded as household consumption. There are two reasons for this short-cut. First, data on these transfers were virtually non-existent and, secondly, the social security system was at that time still very much in its infancy in Indonesia.

18. For non-life insurance, it has been assumed that, in each household group, the claims equalled the premiums minus the service charges accruing to the insurance corporations. This implies that the submatrix (4_6A-4_6F,4_6A-4_6F) records receipts (in the rows) and payments (in the columns) of: social benefits and contributions; pension fund benefits and premiums excluding service charges; and miscellaneous current transfers. The only recipients are economically inactive households (e.g. students, households headed by a jobless female whose husband lives and earns an income in another location, unemployed people, and those in old age living on their own).

19. Property income and transfer receipts from the rest of the world are registered in vector (4_6,10). For households, this involves the remittances of emigrant workers. Corporations receive interest and dividends from abroad. Finally, receipts of unrequited official transfers, as recorded on the balance of payments, partly consist of current transfers.

20. In terms of the circular flow of income, columns 4_6 show the links from the distribution of income to, on the one hand, final consumption expenditure (submatrix 1,4_6) and, on the other hand, saving (submatrix 7,4_6). Submatrix (1,4_6) represents the last process in the closed box of the circular flow of income, while the final link, to production, then follows in column 1. To summarize, the four processes of the current economic cycle are represented in this SAM by submatrices (2,1), (3,2), (4_6,3) and (1,4_6). Note that these processes are all linked in the SAM because each time the row in a certain process equals the column of the subsequent process. Since it is a circular flow, the start and end of the cycle can in fact be selected at will. Of course, this representation in the SAM is tailored to all kinds of analytical applications, including, but not limited to, the so-called closed input-output and applied general equilibrium models.

21. At the same time, however, this SAM also demonstrates that the circular flow of income in the closed box represents a simplification of reality. For that reason, in Figure 1 a second circular flow has been included, which is also represented in this SAM.

22. Starting from production (submatrix 2,1), this flow also leads through the generation of income (submatrix 3,2) and the distribution of income (submatrix 4_6,3). Then it continues to saving by institutional sub-sectors (submatrix 7, 4_6), to investment by industries (submatrix 8,7), and to fixed capital formation by product groups (submatrix 1,8), to end up again with production (submatrix 2,1). In this way, it becomes evident, for instance, that a substantial part of the production of “mining, manufacturing & construction” (32,892 billion Rupiah; cf. cell 2C,1C) is used for fixed capital formation in the “other services” industry (3,799 billion Rupiah, at purchasers’ prices; cf. cell 1C,8E), and that both the “corporations & households” sector and the government are investing quite heavily in this industry (2,498 billion Rupiah and 1,445 billion Rupiah, respectively; both including imported fixed assets; cf. cells 8E,7A and 8E,7B), made possible, to a large extent, by the substantial savings in these sectors (11,819 billion Rupiah and 3,456 billion Rupiah, respectively; cf. submatrix 7,4_6). In turn, a closer look at the rest of the (more detailed) SAM would reveal that in this case these huge savings were made possible by exceptionally high (oil) receipts (cf. Keuning, 1996).

23. Similar to the current economic cycle discussed above, this snapshot or, preferably, a time-series of such SAMs, may supply both the analytical structure and the actual parameters of all kinds of modelling applications. The social aspects are then explicitly taken into account by means of the household classification in all accounts. However, for a full-fledged incorporation of social issues, a SESAME is required.

III. From SAM to SESAME: the welfare chain

24. Although a SAM provides a useful insight into the driving forces and the interlinkages that make an economy work, it is still incomplete as a framework for comprehensive (household) welfare analysis. For a SAM is fully set in monetary units, whereas (changes in) welfare attributes are typically measured as (changes in) "volume" units (cf. Keuning, 1998).

25. In a SESAME, the SAM figures are reconciled with related data which are available from all kinds of dispersed sources. The total system can be viewed as a welfare chain, as depicted in Figure 2.[7] Obviously, this figure is an extension of Figure 1 discussed above.

26. Whereas Figure 1 represents the money flows in a closed economy, Figure 2 provides the stocks and non-monetary flows behind and beyond these money flows. People, time and assets are placed in the centre of the figure, and at the beginning of the welfare chain. For every period, all activity starts with the availability of people, time and assets.

27. *People* refers to the number of persons by household group, cross-classified by characteristics that play a role in consumption behaviour or income generation characteristics (age group, sex, location of residence, within/outside the labour force, educational attainment, etc.). *Time* is obviously the 24 hours in a day and the 365 days in a year that people have available for consumption (the arrow from the middle to the left), income generation (the arrow from the middle to the right), non-income generating production within the household (the arrow from the middle to the top), and leisure time that is not spent on consumption (mainly sleeping). *Assets* consist of (1) produced assets, such as dwellings, computer software and inventories, (2) financial assets and liabilities, and (3) non-financial, non-produced assets, such as land, subsoil assets, patented entities and purchased goodwill; cf. Annex V.D of the 1993 SNA.

28. People, time and assets are combined in production processes and thereby income is generated. So the second shell in the welfare chain is the economic cycle, already explained above. In this case, production includes non-income generating production within the household. The income generating production is subsequently (re-)distributed and then used for consumption expenditure and saving. However, welfare goes beyond the money flows in this cycle. In fact, welfare cannot even be expressed in monetary terms. For many welfare attributes (household work, pollution, etc.) are in reality not paid for, and if they had fetched a price, they would not have been consumed in the same quantities in which they actually were consumed.

29. Even if welfare attributes are paid for, they usually do not fetch a uniform price. An obvious example is the intake of nutrients. A dollar spent on a cheap variety of a certain food item will typically yield more calories than one spent on an expensive variety. For instance, from the SESAME for Indonesia, which distinguishes just ten household sub-groups, it appeared that the poorest sub-group got 1.6 times as many calories per Rupiah spent on fish than the richest sub-group.

30. So, the end of the welfare chain consists of all kinds of welfare attributes expressed in non-monetary units. This transformation is needed anyhow to remove the influence of inflation on the money

flows. In some cases, commodity volumes can be conveniently aggregated by means of another kind of conversion. Evidently, quantities of food items can be expressed in calories and proteins, in order to arrive at some measure for the nutritional status of the population. The consumption of educational services can be expressed in terms of years of schooling successfully completed, and so forth.

31. The conversion of consumption expenditure into non-monetary welfare attributes is shown at the left-hand side of this diagram. In addition, the welfare attributes derived from non-income generating production should be taken into account. This is done at the top right-side of Figure 2. Ideally, for services like childcare and housekeeping, output volumes should be estimated. If these are not available, the time spent on these activities may serve as a proxy measure.

32. Finally, welfare is influenced by the external effects of production and consumption. The most obvious example concerns the effects on the environment, which are explicitly taken into account in the SESAME concept, by means of the so-called NAMEA-module (NAMEA stands for National Accounting Matrix including Environmental Accounts); see section III.C below. In addition, various other external effects, such as the positive social effects from (basic) education can be presented in the SESAME.

33. Regarding the complete welfare chain, it is important to note that the various elements of the current economic cycle (and the SAM) are connected through *additive* definition equalities (e.g. output of production equals intermediate input plus value added; or: generated income equals value added plus primary income from abroad minus primary income to abroad). On the other hand, the linkage of the SAM to the SESAME is typically through *multiplicative* definition equalities (employment times wage rate equals labour income, consumption volume times price equals consumption value, output value divided by output price times emission factors yields emissions of pollutants, et.). It may be imagined that a SESAME adds a third dimension to the two-dimensional SAM (the SAM-values are supplemented with a similarly sized matrix of average prices and with a similarly sized matrix of volumes). This is, in fact, more easily represented in an electronic database than on paper. In any case, just like a SAM and input-output tables, the design of the SESAME is largely determined by definition equations, and this is an important analytical advantage for a multi-purpose information system.

34. Summarizing, a SESAME supplements a SAM with the following type of information:

(1) Various *stocks underlying the SAM-flows*, such as:

(a) Size and composition of the population by household group including the potential labour force;
(b) Production capacity by industry;
(c) The possession of assets (e.g., agricultural land, subsoil assets, consumer durables and financial assets) and liabilities (e.g., external debts) by sub-sector.[8]

In some cases, the SAM flows connect the opening and closing stocks. In other cases, the size of the (year-average) stocks serves to show the magnitude of related flows in their true perspective.

(2) *A decomposition of (changes in) SAM values into (changes in) volumes and (changes In) prices*. For this purpose, SAMs for a range of years should be supplemented, first, by SAMs at constant prices (of a previous year).[9]

(3) *Meso-level, non-monetary data underlying the core macro-indicators*. For a connection to the SAM, the non-monetary data should at least be classified in the same way. In some

cases, a closer link can be established. For instance, in tables on calorie intake not only should the same taxonomy of products and households be used as in the SAM, but the figures should also be consistent with the consumption values registered in the SAM. A similar line of reasoning applies to e.g. labour and schooling accounts. The reference to core macro-indicators mainly serves to set priorities. In addition, many other statistics can usefully be incorporated; see e.g. the United Nations' [1975] publication on a System of Social and Demographic Statistics (SSDS).

(4) *Re-routings or imputations not shown in the SAM proper.* In the SAM, it may not be opportune or feasible to insert all imputations and re-routings prescribed by the 1993 SNA. This concerns, for example, the estimation of "adjusted" disposable income and "actual" final consumption by household sub-group[10]. In general, such tables may link the SAM to tables in which activities, products and expenditures on social protection are identified.[11]

(5) *A breakdown of several transactions shown in the SAM according to a third criterion.* Examples of such three-dimensional tables are:

(a) property incomes by type (rent, dividend, interest, etc.) as well as by paying and receiving sub- sector;
(b) financial transactions both by type of financial asset and by creditor and debtor sector;
(c) all primary input categories by paying industry and by receiving sub-sector.

35. Various examples will be worked out in the next section of this paper.

IV. Presenting the welfare chain in SESAME tables

36. The implementation of these principles when compiling a SESAME should obviously depend on specific circumstances and needs. Below, four examples will be worked out: (1) linking a SAM to employment and socio-demographic information, (2) linking a SAM to welfare indicators related to household consumption, (3) linking a SAM to environmental effects, and (4) linking a SAM to non-income generating production within the household. For presentation purposes, these extensions will each be presented separately. It is important to note, however, that a combination of these extensions does not pose any additional methodological or data problems, while the analytical possibilities are greatly enhanced. For instance, a combination of extension 1 and 3 above is expedient if one wants to simulate the employment and distributional effects of putting a price tag on pollution.

A. Employment and socio-demographic accounts

37. Linking a SAM to employment and socio-demographic information is shown in Tables 2 and 3. The upper part of Table 2 is just a further disaggregation of a household labour income block (the upper left-hand part of submatrix 4_6,3 in Table 1) of the SAM. The coding system provides the linkage between Tables 1 and 2. For instance, the top left element in submatrix (4_6,3) of Table 1, compensation of agricultural employees received by agricultural labourers' households, agrees with the sum of the first two elements on the first row of Table 2 (835+96=931).

38. The lower part of Table 2 reflects the actual labour input, measured in full-time equivalents, by household group and labour category. Evidently, Indonesia was still very much an agricultural society at the time; almost half of total employment, including self-employment was created in farming, fishery and the like. In fact, this lower part of Table 2 shows the labour supply in Indonesia. Similarly, an employment table underlying submatrix (3,2), except the last three rows of course, is available [Keuning, 1996: Table II.5]. That employment table depicts labour demand. Both for labour supply and for labour demand, average wage rates per full-time equivalent have also been integrated into the system. In this way, the SESAME provides a quite detailed ex post insight into the functioning of labour markets. Particularly if a time-series of such overviews is available, the linkage of household income (distribution) to the production and demand structure can be much better analyzed and forecast than at present. In fact, in view of the paramount importance of (un)employment issues all over the world, this information system may be relevant to quite a number of countries.

39. The linkage of employment to demographic issues is shown in Table 3, which shows, by household group, the number of households, the population, the average household size, the potential labour force, the full-time equivalent employment (40 hours per week during the whole year), and the potential labour force participation rate. Of course, total employment by household group equals the concomitant row totals in the lower part of the previous table.

40. In Table 3, employment is broken down by sex, which is expedient for the linkage to demographic issues. The potential labour force participation rates are higher for men than for women, and are very low in those households which depend on transfer income (i.e. mainly female-headed households depending on an absent (working) male, students and pensioners). The percentages are even above one hundred for males in lower level non-agricultural households, which demonstrates that many men in these households work extremely long hours to earn a (minimal) living. Finally, it is intriguing that by far the richest families, the urban higher level households, are also the largest ones, on average. This is only very partially explained by live-in servants. In general, average household size increases quite consistently with household income in Indonesia (cf. also Downey [1984]).

41. From a comparison of this table for various years, a number of core macro-indicators are derived, with a direct linkage to underlying trends by household group. First of all, total population growth can then be computed, and related to the changes in sub-group sizes. For instance, in the Indonesian case-study, it was found that an average population growth of 2.3% per year coincided with a decreasing size of the medium and large farmers' groups by more than 3% per year. The highest population increases appeared in the urban sub-groups and with small farmers.

42. Secondly, the change in employment can be derived, both for a country as a whole and by household group. Thirdly, the potential labour force participation rate is a useful indicator for measuring the degree to which the working-age population is actually employed. Ideally, this indicator should also include the time spent on non-income generating work and should be supplemented by an indicator that gives the time spent on study.

43. Table 3 can in turn be linked to much more detailed socio-demographic accounts by sub-group, including, for instance:

(a) A subdivision of the households by household size and composition;

(b) A breakdown of the population by age group and position in the household;

(c) A breakdown of the potential labour force into the actual labour force (subdivided)

into people working and the unemployed) and those outside the labour force (subdivided into students, housewives (or - husbands), the disabled, and others);

(d) Breakdown of the employed by type of contract and number of hours worked (in ddition to the breakdown by labour type shown in Table 2; and

(e) Matrices that depict transitions during the year (e.g. births, deaths, entries and exits from the working-age population, emigration, immigration and vementsamong household sub-groups).

B. Welfare indicators related to household consumption

44. Probably, households spend their income on consumption in order to increase their welfare. Yet, the change in total household consumption expenditure per capita is an insufficient indicator of the change in national welfare because of the existence of inflation, poverty, sub-optimal distributions among households, government expenditure on individual consumption goods and services, consumer surpluses, unequal needs in households of different sizes and compositions, external effects, etc.

45. Naturally, some of these influences can be captured by considering the volume growth rate of actual national consumption per capita adjusted for distributional changes and equivalence scale shifts, instead of the simple growth rate of consumption expenditures per head. However, significant external effects cannot be internalized ex post, so they must always be covered by separate indicators, and the same applies to consumer surpluses. In addition, if most of the poor live from a non-monetary economy, the whole concept of consumption expenditure may be less meaningful than a direct indicator of needs fulfillment in quantitative terms.

46. By way of example, the linkage of a SAM to nutritional adequacy will be presented here, following Downey [1988]. First, Table 4 presents per capita consumption expenditure by commodity and household group. This consumption expenditure is fully compatible with the left-hand side of submatrix (4_6,1) in Table 1 above, albeit that here more detailed classifications have been used. Some of the findings are: a) substantial between-group inequality exists, b) some 57% of the total budget is spent on food, c) the budget share of rice, the staple food, is highest in the poorest groups, d) corn and firewood seem to be inferior goods (hardly consumed among the richest groups) and e) the budget shares of transport and housing are much higher in urban areas than in rural areas.

47. Next, Table 5 shows per capita daily calorie intake according to the same (food) commodity and household classification as the previous table. For this purpose, detailed consumption quantity data available from a household expenditure survey have first been reconciled with the money values in (a more detailed version of) Table 4 and then converted by means of information on the calorific value of each food item (cf. Downey, 1984: Chapter 7; Sutomo, 1989]. Interestingly, the ranking of sub-sectors in Tables 4 and 5 is quite different. In particular, farmers rank much higher in terms of their calorie intake than they do regarding their (food) expenditures, thanks to their much more nutritious consumption pattern. This result demonstrates the usefulness of linking non-monetary data to the SAM when reviewing household welfare.

48. Another quite important non-monetary determinant of household welfare is the state of the environment. This is discussed next.

C. Environmental effects

49. If a SAM is extended with environmental accounts, one arrives at a so-called SAMEA (SAM including Environmental Accounts); cf. Keuning and Timmerman [1995]. This SAMEA can be seen as the environmental part of the SESAME. In turn, a SAMEA is an extension of the more familiar NAMEA-framework.[12]

50. The NAMEA is a statistical information system that combines national (economic) accounts and environmental accounts in a single matrix. The environmental accounts are in physical units and are aggregated into a few meaningful macro-indicators (in physical units). The principle of the presently available NAMEAs is fairly simple. A SAM is extended with two accounts: a) an account for substances (pollutants and natural resources), such as CO_2, N_2O, CH_4, CFCs, waste, phosphorus and oil; and b) an account for environmental themes, such as the greenhouse effect, acidification and waste.

51. Then, in the rows of the production account, and in the columns of the new substances account, the emission (in kilograms) of these substances is recorded as a by-product of each industry. Analogously, in the columns of the production account and in the rows of the substances account, the extraction of natural resources as well as the re-cycling of waste and such by each industry is presented. Similarly, the disposal of pollutants by consumers is included (by consumption purpose), as well as trans border flows of substances. All in all, the emission of each type of pollutant by all industries and by all consumption purposes plus "imports" from abroad is then equal to re-cycling plus "exports" plus the resulting national environmental pressure. These pressures are aggregated into environmental themes, with weights based on the relative contribution of a kilogram of each substance to the problem at hand. For instance, CO_2, N_2O and CH_4 are converted into so-called global warming potentials, whereby a kilo of N_2O contributes 270 times as much, and a kilo of CH_4 11 times as much, as a kilo of CO_2.

52. In this way, aggregate indicators by environmental problem are computed that are fully consistent with the economic indicators derived from the national accounts (and with the demographic and social indicators derived from SESAME's demographic and social accounts). In actual applications, aggregate indicators have been derived for e.g. the greenhouse effect, ozone depletion, acidification, water pollution and waste. These summary environmental indicators then serve a purpose which is more or less comparable with the unemployment figure. At the same time, an underlying information system becomes available for analyzing the environment-economy (and social) interactions.

53. Another characteristic that serves to increase the NAMEA's policy relevance is the inclusion of a separate tax account, subdivided by kind of tax. In this account, the incidence of all kinds of taxes and subsidies is revealed. This means that environmental levies are separately identified. In turn, this facilitates model simulations of the consequences of a shift in the fiscal system. Naturally, the NAMEA, and particularly the SAMEA, is easily linked to unemployment, and more generally to labour market and human capital issues. Conceptually, the NAMEA is useful for including as well environmental problems that have a current, not a capital character (noise, stench, etc.) and to show the current effects of environmental problems with a stock character (e.g. leakage from chemical waste dumps); refer to Keuning (1993).

54. The additional information contained in the SAMEA, in comparison with the NAMEA, is only revealed in the detailed tables. For instance, wages and salaries by branch of industry, as shown in the Generation of Income Account, are then broken down by sex and by educational level. The same applies to full-time equivalent employment. This makes possible an analysis of the relationship between the remuneration of each labour category and the pollution that is caused by the economic activities in which

they are employed. For instance, in the Netherlands it appeared that unskilled male workers are over-represented in the most polluting industries. Such a finding may be of relevance to policy-making.

55. Based on the SAMEA, the consumption patterns of household groups can also be related to the concomitant environmental pressure. For instance, Table 6 presents the pollution caused by each household group in the Netherlands, as derived from the Dutch SAMEA [Keuning and Timmerman, 1995].

56. From Table 6 it appears, for instance, that childless couples with wages and salaries as their main source of income contribute much more to the acidification problem (32.8%) than is warranted by either their number (22.1%) or their share in national total household consumption (28.1%). The reverse applies to "other" transfer recipients (the unemployed, the disabled, etc.). From the detailed SAMEA tables it can be inferred that this is related to substantial differences between these groups in the use of private cars. Such information may be of use when considering measures to increase excise duties on petrol, say.

57. In general, welfare determinants without a price tag should also be incorporated in a comprehensive (household satellite) accounting system. Besides the environment, this concerns unpaid household production.

D. Non-income generating production within the household

58. All over the world, a lot of productive work is not remunerated in hard cash, but directly consumed by the beneficiaries. In so far as this unpaid work generates a good (e.g. growing potatoes), its value should be imputed in the national accounts, at least according to the 1993 SNA. However, many productive service activities, such as childcare, shopping, cooking and washing, often do not generate an income either, and these are not covered in the national accounts at present.

59. Yet, this work obviously contributes to household welfare, and should therefore be incorporated into the set of core macro-indicators and into the underlying, fully-fledged information system. This is done in the SESAME, by inserting time accounts and, if possible, production accounts for non-income generating activities. These accounts are then comparable with the accounts for income-generating employment (cf. the lower part of Table 2 above, but adding a breakdown by sex) and production. Moreover, a macro-indicator is added that gives full-time equivalent employment in non-income generating productive activities, for men and women separately. This indicator can then be monitored in conjunction with the conventional (full-time equivalent) employment indicator (by sex). In this way, an important gender issue is also covered by the SESAME.

60. An example is given in Table 7, which is copied from Kazemier and Exel [1992]. They have reconciled a time-use survey with the national accounts. This table presents in rows 3 and columns 2 the number of full-time equivalents (fte) spent on:

(a) Income generating production (rows 3A, columns 2A), broken down by sex and employment status in the rows and by nine industries in the columns; and

(b) Non-income generating production (rows 3B, columns 2), broken down by sex and type of work In the rows and by type of activity in the columns.

61. The non-income generating work (8.5 million fte) absorbs almost 1.75 times as much time as income generating work (4.9 million fte). As expected, men are more heavily involved in income

generating work than women (3.4 million fte versus 1.5 million fte), while the reverse applies to non-income generating work (2.9 million fte versus 5.6 million fte). By far the most time-consuming unpaid activity (4.7 million fte) is household work (cooking, cleaning, sewing, clerical work, etc.).

62. The next quadrant (submatrix 4,3) shows the workload by household group. In the rows, two classifications of households are given: first by household size (rows 4a-4d) and then by main source of income (rows 4a'- 4d'). Kazemier and Exel [1992: 10-11] derive the following, interesting conclusions from this table: "... the larger the household, the larger the share of [non-income generating] production in the total production of women. The reverse applies to men ... In general, women are more involved in productive activities than men [7.1 million fte versus 6.3 million fte]. This is especially the case for pensioners and households where transfer income is the main source of income. Perhaps it is more surprising that men work a little more in households which primarily depend on wage income (52% versus 48% of total hours worked)."

63. It should be noted that the income generating employment by industry in this table is fully consistent with the wages and salaries and mixed income in the same industry in the national accounts. As a consequence, such a framework can be used in all kinds of analyses on the interaction between income generating and non-income generating employment in an economy. For instance, if such SESAME tables become available at regular intervals, changes in the distribution of paid and unpaid work between men and women can be monitored and related to shifts in consumption patterns, changes in the (income) tax system, etc.

64. In the next section, a more general review of SESAME's applications is provided, together with some remarks on compilation issues.

V. Applications of the SESAME and compilation issues

65. This section consists of two parts. First, the applications of the SESAME are reviewed. The SESAME can serve both as a framework for compiling national accounts, see section V.A., and as a tool for organizing the data input for modelling and other analyses, see section V.B. Finally, some compilation issues are addressed in section V.C.

A. More integration of available basic data

66. A SESAME can serve as a useful extension to present-day national accounts, in two respects. First, the SAM-part of a SESAME improves the compilation of national accounts, because it integrates more basic sources at a meso-level. Secondly, a SESAME is useful for integrating all kinds of (non-monetary) social and environmental statistics. These two advantages are elaborated next.

67. At present, the starting point of national accounts compilation is often the estimation of a (benchmark) Input-Output Table or Supply and Use Tables. Those tables provide an excellent framework for combining the so-called production approach and expenditure approach to the computation of GDP. However, only cursory attention is then paid to the third approach, the income approach. Expanding such tables into a SAM remedies this shortcoming by providing a more detailed insight into the composition of incomes of various (household) sub-sectors, and by providing a check on these income data through a comparison with detailed expenditure figures for the same sub-sectors. Such an extended combination of sources at a low level of aggregation typically enhances the reliability of the resulting macro-indicators.

68. Another example refers to the comparison of wages and salaries by labour category and industry with identically classified employment figures. This part of the SESAME compilation process must yield plausible average wage rates in all cells, while arriving at a) aggregate estimates for wages and salaries that still fit into the national accounts' cost structure by industry and b) aggregate employment estimates that still fit into the labour accounts.[13] Without a detailed comparison of national accounts and labour accounts, some implicit inconsistencies between these sources may not be detected.

69. In a SESAME, all kinds of social and environmental statistics are connected to the conventional national accounts through the "volumes" that underlie the monetary figures. In other words, the integration of monetary and non-monetary statistics is not achieved through a hypothetical monetarization of physical flows. Of course, it is possible to simulate the impact of putting a price tag on flows that were thus far free of charge (e.g. within-household labour or environmental degradation). However, if in the past such prices had actually been paid, we would have lived in a totally different world, and it would be quite unrealistic to assume that economic subjects would have swallowed the costs without an adjustment in their behaviour. In other words, just adding or subtracting an imputed value for unpriced flows to the national income, without reckoning with the substitution effects, would yield an inconsistent and meaningless number, even disregarding the problem of finding the correct hypothetical prices for those activities. Instead, such an analysis should be done within a fully-fledged model with explicit assumptions as regards the behavioural reactions of economic subjects to the introduction of such prices. A SESAME is meant to be a statistic, not a (implicit) model result. However, it obviously provides the data framework for the above-mentioned models.

70. Above all, a SESAME facilitates the integrated monitoring and analysis of social and ecological objectives (e.g. full employment, equitable income distribution, high educational attainment, overall satisfactory nutritional situation, optimal distribution of paid and unpaid work between men and women, and sustainable use of the environment), and more conventional economic objectives such as NDP-growth, balance of payments equilibrium, low inflation, etc.

71. The applicability of any national accounts framework, including a SESAME, to the measurement of poverty is less evident. Here, the limited capability of nationwide household surveys to cover the poor is the main problem. Besides, the underestimation of income and expenditure in such surveys is not equally spread across the whole range of incomes or expenditures. The largest errors commonly occur at the tails of the distribution. All the same, if households are classified according to socio-economic characteristics, it may be assumed with more confidence that errors are not concentrated in specific sub-groups. A scaling cum reconciliation procedure by income component will then generate reliable results on the average situation in all sub-groups, including the poorest. However, after this procedure the within-sub-group income distribution can no longer be obtained. Therefore it cannot be ascertained whether all the poor belong to the poorest sub-group in the SESAME. On the other hand, a SESAME which contains an elaborate classification of households will identify sub-groups in which the households are typically poor. It will show which needs cannot be properly met in these sub-groups, and, above all, it will allow for analyses concerning the causes and consequences of these circumstances.

72. Some of the above arguments apply to micro-macro links in general. A SESAME reveals the "structural" or average situation in a whole range of household groups, industries, categories of workers, etc. Obviously, a proper classification, resulting in fairly homogeneous categories is crucial. In addition, micro-macro links are considerably facilitated if the concepts in the SESAME are tuned to the perceptions at the micro-level. For instance, if the old-aged typically view their pension fund benefits as income, and not as dissaving, this should also be reflected in an accounting framework that is used for analyses where this view plays a relevant role.

73. Another application of a SESAME refers to regional or supra-national accounting. In many instances, it is neither necessary nor feasible to construct complete regional SAMs, or Input-Output tables for that matter. However, the SAM feature of multiple sectoring implies that the regional dimension can be introduced into the classifications wherever relevant and possible. For example, a regional aspect may be introduced into the classifications of employed persons and households.

74. Improvement of the quality of the data set is an important advantage of the construction of a SESAME. However, the SESAME extends not only the statistical information system as such, but also the tools for modelling and policy analysis. This is elaborated next.

B. SESAME as a tool for modeling and policy analysis[14]

75. The structure of each SESAME and SAM reflects the relationships represented in an economy-wide model. As a rule, the outlays in each column of an "analytical" SAM should be directly related to total receipts in the concomitant row. This could imply, for instance, that taxes and social contributions are recorded in accordance with their incidence: product taxes in the columns of the Goods and Services Account, other taxes on production on the Production Account, wage-related social contributions on the Income Generation Account, taxes on total primary income on the Allocation of Primary Income Account, etc.

76. A SESAME may be more suitable for testing some new theories of economic growth than the conventional accounts. For example, a SESAME provides industry-specific information on the economic role of human capital. The breakdown of labour income, employment and wage rates by educational level of the employed person yield more insight into the interaction between the demand for these kinds of labour in each industry, on the one hand, and the supply of these kinds of labour in each household sub-sector, on the other. Besides, the schooling accounts register the dynamics on the supply-side.[15]

77. In analogy with the inverse of an Input-Output Table, the inverse of the endogenous part of a SAM, provides a framework for a simple, linear model [Pyatt and Round, 1985]. However, a SAM-based inverse enables a more complete analysis of employment multipliers, of exogenous changes in government expenditures and foreign trade, etc. Moreover, income distribution effects can be studied as well. In a SAM which is adapted to multiplier analysis, accounts considered exogenous (e.g. government accounts) are singled out and put at the end. In addition, the structure of the SAM should then be oriented towards obtaining the most realistic proportionality assumptions. Realism may be enhanced by estimating coherent sets of relevant elasticities to arrive at marginal instead of average expenditure propensities [Keuning and Thorbecke, 1992]. For some purposes, the relative simplicity of the multiplier approach is appealing. For instance, Figure 3 uses this approach to trace the total impact of several categories of government expenditures on income and food consumption of some household groups in Indonesia (copied from Keuning and Thorbecke, 1992; cf. also Defourny and Thorbecke, 1984).

78. This multiplier analysis shows, among other things, that a general, 100 Rupiah rise in government expenditures on education and health ultimately increases the income of the higher level urban households by 37.1 Rupiah, and the income of the lower level urban households by 27.7 Rupiah (cf. column 5). In the case of the higher level households, 80% of the additional income comes from the wages and salaries of either clerical workers or professionals who belong to this household group and who are employed in education and health services (cf. column 7). The rest of the additional income is more indirectly generated (e.g. because extra education and health output lead to more production from suppliers, who also employ members of the higher level urban sub-group).

79. The next chain shown in Figure 3 is from income to food consumption (column 6). For example, a general, 100 Rupiah rise in government transfers might ultimately increase food consumption of lower level urban households by 21.5 Rupiah, while this increase might be only 7.4 Rupiah if the same amount was spent on extra public education and health services.

80. Figure 3 provides a very simple example of the advantages of a SAM framework when analyzing the economy-wide impact of government policies. However, in many other applications the absence of supply constraints and of endogenous prices in this model is a serious limitation. These shortcomings may be overcome when a SESAME is embedded into a so-called Applied General Equilibrium (AGE) model. These economy-wide models take account of price-quantity interrelations. They apply microeconomic insights at a meso-level and serve to simulate the effects on growth and income distribution of a range of policies, from trade liberalization measures to tax rate changes and structural adjustment packages.[16] The data requirements for AGE models are:

(1) A base-year SAM;

(2) A decomposition of SAM values per category of goods and services into appropriate price and volume components, or, preferably, a full SAM at constant prices;

(3) Related SESAME data on stocks (population, production capacity, etc.) and on non-onetary phenomena;

(4) A time-series of SESAMEs for a more realistic derivation of relevant price and income elasticities. If such a time-series is not available, econometric estimation of parameters may be based on other time-series data which are scaled such that the base-year values are in conformity with the corresponding base-year SESAME-values.

81. The output of such a modeling exercise typically consists of a reproduction of the base-year SESAME, which validates the model, and of a series of SESAMEs for future periods.

82. A distinctive feature of all SESAME-based models is their reliance on complete balances, at a multisectoral level, of: (1) incomes and outlays of institutions, and (2) supply and use of goods and services. Ideally, the supply and use balances are maintained for values and volumes separately, and for labour services and assets as well. Another feature is that the structure of the model closely corresponds with the structure of the underlying SAM and SESAME. To a lesser extent, this also applies to the parameter values. This implies a departure from a model specification which hinges on co-variations among time-series of considerable length. As a result, SESAME-based models are less liable to the disadvantages of the macro-econometric approach, such as: (1) use of proxy variables and independently estimated, possible inconsistent, deflators for transaction categories; (2) dependence on long time-series, for which insufficient data are available; and (3) reliance on the constancy of relationships over a longer period, in an era of structural shocks (e.g. currency crises) and continual institutional reforms (e.g. lifting trade barriers, deregulation).

83. SESAME-based models are particularly relevant to policy analyses in which the structural features of an economy play an important role. For instance, one can use such models for simulating the macroeconomic and distributional implications of price liberalization measures or of environmental levies. In analyses with a relatively short time-horizon, it can safely be assumed that many structural features are well represented by fixed coefficients. In longer-term models, feedbacks at the meso-level need to be incorporated more carefully. In both cases, the SESAME can serve as a framework to guarantee consistency, both in current and in constant prices.[17] If more timely SESAMEs with well-

articulated financial accounts become available, the relevance of AGE models to short-term, monetary stabilization policies may also increase.

84. Finally, SESAMEs are suitable for use in a macroeconomics teaching course, in view of their concise and conveniently arranged description of interrelations between economic processes, their function as a systematic database for the joint derivation of monetary and non- monetary aggregate indicators, and their close connection to flexible, economy-wide models of varying degrees of complexity.

C. Compilation issues

85. The abundance of data included in most SESAMEs may give the impression that they can be constructed only for countries with a wealth of statistical information. In practice, developing countries have taken the lead in compiling SAMs. It is significant that a SESAME case study in this Handbook refers to Indonesia. Actually, in situations where basic information and other statistical resources are (very) scarce, it is all the more important to make the best possible use of whatever data are available. Integrating outcomes of all kinds of costly censuses and surveys into a consistent overall framework increases both their relevance and their reliability. In particular, this applies to household surveys and population censuses. Carefully acquired consistency at the meso-level should lead to more accuracy at the macro-level. Of course, if there are too many holes in the basic data, the reliability of (parts of) the SESAME remains dubious. Anyhow, the compilation of a SESAME will pinpoint gaps in the data and discrepancies in the survey concepts.

86. A case in point is the use of a SESAME for measuring income and expenditure distributions. Household surveys tend to underestimate not only total incomes or expenditures, but also inequality among households. Therefore, a reconciliation of these sources and the national accounts leads to a more reliable description of disparities between social strata and to more plausible inequality measures.

87. For example, in the Indonesian case study, income from the cultivation of food crops as stated by the respondents in an income survey, on the one hand, was compared with the same income as computed from a reconciliation of that survey, the input-output table and statistics on land ownership, land use and agricultural productivity, on the other hand. This revealed an underestimation of income in the survey that varied from 20% for small farmers to 330% for the largest landowners [Keuning, 1984]. Another example: when compiling the Indonesian SAM, the household budget survey's estimate of rice consumption has hardly been corrected, while its estimate for prepared foods has been almost tripled [Downey, 1988]. As in the cities, relatively more prepared foods are consumed, the SAM's distribution of total food consumption between urban and rural areas is quite different from this distribution in the budget survey. Besides, the budget survey registered zero expenditures on (owner-occupied) housing in 30% of households. Such problems permeate budget surveys all over the world [Berry, 1985].

88. If households are classified on the basis of income or expenditure size, a significant proportion ends up in too low a bracket. When income source, and not income size, is the main classification criterion, though, such underestimations do not influence the grouping of households. Consequently, it is less hazardous to assume that per capita consumption of each product group is equiproportionally underrated in all sub-groups. A uniform scaling by product group then yields a more dependable view of inequality among sub-groups.

89. In the first instance, it may be advisable to build fully-fledged SESAMEs only for those years for which main surveys or censuses are held. These SESAMEs then serve as benchmark data sets, updated yearly or even quarterly with the help of less detailed recent information (cf. Algera and Janssen, 1991).

Such a process starts from the assumption that all kinds of structural interrelationships have not altered since the SESAME's reference period. For example, it is supposed that expenditure patterns by household sub-group are stable. However, this "fixed coefficients" assumption is subsequently relaxed when the resulting provisional SESAME is not in conformity with the more aggregate indicators on the immediate past. In this way, a consistent preliminary SESAME is rapidly estimated. This SESAME incorporates whatever source statistics have already become available, but contains more detailed and more complete information. A matrix framework is especially suitable in this regard, in view of the availability of various updating and reconciliation algorithms. In summary, preliminary results from statistical integration systems such as a SESAME can be almost as timely, but more detailed and more complete, than the corresponding figures from source statistics.

VI. Conclusions

90. Just like conventional national accounts, *a SESAME provides both core macro-indicators and an underlying information system.* In this way, it simultaneously serves two categories of user: first, the general public, media and policy makers, who want to know the main trends at a glance, and secondly, the analysts, scientists and policy- advisers, who want to disentangle causes and consequences, make forecasts and do policy simulations.

91. The SESAME serves to meet the criticism that conventional national accounts, despite their wealth of information, take too limited a view of social, environmental and economic development. For that reason, the SESAME details the accounts expressed in money values, particularly those for labour income, and, more importantly, links up non-monetary information with these accounts. In doing this, an integral system approach is maintained. This means that inter-relationships between monetary and non-monetary data are incorporated at a meso-level, including an additional plausibility check on the results. In general, the more data are confronted at a meso-level, the more logical identities can be checked.

92. Formal models based on a SESAME may thus contain e.g. the interactions between economic development and social and ecological change, including feedback from social and environmental (non-monetary) variables to economic (monetary) variables. Furthermore, a conceptual anchoring of aggregate social and environmental indicators within a comprehensive accounting system will enhance the standardization and the stability of their definition, if only because any adjustment of a concept should then be weighed against its repercussions on the rest of the system. To put it simply, *a SESAME yields a synthesis of national accounts and the social indicators approach, such as followed in e.g. UNDP's Human Development Index* [United Nations Development Programme, 1996].

93. An important feature of the SESAME is its matrix format. Such a format has the following advantages:

(1) Only a matrix presentation allows for a selection of the most relevant units and classification of units in each account. In other words, both multiple actoring and multiple sectoring can be applied in a matrix. This enables e.g. the integration of detailed Supply and Use Tables and institutional sector accounts in a single format for presentation and analysis. This feature also greatly facilitates the incorporation of non-monetary data into the national accounts;

(2) A matrix presentation is suitable for mathematical treatment using matrix algebra. This feature is quite expedient both in the compilation of national accounts and in their analytical use;

(3) A detailed matrix presents a breakdown of all transactions by both paying and receiving units. Since the receiving unit in one transaction (e.g. a household receiving labour income from a working member) is the paying unit in another transaction (e.g. the same household buying a consumer good), this feature is essential to revealing, at a meso-level, interrelations among economic flows;

(4) A detailed matrix is quite suited to experiments with alternative representations of transactions in accounts. In principle, transactions can be paid from one account and received by any other without upsetting the transparency of the system.

94. A SESAME promotes the use of uniform units, classifications, concepts, etc. throughout a statistical system; that is, not only in economic statistics, but also in social statistics. Among the advantages of such a harmonization is a much easier matching of results from different surveys. As a consequence, fewer questions per survey and perhaps even smaller samples are needed. It is likely that some groups of specialized users will prefer a different classification or concept for their specific field of interest. However, only an integrated data system can be qualified as a pure public good and therefore the compilation of data according to special purpose specifications might receive a lower priority in official statistics, or be financed to a larger extent by the beneficiaries.

95. A SESAME is an inherently *flexible* framework. It can readily be adapted to the specific characteristics, needs and capabilities of every country or region. In particular the accounting structure, the classifications and the kind of non-monetary phenomena incorporated can be tailor-made. Because of this modular approach, it is not necessary to include all aspects at once.[18]

96. Any evaluation of the SESAME's usefulness should also address the issue of timeliness. While acknowledging that, for the time being, SESAMEs will become available with some delay, comfort may be derived from the experience with the input-output approach. In the beginning, these tables were also rather out-of-date when they were published. Nowadays, such matrices are a basic tool in the compilation of national accounts in many countries. In fact, the quality of even the most timely estimates can be considerably improved upon if use is made of the underlying structural relationships that are revealed by more comprehensive, but less recent information systems such as an Input- Output table or a SESAME.

97. Finally, it should be mentioned that *a SESAME essentially aims at a better use, through integration, of existing statistics.* In turn, by integrating information that is already collected, official statistical agencies will increase their own value added.

98. Just like present-day national accounts, a SESAME is a multi-purpose information system that can be used to test any economic or social theory. It is this property that has made the national accounts the universal language of economics. SESAME may open the door to even richer insights into human welfare.

Figure 1: Flow chart of the economic cycles for a closed economy, as represented in a SAM

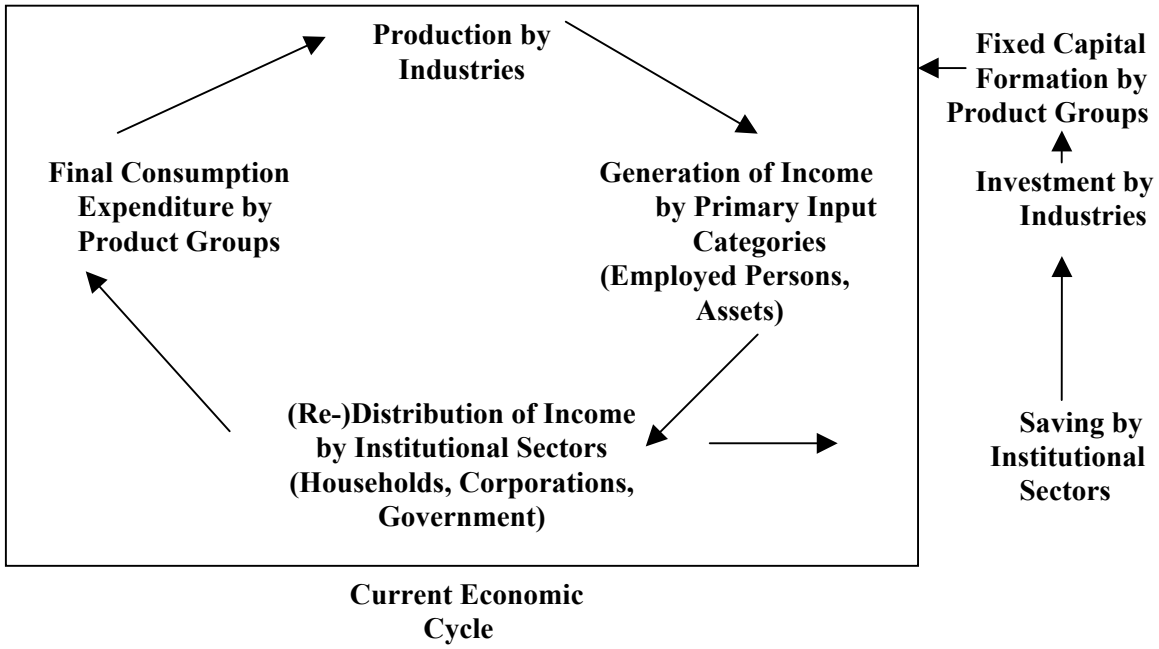


Figure 2: Flow Chart of the single period welfare change, as represented in a SESAME

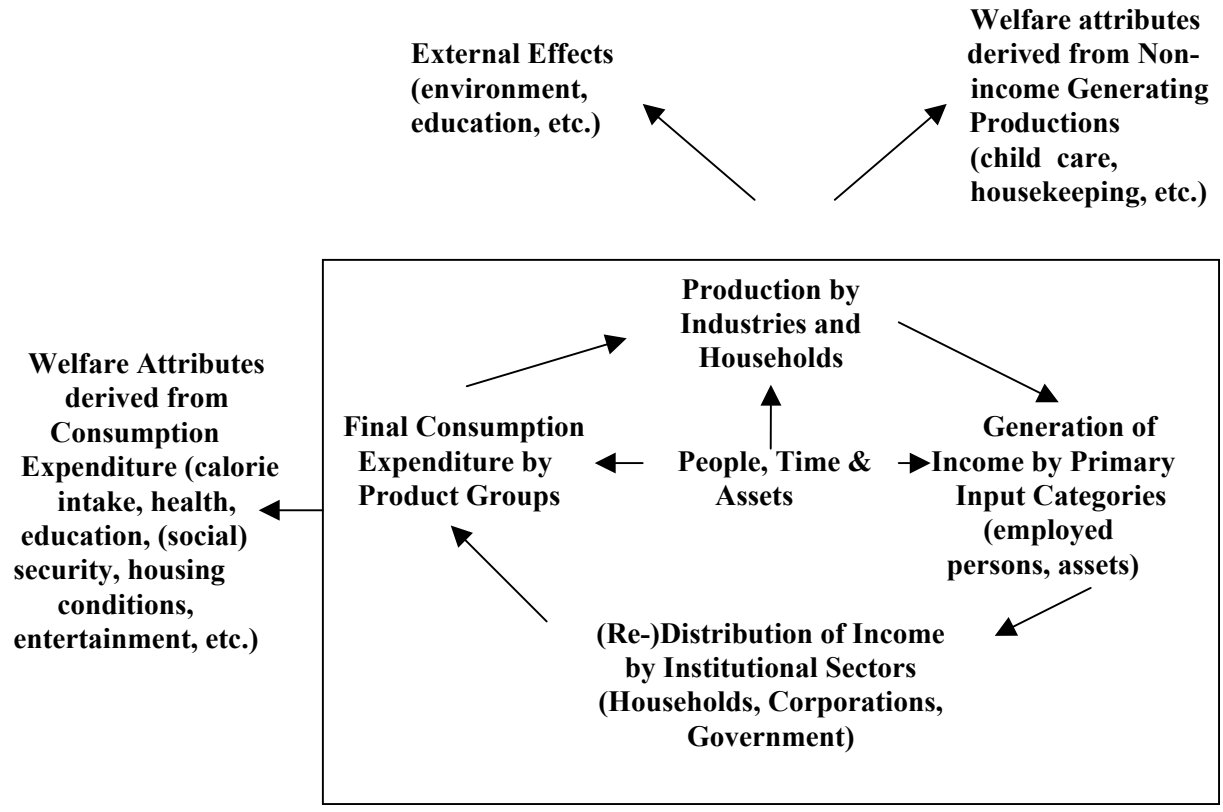
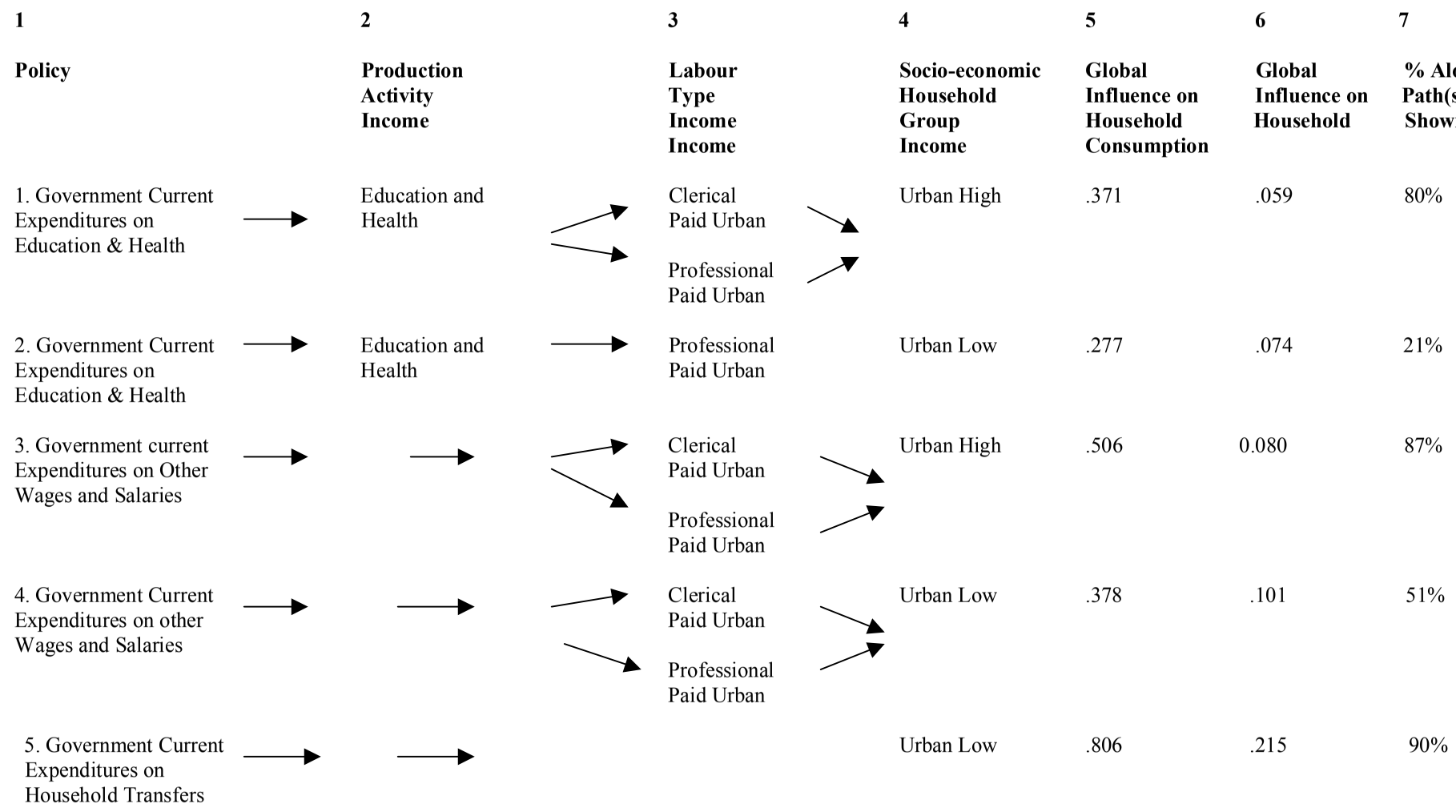


Figure 3: Impact of Different Government Current Expenditure Programs on Income and Food Consumption of Socio-economic Groups in Indonesia, 1980



1 Policy	2 Production Activity Income	3 Labour Type Income Income	4 Socio-economic Household Group Income	5 Global Influence on Household Consumption	6 Global Influence on Household	7 % Alon Path(s) Shown
1. Government Current Expenditures on Education & Health	Education and Health	Clerical Paid Urban Professional Paid Urban	Urban High	.371	.059	80%
2. Government Current Expenditures on Education & Health	Education and Health	Professional Paid Urban	Urban Low	.277	.074	21%
3. Government current Expenditures on Other Wages and Salaries		Clerical Paid Urban Professional Paid Urban	Urban High	.506	0.080	87%
4. Government Current Expenditures on other Wages and Salaries		Clerical Paid Urban Professional Paid Urban	Urban Low	.378	.101	51%
5. Government Current Expenditures on Household Transfers			Urban Low	.806	.215	90%

Table 1: A somewhat disaggregated (45x43) SOCIAL ACCOUNTING MATRIX for Indonesia, 1980 (Billions of Rupiah)

EXPENDITURES / RECEIPTS			Code	GOODS AND SERVICES: DOMESTIC PRODUCTS: Food &food products	Other agriculture prod.	Mining manuf. & Constructr.	Trade transport & Hh.serv.	Other services	IMPORTED PRODUCTS: Food and food prod.	Other agriculture prod.	Mining manuf. & constructr.	Trade transport& Hh.serv.	Other services	PRODUCTION: Food agriculture & Processing	Other Agriculture	Minig, manufacture & construction	Trade, transport & Household Servi.	Other services	GENERATION LABOUR: Agricultural Paid	Agricultural Unpaid	Manual, Transport, etc. Paid	Manual, Transport, etc. Unpaid
				1A	1B	1C	1D	1E	1F	1G	1H	1I	1J	2A	2B	2C	2D	2E	3A	3B	3C	3D
G	Food & Food Products		1A											5308	3	79	919	106				
O DO-	Other Agricultural Products		1B											1166	510	981	58	3				
O MES-	Mining, Manufacturing & .Construction		1C											547	192	6934	991	1102				
D TIC	Trade, Transport & Household. Services		1D											50	55	343	990	731				
S……	Other services		1E											127	59	387	661	301				
&	Food & Food Products		1F											180	0	8	44	0				
S IM-	Other Agricultural Products		1G											74	0	124	0	0				
E POR-	Mining, Manufacturing & Construction		1H											156	70	4851	812	222				
R RED	Trade, Transport & Household Services		1I											1	0	9	91	319				
V…	Other services		1J											0	0	264	38	65				
			1K	2836	1271	2612	-8556	0	111	18	1654	55	0									
	Food Agriculture & Processing		2A	17502		0	0	0														
PRO-	Other Agriculture		2B	0	4365	0	0	0														
DUC-	Mining, Manufacturing & Construction.		2C	0	0	32892	0	0														
TION	Trade, Transport & Household. Services,		2D	0	0	0	14516	0														
	Other services		2E	0	0	0	0	9773														
	Agricultual	Paid	3A											1073	379	0	0	0				
IN-	Agricultural	Unpaid	3B											2533	485	0	0	0				
CO-	Manual	Paid	3C											284	29	1714	635	208				
ME La-	Manual	Unpaid	3D											173	16	565	711	7				
bour	Clerical Sales & Services	Paid	3E											50	26	299	855	993				
GE	Clerical Sales & Services	Unpaid	3F											23	5	24	3218	7				
NE-	Professional & Manager	Paid	3G											33	7	341	92	2679				
RA- ….	Professional & Manager	Unpaid	3H											39	3	131	82	34				
TION	Net non-labour	Private National	3I											4957	1916	1925	3036	1623				
		Public & foreign	3J											380	392	12801	695	646				
	Depreciation		3K											349	187	1111	585	725				
INCOME		Agricultural Labourers	4-6A																931	37	143	29
DIS-	Hou-	Farmers	4-6B																407	2878	228	228
TRIBU-	se	Non-agRur.LL& Inact.	4-6C																84	69	1071	517
TION	holds	Non-agRur.Highter LL	4-6D																17	24	37	205
		Non-agRur.LL& Inact	4-6E																9	6	1292	337
AND		Non-agUrb.Highter LL	4-6F																4	3	100	156
	Corporations		4-6G																			
USE	Government		4-6H	281	39	-441	355	90	-8	7	-26	0	1									
CAPI-	Corporations & households		7A																			
TAL	Government		7B																			
	Food Agriculture &Processing		8A																			
CAPI-	Other Agriculture		8B																			
TAL	Mining, ,Manufacturing .& Construction		8C																			
FORMA-	Trade, Transport .& Household .Services		8D																			
TION	Other services		8E																			
FINANCIAL BALANCE			9																			
REST OF	CURRENT		10						806	182	7847	661	390						0	0	0	0
THE WORLD	CAPITAL		11																			
TOTAL				**20619**	**5674**	**35063**	**6315**	**9863**	**908**	**207**	**9475**	**716**	**391**	**17502**	**4365**	**32892**	**14516**	**9773**	**1452**	**3018**	**2871**	**1472**

Table 1: A somewhat disaggregated (45x43) SOCIAL ACCOUNTING MATRIX for Indonesia, 1980 (Billions of Rupiah) (continued)

OF INCOME							DISTRIBUTION AND USE OF INCOME								CAPITAL		FIXED CAPITAL FORMATION					REST OF THE WORLD		TOTAL
				NET NON-LAB		DE-	HOUSEHOLDS																	
Clerical, Sales and services		Professionals techicians & Managers		Priva- te, na- tional	Pu- blic & Fo- reign	PRE- CIA- TION	Agricultural		Non-Agricultural				COR- P0- RA- TIONS	GO- VERN- MENT	Corpo- rations &house holds	Go- vern- ment	Food agri- culture & pro cessing	Other agri- cul- ture	Minig, manu- factur. & con- Struct.	Trade trans- port & housh services	Other Ser- vi- ces	Cur- rent	Capi- tal	
Paid	Unpaid	Paid	Unpaid				La- bou- rers	Far- mers	Rural lowL& inactive	High level	Urban low L& inactive	High Level												
3E	3F	3G	3H	3I	3J	3K	4-6A	4-6B	4-6C	4-6D	4-6E	4-6F	4-6G	4-6H	7A	7B	8A	8B	8C	8D	8E	10	11	
							1172	5392	2486	796	2368	1381		0	119	124	0	0	0	0	0	366		20619
							63	282	107	34	48	25		0	53	0	0	0	0	0	0	2345		5674
							197	933	547	233	848	732		0	961	0	483	355	1535	1717	3799	12955		35063
							200	702	504	185	1279	838		0	0	0	0	0	0	0	0	409		6315
							149	645	386	162	1024	780		0	0	0	0	0	0	0	0	31		9863
							62	229	128	41	131	76		5151	8	0	0	0	0	0	0	0		908
							0	1	1	0	0	0		0	5	0	0	0	0	0	0	0		207
							35	168	99	42	165	118		0	149	0	180	45	1776	442	144	0		9475
							9	41	29	17	80	63		0	0	0	0	0	0	0	0	55		716
							1	3	3	2	8	7		0	0	0	0	0	0	0	0	0		391
																								0
																								17502
																								4365
																								32892
																								14516
																								9773
																						0		1452
																						0		3018
																						0		2871
																						0		1472
																						0		2224
																						0		3277
																						0		3152
																						0		289
																								13456
																								14914
																								2956
58	85	68	2	463	0	53	0	0	0	0	0	0	3	4								0		1876
67	424	129	26	5282	0	409	0	0	0	0	0	0	14	18								0		10111
273	1062	106	13	1132	0	141	5	108	31	33	4	7	126	8								1		4793
278	162	1044	43	330	0	40	0	0	0	0	0	0	292	2								3		2478
580	1242	196	29	1867	0	358	1	13	6	6	126	201	226	3								4		6504
968	302	1608	176	921	0	191	0	0	0	0	0	0	1849	0								0		6278
				3461	14914	1609	0	0	0	0	0	0	17	0								75		20076
				0	0	154	45	230	95	49	128	122	7951	1147								22		10241
							-64	1362	371	880	294	1926	7050		0	843							0	12662
														3456	0	393							1219	5068
															356	307								663
															185	214								399
															2676	636								3312
															1322	837								2158
															2498	1445								3944
															4331	270							-4600	0
0	0	0	0				0	0	0	0	0	0	2548	451										12885
															0	0						-3381		-3381
2224	**3277**	**3152**	**289**	**13456**	**14914**	**2956**	**1876**	**10111**	**4793**	**2478**	**6504**	**6278**	**20076**	**10241**	**12662**	**5068**	**663**	**399**	**3312**	**2158**	**3944**	**12885**	**-3381**	

Table 2: Distribution of LABOUR INCOME and EMPLOYMENT over Household Sub-sectors in Indonesia, 1980

EXPENDITURES				LABOUR CATEGORY																TOTAL
				Agricultural				Manual				Clerical Sales and Services				Professional, Managerial				
				Paid		Unpaid		Paid		Unpaid		Paid		Unpaid		Paid		Unpaid		
				Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	
RECEIPTS		SAM		3Aa	3Ab	3Ba	3Bb	3Ca	3Cb	3Da	3Db	3Ea	3Eb	3Fa	3Fb	3Ga	3Gb	3Ha	3Hb	Column3
→		Codes		67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	67-82
	Agric. Lobourers	4-6A	93	835	96	35	2	116	27	24	4	38	20	70	15	48	20	2	0	1353
	Small Farmers	4-6Ba	94	270	4	1448	60	132	12	127	7	32	5	235	28	51	7	13	1	2433
Hou-	Medium Farmers	4-6Bb	95	80	1	570	17	43	2	44	2	11	1	74	7	25	3	4	0	885
se-	Large Farmers	4-6Bc	96	50	1	762	21	36	2	46	2	15	2	73	7	39	4	7	1	1068
hold	Lower Non-agricultural Rural	4-6Ca	97	82	0	68	0	1070	0	516	0	272	0	1058	0	100	0	12	0	3181
Sub-	Economically Inactive, Rural	4-6Cb	98	2	0	1	0	1	0	1	0	1	0	4	0	6	0	1	0	15
sec-	Higher Non-agricultural Rural	4-6D	99	17	0	24	0	37	0	205	0	278	0	162	0	1044	0	43	0	1811
tors	Lower Non-agricultural Urban	4-6Ea	100	0	9	0	6	0	1292	0	337	0	575	0	1238	0	195	0	29	3681
	Economically Inactive Urban	4-6Eb	101	0	0	0	0	0	0	0	0	0	5	0	4	0	1	0	0	11
	Higher Non-agricultural Urban	4-6F	102	0	4	0	3	0	100	0	156	0	968	0	302	0	1608	0	176	3316
	TOTAL HOUSEHOLDS			**1336**	**115**	**2908**	**109**	**1435**	**1436**	**963**	**509**	**647**	**1576**	**1677**	**1600**	**1314**	**1838**	**82**	**207**	**17755**
	Employment (*1000 worker equivalents)																			
	Agric. Lobourers	4-6A	93	4405	316	274	11	396	82	113	22	111	55	289	58	72	25	5	1	6237
	Small Farmers	4-6Ba	94	1377	13	10403	292	417	29	560	23	86	10	895	69	72	5	30	2	14284
Hou-	Medium Farmers	4-6Bb	95	355	3	3682	74	120	5	173	6	27	2	254	16	32	2	8	0	4759
se-	Large Farmers	4-6Bc	96	215	4	4812	90	98	5	178	6	34	4	245	16	48	3	13	1	5771
hold	Lower Non-agricultural Rural	4-6Ca	97	389	0	477	0	3231	0	2181	0	703	0	3874	0	135	0	27	0	11016
Sub-	Economically inactive. Rural	4-6Cb	98	12	0	8	0	3	0	4	0	3	0	16	0	10	0	2	0	57
sec-	Higher Non-agricultural Rural	4-6D	99	59	0	124	0	83	0	643	0	535	0	441	0	1043	0	69	0	2997
tors	Lower Non-agricultural Urban	4-6Ea	100	0	26	0	27	0	2909	0	1022	0	1056	0	2986	0	157	0	31	8215
	Economically Inactive Urban	4-6Eb	101	0	0	0	0	0	1	0	1	0	20	0	22	0	3	0	0	47
	Higher Non-agricultural Rural	4-6F	102	0	9	0	11	0	179	0	376	0	1417	0	579	0	1030	0	149	3761
	TOTAL HOUSEHOLDS			**6811**	**372**	**19781**	**505**	**4350**	**3211**	**3852**	**1456**	**1499**	**2564**	**6013**	**3746**	**1411**	**1225**	**154**	**184**	**57134**
	Average Wage rate (*1000 Rupiah)																			
	TOTAL HOUSEHOLDS			**196**	**311**	**147**	**216**	**330**	**447**	**250**	**349**	**432**	**615**	**279**	**427**	**931**	**1500**	**531**	**1128**	**311**

Table 3: Number of households, Population and Labour Force by sub-sector in Indonesia, 1980, related to the 1980 SAM (*1000)

Households Sub-sector		Number-of house-holds	Popu-lation	Average house-hold Size	Potential Labour force			per Househ.	Employment (*1000 Full-time equivalents)			Potential labour force Participation rate		
					Male	Female	Total		Male	Female	Total	Male	Female	Total
Agricultural Employees		3578	15703	4.39	5067	5459	10525	2.94	4056	2180	6237	80%	40%	59%
Small Farmers		8191	38556	4.71	13870	14204	28074	3.43	10101	4183	14284	73%	29%	51%
Medium Farmers		2379	12307	5.17	4828	4730	9558	4.02	3440	1319	4759	71%	28%	50%
Large Farmers		2718	15428	5.68	6180	5918	12098	4.45	4180	1591	5771	68%	27%	48%
Rural	Lower Level	5039	23664	4.70	7569	8029	15598	3.10	7868	3148	11016	104%	39%	71%
Rural	Economically Inactive	1311	3848	2.93	1142	1714	2856	2.18	36	21	57	3%	1%	2%
Rural	Higher Level	1499	8036	5.36	2582	2573	5155	3.44	2318	679	2997	90%	26%	58%
Urban	Lower Level	3230	17057	5.28	5830	5881	11710	3.63	6007	2208	8215	103%	38%	70%
Urban	Economically Inactive	726	2610	3.59	903	1122	2055	2.79	8	39	47	1%	3%	2%
Urban	Higher Level	1592	9568	6.01	3332	3421	6753	4.24	2631	1121	3751	79%	33%	56%
ALL HOUSEHOLDS		**30263**	**146777**	**4.85**	**51303**	**53050**	**104353**	**3.45**	**40646**	**16488**	**57134**	**79%**	**31%**	**55%**

Table 4 : Per capita Consumption Expenditures by Commodity Item and Household Subgroup in Indonesia, 1980 (* 1000 Rupiah)

Commodity	Household Sub-group (SAM row-codes)	AGRICULTURAL				NON-AGRICULTURAL						TOTAL
		Labourers	Farmers			Rural			Urban			
			Small	Medium	Large	Lower Level	Economic Inactive	Higher Level	Lower Level	Economic Inactive	Higher Level	
Rice	(1,8,23,30)	29.7	28.0	28.5	33.6	33.5	34.1	34.5	33.9	35.1	40.0	31.8
Corn	(1,23)	2.6	3.9	4.5	3.8	1.9	2.9	2.4	0.3	0.4	0.3	2.7
Cassava,etc.	(1,23)	4.2	5.4	6.2	6.0	4.0	4.1	4.8	2.5	2.3	2.5	4.5
Beans, Bean Products	(1,8,23,30)	3.6	3.1	3.4	4.3	3.9	4.1	4.1	6.4	7.0	7.7	4.3
Vegetables, Fruits	(1,23)	9.8	9.3	10.8	14.1	11.9	11.9	13.0	17.0	18.3	20.5	12.5
Fish	(5,27)	4.8	4.6	6.0	10.3	7.9	7.4	9.4	10.9	11.8	15.2	7.8
Meat and Eggs	(3,25)	4.2	4.0	5.6	8.9	6.5	6.5	7.2	14.6	17.9	19.8	7.8
Oils and Fats	(8,30)	1.8	1.7	1.8	2.2	2.1	2.1	2.2	3.0	3.1	3.3	2.2
Sugar and Coconuts	(2,8,24,30)	4.5	4.6	5.3	6.6	5.2	5.3	6.0	6.1	6.7	7.3	5.4
Coffee, Tea, etc.	(2,7,8,24,30)	3.4	3.3	3.7	4.6	3.6	3.7	3.9	3.9	4.0	4.2	3.7
Processed Food	(4,8,15,30,37)	13.0	11.1	9.6	12.1	17.1	16.7	17.2	38.4	45.0	46.1	18.8
Tobacco Products	(8,30)	7.4	5.5	6.5	9.4	9.9	9.3	11.2	16.1	16.1	16.5	9.5
Clothing	(10,12,32,34)	4.4	4.6	5.1	6.5	6.3	6.8	7.4	11.0	12.4	14.4	6.8
Firewoods	(4)	2.0	2.0	1.8	1.6	1.7	1.6	1.6	0.5	0.4	0.4	1.6
Other Fuels	(11-13,33,34)	2.7	2.4	2.4	3.3	4.1	5.2	5.1	10.3	12.3	14.4	4.9
Durables	(9,11,31,33)	2.7	2.5	2.9	4.6	6.0	7.4	12.7	15.1	26.0	42.4	8.5
Paper, Books, etc.	(11,33)	0.2	0.1	0.1	0.1	0.3	0.4	0.6	2.3	3.3	4.2	0.8
Soap, etc., and Water	(12,13,34)	1.5	1.6	1.7	2.0	2.1	2.1	2.4	4.4	5.0	5.3	2.4
Other Manufactured Products	(2,9,10,11,21,24,31-33,44)	2.1	2.3	2.6	3.6	2.7	2.5	4.4	4.6	5.9	6.9	3.2
Transport, etc.	(14,17,18,22,39,40)	2.1	2.1	2.3	3.0	5.5	5.5	9.7	30.2	34.8	42.3	9.7
Housing	(20)	6.1	5.9	6.4	7.9	8.1	8.2	9.0	29.5	36.3	44.6	12.6
Medical Needs	(12,21,34)	2.4	2.1	2.1	2.7	3.1	3.5	3.5	7.0	7.7	10.1	3.7
Education	(21)	0.9	1.1	1.2	1.3	1.9	1.8	5.1	7.0	10.8	15.2	3.2
Other Services	(16,19-22,38,41,43)	4.2	3.7	3.8	5.3	5.9	6.3	10.7	20.7	26.1	37.2	9.3
Food		81.5	79.1	85.4	106.5	97.6	98.7	104.7	137.0	151.6	167.0	101.4
Non-food		38.7	35.8	39.1	51.4	57.7	60.8	83.2	158.6	197.2	253.4	76.1
TOTAL		120.2	114.9	124.5	157.8	155.3	159.5	188.0.	295.6	348.8	420.3	177.5

Table 5: Daily Calorie Intake per Capita by Commodity Item and Household Subgroup in Indonesia , 1980

Commodity	Household Subgroup (SAM row-codes)	AGRICULTURAL				NON-AGRICULTURAL						TOTAL
		Labourers	Farmers			Rural			Urban			
			Small	Medium	Large	Lower Level	Economic Inactive	Higher Level	Lower Level	Economic Inactive	Higher Level	
Rice	(1,8,23,30)	1181	1135	1150	1313	1317	1392	1348	1269	1305	1470	1248
Corn	(1,23)	190	271	350	281	131	179	163	17	19	16	188
Cassava, etc.	(1,23)	261	330	374	389	221	195	241	74	70	61	255
Beans	(1,23)	39	34	53	80	52	59	58	73	83	93	55
Beans Products	(8,30)	16	13	11	10	16	16	16	31	32	33	17
Vegetables Fruits	(1,23)	44	37	50	65	57	58	62	83	87	93	57
Fish	(5,27)	20	19	25	44	28	26	34	32	33	42	28
Meat and Eggs	(3,25)	14	12	16	30	19	16	21	33	51	54	22
Oils and Fats	(8,30)	63	60	62	80	74	73	75	99	103	105	74
Coconuts, Brown Sugar	(2,24)	155	177	194	225	156	174	174	100	107	105	163
Sugar and Soft Drinks	(8,30)	65	57	71	97	79	76	90	118	132	128	82
Coffee, Tea, etc.	(2,7,8,24,30)	10	10	11	15	11	11	11	9	10	10	11
Wheat Flour, etc.	(8,30)	38	43	53	97	61	55	66	55	59	58	56
Other Processed Food	(4,8,15,30,37)	163	142	139	171	268	228	265	336	226	406	218
TOTAL		**2262**	**2340**	**2560**	**2897**	**2490**	**2558**	**2625**	**2329**	**2320**	**2673**	**2474**

Table 6: Contribution to Consumption Expenditure, Population and Environmental Themes per Household Group in the Netherlands, Based on the 1990 SAMEA

				Total population	Household Consumption	ENVIRONMENTAL THEMES				
						Greenhouse Effect (GWP)	Ozone layer depletion (OPD)	Acidification (AEQ)	Eutrophication (EEQ)	Waste Accumulation (min KG)
				in % of total households						
		Wages and	Single-person	4.6	7.4	7.6	7.3	7.9	7.4	7.3
		salaries	Multi-person without children	22.1	28.1	30.3	27.5	32.8	28.5	27.6
H			Multi-person with children	36.9	27.9	28.9	27.7	30.0	28.2	27.7
O										
U	G	Mixed	Agricultural	1.9	1.7	1.6	1.7	1.5	1.6	1.7
S	R	income	Trade, restaurants, repair	1.9	1.8	1.6	1.8	1.4	1.8	1.8
E	O		Business and persons serv.	2.3	2.9	2.8	3.0	2.6	2.9	3.0
H	U		Other property income	2.0	1.9	1.7	1.9	1.5	1.8	1.9
O	P									
L	S	Transfer	Age	14.5	16.9	15.9	17.2	14.8	16.7	17.1
D		income	Other	11.9	9.5	8.4	9.8	7.2	9.3	9.8
		Persons in institutions		1.8	1.9	1.1	2.1	0.3	1.8	2.1
		TOTAL		**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 7: Employment of Income-Generating and Non-Income Generating Labour in the Netherlands, 1987 (x 1000 working years)

			Production														Income Generation														Total	Number house-
																	Income-generating						Non-income generating									
			Income- Generating									Non-income generating					Male			Female			Male				Female					x 1000
			2Aa	2Ab	2Ac	2Ad	2Ae	2Af	2Ag	2Ah	2Ai	2Ba	2Bb	2Bc	2Bd	2Be	3Aa	3Ab	3Ac	3Ad	3Ae	3Af	3Ba	3Bb	3Bc	3Bd	3Be	3Bf	3Bg	3Bh		
Income Generation	Formal, male																															
	-Employees	3Aa	86	11	728	38	258	433	277	544	499																				**2874**	
	-Self-employed	3Ab	136	0	29	0	11	67	29	104	0																				**375**	
	-Unpaid family workers	3Ac	96	0	12	0	21	26	0	0	0																				**156**	
	Formal, female																															
	-Employees	3Ad	8	0	116	6	17	167	43	602	210																				**1269**	
	-A Self-employed	3Ae	18	0	3	0	0	17	0	35	0																				**74**	
	-Unpaid family workers	3Af	54	0	31	0	1	62	0	13	0																				**160**	
	Informal, male																															
	-Voluntary work	3Ba	0	0	0	0	0	0	0	224	0																				**224**	
	-Neighbourhelp	3Bb										19	12	37	60																**128**	
	-Own household	3Bc										958	400	99	643																**2099**	
	-Travelling	3Bd														480															**480**	
	Informal, female																															
	-Voluntary work	3Be	0	0	0	0	0	0	0	157	0																				**157**	
	-Neighbourhelp	3Bf										91	22	83	23																**219**	
	-Own household	3Bg										3623	703	370	285																**4981**	
	-Traveling	3Bh														243															**243**	
Allocation of Primary Income	Composition of households																															
	-One person households	4a															382	39	8	268	12	4	44	20	314	76	39	73	819	46	**2145**	1605
	-Multiperson, no children	4b															1169	165	95	697	22	88	90	64	1030	194	45	100	2101	119	**5977**	2170
	-multiperson, 1 child	4c															525	100	7	155	10	35	32	21	307	80	17	22	799	32	**2144**	760
	-Multiperson, 2+ children	4d															797	71	45	149	29	33	59	22	448	131	57	25	1262	47	**3175**	1177
	Main Source of income																															
	-Wages	4a'															2630	14	44	1003	43	34	126	67	1143	394	89	90	2686	8546	**8546**	3210
	-Enrtepeneurial Income	4b'															23	297	88	57	27	95	12	4	100	31	10	14	368	18	**1144**	394
	-Transfers in view of old age	4c'															98	15	8	42	1	7	38	27	428	24	32	53	1209	18	**2001**	1160
	-Other transfers	4d'															123	48	16	167	2	24	48	30	427	31	27	62	717	27	**1751**	948
TOTAL			**399**	**11**	**920**	**44**	**308**	**871**	**349**	**1679**	**709**	**4690**	**1138**	**588**	**1011**	**724**	**2874**	**375**	**156**	1269	74	160	224	128	2099	480	157	219	4981	243		5712

2Aa Agricultural and Fishery
2Ab Mining and quarying
2Ac Industry
2Ad Utilities
2Ae Construction
2Af Trade, hotels, repairs of cons. Goods
2Ag Transport, storage and communication
2Ah Other services and n.e.c. (excl. 2Ai)
2Ai Government and education

2Ba Household work
2Bb Shopping
2Bc (Child) care
2Bd Do-it-yourself
2Be Traveling

NOTE: One working year (excluding absenteeism) equals about 1750 working hours in 1987

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Endnotes

[a] The views expressed in this paper are those of the author and do not necessarily reflect the views of Statistics Netherlands.

[1] The SAM is also an integral part of the central framework of the European System of Accounts (ESA 1995) [Eurostat, 1995: 8.100-8.155]. In the European context, it is considered that the SAM's main merits are: a) integrating the income approach to national accounts compilation with the production and expenditure, or input-output approaches, and b) linking the national accounts to labour market issues in general and (un)employment problems in particular.

[2] For an extensive review of both SAM and SESAME, plus an application to the case of Indonesia, see Keuning [1996]. A summary is given in Keuning [1997].

[3] The origins of the SAM lie with Pyatt and Thorbecke [1976] and Pyatt and Roe [1977], who built on earlier work by Stone (e.g. 1981, 1986). More information on SAMs can also be found in Keuning [1991, 1994, 1996], Pyatt and Round [1986], Alarcon et al. [1991] and Timmerman and Van de Ven [1994]. Among the more recently published SAMs are the ones for Botswana (1985/86) [Central Statistics Office of Botswana, 1990], Indonesia (1990) [Biro Pusat Statistik, 1996], Italy (1984) [Bottiroli Civardi, 1990], Kenya (1987) [Lewis and Thorbecke, 1992], the Netherlands (1994) [Statistics Netherlands, 1997], the Philippines (1987) [Vos, 1991], Spain (1987) [Roland-Holst and Sancho, 1995] and the United States (1988) [Reinert and Roland-Holst, 1992]. At present, SAMs are compiled annually by Statistics Netherlands and every five years by Biro Pusat Statistik Indonesia. Feasibility studies for a regular compilation of SAMs are underway in the Italian and British Central Statistical Offices.

[4] The discussion of this SAM is limited here to its representation of the circular flow of income. Refer to Keuning [1996; section II.5] for a detailed discussion of the complete table.

[5] For instance, the accounts for the allocation of primary income (#4), the secondary distribution of income (#5) and the use of income (#6) have been consolidated into a single account (#4_6), for lack of data. Moreover, submatrix (2,1) is a diagonal matrix, since in this case only an input-output table was available. If supply and use tables have been compiled, this submatrix can be copied from the (transposed) supply table.

[6] This excludes social transfers in kind such as household benefits of public expenditures on education and health. These have been recorded in supplementary tables; see Keuning [1996: tables IV.33-35].

[7] A SESAME still excludes non-economic aspects of well-being such as a pleasant family life, friendship or political freedom. Refer to Keuning [1996] for an extensive review of the SESAME-concept.

[8] An alternative is to incorporate balance sheets in the SAM (cf. Pyatt [1991: table 10] and Table XX.7 in the 1993 SNA).

[9] Chapter III of Keuning [1996] contains an elaborate discussion of methodological and practical issues when compiling a SAM at constant prices. The appendix to that Chapter presents a step-by-step approach to the actual compilation of the SAM at constant prices for Indonesia. A further elaboration of the methodology for deflating capital input into production is provided by Keuning and Reininga [1997].

[10] For monitoring purposes, the tertiary income distribution could also be shown in the SAM proper. However, these imputations should be set aside in an analysis that makes use of average or marginal expenditure propensities. As redistributed income in kind is by definition fully spent on certain goods and services, its size influences neither saving nor the final consumption of other products. Incorporating such imputations in the SAM proper would thus distort an evaluation of household expenditure decisions. The same applies to income imputed when valuing output for own final consumption at equivalent market prices (subsistence production, services of owner-occupied dwellings, etc.) and to wages in kind.

[11] Becker, Schweinfest and Van Tongeren [1996] see the lack of such a link as a shortcoming of the SAM-approach. This is thus remedied in a SESAME.

[12] Refer to Keuning [1993], and De Haan and Keuning [1996] for the conceptual design of the NAMEA and an application to the Netherlands. See Hellsten et al. [1998], Ike [1998] and Vaze [1998] for applications to Sweden, United Kingdom and Japan, respectively. Meanwhile, in almost all EU-countries NAMEA-type tables are being compiled, with financial assistance from the European Community budget; cf. Eurostat [1996].

[13] Refer to Altena et al. [1991] for a more elaborate discussion on labour accounts.

[14] Refer also to Van Tongeren [1996] for a review of the relationship between accounting and analysis.

[15] Refer to Knight [1996] for a general review and to Bos [1996] for a specific human capital module related to the SESAME.

[16] A survey of these models is given in Gunning and Keyzer [1995]. Refer also to Gelauff and Graafland [1994], Keyzer et al. [1992], Shoven and Whalley [1992], Thorbecke [1992] and Decaluwe and Martens [1988].

[17] For instance, the so-called BACHUE-models (e.g. Anker and Knowles [1983]), which deal with economic-demographic interactions, would have benefited from the availability of a SESAME.

[18] Refer to Van Bochove and Van Tuinen [1986] for a review of the advantages of a core-module approach to national accounting.

The SAM and SESAME in the Netherlands: A modular approach

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I. Introduction

1. In 1994, the pilot-compilation of a Social Accounting Matrix (SAM) for the Netherlands was completed. Estimates were published for the years 1988 and 1990 (see Timmerman and Van de Ven, 1994). In subsequent years, consistent SAM have been compiled for 1991 up to and including 1994. In the meantime, research has been undertaken to extend the SAM with data on other aspects of welfare: the development of a System of Economic and Social Accounting Matrices including Extensions (SESAME). In particular, attention has been focused on the integration of socio-demographic data, and the inclusion of data on informal ("parallel") production such as household work and volunteer jobs. Furthermore, the SAM has been combined with the National Accounting Matrix including Environmental Accounts (NAMEA) in order to study the interaction between the economy and the environment. Among other things, the Social Accounting Matrix including Environmental Accounts (SAMEA) is used to analyze the impact of a shift in economic structure towards less polluting activities on the labour market and income distribution among household groups.

2. In this chapter, attention is mainly focused on compilation issues and results in relation to the Dutch (SE)SAM(E). For a more general introduction to the matrix approach, reference is made to chapter XX of the 1993 SNA, and to the chapter *Accounting for welfare with SESAME* included in this handbook.

3. To start with, section II describes the general structure of the Dutch SAM. Subsequently, the sequence of accounts and the classification applied in the accounts are discussed.

4. In the Netherlands, several partially integrated frameworks are available. For the compilation of the Dutch SAM, use has been made of the labour Accounts (LA) and the Socio-Economic Account (SEA). The LA provides on overall picture of the Dutch labour market. As such they contain extensive information on employment and compensations of employees, broken down not only by industry but also by sex, level of education, part time/full time jobs, etc. the SEA in the other hand, contains detailed information on the income distribution and consumptions patterns of various household group. In section III, the integration of these frameworks with the relevant information included in the System of National Accounts is discussed. Furthermore, attention is paid to the underlying data sources and the compilation of the LA and the SEA.

5. In section V, some of the information that can be derived from the Dutch SAM is presented and analyzed. First, tables on labour are discussed. Attention is also paid to the development of the value added and employment by industry and labour type between 1988 and 1993. Next, table on household income and expenditure are presented. One of the advantages of a matrix approach is the possibility of applying matrix algebra both in the compilation phase and in subsequent economic analyses. In the final part of section IV, an example is presented of the impact of final demand on employment by using multiplier analysis.

6. Section V contains a short introduction to some (future) extensions of the Dutch SAM. First, the results are presented of a study in which the SAM is combined with the NAMEA: the Social Accounting Matrix including Environmental Accounts (SAMEA). It is shown how a shift towards less polluting activities may affect employment by sex and level of education. Furthermore, attention is paid to the inclusion of unpaid activities in the SAM by integrating data from time-use surveys in the framework. Finally, the extension of the SAM with socio-demographic data is discussed briefly. Here, the discussion mainly concerns the integration of data on population, broken down by personal characteristics (sex, level of education, age, ethnicity, etc.), with data on employment and social security included in the SAM.

7. Finally, section VI ends the chapter with some concluding remarks.

II. Presentation of a consolidated Dutch SAM

8. A consolidated overview of the Dutch SAM containing figures for 1990 is shown in Table 1 (see annex). Such a SAM, in aggregated form, can serve as an overview view of an economy as a whole. In the detailed matrices, each account is sub-classified according to the most relevant groups of economic actors. The principles governing the classifications are mentioned in the headings of each account; the classifications actually used in the detailed SAM are discussed below. First, each account of the (consolidated) SAM is discussed briefly.

A. Sequence of accounts

9. The first row and column show the *goods and services account*. In the row, the use of goods and services, valued at purchasers' prices, is shown: intermediate consumption (479.0 billion guilders), final consumption expenditure (377.9), changes in inventories (6.5), gross fixed capital formation (106.9) and exports (279.7). Column 1 shows the total supply of goods and services. About 79% of the goods and services (949.0 billion guilders) are produced by resident industries. The relatively large share of imports (21%) illustrates the openness of the Dutch economy. In contrast with the 1993 SNA, taxes, social contributions and subsidies are shown in a separate tax account. This account has been introduced to make the matrix suitable for a more detailed analysis of government intervention through tax policy. The balance of taxes and subsidies on products, included in cell (13,1), amounts to 45.3 billion guilders.

10. The row of the *production account* shows the output of resident industries at basic prices. The column shows, among others, intermediate consumption by industry. Other (i.e. not product-related) taxes less subsidies on production are presented in the tax account. As a consequence, the balancing item of this account, GDP, is valued at factor costs, and not at basic prices as in the 1993 SNA. Another difference from the 1993 SNA relates to consumption of fixed capital. In the production account of the SAM in the 1993 SNA, this transaction is assigned to the capital account and the balancing item reflects Domestic Product, net of consumption of fixed capital. In the Dutch SAM, this was not possible due to insufficiently detailed information on consumption of fixed capital by industry.

11. The third row and column show the *generation of income account*. The receipts of the primary input categories (labour and capital) are presented in the row of this account. The item "VAT not handed over to the government" is specific for national accounts of countries with a VAT system. It relates to VAT invoiced by a producer to a purchaser, which is not subsequently turned over to the government. As such, it adds to operating surplus/mixed income of producers. For 1990, the amounts concerned equal 1.6 billion guilders, or about 4% of total invoiced VAT. In the column of the generation of income account, the receipts from direct participation in production are assigned to several accounts: consumption of fixed capital to the capital account (row 7), wages and salaries earned by foreigners to the current account of the rest of the world (row 14) and the balancing item, Net National Generated Income (NNGI), to the distribution of primary income account (row 4).

12. The fourth row and column record the *distribution of primary income* among institutional sectors. In the row, the sectors receive NNGI from the generation of income account (409.8 billion guilders) and property income from resident sectors (205.5) as well as from the rest of the world (49.5). The government sector receives the total of taxes less subsidies on production in this account (48.0), i.e. taxes less subsidies on products plus other taxes less subsidies on production plus VAT on land and other levies on fixed capital goods (see below) minus VAT not handed over to the government. In column 4, property income to resident sectors and to the rest of the world is registered. The balancing item, total primary income received by resident sectors, corresponds with Net National Income (NNI) at market prices. For 1990, NNI amounts to 457.1 billion guilders.

13. The format of the *distribution of secondary income account* (account 5) is the same as the one in the 1993 SNA, with the exception of the recording of taxes on income, wealth, etc., and social contributions on the tax account. The relevant receipts by the government are shown in cell (5,13), while payments by resident sectors can be found in cell (13,5). Here, it shows that taxes on income, wealth, etc., and social contributions are relatively high in the Netherlands: about 38% of NNI in 1990. If we include taxes on production, this percentage rises to almost 50%. More recent years, however, show a decrease in government intervention, resulting in a relative decrease in taxes and social contributions. Net National Disposable Income, the balancing item of account 5, amounts to 453.9 billion guilders in 1990.

14. Row and column 6 describe the *use of disposable income* by institutional sectors. About 83% of disposable income is used for final consumption expenditure. Net National Saving, the balancing item of this account, equals 76.0 billion guilders. At 17% of disposable income, Dutch savings are quite high compared with other countries.

15. Row and column 7 contain the *capital account.* Receipts by institutional sector are recorded in the row: consumption of fixed capital, net saving and capital transfers from resident sectors as well as from the rest of the world. Outlays are recorded in the column: capital transfers to resident sectors and to the rest of the world, gross capital formation and the balancing item, Net Lending of the Total Economy.

16. Account 8 is a dummy account. This account is not included in the SAM in the 1993 SNA. The reason for its insertion is lack of information on the cross-classification of gross fixed capital formation by institutional sector and industry in the Netherlands. On the row of account 8, gross capital formation per institutional sector resulting from the capital account is recorded. In the column, the following items are shown: changes in inventories specified by product group (cell 1,8), gross fixed capital formation from production and imports, specified by industry of destination (cell 9,8) and sales of used capital goods specified by type of asset (cell 10,8).

17. In the column of account 9, investments in new capital goods per industry are cross-classified by type of asset (cell 10,9). In the column of account 10, these investments (minus sales of second-hand capital goods to consumers and abroad) per type of asset are specified by product group (cell 1,10). VAT on land and other levies on fixed capital goods are recorded in the tax account (cell 13,10). The latter taxes on products have been recorded here, because they cannot be allocated either to products or to producers.

18. Row and column 11 provide information on the *financial transactions* of the resident sectors. Besides the balancing item of the capital account, Net Lending of the Total Economy, the changes in liabilities are recorded in the row. Together, these items yield the total sum available to residents for the acquisition of financial assets. Both the incurrence of liabilities and the acquisition of financial assets are specified by type of financial asset. In addition to the changes in financial assets and liabilities of resident sectors, account 12 shows the acquisition of financial assets and the incurrence of liabilities by the rest of the world.

19. The next row and column contain the *tax account*. As stated in the above, this account has been included to analyze Dutch tax policy in more detail. The intersection of this account demonstrates the flexibility of the SAM framework. In the row of this account, the relationship between each tax and the transaction on which the tax is levied is shown: taxes less subsidies on products in the goods and services account (cell 13,1), other (not product-related) taxes less subsidies on production in the production account (cell 13,2), taxes and social contributions levied on the income and wealth of resident sectors in the distribution of secondary income account (cell 13,5), levies on fixed capital goods in account 10 (cell 13,10) and finally, taxes levied on foreign income and wealth in the current account of the rest of the world (cell 13,14). In the column, the receipts of taxes and social contributions are specified in cells (3,13), (4,13), (5,13) and (14,13).

20. The *current account for the rest of the world* is shown in row and column 14. The row contains payments to the rest of the world, that is the income of the rest of the world; in the column, the receipts from the rest of the world (i.e. the outgoings of the rest of the world) are recorded. The balancing item, the current external balance, is registered from the Dutch point of view. Therefore, this balancing item is presented in the row and not in the column of account 14. A positive amount means a surplus for the Netherlands, a negative amount, a deficit for the Netherlands. At 19.8 billion guilders, i.e. 3.8% of GDP at market prices, the Dutch surplus is considerable. In 1996, the surplus had even grown to a record high of 5.8% of GDP. Accumulated for the period 1981 up to and including 1996, the surplus amounts to almost 312 billion guilders, only resulting in a positive balance of primary income received from the rest of the world, from 1994 onwards.

21. The last row and column represent the capital account for the rest of the world. The row records capital transfers to the rest of the world and the incurrence of liabilities by the rest of the world vis-á-vis the Netherlands. The column records, in addition to the balancing item of account 14, capital transfers from the rest of the world and the acquisition of financial assets by the rest of the world.

B. Classification of the accounts

22. Defining classifications for the various accounts is a vital phase in the construction of a SAM. In a SAM, it is possible to distinguish the most relevant unit and classification of units for each account. Because of this, the SAM is a very flexible framework. It makes the SAM a suitable instrument for integrating and presenting information from the Labour Accounts (LA) and the Socio-Economic Accounts (SEA) within the system of national accounts.

23. In general, the classifications should meet certain requirements:

- Groups should be homogeneous with regards to the main decisions they have to make and should be relatively stable over time;
- Classifications should be a reflection of the variety in society, and
- Classifications should be derivable from existing data sources.

24. Next, the classifications in the SAM for the Netherlands are reviewed. A complete list of all classifications can be found in Timmerman and Van de Ven, 1994. Here, we confine ourselves to the classifications applied in accounts 3 up to and including 6, and account 13 (the tax account). These accounts are the most relevant ones for an analysis of household income and expenditure. In fact, this comes down to a description of three classifications: primary input categories, or different types of labour and capital, in account 3, different types of institutional sectors including a detailed breakdown into household groups in accounts 4 up to and including 6, and different types of taxes and social contributions in account 13.

1. Primary input categories

25. Traditionally, in the generation of income account (account 3) two main primary input categories are distinguished: compensation of employees, broken down into wages and salaries and employers Æ social contributions, and gross operating surplus/mixed income. The SAM contains additional information about the use and the remuneration of labour inputs. In sub matrices (3,2) and (3,14), wages and salaries (and the underlying number of employees) per industry are broken down by type of person employed. The same classification by type of labour is also used for the household groups that supply the labour. This supply is shown in sub matrices (4,3) and (14,3).

26. In the Dutch SAM, labour input is disaggregated into 14 types of labour. The necessary information is derived from the LA. Two important determinants for Dutch employment and wages have been applied as discriminating criteria: sex and level of education attained. Regarding level of education, the following seven categories are distinguished:

- Basic education;
- Lower general secondary education;
- Higher general secondary education;
- Lower vocational education;
- Middle vocational education;
- Higher vocational education and
- University training.

27. In addition to this, other discriminating criteria could be used for the Netherlands. Examples are ethnicity, age and household composition. For practical reasons, these criteria have been excluded from the present SAM. They are, however, part of the future development of a SESAME for the Netherlands (see section V). A distinction between rural and urban employment, and by type of occupation, such as in the Indonesian SAM, seems to be less relevant for the Netherlands.

2. Institutional sectors and household groups

28. In relation to the breakdown into institutional sectors, in the first instance seven institutional sectors have been distinguished in accounts 4 and 5, identical to the ones used in the institutional sector accounts of the national accounts:

- Non-financial (corporate and quasi-corporate) enterprises;
- Credit institutions;
- Insurance companies and pension funds;
- Central government;
- Local government;
- Social security funds and
- Households.

29. In account 6 on the other hand, the sectors constituting general government, that is central government, local government and social security funds, have been grouped together. The reason for this is lack of information on the consumption expenditure of these sectors by product group.

30. Furthermore, accounts 4, 5 and 6 contain a more detailed household classification. The household sector is disaggregated into 14 socio-economic groups. The sub-sectoring of households is based on the Socio-Economic Accounts (SEA). This framework applies a classification to household groups based on differences in consumption behaviour and sources of income. In the SAM, the following criteria are used:

household category, household composition and main source of income.

31. First, the household sector has been subdivided into private households and institutional households. Households are defined as sets of one or more persons, occupying one living accommodation and having the disposal of a private, or alternatively, a joint provision of domestic services at that place, i.e. a provision of food and other essentials for living. Examples of institutional households are (persons in) prisons, homes for the elderly, etc.

32. Secondly, private households have been subdivided on the basis of their main source of income:

- Wages and salaries;
- Property income and mixed income, that is income from an unincorporated enterprise;
- Transfer income in connection with old age and
- Other transfer income, e.g. social benefits in connection with unemployment, invalidity and general need.

33. Thirdly, with the exception of the household groups with mixed income (and property income), these groups have been further broken down on the basis of the composition of the household:

- One person;
- Two or more persons without children and
- Two or more persons with children.

34. Fourthly, the household groups with mixed income as their main source of income have been split up according to the economic activity in which they are engaged:

- Mixed income from agriculture;
- Mixed income from trade, hotels, restaurants, cafes and repair services;
- Mixed income from business and personal services, and
- Mixed income from other activities and property income.

35. In discussing this classification of household groups with important users, among which is the Central Planning Bureau that compiles forecasts for the Dutch economy and estimates the impact of official government policy and political programs on future economic developments, it turned out that there is a high political need to have more detailed information on the development of income and expenditure of household groups depending on transfer income from government. Here too, account will be taken of these user demands in the future development of the SESAME (see section V).

36. A final remark concerning the household sector relates to the contents of this sector in the system of national accounts. In the present system, the household sector includes not only private and institutional households but also non-profit institutions serving households such as sporting clubs and trade unions. In the SAM, these institutions are part of “households undivided” (see section III).

3. Types of taxes and social contributions

37. There are various types of taxes, social contributions and subsidies in the Netherlands. They are charged on various types of transactions: transactions in goods and services, transactions in relation to production activities, income transactions, etc. To show this relationship explicitly, a tax account has been introduced in this SAM. By doing so, it is possible to examine more closely the effects of government

policy on e.g. the distribution of income among various household groups.

38. A subdivision of taxes and subsidies into different categories can be based on the following two criteria: the purpose and the base on which they is levied. The OECD holds the view that generally the classification of taxes should be governed by the base on which they are levied. Regarding social contributions, however, the OECD makes an exception to this rule; the classification of this item is based on the purpose of the "tax", i.e. the right to receive social benefits. In the Dutch SAM, the general principles of the OECD have been applied. As a consequence, taxes, social contributions and subsidies have been subdivided into the following broad categories:

- VAT;
- Excise duties;
- Taxes on imports (excluding VAT);
- Other taxes on production;
- Subsidies;
- Taxes on income;
- Taxes on wealth, etc. (e.g. tax on the net wealth of individuals, real estate tax and motor vehicle Tax paid by households);
- General social insurance contributions;
- Employees social insurance contributions;
- Imputed social contributions and
- Pension premiums.

39. In addition, a separate category has been distinguished for environmental taxes. Environmental policies play an increasing role in economic decision-making (see De Haan et al., 1993). In accordance with the general rule of the OECD for classifying taxes, a new base has been introduced as a criterion on which taxes are defined: the direct pollution of the environment. Taxes which have been classified as environmental taxes are:

- Energy levies (WABM);
- Refuse collection rate;
- Sewerage duties;
- Levies on water pollution;
- Levy on manure surplus;
- Levy on noise emission of civil aviation and
- Levy on ground water.

40. As a consequence of the above classifications, the SAM contains extensive information on transactions which determine the income and expenditure of households. In sub-matrix (3,2), data on employment and compensation of employees, cross-classified by industry and by type of employee, can be found. Furthermore, in each of the sub matrices constituting the distribution of primary income account (account 4), the household sector has been subdivided into household groups. As a consequence, for each household group the following information can be derived from the Dutch SAM:

- How much income each household group receives from direct participation in the production process, subdivided by primary input category (sub matrix[4,3]);
- How much property income[1] each household group receives from resident sectors (sub matrix[4,4]) and from the rest of the world (sub matrix[4,14]);
- How much property income each household group pays to resident sectors (sub matrix [4,4]) and to the rest of the world (sub matrix[14,4]).

41. In the secondary distribution of income account (account 5), the Dutch SAM provides a complete picture of the effects of government policies on the distribution of personal income among household groups:

- How much primary income each household group receives as a result of the distribution of primary income (sub matrix [5,4]);
- How much current transfers each household group receives from resident sectors (sub matrix [5,5]) and from the rest of the world (sub matrix [5,14]);
- How much current transfers other than taxes and social contributions[2] each household group pays to resident sectors (sub matrix [5,5]) and to the rest of the world (sub matrix [14,5]);
- How much taxes and social contributions each household pays, subdivided by several categories of taxes (sub matrix[13,5]).

42. Final consumption expenditure is recorded in sub matrix (1,6). Here, consumption by household group has been broken down into approximately 50 product groups. Saving by household group, finally, is included in sub matrix (7,6).

III. Data sources and micro-macro links

43. In general, the combination of data from integrated macro-systems with detailed source (= survey) data enables the statistician to compile additional information on specific areas. Moreover, a subsequent effort to adjust the micro-data and its aggregates to the integrated macro-figures increases the possible uses of statistics even further.

44. This chapter describes the integration of labour market statistics and household income statistics within a SAM. In the construction of the Dutch SAM, data from the National Accounts (NA), the Labour Accounts (LA) and the Socio-Economic Accounts (SEA) are combined with source data from the Labour Force Survey (LFS), the Annual Earnings Survey (AES) and the Statistics of Employed Persons (SEP). As a result, detailed information on the distribution of income among household groups is presented in combination with elaborate labour market data (classified by sex and educational level) and national accounts data. Section A describes the integration of labour data and section B the integration of household income data within the SAM.

A. The SAM and labour data (wages and salaries, employment)[3]

45. With respect to labour data, the SAM for the Netherlands contains two types of cross-tabulations (see also section 2). The first table, sub-matrix (3,2), records generation of income by various factors of production. The remuneration of the production factor, labour (compensation of employees), consists of wages and salaries and employers social contributions. For each industry, wages and salaries are subdivided into 14 types of employed persons (see section 2). In addition to the data on wages and salaries, corresponding data on the number of employees is compiled. Data on paid employment are measured in full-time equivalents (ft'es); so part-time jobs have been converted into fte's. Furthermore, data on the labour input of self-employed persons is compiled and also classified by type of employed person.

46. The second table, sub-matrix (4,3), records the distribution of generated income among households and other resident sectors. Wages and salaries are cross-classified by 14 types of employed persons and 14 household groups. In addition, an identically specified matrix on labour input (fte's) by households is compiled.

47. In discussing micro-macro linkages on labour data in the SAM, the two types of matrices are consistently distinguished.

1. Labour classified by sex, educational level and type of industry

48. The detailed information on the labour market in the SAM could be derived from a combination of data from different micro-sources and meso data from the Labour Accounts (LA) and the National Accounts (NA). The Dutch NA contains total labour input figures (employees and self-employed) for 58 industries, whereas the Dutch LA provides data on labour inputs classified by 81 industries. In the SAM, the most detailed intersection of the two classifications is applied: 41 industries. In this section the compilation of the SAM sub-matrix on paid employment (full-time equivalents) classified by sex, educational level and industry is discussed first.

49. In the LA[4], an explicit relationship exists between micro-data from, among others, the Labour Force Survey (LFS) and macro-data. The conceptual framework of the LA consists of a set of definitions (identities)[5], both among macro-variables and between aggregates and the underlying micro-data. Some of these macro-variables are also included in the NA (total wages and salaries, total employment), which leads to additional identities which have to be fulfilled. In case of discrepancies between preliminary estimates of the macro-data, an analysis of the underlying source data leads to adjustments in micro- as well as meso data.

50. In the Netherlands there are three basic sources of labour data (cf. Leunis and Altena, 1996):

- Establishment surveys: presenting employment and vacancy data, and hours of work and earnings/labour cost;
- Household surveys: the LFS produces employment and unemployment data in relation to socio-demographic characteristics;
- Central registers: offering information on gross earnings and benefits from social security institutions.

51. Within the LA the various sources with data on labour are combined and, where necessary, reconciled to present an overall view of the labour market. The reconciliation or integration process starts with choosing the "best" source for each variable to be included in the LA.

52. Table 2 shows the adjustments made to compile the number of jobs of employees for the year 1990. These adjustments are summarized in four stages, namely (i) harmonization, (ii) achievement of full coverage, (iii) minimization of measurement errors and (iv) balancing. Establishment surveys are used as the primary source to describe paid employment, because of their low variance of data on paid labour as compared with the LFS. For example, the Statistics on Employed Persons (SEP) are used as the best source to describe total employment (jobs). For an elaborated overview of the adjustments shown in Table 2, see Leunis and Altena, 1996.

53. In addition, the average annual contractual hours worked per type of job (classified by sex and type of industry) is compiled by using data from the Annual Earnings Survey. Multiplying total hours per job by the total number of jobs produces total hours worked per year. Next, total full-time equivalents (fte's) can be derived by dividing this figure by total contractual hours worked per full-time job. At a macro-level the LA figure on total fte's corresponds with the NA figure, apart from some minor differences which can be specified[6].

54. Thus far, paid employment by sex and type of industry has been compiled, but information on educational levels is still lacking. The Labour Force Survey (LFS) contains reliable employment data by educational levels. In compiling the detailed SAM labour matrix, LFS data are linked to LA figures. Therefore, the LFS records are clustered into 324 cells classified by industry, sex and labour hours (">= 20 hours a week " versus "< 20 hours a week"). Next, each LFS cell is grossed up in such a way that the result equals the corresponding LA figure. This reweighted LFS database provides, in the first instance, the sub-matrix on paid employment of employees classified by sex, educational level and industry, and secondly, an identically classified sub-matrix on the self-employed.

55. Next, the re-weighted LFS database is used to compile the detailed SAM sub-matrix on wages and salaries. Data on wages and salaries by educational level are only available to a limited extent. A household survey appears most suitable for a proper measurement of educational levels, for respondents themselves know best how well they are educated. Establishments often do not know the most recent educational attainment of their employees, so they systematically underestimate these levels. This underestimation is clearly shown in Table 3, in which the results from the LFS on households and the Annual Earnings Survey (AES) on establishments are compared.

56. Household surveys, on the other hand, are less appropriate for obtaining data on wages and salaries. For that purpose, establishment surveys like the AES are more useful. For SAM purposes, data from this survey have to be combined with LFS-information. The following procedure has been applied:

(1) Based upon the 1989 AES, the following function has been estimated by means of regression analysis[7]: Hourly wage rate = F (sex, age, hours worked, educational level;
(2) The obtained coefficients were used to impute an hourly wage rate for each record employee) in the LFS, based on the characteristics mentioned. In dealing with the underestimation of educational levels by AES, it was assumed that (a) the AES correctly estimated the wage ratios between educational levels, and (b) these wage ratios did not change over time;
(3) Within each of the above LFS cells, total wages and salaries were computed as the product of the imputed hourly wage rate and hours of work;
(4) The extended LFS records were aggregated to obtain the same level of detail as the integrated LA figures on total wages and salaries;
(5) Imputed wages and salaries are compared with the corresponding LA figures. This resulted into correction factors for each LFS cell;
(6) Using the correction factors and the imputed wage rates in 2, and making use of Iterative Proportional Fitting (IPF), integrated hourly wage rates could be obtained. Multiplying by the amount of full-time equivalents (hours of work) resulted in integrated data on wages and salaries per type of employee.

57. As mentioned before, NA and LA levels do not fully coincide at present. In handling this, NA-levels of respectively wages and salaries and employment per type of industry are used as benchmark estimates for the levels of wages and salaries and employment registered in the SAM.

2. Labour classified by sex, educational level and household group

58. The SAM also distinguishes labour input data and data on wages and salaries classified by sex, educational level and household group. The SAM for the Netherlands distinguishes 14 types of households classified by main source of income and household composition (see section 2). The SAM sub-sectoring of households is based on the Socio-Economic Accounts (SEA). The SEA constitute a framework which gives coherent and consistent information on the income and outlays of different household groups. In the SEA, total wages and salaries received per type of household are compiled based on micro tax data. The linkages between the latter data, the SEA and the national accounts are more extensively discussed in the next section.

59. As stated before, the LFS collects data on personal characteristics, including position in the household (e.g. breadwinner, partner or child). Household data such as its composition (single- or multi-person, with or without children) also belong to these characteristics. In order to compile matrices with labour data classified by sex, educational level and household group, LFS data have to be compared with

SEA data. For this purpose the previously discussed re-weighted LFS database, extended with imputed wage rates, has been used again. But this time the LFS cells have been grossed up in such a way that a) total wages and salaries by sex and educational level equal the previously compiled levels and b) total wages and salaries per type of household equal the corresponding SEA figure.

60. It should be noted that the Dutch LFS does not contain any information on income levels. Hence, contrary to the SEA, the Dutch LFS cannot classify households by main source of income on the basis of the sum of the incomes of all persons in the household. On the other hand, the LFS does contain information on the employment status (employee or self-employed) and the type of industry for each individual in the household who belongs to the labour force. In addition, the LFS inquires whether a person receives social security benefits and whether he or she has reached the age of 65. Based on these data the main source of income of the bread winner[8] can be deduced. This has been used as a proxy for the main source of income of the whole household. Regarding double-income households this method is not completely accurate. Table 4 shows that the discrepancies between the SEA and LFS are indeed concentrated in the category multi-person households without children.

B. SAM and household income and expenditure

61. The main data source for the compilation of data on the income and expenditure of households, i.e. accounts 4 up to and including 6 in the SAM, is the SEA. This partially integrated framework provides consistent information on income and expenditure for about 50 household groups. In addition to the household groups included in the Dutch SAM, the SEA also contain a breakdown into level of income. The income data included in the SEA are based on the Income Statistics of Statistics Netherlands, while the data on final consumption expenditure are derived from the Budget Survey of Statistics Netherlands. Furthermore, the SEA have in principle been made consistent with the income data for the household sector included in the system of national accounts. However, some differences, mainly of a conceptual nature, have not been eliminated.

62. In the following, the compilation of household data included in the SAM is discussed in more detail. As most countries do not have a partially integrated framework like the SEA, attention is also paid to the relationship between the SEA, on the one hand, and the Income Statistics and the Budget Survey, on the other. First, the compilation of income data are discussed. Next, the expenditure data come up for discussion. Finally, attention is paid to the relationship between the SEA and the system of national accounts, including the Dutch SAM. As far as the first issue is concerned, the text has mainly been derived from Bos (1995). In addition, the contributions of Van der Laan and Van Tuinen (1997) and CBS (1988) are gratefully acknowledged here.

1. Income statistics and the SEA

63. The Income Statistics are based on an annual panel survey of 75,000 households. The income data on persons from these households among others are taken from the data of the fiscal authorities. To arrive at the data used for the compilation of the SEA, these data have been adjusted for differences in definition and classification, and differences in population. Furthermore, additional estimates have been made for some income items not included in the Income Statistics.

64. Differences in definition and classification relate to income items covered by the Income Statistics that are only included in the concept of income according to the Income Statistics or in the concept of income according to the SEA. The relevant information, however, can be derived from the former source. An example is reimbursements for the travel expenses of employees, which are included in

compensation of employees according to the SEA, but excluded from this income according to the Income Statistics. Applying a more coordinated income concept has resulted in a significant decrease of adjustments for differences in definition and classification from 1990 onwards. For example, for disposable income, the differences amount to 12.6 and 0.8 billion guilders in 1989 and 1990, respectively; see also Table 5.

65. The Income Statistics relate to the population as at 31st December. The SEA, on the other hand, estimate total income earned during the year under investigation. As a consequence, in the latter case, average population figures (instead of population at the end of the year) have been applied for grossing up the survey data. For 1990, the resulting differences in population amount to 3.6 billion guilders of disposable income.

66. Some income items included in the SEA are either not included or valued differently in the tax and other data on which the Income Statistics are based. In these cases, additional estimates have been made. For example, the interest receipts of persons for whom tax payments by the employer on behalf of the employees equal the final settlement of their tax debt are not included in the tax data. For 1991, the amounts concerned are about 1.3 billion guilders. Another example relates to social benefits in case of sickness that are paid by employers on behalf of social security funds. In the data from the tax authorities, these amounts are often included in compensation of employees, and excluded from social benefits. Here, the relevant amounts need to be estimated, and subsequently transferred from the former to the latter income item to arrive at the income definitions according to the SEA. A final example is the imputed rents of owner-occupied dwellings. The valuation according to the fiscal legislation differs considerably from the economic valuation according to the SEA. In total, additional estimates have resulted in an increase of 8.5 billion guilders of disposable income in 1990.

67. Apart from the conceptual differences discussed below, the SEA in principle correspond to the totals of the sector accounts for households as included in the system of national accounts. The totals for the Income Statistics adjusted for the above-mentioned differences, are still below these figures. The main reason for these statistical discrepancies can probably be found in under-reporting. Furthermore, as the Income Statistics are based on administrative registers, not all the income components needed for the desired income concept of the SEA can be observed. In the case of disposable income, the remaining statistical discrepancies vary between 4% and 6%. For those items composing disposable income, however, the discrepancies are substantially higher: e.g. entrepreneurial income (25% to 30% in relation to the corresponding total of the Income Statistics) and property income (about 30%). In compiling the SEA, these statistical discrepancies have usually been allocated proportionally to the household groups distinguished; an exception is the allocation of the discrepancy for interest receipts. In the latter case, results from studies of the hidden economy have been used; refer to Kazemier (1984) and CBS (1986).

2. The Budget Survey and the SEA

68. In relation to final consumption expenditure, the SEA starts from the Budget Survey. This survey measures the net income and expenditure of households. The focus is on a description of the consumption patterns of private households.

69. Due to the small size of the sample, consumption data have not been calculated by applying a grossing-up procedure. Instead, the estimation of consumption patterns by household group has been based on a regression analysis, using a separate equation for each of the product groups distinguished. In doing so, the value of the consumption of the relevant product group has been used as dependent variable, while the main source of income, in combination with age, number of persons in the household, and income class constitute the independent variables.

70. The resulting data have been adjusted for differences in population. Furthermore, additional

estimates have been included. In relation to the former adjustments, the (personal) expenditure of persons in institutions should be mentioned. Examples of additional estimates are the (imputed) service charges of banking and insurance, and expenditures for the replacement and repair of goods that are covered by non-life insurance claims. The imputed rents of owner-occupied dwellings are another example.

71. Similarly to the case of the Income Statistics, the adjusted data of the Budget Survey lie below the corresponding levels in the SEA. The remaining statistical discrepancies are about 4% in terms of total final consumption expenditure. Not surprisingly, the largest discrepancies are found with expenditures on tobacco (50% lower in the Budget Survey as compared to the SEA), and beverages (15%). These statistical discrepancies have been allocated proportionally to household groups.

3. SEA and SAM

72. In the Dutch SAM, the usual way of accounting adopted in the national accounts has been followed. Although in most cases the sum of transactions by household group in the SEA equals the corresponding figure in the National Accounts (NA), there are some differences. As far as possible, these discrepancies have been removed. In addition to this, some additional estimates have been made; these mainly concern property income by counterpart-sector.

73. It was not possible to remove all discrepancies. For this purpose, a fictive household group, called *households undivided* has been added in some instances. In Table 6, the components of this group have been specified for each transaction category. In the following, they are explained briefly.

74. First of all, there is a difference in population in relation to non-profit institutions serving households (NPISHs). In the NA, the household sector includes NPISHs; this is not the case in the SEA[9].

75. The accounting of transactions concerning pensions and other life insurance in the SEA differs from the one in the SAM. In the SEA, the premiums and benefits concerning pensions and other life insurance are considered as secondary income transfers, whereas in the NA, and consequently also in the SAM, these transactions are considered a kind of saving by households, i.e. as changes in actuarial reserves[10]. Furthermore, in the NA system, interest, which equals the return on investment of actuarial reserves by insurance companies and pension funds, is imputed as a primary income transaction from the insurance sector to households. In the financial account, this item is then counted as a change in actuarial reserves. From SEAs point of view, these returns on investment are not part of the income of households. A choice between these two alternative accounting methods strongly influences the determination of disposable income and saving of the household sector.

76. The way in which public health insurance is treated also differs between the two systems. In the NA, the medical care and health expenses covered by social security funds are treated as final consumption expenditure of households; on the other hand, households receive social benefits to pay for these goods and services. In the SEA, both transactions are not recorded. The reason for this is the lack of information on the distribution of these expenses (and related social benefits) among household groups. In fact, for private health insurance the same holds. In this case, however, the figures from the SEA have been adjusted to fit with the figures in the national accounts.

77. Finally, differences in the time of the recording of taxes on income, wealth, etc. should be mentioned. In the present NA, these transactions are recorded on a cash basis, i.e. at the time the taxes are actually paid and received. On the other hand, the figures per household group available from the SEA are recorded on an accrual basis, i.e. at the time the taxable income is earned.

IV. Results and analysis

78. In this section some interesting tables derived from the SAM are presented. Section IV.A shows detailed tables on employment classified by (i) labour type and type of industry and (ii) labour type and household group. Next, in section IV.B, tables on income and expenditure by different household groups are discussed. The tables presented here are fully consistent with the complete set of National Accounts.

A. Presentation of sub-matrices on labour

79. In tracing the circular flow of household income, it is essential to know how income is generated in the first place. In this respect, sub-matrices (3,2) and (4,3) give very detailed information on the demand and supply of labour data in relation to the complete set of NA. This offers a lot of opportunities for analysis. For instance, Table 7 shows the proportions of four types of labour in total paid employment for the year 1990. Men make up more than two thirds of total paid employment measured in full-time equivalents (fte's). With respect to educational level the "highly skilled" are in the majority with a percentage of 59%. These percentages vary between different types of industry. By far the most important employer for females are the other non-commercial services as shown in Table 7. Moreover, this industry is the only one that employs more women than men. In 1990, this sector accounted for almost 43% of highly educated female employment. In contrast, the manufacturing industry employs comparatively more less-educated people, and women are under-represented.

80. The percentage of women in employment has been quite low in the Netherlands as compared to other countries. Therefore it is interesting to analyze whether this phenomenon is changing. At the moment there are SAMs for the years 1988 up to 1993[11]. Table 8 shows the average annual growth rates of GDP (at factor cost) and total employment (fte's) distinguished by sex, educational level and type of industry. Between 1988 and 1993, the overall average growth rate of total employment was 1.3%, which lags behind the overall average GDP growth rate of 2.7%. Clearly, Dutch labour productivity increased also during this period. Most striking are the high average employment growth rates of highly educated females and (to a less extent) males, in contrast to the negative growth rates in the employment of less educated males. Low skilled men have the toughest time finding a job, which is illustrated by their decreasing employment, at 0.9% a year, on average. In banking and insurance for example, the employment of less educated men fell sharply, while the employment of highly educated men grew at an above average rate. In this sector, the employment level of highly skilled women grew even faster than the number of jobs for equally qualified men (7.3% versus 4.1%). The proportion of highly educated women in general government services also increased, especially at the expense of less educated men. This was partly due to the abolition of general conscription in the Netherlands. So it can be concluded that the division of labour between men and women is becoming gradually more equal.

81. Finally, Table 9 shows the shares of specific labour categories in the household sector with wages and salaries as their main source of income. As expected, the proportion of women is closely related tothe composition of the household. The percentage of female full-time equivalents within multi-person households with children is below 22%, whereas within single-person households this figure rises to 41%

82. With respect to their participation in the labour market, women can generally be classified into different categories based upon age and household composition. Scheme 1 summarizes the most striking labour market characteristics of six types of women. Furthermore, the following applies to all women: the higher they are educated, the greater their participation rate is. In this regard, it should be noted that older Dutch women are far less educated than younger ones.

B. Presentation of sub-matrices on household income

83. Table 10 gives an overview of income and outgoings per household group in 1990. The transactions presented in this table have been derived from the relevant sub-matrices of the most detailed SAM. Unlike the presentation in the SAM, Table 10 does not show from whom the households receive their income and to whom they pay their outgoings. Furthermore, income and outgoings per household group have been divided by the number of equivalent persons[12].

84. On average, total resources in 1990 amounted to 53,000 guilders per equivalent person; see Table 10. There were, however, major differences between household groups in the amounts available for spending. Total resources per equivalent person were highest in the self-employed household group, ranging from 71,000 guilders for self-employed households in other activities, plus those depending on property income, up to 104,000 guilders in agriculture. Employees, on the other hand, received 52,000-53,000 guilders (single-persons households and multi-person households with children) up to 69,000 guilders (multi-person households without children). Not surprisingly, households with transfer income (transfers) as their main source of income were worst off: 23,000 guilders per equivalent person for single-person households depending on other transfers up to 43,000 guilders for multi-person pensioner households.

85. Taking a closer look at the income components, it appears that at a macro-level compensation of employees (including employers' social contributions) accounted for more than 55% of total resources. Social benefits (including pension benefits) accounted for 26%. This is twice as high as the proportion of self-employment income (13%). Evidently, the household groups have quite diverging sources of income. For example, almost 82% of the total resources of households with children depending mainly on other transfers consisted of social benefits. On the other hand, more than 81% of the total resources of the self-employed in agriculture (farmers) consisted of mixed income. The latter households only received relatively small amounts of wages and salaries (almost 6,000 guilders) in comparison to other self-employed households. These amounts were even lower, though, in households that mainly depend on transfer income.

86. Furthermore, receipts of interest and dividends were much higher for self-employed households and for pensioner households than for all other household groups. In the case of self-employed households, these receipts were more than offset by payments of interest and dividends (i.c. rents on land), etc. Only single-person households with other transfers as their main source of income received a considerable amount of unrequited current transfers n.e.c.: almost 4,000 guilders per equivalent person. This is mainly caused by scholarships (excluding loans) received by students.

87. Regarding uses, there were major differences in the share of premiums and taxes between household groups. On average, 36.2% of total uses consisted of these outgoings. Self-employed households engaged in agriculture and single-person households depending on transfers in connection with old age had the lowest shares (18.2% and 20.1%, respectively), whereas employee households had the highest shares (ranging from 41.3% to 44.1%).

88. For all households, final consumption expenditure was by far the largest item of total uses. Obviously, there were differences between household groups in terms of the consumption budget per equivalent person. However, consumption inequality between households presents quite a different picture from income inequality between households. In 1990, total resources per equivalent person ranged from 23,000 guilders for single-person households with other transfers to 104,000 guilders for self-employed households engaged in agriculture. That is, the ratio between the household group with the lowest income and that with the highest income was 1:4.5. The amounts of total consumption per equivalent person ranged from 18,000 guilders for institutional households to 41,000 guilders for self-employed households engaged in business and other personal services, that is, a ratio of 1:2.3. Probably, inequality in consumption is a better indicator for the degree of relative prosperity of households than

inequality in income.

89. Saving per household category deserves some attention. In the case of single-person households and households with children mainly depending on wages and salaries and on other transfers, this amount was negative in 1990. In contrast, self-employed households, especially those engaged in agriculture, had a very high saving rate. In the SAM, less plausible results by household group have not yet led to an adjustment of macro-figures for some transaction categories. It is expected that in the next revision of the NA such feedback will in fact be applied. Anyhow, saving by household group will be the subject of further research in the near future.

90. The use of net disposable income sub-classified by institutional sector is recorded in account 6. In this account, final consumption expenditure of households (and general government) has been sub-classified by 51 groups of goods and services, whereas the household sector has been subdivided into household groups. In Table 11, the shares of product groups in total final consumption expenditure of household groups is presented at a more aggregated level. On average, 12.5% was spent on food products, 6.0% on tobacco and beverages, 8.0% on clothing, textile and leather ware, and 15.4% on services of dwellings.

91. In general, households with other transfers as their main source of income spent a higher proportion on food products than other household groups (15.0% on average). These households also spent the highest percentage of their budget (7.0%) on tobacco and beverages. However, as regards consumption per equivalent person on these items they spent less than the other household groups. Concerning dwelling services and electricity, gas and water, pensioners spent the highest proportion of their consumption budget on these items (23.9%). Not surprisingly, the percentage of financial and business services in total consumption was the highest for self-employed households (4.8%). Finally, it is clear that institutional households had a somewhat different consumption pattern than private households. For example, institutional households spent 67% of their consumption budget on other goods and services in 1990, while for all households this percentage was 20.2%. The obvious reason for this is that other goods and services include medical, health and other community services.

92. From Table 11, one can also see that there are substantial differences in the consumption patterns of single-person households and multi-person households. Single-person households spent a smaller share of their budget on food products in comparison with other households with the same source of income. For example, single-person employees' households spent 9.1% of their budget on food, while employee households without children and with children spent 11.4% and 13.7%, respectively. On the other hand, single-person households spent higher proportions of their consumption budget on dwelling services than other households. These households also spent higher proportions of their budget on meals, drinks and lodging, and on transport, communication and repair services. In fact, differences in consumption patterns between households depend less on the source of income than on the composition of the household.

C. The use of a SAM in multiplier analysis

93. All kinds of analysis can be applied with a SAM. In the chapter *Accounting for welfare with SESAME* in this handbook, it is stated that a SAM-based inverse enables, among other things, a more complete analysis of employment multipliers. This section presents an analysis of the interaction between the composition of final demand (e.g. consumption by households) and the structure of employment in the Netherlands. This is the same as measuring the total (*direct and indirect*) effects on employment given a change in the output of industries. For this purpose, we need to measure the inter-industrial linkages of a particular industry to other industries as suppliers of inputs (the so-called backward linkage). The total

backward linkage of an industry is measured[13] by using the Leontief inverse. Next, employment multipliers can be measured, showing total increases in employment given an increase in one unit of output of each industry.

94. The study presented analyses two things:

- What is the most important industry regarding the supply of jobs.
- Which type of labour (high/low skilled, male/female) might benefit or suffer from a shift in final demand (= shift in the output of industries).

95. In the last decade, the commercial service industry has become a very important sector for the Dutch economy. Employment levels in this sector grew at above average rates each year, while manufacturing showed only meagre growth rates. Several causes can be mentioned. The most important one is that commercial services remained very labour intensive and that, at the same time, the growth of labour productivity in this industry lagged behind the overall average growth of labour productivity. So the commercial service industry has developed as the most important supplier of jobs in the Netherlands. But what are the inter-relations with other Dutch industries, say manufacturing? Did manufacturing also account for the employment growth in commercial services, and if yes, to what extent? This can be measured by applying multiplier analysis.

96. In 1990 the share of commercial services in total employment was 41% and of manufacturing 28%. These percentages are based on the direct input of labour in total Dutch production. However, inter-industrial linkages must also be taken into account. This way, the total cumulated (direct and indirect) effect of a change in the output of one industry on the level and structure of total Dutch employment is measured. As a result, a totally different picture can be shown than that presented above. In 1990 (see Figure 1), 32% of total employment could be attributed to the final output (= output for the benefit of final demand) of manufacturing and only 20% to commercial services. Furthermore, the proportion of low skilled labour in employment related directly or indirectly to the production of manufacturing and commercial services was almost 50%. In contrast, the production of non-commercial services and government services required mainly higher skilled labour.

97. In conclusion, it can be stated that manufacturing industry is much more important for the Dutch economy than is suggested by the (direct) employment figures by type of industry. The backward cumulating effect of manufacturing industry is much higher than that of commercial services. Paradoxically, the manufacturing sector of all industries faces strong foreign competition from so-called low-wage countries. Note that manufacturing industry accounts for 38% of total low-skilled employment and just 27% of high skilled employment. Hence, less educated people might suffer primarily from higher foreign competition.

V. From SAM to SESAME

98. The Dutch SAM presents both data on production and labour markets and data on the distribution and use of income by household group. In the extension of the SAM towards a System of Economic and Social Accounting Matrix and Extensions (SESAME) the economic information in the SAM is complemented by other important aspects of human life, cf. the chapter *Accounting for welfare with SESAME* in this handbook and Keuning (1996). A strong argument for such a system is the increasing global awareness of the interaction between social and environmental issues and the economic process.

99. In the Netherlands, a modular (or satellite) approach is used in the elaboration of specific fields in the context of a SAM. The section presented here illustrates the modular approach with some examples. Section V.A discusses the extension of the Dutch SAM with environmental issues, also called SAMEA

(Social Account Matrix including Environmental Accounts). Next, section V.B presents a module on non-paid production in relation to production as recorded in the National Accounts (NA). Finally, section V.C discusses future extensions of the Dutch SAM, which in particular relate to the inclusion of socio-demographic data.

A. A SAM including environmental accounts

100. In the chapter *Accounting for welfare with SESAME* in this handbook, the SAMEA has already been introduced. In this system, environment-polluting activities are related to economic activities such as production and consumption by households. An aggregate SAMEA is shown in Table 12. For an extensive discussion of this table, refer to De Haan and Keuning, 1995. The units of measurement used in the environmental accounts are non-monetary units, such as kilograms and joules. In this way, the monetary transactions in the SAM are not "polluted" by monetary transactions which never took place and therefore could not be consistently recorded. Among other things, the SAMEA provides an opportunity to analyze the relationship between the remuneration of employed persons (broken down by sex and educational level) and the pollution caused by the economic activities in which they are employed. Furthermore, by means of the detailed household classification in the SAM, the relationship between income distribution and the use of natural resources can be measured.

101. Table 13 shows the proportion of different types of labour in total wages and salaries and total paid employment in relation to five summary environmental indicators. This table provides an indication of the type of labour that might benefit or suffer from a shift in economic structure towards less polluting activities as a result of government policy. The most striking fact is that women as compared to men are employed in less polluting industries. This is a consequence of the over-representation of women in the service industry. The contribution of the service industry to GDP is much more important than its share in environment-polluting equivalents.

102. The above allocation of pollution units to labour inputs can be taken one step further, so that the contribution of each household group is revealed. In this way, the first-order effects of a less polluting production structure on income distribution between several household groups can also be analyzed, based on the contribution of household groups to production. In Table 14 the contribution of each household group to total population, Gross National Generated Income and the five environmental problems is presented. The share of the different household groups in pollution varies considerably. Most striking is the contribution of self-employed households in agriculture (just 2% of the total Dutch population) to acidification and eutrophication. Employee households (with mainly wages and salaries) contribute a lot to ozone layer depletion and the accumulation of waste. This is a consequence of the relatively high share of wages and salaries in the total value added of the manufacturing industry, the biggest cause of ozone layer depletion. Apart from that, it is not surprising that households with mainly transfer income are hardly involved in production causing pollution. This picture changes when we look at pollution caused by consumption.

B. Non-income generating production[14]

103. The National Accounts (NA) only measure productive activities which add to the national income as currently defined. Consequently, production in which unpaid labour is involved has not been taken into account yet. The chapter *Accounting for welfare with SESAME* in this handbook has already pointed out the need to incorporate non-income generating production, such as childcare, cooking and washing into the set of core macro-indicators.

104. In each household there is a trade-off between time spent on paid labour and on unpaid labour; after all, there are only twenty-four hours in a day. The total time spent on unpaid production can be used as a proxy for the total volume of unpaid labour. Next, total unpaid labour input can be compared with (and added to) the total amount of paid hours. As a result, the differences between various type of households in the distribution of total time spent on paid and unpaid labour can be analyzed. Furthermore, the distribution of paid and unpaid labour between different persons in a household (men versus women or adults versus children) can be shown.

105. In the Netherlands, data on the distribution of time spent on unpaid and paid production are obtained from the Time Use Survey (TUS). This information has been integrated with the data on total paid employment, which can be obtained from the SAM. The chapter *Accounting for welfare with SESAME* has already presented a detailed table on total labour input (fte's) spent respectively on income generating work and non-income generating work in the Netherlands for the year 1987[15]. In addition, this section discusses the various non-income generating activities ("informal goods and services") produced and consumed[16] by different types of households.

106. Table 15 shows for each household group, the share of time spent (=consumed) on informal activities. In general, more than 50% of total time is spent on household work, such as cooking, cleaning and administration. Predictably, households with children spend a relatively large amount of time on (child) care. On average, more than 20% of total care can be classified as neighbor help (e.g. care for aged, disabled or sick persons, baby-sitting). Pensioners spend a relatively large part of their productive time on preparing meals, cleaning the house, sewing and daily purchases. On the other hand, households with wages and salaries as their main source of income (employees) spend relatively more time on traveling to and from work

C. Future extensions

107. In the near future, the Dutch SAM will be extended in three ways:

- With a more detailed classification of persons and households as is used in the previously discussed SAM;
- With an extended module on transactions in relation to social insurance, and
- With a detailed socio-demographic module on the total Dutch population in relation to participation in the labour market.

108. Regarding a more detailed classification, labour data (wages and salaries and total employment) will be classified, not only by sex, educational level and industry, but also by age (4 groups: 15-24, 24-44, 45-64, 65+) and ethnicity (2 groups: Dutch nationality versus other nationalities). The last two characteristics cannot be omitted in analyzing the division of labour in the Netherlands.

109. In addition, more different household groups will be distinguished, with the purpose of increasing the relevance of the classification of households. Private households are already classified by main source of income and household composition. Regarding the latter characteristic, three types of households are distinguished: single person households, multi-person households *without* children younger than 18 and multi-person households *with* children. The latter group will be further subdivided into a) single parent households with at least one child younger than 5 years old, b) single parent households with children of 5 years of age and older, c) couples with at least one child younger than 5 years old, and d) couples with children of 5 years of age and older. The more detailed classification of households is based on the idea that the presence of young children in a household influences the labour market behaviour of the persons

belonging to that household. For example, the labour market participation of single parent (predominantly mothers) households has always been very low in the Netherlands.

110. A very important discriminating variable in the consumption pattern of households is the level of income. Therefore the classification of households in the consumption matrix, sub-matrix (1,6), will be extended to include this characteristic.

111. The same sources will be used as discussed earlier in this chapter. The Labour Force Survey (LFS) is the most important source in describing persons and households by socio-demographic features. In the Dutch Labour Accounts and Socio-Economic Accounts, not all relevant characteristics have been integrated in describing the most important variables thus far. So "new" figures have to be compiled resulting from a comparison of LFS data with a) employment data and data on wages and salaries from the Annual Earnings Survey, and b) income and expenditure data on households from the Income Statistics (tax data).

112. The extensive social insurance provisions in the Netherlands argue for a separate module which shows social insurance payments and receipts at a very detailed level. In 1993, total social benefits received by households was equal to 27% of GDP. This proves its dominant role in the redistribution of income among households in the Netherlands. Taxes also play a very important role in the Dutch economy. The SAM already distinguishes a separate tax account which shows the Dutch tax policy. In addition, the SESAME will include a separate account to analyze transactions related to social insurance schemes in more detail. This (functional) account can be compared with the extension of SAM with environmental accounts in the SAMEA (see Table 12).

113. The schemes related to the social insurance legislation can be summarized as follows:

- Schemes related to old age and widows/widowers;
- Schemes related to disability;
- Schemes related to sickness;
- Schemes related to unemployment;
- General needs;
- Other income supplements and substitutes.

114. For each scheme, total benefits received are recorded by different household group. In addition, the actual number of households receiving benefits under a particular scheme ("scores") are measured, including the number of persons belonging to these households. Of course, a household can receive more than one type of benefit. Therefore, in addition, households receiving mainly transfer income will be further classified by the above-mentioned schemes[17].

115. Finally, the labour market can be characterized by the demand for and the supply of labour. The total labour supply can be divided into unemployed persons (looking for a job) and employed persons (having a job). The SAM contains very detailed information on wages and salaries and employment (fte's). On the other hand, the SAM does not present any data on unemployed persons and persons outside the labour force. For this purpose, a detailed socio-demographic module on the total Dutch population in relation to labour market participation is introduced[18].

116. The following information can be obtained:

- A classification of the Dutch population (older than 15 years) by personal characteristics, such as sex, age, educational level, position in the household and ethnicity;

- A classification of the Dutch population by the following groups: a) the potential labour force, b) the working labour force, c) the non-working labour force (the unemployed), and d) the non-labour force.

117. As a result, the labour market positions of various population sub-groups can be analyzed. For example, for each separate group the participation rate can be measured. In addition, per sub-group, unemployment rates can be compiled.

118. The module must be fully consistent with the information presented in the SAM. So, data on persons belonging to the "working labour force", must be consistent with the employment figures presented in the SAM. The socio-demographic module must also be consistent with the module on social insurance schemes. After all, there is a strong relationship between persons receiving social benefits and people who are non-working or outside the labour force.

VI. Conclusions

119. In this chapter, the compilation of the Dutch SAM and some interesting results from such a framework have been discussed. With the completion of the SAM, important progress has been made in the development of a complete, consistent and coherent data set which can supply information on the relationships between important economic indicators and the distribution of income and expenditures among households.

120. An important user of National Accounts and SAM is the Dutch Central Planning Bureau (CPB). The CPB provides models relevant to policy issues. In the Netherlands the importance of economic models in the interaction between economic theory and policy is unquestionable. Consequently, the use of the National Accounts (NA) for policy-making has been increasing along with the use of models. At the same time, quoting Zalm (1994), " ... the [economic] analysis enters much more into details: increasing share of micro analysis, increasing attention to subsequent steps of processes ... "and ... even further reaching is the internalization of non-economic processes in the analysis ... ". The applied general equilibrium models of the CPB require consistent data with, as well as macro-economic figures, disaggregated data on industries, households and persons to analyze, for example, labour market performance, tax incentives and social insurance regulations (Gelauff et al, [1991]).

121. The demand for more disaggregated and detailed data increases the need for a better linkage between the NA and other (micro and meso) data sources. Without such a harmonization, consistent analysis of both macro economic effects and distributional effects is impossible.

122. As a continuation of SAM, the SESAME can provide for the increasing need for a better integration of monetary data and related information in non-monetary units. In the end, the development of SESAME will yield an integrated description of economic, social and ecological phenomena. The usefulness of such a statistical information system is the possibility of deriving a whole range of economic and social summary indicators.

123. The (SE)SAM(E) can also offer relevant information for a somewhat broader public than policy makers, university researchers and modelers. With the help of a SAM, all kinds of statistical data on several fields of interest can be combined and presented in tables, graphs and diagrams. Newspapers are very eager to publish this information, provided that the tables are accessible and inviting for the average interested reader. A few months ago *Het Financieele Dagblad* (in English: *The Financial Times)* as well as other Dutch newspapers, published an article based on Table 8 presented in section IV.A in which it

was explicitly stated that " ... Using a new computing method, the Social Accounting Matrix, the CBS has compiled figures which indicate a direct link between people's qualifications and their prospects on the labour market."

124. So far, the advantages of the (SE)SAM(E) and the most important parties interested have been discussed. Another important aspect which cannot be ignored in discussing an elaborate integrated system such as SESAME, is the requirement for strong co-ordination within the statistical office. Up to now Statistics Netherlands has successfully put much effort into creating consistent frameworks. However, the systems have been developed more or less apart from the production of statistical data from surveys and also apart from each other. The linkage from micro to macro still needs improvement. At the same time, the synergy between accounting systems and their basic sources must be accompanied by an overall synergy between the different sub-accounting systems of the CBS. In the 1998 Statistical Program of the CBS, the SESAME is proposed as the framework to achieve this overall synergy.

125. However, all persons in different statistical production processes have to be convinced of the usefulness of such an overall integrating framework. In addition persons producing data based on one single survey must be involved in the decision-making process. In conclusion, the success of the development of SESAME is strongly based on the motivation of the individual statistician to join the "higher" goal of total co-ordination.

Table 1: Consolidated Social Accounting Matrix for the Netherlands, 1990 (in millard guilder)

		1. Goods and services	2. Production	3. Generation of income	4. Primary income distribution	5.Secondary income distribution	6.Use of disposable income	7. Capital	8.Fixed capital formation and changes in inventories
	Classifi-cations	Product groups	Industries	Primary input categories	Institutional sectors	Institutional sectors	Institutional sectors	Institutional sectors	
1. Goods and services	Product groups	Trade and transport margins 0.0	Intermediate consumption 479.0				Final consumption 377.9		Changes in inventories 6.5
2. Production	Industries	Output, basic prices 949.0							
3. Generation of income	Primary input categories		Gross Domestic Product (factor costs) 466.7						
4. Primary income distribution	Institutional sectors			Net National Generated Income 409.8	Property Income 205.5				
5. Secondary Income distribution	Institutional sectors				Net National Income, market prices 457.1	Unrequited current transfers, n.e.c. 237.4			
6. Use of disposable income	Institutional sectors					Net Disposable National Income 453.9			
7. Capital	Institutional sectors			Consumption of fixed capital 56.2			Net National Saving 76.0	Unrequited capital Transfers 17.2	
8. Fixed capital formation and changes In inventories								Fixed capital formation and changes in inventories 114.5	
9. Allocation of investments	Industries								Fixed capital formation from production and imports 111.6
10. Type of Investments	Types of fixed assets								Sales of used fixed capital goods (-) -3.6
11. Financial	Institutional sectors							Net Lending of the Total Economy 18.6	
12. Financial	Types of financial assets								
13. Tax account	Categories of taxes and subsidies	Taxes less subsidies on products 45.3	Other taxes less subsidies on production 3.3			Taxes on income and wealth and social contributions 176.3			
14. Rest of the world (ROW) (current)		Import of goods and services (cif) 255.8		Compensation of employees to ROW 1.1	Property income to ROW 50.1	Unrequited current transfers to ROW 13.7			
15. Rest of the world (ROW) (capital)								Unrequited capital transfers to ROW 2.1	
T O T A L		Supply, purchasers' prices 1250.1	Input, basic prices 49.0	Allocation of generated income 469.1	Destination of quid-pro-quo income 712.7	Destination of secondary income 881.3	Current expenditure 453.9	Capital expenditure 152.3	Fixed capital formation and changes in inventories 114.5

Table 1: Consolidated Social Accounting Matrix for the Netherlands, 1990 (in millard guilder)

		9. Allocation of investments	10. Type of investments	11.Financial	12. Financial	13. Tax account	14. Rest of the world (ROW) (current)	15. Rest of the world (ROW) (capital)	T O T A L
	Classifica-tions	Industries	Types of fixed assets	Institutional sectors	Types of financial assets	Categories of taxes and subsidies			
1. Goods and services	Product groups		Gross fixed Capital formation 106.9				Exports of goods and services (fob) 279.7		Use, purchasers' Prices 1250.1
2. Production	Industries								Output, basic prices 949.0
3. Generation of income	Primary input categories					VAT not handed over to the government 1.6	Compensation of employees from ROW 0.9		Generated income 469.1
4. Primary income distribution	Institutional sectors					Taxes less subsidies on production 48.0	Property income from ROW 49.5		Quid-pro-quo income 712.7
5. Secondary income distribution	Institutional sectors					Taxes on income and wealth and social contributions 177.3	Unrequited current transfers from ROW 9.5		Secondary income 881.3
6. Use of disposable income	Institutional sectors								Disposable income 453.9
7. Capital	Institutional sectors							Unrequited capital transfers from ROW 0.9	Capital income 152.3
8. Fixed capital formation and changes in inventories									Fixed capital formation and changes In inventories 114.5
9. Allocation of investments	Industries								Fixed capital formation from output and imports 111.6
10. Type of investments	Types of fixed assets	Fixed capital formation from pro-duction and imports 111.6							Fixed capital formation 107.9
11. Financial	Institutional sectors				Changes in liabilities 182.8				Changes in financial assets 201.4
12. Financial	Types of financial assets			Changes in financial assets 201.4				Changes in liabili-ties vis-a-vis the ROW 45.1	Total changes in financial assets 246.5
13. Tax account	Categories of taxes and subsidies		VAT on land other levies on fixed capital goods 11.1				Taxes received from the rest of the world 1.1		Taxes less subsidies and social contributions 227.0
14. Rest of the world (ROW) (current)						Taxes paid to the rest of the world 0.1		Current external balance 19.8	Current flows to the rest of the world 340.6
15. Rest of the world (ROW) (capital)					Changes in financial assets vis-á-vis the ROW 63.7				Capital flows to the rest of the world 65.8
T O T A L		Fixed capital formation from pro-duction and imports **111.6**	Fixed capital formation **107.9**	Changes in financial assets **201.4**	Total changes in liabilities **246.5**	Taxes less subsidies and social contributions **227.0**	Current flows from the rest of the world **340.6**	Capital flows from the rest of the world **65.8**	

Table 2: Jobs in paid employment (x 1000), from source to Labour accounts 1991

		DETAIL	TOTAL
Jobs in paid employment measured by the Statistics of Employed persons, September 30			5180
Adjustment to achieve:			
HARMONISATION			
-	reference date in the education branch		-3
-	conversion to annual average		-62
FULL COVERAGE			
-	regular members of the armed force	56	
-	conscripts	47	
-	employees of size code zero establishments	83	
-	employees not observed in company records (e.g. domestic staff, newspaper boys/girls)	142	
-	remaining jobs not insured under the sickness Act and hidden employee labour	229	
	Subtotal		557
MINIMISATION OF MEASUREMENT ERRORS			
-	general adjustments	24	
-	jobs in education	28	
-	temporary workers hired from private employment agencies	-6	
-	missing firms	3	
-	plausibility adjustments	-2	
-	adjustment for comparability over time	-4	
-	cumulative balancing adjustments over previous years	-2	
	subtotal		43
BALANCING			-1
Total number of jobs in paid employment			**5714**

Table 3: Paid employment (fte's) by educational level, 1989

EDUCATIONAL LEVEL	EMPLOYMENT		
	LFS (1)	AES (2)	(1)-(2)
Basic education	11.7%	9.9%	1.8%
Lower general secondary education	5.9%	10.9%	-5.0%
Lower vocational education	18.9%	25.6%	-6.7%
Higher general secondary education	4.8%	6.6%	-1.7%
Middle vocational education	37.8%	28.6%	9.2%
Higher vocational education	15.6%	13.4%	2.2%
University training	5.4%	5.1%	0.3%
TOTAL	**100.0%**	**100.0%**	

Table 4 : Number of households by SAM-household groups according SEA and LFS, 1990

	SEA (1)	LFS (2)	(1)-(2)
	x 1000		in %
Wages and salaries	3416	3233	5.40%
- Single person	686	676	1.50%
- Multi-person, without children	1347	1177	12.60%
- Multi-person, with children	1383	1380	0.20%
Mixed income, engaged in	382	429	-12.30%
- Agriculture	78	115	-47.40%
- Trade	89	89	0.00%
- Services	116	136	19.00%
- Other activities and property income	99	88	11.00%
Transfer income in case of age	1384	1381	0.20%
- Single-person households	691	699	-1.20%
- Multi-person	693	682	1.60%
Other transfer income	880	1008	-14.50%
- Single person	391	368	5.90%
- Multi-person, without children	269	413	53.00%
- Multi-person, with children	220	227	-3.20%
Unknown		10	
TOTAL	**6062**	**6062**	

Table 5: Disposable income according to Income Statistics and Socio-Economic Accounts

		1989	1990	1991
1.	Disposable income according to Income Statistics	234.3	248.2	263.0
2.	Differences in definition and classification	12.6	0.8	1.1
3.	Differences in population	0.9	3.6	1.4
4.	Additional estimates	-5.5	8.5	8.4
5.	Disposable income according to Income Statistics, adjusted for differences in definition, classification and population, and additional estimates (1+2+3+4)	242.2	261.1	273.9
6.	Statistical discrepancies	13.3	15.8	10.7
7.	Disposable income according to Socio-Economic Accounts (5+6)	255.6	276.9	284.5

Table 6: Linkage between SAM and National Accounts, 1990

	Total subdivided to house-holds in SAM	NPIs	Pension- and life insurance	Public-health insurance	Cash-/ transaction difference	Other differences	Differences in rounding	Total National accounts
Wages and salaries	229290	-		-	-	-	-	229290
Employers' social contributions	38178	-		-	-	-	-8	38170
Net operating surplus/mixed income	61367	-		-	-	-	3	61370
Interest	16633	1807		-	-	-	-	18440
Dividends etc.	6590	1009		-	-	-	1	7600
Imputed interest on actuarial reserves	-	-	39480	-	-	-	-	39480
Social benefits	123445	-	-18750	29831	-	134	-10	134650
Unrequited current transfers n.e.c	6789	15140		-	-	180	1	22110
Total resources	**482292**	**17956**	**20730**	**29831**	**-**	**314**	**-13**	**551110**
Interest	22268	130	-	-	-	-	2	22400
Dividens etc.	890	-	-	-	-	-	-	890
Imputed social contributions	9251	-	-	-	-	-	-1	9250
Social security premiums	87902	-	-	-	-	-	8	87910
Pension premiums	13810	-	-13810	-	-	-	-	0
Taxes on income and wealth	63793	-		-	-2190	-	7	61610
Unrequited current transfers n.e.c.	8146	550		-	-	260	4	8960
Final consumption expenditure	257615	12017	3640	29831	-	-	-3	303100
Savings	18617	5259	30900	-	2190	54	-30	56990
Total uses	**482292**	**17956**	**20730**	**29831**	**-**	**314**	**-13**	**551110**

Table 7: Employment shares by sex, educational level and type of industry, 1990

	TOAL EMPLOYMENT: EMPLOYEES AND SELF-EMPLOYED									
	Male		Female		TOTAL	Male		Female		TOTAL
	low-educated	high educated	low-educated	high educated		low-educated	high educated	low-educated	high educated	
Agricultural and fishery	8.2%	4.8%	3.8%	1.4%	5.0%	46.1%	39.4%	9.6%	4.8%	100.0%
Mining and quarrying	0.2%	0.3%	0.0%	0.1%	0.2%	25.7%	64.5%	3.0%	6.9%	100.0%
Manufacturing	25.4%	19.7%	13.7%	7.9%	18.5%	39.1%	44.0%	9.3%	7.6%	100.0%
Public utilities	0.7%	1.4%	0.4%	0.3%	0.9%	23.7%	65.5%	5.3%	5.5%	100.0%
Construction	13.4%	8.0%	1.4%	1.0%	7.5%	51.1%	44.1%	2.4%	2.4%	100.0%
Trade, restaurants, repair	19.5%	17.6%	31.2%	17.0%	19.7%	28.0%	36.7%	19.9%	15.3%	100.0%
Transport, storage and communication	10.8%	6.2%	3.4%	3.3%	6.6%	46.1%	38.5%	6.5%	8.9%	100.0%
Banking	2.3%	3.7%	4.7%	4.5%	3.5%	18.2%	42.5%	16.8%	22.5%	100.0%
Other commercial services	9.0%	10.7%	21.6%	15.1%	12.4%	20.6%	35.6%	11.4%	21.8%	100.0%
Governmental Services	6.6%	12.6%	4.6%	6.9%	8.9%	21.1%	58.5%	6.5%	13.9%	100.0%
Other non-commercial services	4.0%	15.0%	15.2%	42.5%	16.8%	6.8%	36.8%	11.4%	45.0%	100.0%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100%**	**28.4%**	**41.2%**	**12.6%**	**17.8%**	**100.0%**

Table 8: Average annual growth rates 1988-1993 , GDP (factor cost) and employment

	GDP	Total employment: employees and self-employed				
		Male		Female		TOTAL
		low-educated	high-educated	low-educated	high-educated	
Agriculture and fishery	5.2%	-2.7%	2.4%	-0.1%	4.10%	-0.2%
Mining and quarrying	3.2%	-5.4%	1.8%	-	-	0.0%
Manufacturing	1.2%	-1.1%	-0.3%	1.6%	2.6%	-2.0%
Public utilities	1.6%	-5.9%	0.9%	-3.5%	4.8%	-0.9%
Construction	-0.8%	-2.9%	5.1%	-13.8%	2.0%	0.4%
Trade, restaurants, repair	3.0%	1.2%	3.3%	3.2%	4.1%	2.8%
Transport, storage and communication	5.0%	1.9%	0.1%	4.9%	3.4%	1.6%
Banking	0.1%	-10.5%	4.1%	-6.6%	7.3%	1.0%
Other commercial services	4.9%	2.6%	7.4%	-2.3%	6.3%	4.1%
Governmental services	1.2%	-6.1%	-0.5%	1.9%	5.0%	-0.9%
Other non-commercial services	1.5%	-0.1%	0.2%	-1.1%	3.1%	1.3%
TOTAL	**2.7%**	**0.9%**	**2.0%**	**0.4%**	**4.0%**	**1.3%**

Table 9: Employment of employees' household groups by sex, educational level and household composition, 1990

	TOTAL EMPLOYMENT: EMPLOYEES AND SELF-EMPLOYED									
	Male		Female		TOTAL	Male		Female		TOTAL
	low educated	high educated	low-educated	high-educated		low educated	high educated	low educated	high educated	
Households with wages and salaries as main source of income:										
Single person	6.4%	12.9%	12.3%	21.4%	12.5%	14.8%	43.2%	11.6%	30.4%	100.0%
Multi person without children	43.5%	45.7%	56.3%	54.4%	47.8%	26.3%	39.8%	13.8%	20.1%	100.0%
Multi person with children	50.1%	41.4%	31.4%	24.2%	39.7%	36.4%	43.5%	9.3%	10.8%	100.0%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**28.9%**	**41.7%**	**11.7%**	**17.7%**	**100.0%**

Table 10: Income and outlay per equivalent person by household group, 1990 (in guilders)

	Wages and salaries			Mixed income				Transfer income					Persons in insti- tutions	**Total**
								Age		Other				
	Single person house- holds	Multi person house- holds without children	Multi- person house- holds with children	Agricul- tures forestry and fishing	Trade hotels restau- rants , cafes & repair services	Business and personal services	Other activities and property income	Single person house- holds	Multi- person house- holds	Single person house- holds	Multi- person house- holds without children	Multi- person house- holds with- children		
	6.5a	6.5b	6.5c	6.5d	6.5e	6.5f	6.5g	6.5h	6.5i	6.5j	6.5k	6.5l	6.5m	
	In guilders													
Wages and salaries	37187	46438	35938	5879	16133	23357	13870	385	2049	1298	3476	2255	1667	25255
Employers' social contributions	6136	7941	6199	914	773	1092	845	97	399	233	628	387	262	4205
Net operating surplus/mixed income	1364	3417	3100	84529	56760	65714	46292	1902	3004	358	1993	780	219	6759
Interest	1065	1345	643	6057	3453	3530	3224	4793	3922	710	1407	426	2448	1832
Dividends, etc.	306	414	202	1164	2493	2708	2981	1921	1626	235	509	91	720	726
Imputed interest on actuarial reserves														
Social benefits	5266	8923	6234	4750	3873	4605	3770	27443	31265	16553	29330	22055	21832	13597
Unrequited current transfers n.e.c.	753	642	573	771	367	416	311	651	438	3638	906	973	269	748
Total resources	52078	69119	52888	104064	82853	101422	71292	37193	42704	23224	38248	26967	27416	53122
Interest	1601	2716	3157	11786	7153	10584	6410	402	900	164	831	451	97	2453
Dividens, etc.	92	94	85	900	167	562	199	65	62	13	30	5	11	98
Imputed social contributions	1495	1833	1596	157	160	341	161	17	83	38	117	55	86	1019
Social security premiums	12648	15963	10872	7986	7053	7638	7130	2795	3704	3761	7114	4868	6111	9682
Pension premiums	2049	2689	2371	543	373	1459	280	29	124	72	218	69	97	1521
Taxes on income and wealth	6792	9168	6956	10200	12567	20822	12143	4664	6058	1980	4015	2297	2337	7026
Other unrequited current transfers	1150	1003	892	914	1187	1508	882	990	927	473	499	434	398	897
Final consumption expenditure	27631	34390	28475	30536	30847	40859	29901	23428	27414	19951	24588	18841	17767	28375
Saving	-1380	1263	-1515	41043	23347	17649	14186	4801	3431	-3227	836	-52	513	2051
Total uses	**52078**	**69119**	**52888**	**104064**	**82853**	**101422**	**71292**	**37193**	**42704**	**23224**	**38248**	**26967**	**27416**	**53122**

Table 11: Product groups as percentage of total final consumption expenditure by household group, 1990 (in %)

		Wages and salaries			Mixed income				Transfer income					Persons	Total
		Single person house-holds	Multi-person house-holds without children	Multi-person house-holds with children	Agriculture, forestry and fishing	Trade, hotel and restaurants cafes and repair services	Business and personal services	Other activities and property income	Age Single person house-holds	Multi-person house-holds	Other Single-person house-holds	Multi-person households without children	Multi-person households with children	in insti-tutions	
		6.5a	6.5b	6.5c	6.5d	6.5e	6,5f	6.5g	6.5h	6.5i	6.5j	6.5k	6.5l	6.5m	
		in % of total final consumption expenditure													
Food products	1.a	9.1	11.4	13.7	13.2	13.2	10.6	13.9	13.3	14.2	12.5	14.9	17.9	1.5	12.5
Tobacco and beverages	1.b	5.5	5.9	6.2	5.5	6.2	4.9	5.3	5.7	5.9	5.8	7.4	7.5	4.4	6.0
Clothing, textile and leather ware	1.c	6.8	8.3	8.9	9.0	9.2	8.3	7.4	6.7	7.5	5.8	7.5	8.3	5.3	8.0
Books, magazine and papers	1.d	3.4	2.6	3.1	2.4	2.2	2.7	2.5	2.8	2.4	3.9	2.7	3.3	2.8	2.9
Motor fuel	1.e	3.8	3.7	3.5	3.1	1.8	2.0	2.4	2.1	3.1	1.6	3.4	3.0	0.3	3.2
Electricity, gas and water	1.f	4.2	3.3	3.6	3.9	3.6	3.3	4.2	6.4	4.4	5.6	4.7	6.1	0.6	3.9
Transport equipment	1.g	3.9	5.1	4.7	3.3	3.9	4.2	3.6	1.8	3.4	1.2	3.1	2.5	0.3	4.0
Household appliances and interior decorating	1.h	8.6	9.9	8.5	6.2	6.4	8.1	5.8	5.8	7.8	6.5	7.0	7.1	3.4	8.3
Services of dwellings	1.i	17.1	13.4	14.8	17.1	16.0	16.9	16.2	22.0	16.9	18.5	15.4	17.2	2.5	15.4
Meals, drinks and lodging	1.j	7.7	5.7	3.6	4.3	5.4	3.9	6.4	3.2	3.5	7.5	4.1	2.5	3.5	4.7
Transport, communication and repair services	1.k	8.4	6.2	5.5	4.7	4.0	5.5	4.0	7.9	6.7	9.3	7.7	6.8	5.3	6.3
Financial and business services	1.l	2.8	3.2	3.4	5.1	4.1	5.3	4.4	2.4	2.7	1.5	2.1	1.8	1.8	3.1
Recreational and cultural services	1.m	1.9	1.4	1.5	1.6	1.4	1.9	1.2	1.5	1.3	1.9	1.4	1.4	1.2	1.5
Other goods and services	1.n	16.8	19.8	19.2	20.7	22.5	22.4	22.6	18.5	20.2	18.4	18.5	14.4	67.0	20.2
TOTAL		**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 12: Consolidated Social Accounting Matrix Including Environmental Accounts for the Netherlands, 1990

ACCOUNT (classification)		Goods and services (Product groups)		Consumption of households (Purposes)		Production (Branches of Industries)	Generation of income (Primary Imput Categories)	Primary distribution of income (Institutional Sectors)	Secondary distribution of income (Institutional Sectors)	Use of disposable income (Institutional Sectors)	Capital	Tax account (categories of taxes and subsidies)	
				Environ-ment	Other purposes							environ-mental taxes	Other taxes
		1.a	1.b	2.a	2.b	3	4	5	6	7	8	10.a	10.b
Goods and services (Product groups)		Trade and transport margins		Consumption of households		Intermediate consumption				Consumption of government	Gross capital formation		
Envirmental cleansing services	1.a	-	-	24	-	5174				1228			
Other goods and services	1.b			693	302379	477664				73567	113406		
Consumption of household (Purpose)										Comsumption of household			
Environmet	2.a									717			
Other purpose	2.b									302379			
Peoduction (Branch of industries)	3	Output, basic prices											
		6342	946428										
Generation of income (Primary input categories)	4					Gross Domestic Product, factor cost						VAT not handed Over to the government	
						466663						1614	
Primary income distribution (Institutional sectors)	5						Net National Generated Income factor cost	Property income				Taxes less subsidies on production	
							409770	205490				1428	46562
Secondary income distribution (Institutional sectors)	6							Net National income, market prices	Unrequited current transfers, n.e.c			Taxes on income and wealth and social contributions	
								457129	237425			2030	175220
Use of disposable income (Institutional sectors)	7								Net Disposable National Income				
									453876				
Capital	8						Comsumption of fixed capital			Net National Saving			
							58230			75980			
Financial balance	9										Net Lending of the total economy		
											18550		
Tax account (Categories of taxes and subsidies		Taxes less subsidies on product				Other taxes less subsidies on production			Taxes on inocme and wealth and social contributions		VAT on land and other levies on investment		
Enviromental taxes	10a		609			819			2030		1054		
Other taxes	10b	84	44584			2450			174283				
Rest of the world (ROW) (Current)	11	Inport of goods and services (cif)					Compensation of employees to ROW	Property income to ROW	Unrequited current transfers to ROW			Taxes paid to the rest of the world	
		255830					1130	450090	13700			130	
Resto of the world (ROW (Capital)	12										Unequited capital ansfers to ROW		
											2090		
Substances (CFCs and halons in 100 kg. Gas in pl. oil in tj and other substances in million kg)						Absorption of substances in production							
CO2	13a												
N2O	13b												
CH4	13c												
CFCs and halons	13d												
Nox	13e												
SO2	13f												
NH3	13g												
P	13h												
N	13i												
Waste	13j					2829							
Gas	13k					2310							
Oil	13l					150							
Global environmental themes											Enviromental indicators		
Greenhouse (GWP)	14a										182591		
Ozone Depletion (ODP)	14b										4756		
National environmental themes													
Acidification (AEQ)	15a										160		
Eutrophication (EEQ)	15b										294		
Waste production (KG)	15c										22890		
Natural resource depletion (PJ)	15d										7348		
TOTAL		Supply purchasers' prices		Consumption of households		Input, Basic prices	Allocation of generated income	Destination of Quid-pro-quo income	Destination of secondary income	Current expenditure	Capital expenditure	Taxes less subsidies and social contributions	
		6426	247450	717	302379	948960	469130	712710	881320	453880	135100	3458	223522

Table 12: (Consolidated Social Accounting Matrix Including Environmental Accounts for the Netherlands, million guilders (continued)

	Rest of the world (ROW) (Current)	Rest of the world (ROW) (Capital)	Substances CFCS and halons in 1000 kg, gas in pi. Oil in tj and other substances In million kg												Global environmental themes		National environmental themes				TOTAL
			C02	N20	CH4	Halons	Nox	SO2	NH3	P	N	Waste	Gas	Oil	Green-house effect	Ozone Layer depletion	Acidi-fica-tion	Eutro-phica-tion	Waste	Natural resoruces depletion	
	11	12	13a	13b	13c	13d	13e	13f	13g	13h	13i	13j	13k	13l	14a	14b	15a	15b	15c	15d	
1.a	Exports of goods and services (fob)																				Use purchasers' prices 6426
1,b	279740																				1247450
2.a			Emission of pollutants from households 33919	2	3	800	164	6	-	15	120	6783									Final consumption of households 717
2,b																					302379
3			Emissions of pollutants from industries 124579	59	690	5331	394	202	213	163	1258	18936									Output, basic prices 948960
4	Compensation of Employees from ROW 8500																				Generated income 469130
5	Property income from ROW 49460																				Quid-pro-quo income 712710
6	Unrequited current transfers from ROW 9510																				Secondary income 881320
7																					Disposable income 453880
8		Unrequited capital transfers from ROW 890	Other changes in natural resources										9748								Capital income 135100
9		Net lending of the rest of the world -18590																			
10a	Taxes received from the rest of the world																				Taxes less subsidies and social contri-butions, 3458
10b	1070																				222522
11			Trans boundary pollution from the rest of the world				96	111	27	20	417										Current payments to the rest of the world 320880
12	Balance of payment																				Capital flows to
	of the rest of the world -19750																				the rest of the world -17660
13a	Trans boundary pollution to the rest of the world														Allocation to global environmental themes 158498		Allocation to national environmental themes (Immission of substances)				Destination of substances 158498
13b															61						61
13c															693						693
13d																6131					6131
13e	492																162				654
13f	164																155				319
13g	110																130				240
13h	25																	173			198
13i	584																	1211			1795
13j																			22890		25719
13k																				7438	9748
13l																				-150	-
14a																					Theme-equiva-lents (global) 182581
14b																					4758
15a																					Theme-equiva-lents (national) 160
15b																					294
15c																					22890
15d																					7438
	Current receipts from the rest of the world 320850	Capital flows From the rest of the world -17660	Origin of substances 158498	61	693	6131	654	319	240	198	1795	25719	9748	-	Theme-equivalents (global) 182591	4756	Theme-equivalents (national) 160	294	22890	7438	

Table 13: Contribution to GDP, employment and environmental themes per type of labour, 1990

			GROSS Domestic Product (factor cost)	TOTAL employ-ment (full-time equivalents	Greenhouse effect (GWP)	Ozone layer depletion (ODP)	Acidifi-cation (AEQ)	Eutrophi-cation (EEQ)	Accumulation of waste (min KG)
		in % total employed persons							
L									
A	T	Male with low location	27	28	31	34	36	42	38
B	Y	Male with high education	49	41	55	55	51	45	48
O	P	Female with low education	8	13	6	5	6	7	6
U	E	Female with high education	16	18	8	6	7	5	8
R	S								
TOTAL			**100**	**100**	**100**	**100**	**100**	**100**	**100**

Table 14: Contribution to GNGI, population and environmental themes per household groups, 1990

				Total population	Gross National Generated Income (factor cost)	Total employment (fte's)	Greenhouse effect (GWP)	Ozone layer depletion (CDP)	Acidification (AEQ)	Eutrophication (EEQ)	Accumulation of waste (min KG)
			In % of all household groups								
HOUSEHOLDS	GROUPS	Wages and salaries	Single-person	5	9	10	7	8	5	3	8
			Multi-person without children	22	36	39	31	35	20	12	35
			Multi-person with children	37	34	32	30	34	19	11	33
		Mixed income	Agriculture and fishery	2	4	1	19	-	50	70	6
			Trade, restaurants, repair	2	4	8	1	1	1	-	1
			Business and pers. services	2	6	3	3	1	2	1	4
			Other and property income	2	3	4	7	18	3	2	10
		Transfer income	Age	15	2	1	1	1	1	-	1
			Other	12	1	2	1	1	1	-	1
		Other		2	-	-	-	-	-	-	-
		TOTAL		**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

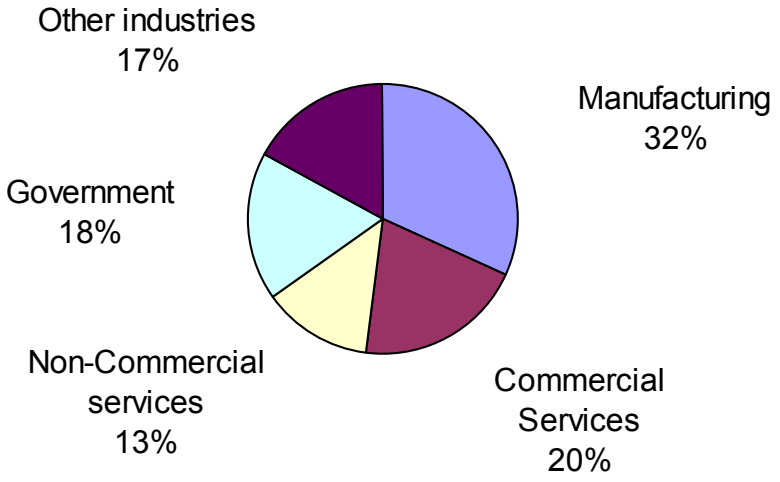
Table 15: Consumption of informal products per household type

	HOUSEHOLD GROUPS								TOTAL
	Composition of households				Main source of income				
	Single Person	Multi-person with 0 children	Multi-person with 1 child	Multi-person with 2+ children	Wages and salaries	Mixed income	Transfer incomes, old age	Other transfer income	
	in % of column totals								
Meals and restaurant services	31	29	24	25	25	28	**34**	**28**	**28**
Cleaning	20	20	19	19	19	19	**21**	**19**	**19**
Clothing, repair of clothes	5	6	4	4	4	4	**7**	**5**	**5**
Administration	2	1	1	1	1	1	**1**	**1**	**1**
Purchases	11	10	8	8	9	8	**11**	**9**	**9**
Incidental purchases	5	5	5	4	5	4	**4**	**5**	**5**
(Child)care	2	2	14	15	9	9	**2**	**7**	**7**
Maintenance of vehicles	1	2	2	2	2	1	**1**	**2**	**2**
Repair, construction	6	8	6	6	7	6	**7**	**7**	**7**
Farmer's products	8	10	7	6	7	9	**9**	**8**	**8**
Transport	9	9	9	9	13	9	**2**	**9**	**9**
Total	100	100	100	100	100	100	100	100	100

Scheme 1: Female labour market characteristics based on age and household composition

	Younger women (25-44 years)	Older women (>=45 year
Single-person households	* equals male participation rate * full-timers * high educated	* small group * very low participation in
Multiple-person households without children	* < male participation rate * more part-timers when compared to young single women	* mostly women grown o * low participation in paid * mostly part-timers
Multi-person households with children	* low participation rate * mostly part-timers	* very small group * low participation in paid

Figure 1: Share of industries in employment related to final demand, 1990



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Endnotes

[1] Here, a third dimension has been introduced by disaggregating each relevant sub-matrix into different types of property income: interest, dividends and other property income.

[2] Regarding current transfers other than taxes and social contributions, a third dimension has been introduced by breaking down the sub-matrices containing these transactions into social benefits (including pension benefits) and other current transfers n.e.c.

[3] This section is based on Leunis and Timmerman, 1996.

[4] An extensive description of the principles and practice of labour accounts is presented by Leunis and Verhage, 1996.

[5] In case of employees, the basic identities are:
Persons employed (=main jobs) + Secondary jobs = Total number of jobs
Hours of work per job*Number of jobs = Total hours of work
Hourly rates*Hours of work per job = Annual wages per job
Annual wages per job*Number of jobs = Total wages

[6] Differences between corresponding NA figures and LA figures are the result of (i) the use of different wage concepts, (ii) differences in the population of "persons employed, (iii) the use of different benchmark years regarding self-employment, and (iv) the lack of harmonization with NA during the development of the LA-system.

[7] See also Takkenberg en Walschots (1992): Earnings of employees by education.

[8] In case of multi-person households, the breadwinner is determined as follows: in case of married couples the man, in case of a single parent household the parent, in all other cases the oldest member of a household.

[9] The construction of an income and outlay account for NPISHs is laborious but cannot be avoided because of the importance of NPISHs in the aggregate. This is also acknowledged in the 1993 SNA. Further estimation must be done to fit these figures into a SAM (Stone, 1985).

[10] In the 1993 SNA, actual contributions and benefits in relation to pensions are also considered as current transfers, in addition to a recording as a financial transactions. To avoid double counting, and adjustment-item is included in the use of disposable income account. In the present Dutch system of national account, such a recording has not yet been included.

[11] Meanwhille, the 19974 SAM has been completed.

[12] The number of equivalent persons is based on the so-called "Budget Attribution Scale." In measuring the number of persons relevant for a welfare comparison between household groups, this equivalence scale takes account of economies of scale in households consumption related to size of the household; furthermore, in relation to children only additional expenses are taken into account. See also Schiepers (1991).

[13] Refer to UN Handbook of Input-Output table compilation and analysis. The term backward linkage is meant to measure the inter-industrial linkages of a particular industries to other industries as suppliers of inputs (and thus also labour and as a provider of input to other industries.

[14] The text in this section has been mailed derived from Kazemier and Exel (1987)

[15] Unfortunately the most recent TUS was conducted in 1988.

[16] Apart from neighbor help, informal goods and services are assumed to be produced and consumed by the same household. Unfortunately, the TUS does not contain information on this destination of neighbor help. Therefore, for the time being, the consumption of this activity is also assumed to contribute to the welfare of the household which produces it.

[17] This means a more detailed classification of by main source of income. If a household receives more than one type of social benefit, the household will be classified by the most important (= the largest amount) social benefit.

[18] Obviously, the module must be fully consistent with the information presented in the SAM. So, data on person belonging to the "working labour force", most be consistent with the employment figures presented in the SAM. The socio-demographic module must also be consistent with the module on social security schemes. After all, there is a strong relationship between persons receiving social security benefit and people who are non-working or outside the labour force

SAM and SESAME in Indonesia: Results, usage and institutionalization

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I. Introduction to the Indonesian SAM and SESAME

1. In Indonesia, promoting an equitable distribution of the fruits of development is a core objective of government policy, in addition to fostering economic growth and stability. Each of these three principal objectives is not pursued in isolation, but as part of a coherent package. For that reason, there exists a demand for a statistical information system with which all three objectives can be jointly monitored and analyzed. The standard national accounts plus the regular money and banking statistics are quite suitable in this regard, as far as economic growth and stability are concerned. However, those statistic do not sufficiently covering distributional issues. In order to integrate those issues into the National Account a social Accounting Matrix (SAM) and broader System of Economic and Social Accounting Matrices and Extension (SESAME) have been developed for Indonesia.[1]

2. Starting with the reference year 1975, every five years a SAM and accompanying SESAME-tables are compiled by the Central Bureau of Statistics (Biro Pusat Statistik, 1982, 1986, 1991, 1995, 1996). The most recent set refers to 1990, but it was expected that the 1995 framework would become available in the course of 1998. In this paper, we will focus on the comparable SAMs and SESAMEs for 1975 and 1980, since these are the ones which have been most thoroughly analyzed. In the rest of this section, the (aggregate) Indonesian SAM is shown, followed by a discussion on classifications, and a presentation of a more detailed sub-matrix of labour income by labour type and industry, including a linkage to the SESAME employment tables.

A. An aggregate Social Accounting Matrix

3. Table 1 (see annex) presents an aggregate SAM for Indonesia.[2] The concepts applied in the Indonesian SAMs are generally the same as those in the 1993 SNA's SAM Chapter. In turn, the SAM concepts are quite similar to those in the central framework of the 1993 SNA, albeit that they are better tailored to an analysis of the economic role of the household sector.

4. The first two rows and columns show aggregate Supply and Use Tables. The supply table has been transposed and appears in column 1. In row 2 of this column, output (79,048 billion Rupiah) is shown, valued at factor cost. All taxes on production less subsidies (298) accruing to the government are thus directly booked on the Allocation of Primary Income Account (row 4). The total value of these 'indirect' taxes is very small, only 0.6% of GDP at market prices. This is as a result of substantial subsidies on some products. Imports, at cost, insurance and freight (c.i.f.) prices (9,886) originate from the current account for the rest of the world (row 10).

5. The elements in column 1 add up to total supply of goods and services at purchasers' prices (89,231). Row 1 shows the uses of goods and services at purchasers 'prices (also totaling 89,231, of course). Roughly 20% of the output value is exported. Indonesia had a vary favourable trade balance in 1980 (16,161-9,886=6,275 billion Rupiah, or +13% of GDP).

6. Because output is valued at factor cost, this valuation also applies to the sum of row 2 (79,048), to the corresponding sum of column 2, and to the balancing item in cell (3,2), i.e. GDP (49,081).

7. The third account plays an important role, because further elaboration of the generation and allocation of primary income is the most distinguishing feature of a SAM. For this purpose, the SAM introduces new, primary input units, in between the establishment unit (see account 2) and the institutional unit (see account 4).

8. Concerning capital inputs, a new approach for their definition and classification has been proposed [Keuning, 1996: II.3.3; Keuning and Reininga, 1997], but not implemented in the Indonesian SAMs, for reasons of lack of data.

9. Concerning labour inputs, the SAM considers employed *persons as separate statistical units* that receive wages and salaries in the Generation of Income Account and distribute these revenues to their household in the Allocation of Primary Income Account (cf. section XVII.B.1 of the 1993 SNA for the definition of an employed person). The SAM approach thus provides detailed information on the sources of income of each household group and, in this way, throws light on the linkages between production and income distribution. In addition, this approach allows for a connection of the national accounts to detailed data on employment and to an aggregate (un)employment indicator. Finally, since the SAM's classification of employed persons should distinguish both sexes, an important gender issue (labour income, employment, wage rates, etc. by sex) thereby becomes an integral part of a national accounts framework. This is elaborated below.

10. Because Gross Domestic Product is recorded as a balancing item in cell (3,2), the labour categories in account 3 must encompass all persons employed in resident enterprises. In column 3, compensation of non-resident persons employed in resident enterprises is then handed over to the rest of the world (cell 10,3). A meaningful, national balancing item is only obtained in account 3 if compensation of resident persons employed in non-resident enterprises is added first. This is done in cell (3,10). As a consequence, the Generation of Income Account is closed with a new balancing item (to the amount of 46,125), between GDP and NNI. This balancing item, named Net National Generated Income (NNGI), gives the total income generated in production that is earned by resident institutional units. Because consumption of fixed capital is a cost item, i.e. not income, it is directly recorded in the Use of Income Account (account 6).

11. The Allocation of Primary Income Account of a detailed SAM shows to what extent each household group depends on multiple sources of income from production. It presents the contribution of various categories of (male and female) workers and assets to household income. In addition, capital incomes are also allocated to the corporate (sub)sectors.

12. In the row of the Allocation of Primary Income Account (account 4), the net generated income is augmented with taxes less subsidies on production, and with property income from the rest of the world (75); see cell (4,10).[3] National, inter-sectoral property income flows (2671) are recorded on the diagonal (row 4 and column 4), for they change only the distribution and not the total national income. To obtain NNI at market prices (43499), this diagonal item, as well as property income paid to the rest of the world

(2999), must be subtracted from the total of column 4. That column total is derived from the identical row total.

13. Apart from NNI, current transfers from abroad (30) appear on the credit side of the Secondary Distribution of Income Account (account 5). National, inter-sectoral taxes on income, wealth, etc., social contributions and benefits, and other current transfers (10202) are recorded on the diagonal of this aggregate table. Current transfers, etc. to the rest of the world (0) are recorded on the debit side, as is the balancing item, Net National Disposable Income (43529). This balancing item is put in the Use of Income Account.

14. The Use of Income Account (account 6) records spending of gross disposable income: final consumption expenditure on goods and services and Gross Saving (15275), which is put in the Capital Account. The gross saving rate was estimated at 33%. This mainly concerns corporate-retained earnings.

15. The row of the Capital Account (account 7) presents gross saving, capital transfers receivable from the rest of the world (1,219) and, on the diagonal, national inter-sectoral capital transfers receivable (1,236)[4] Column 7 records how these funds have been allocated: changes in inventories, national inter-sectoral capital transfers payable, gross fixed capital formation (10476) and capital transfers payable to the rest of the world (0). The balancing item is Net Lending of the Nation (4600). Interestingly, this balance is quite positive and even much larger than the development assistance received by Indonesia in 1980 (see cell 7,11).

16. A large part of the total volume change in net worth consists of an increase in fixed assets. For an insight into economic dynamics one should know in which industries production capacity has been expanded. For this purpose, the Fixed Capital Formation Account (account 8) has been inserted here. The usefulness of this account only appears from a detailed SAM. In such a SAM, the Fixed Capital Formation Account presents: (i) 'who invests where' in the rows (sub-matrix 8,7), and (ii) 'where does one invest in what' in the columns (sub-matrix 1,8). The 'who' refers to an institutional sector, the 'where' refers to an industry, and the 'what' refers to a product group. Through this Fixed Capital Formation Account, detailed SAMs show at a meso level the linkages that exist between fixed capital formation per institutional sector, as presented in the Capital Account, and fixed capital formation per product group, as contained in the Supply and Use Table.

17. At the time of compiling the first SAMs for Indonesia, insufficient information was available for a complete presentation of financial flows.[5] Only a Financial Balance Account (account 9) is included here. This account records the financial balances of the institutional sub-sectors (cell 9,7) and of the rest of the world (cell 11,7). Naturally, Net Lending of the Rest of the World (-4600) is the mirror image of the nation's financial balance, so that this account always adds up to zero. For that reason, the column of this account is empty and has been deleted. The elements in the Current and Capital Account for the Rest of the World (#10 and #11) have all been discussed above, except the Current External Deficit (-3381) shown in row 11 and column 10. Clearly, the oil boom created a sizeable surplus for Indonesia in 1980.

B. Classifications

18. It stands to reason that SAMs for different countries select a common type of classification in each account, but that the actual (detailed) classifications are based on local conditions. Defining the taxonomies is a vital phase in the construction of a SAM, because these categories must also be applied when using the SAM for monitoring or analysis.

19. Because transactions in a SAM are shown simultaneously as a receipt of one account and an outlay of another, they are usually cross-classified. The usefulness and feasibility of such cross-classifications should thus be considered when designing the taxonomies for each account. For a review of general considerations that may guide the definition of classifications, see Keuning and de Ruijter (1988) and the 1993 SNA's SAM Chapter. Here, we focus on the taxonomies applied in the Indonesian SAMs.

20. In practice only a few classification criteria can be applied simultaneously. Therefore, it is expedient to start from an inverted tree structure. Figure 1 exemplifies this process of successive subdivisions in the case of the household taxonomy in the Indonesian SAMs. This classification was designed by Downey (1984, 1985), following the provisional guidelines as published by the United Nations (1977):

(1) all non-institutional households are split into agricultural, rural non-agricultural and urban on-agricultural;

(2) agricultural households are split into agricultural employees and farmers (own-account workers and employers combined);

(3) rural and urban non-agricultural households are split into (i) 'lower' level (defined in step 7), (ii) economically inactive (that is, recipients of transfer or property income) and (iii) 'higher' level (defined in step 9);

(4) agricultural labourers are not further broken down;

(5) farmers are split into small farmers, medium farmers and large farmers, depending on the size of land owned;

(6) small, medium and large farmers are further partitioned, in six, two and five sub-groups, respectively, depending on the size of land owned (see figure 1 in the annex);

(7) 'lower' level rural and urban non-agricultural households are split into three sub-groups: (i) own-account workers, excluding professionals, technicians and all own-account workers in 'modern' service industries, (ii) 'unskilled' clerical, sales and service employees and (iii) manual employees;

(8) economically inactive rural and urban non-agricultural households are subdivided in accordance with the age of the head of the household: (i) <25 years, (ii) 26-50 years and (iii) >50 years; in addition, these households include the (insignificant) sub-group of unclassified households; and

(9) 'higher' level rural and urban non-agricultural households are split into (i) employers, (ii) own-account professionals and technicians and own-account workers in 'modern' service industries, (iii) managing and supervising employees, (iv) professional and technical employees, (v) 'skilled' clerical, sales and service employees and (vi) military employees.

21. Overall, this yields 40 subgroups (14 agricultural, 13 rural non-agricultural and 13 urban non-agricultural). When constructing the SAMs, this classification has mostly been used. However, the final consistency of blocks of the SAM has only been secured at a higher level of aggregation, viz. the level corresponding with the 10 groups indicated by Roman numerals in Figure 1.

22. In addition to the household sub-groups, only two sectors have been distinguished in the Indonesian SAMs: corporations and the government. As a result of data limitations, all the household sub-

sectors and the corporate sector have been combined in the Capital Account. In contrast to a T-accounts presentation, such data limitations in the field of capital transactions do not have any repercussion on the classifications applied in the current accounts of the SAM. Here, we see one of the advantages of the multiple sectoring property of accounting matrices.

23. The most extensive classification of labour in the Indonesian SAMs encompasses 40 categories: rural/urban x paid/unpaid x male/female x five occupations: (i) agricultural worker, (ii) manual worker, (iii) clerical, sales or service worker, (iv) professional or technician and (v) manager or supervisor. Paid labourers are employees, while unpaid labourers include employers, own-account workers and unpaid family members. Because commuting from and to a neighboring country is negligible in the case of Indonesia (cf. cells (3,10) and (10,3) in Table 1), there was no need to distinguish separate categories for resident persons employed in non-resident enterprises and non-resident persons employed in resident enterprises. The classification applied in the tables presented in this paper goes into somewhat less detail, by showing the male/female distinction separately and by combining occupational categories (iv) and (v).

24. The asset income has been subdivided into produced capital income and non-produced capital income. The produced capital income equals the consumption of fixed capital. The non-produced capital income is classified by the institutional sector of ownership: (i) unincorporated; (ii) corporate private national; (iii) public; and (iv) foreign. The income accruing to joint ventures has been split relative to the shares held by both partners. According to the 1993 SNA, unincorporated operating surplus only refers to income from owner-occupied housing. This is also singled out in our SAM. The remaining unincorporated capital income is part of mixed income. This is subdivided here by the type of activity in which it is generated: agricultural versus non-agricultural. Finally, non-agricultural income is further broken down by two household sub-sectors of ownership: rural versus urban households. Overall, this yields eight categories of non-labour primary inputs.

25. Because an Input-Output Table instead of a Supply and Use Table was used in the construction of the Indonesian SAMs, the classification of products and that of industries is the same. In the most detailed SAMs, this classification is a somewhat aggregated version of the two-digit ISIC-taxonomy (Rev.2). In addition, all products have been distinguished into domestically made and imported categories. Thus, this is shown in the Use Table too. Finally, tables on household consumption have also been compiled for a more detailed taxonomy of products. This taxonomy resulted from a combination of the categories distinguished in the most detailed Input-Output Table and in the household budget survey (Downey, 1988; Sutomo, 1989). This provided a link to the calorie intake tables that are part of the SESAMEs.

26. Next, a more detailed sub-matrix for labour income by industry and its linkage to employment is presented.

C. Labour income and employment by industry

27. Table 2 exemplifies the information contained in the fully fledged SAMs for Indonesia. It shows detailed labour income and concomitant employment by industry. Labour income is obviously part of sub-matrix (3,2) of the detailed SAM. From the upper part of this table, the following illustrative conclusions can be drawn:

(1) Female labour income accounts for 20% of total labour income (cf. row 3Aii-Hii). This share is particularly low in transport & communication (columns 2Dd and 2De),fishery (2Ac),and wood & wood products manufacturing & construction (2Cc).Only in restaurants (2Db), textile manufacturing (2Cd), and trade& transport services (2Da) do women earn more than 30% of total labour income. Three industries - i) trade& transport services (2Da), ii) government, Social,

cultural& recreational services 2Ec), and iii) food crops cultivation (2Aa) - generate 68% of the total female labour income and 54% of the total male labour income.

(2) Labour income is fairly equally spread over the four occupational categories distinguished here. Clerical, sales & service workers (all rows 3E,F) obtain somewhat more than a quarter (31%), and professionals, technicians, managers & supervisors (all rows 3G,H) somewhat less (19%). Clerical, sales & service workers obtain the highest share in mining (column 2Ca) and in all service industries (all columns 2D,E), except transport (2Dd and 2De) and government, etc. services (2Ec). The latter branch is the only one where professionals, technicians, managers & supervisors dominate the wage bill. These workers receive almost three-quarters of their income from that activity.

(3) Some 58% of labour income accrues to rural households (all rows 3a); apart from all branches of agriculture and food processing (all columns 2A and 2B), more than half of labour income also goes to rural areas in quarrying (2Cb) and in wood & wood products manufacturing & construction (2Cc).

(4) Imputed labour income of the self-employed (all rows 3B,D,F,H) accounts for 45% of total labour income. Almost two-thirds of this imputed income is earned in two industries, i.e. trade & transport services (column 2Da), and food crops cultivation (2Aa). In the former activity, only16% of labour income consists of wages and salaries, and in the latter this share equals 30%.

28. Table 2 has not been constructed in isolation but is fully integrated both with the Supply and Use Table (accounts 1 and 2 in the SAM) and with the disaggregated sector accounts (accounts 4-7 in the SAM) and with detailed employment and wage rate data (see below). This integration enables all kinds of analyses on the interrelations between processes of production and generation of income, on the one hand, and processes of (re)distribution and use of income, on the other hand (see, for example, Keuning [1995]).

29. An important social concern is the level and composition of (un)employment. A SESAME provides additional information on this issue, via a subdivision of total employment, by type of person employed and industry of employment, on the one hand, and by household group and type of person employed, on the other hand. To illustrate this, the lower part of Table 2 shows 1980 employment by labour category and industry in Indonesia. Dividing labour incomes by the concomitant employment figures obviously yields average wage rates. This leads to the following observations:

(1) The share of agricultural labour, rural labour, unpaid labour and female labour in total employment is considerably higher than the share of these categories in total labour income. Their respective average wage rates are only 0.52, 0.76, 0.73 and 0.68 times the national mean;

(2) The share of food crop cultivation, textile manufacturing, and personal and household services in total employment is considerably higher than the share of these industries in total labour income. The respective average wage rates in these industries are only 0.45, 0.62 and 0.66 times the national mean;

(3) The share of mining, finance and utilities in total employment is considerably lower than the share of these industries in total labour income. The respective average wage rates in these industries are 7.21, 7.07 and 3.50 times the national mean;

(4) The labour input of women is higher than that of men in restaurants and textile manufacturing. Female labour input is negligible in transport and fishery. In all industries except livestock and hotels, average rates of males are higher than those of females. The difference is particularly

pronounced in wood & wood products manufacturing & construction, quarrying and food processing. The divergence in wage rates by industry is more pronounced for women(between 0.50 and 10.37 times the national female average) than for men (between 0.43 and 6.57 times the national male average);

(5) A wide range of industries generate most of their employment in rural areas. This applies not only to agriculture, but also to all manufacturing industries except paper, metal products & other manufacturing, and to all services except hotels, other transport & communication, finance, and real estate & business services. Yet, half of all employment in rural areas is in food crops cultivation. In all industries except one, the average wages are higher in urban areas. The divergence in wage rates by industry is more pronounced in rural areas (between 0.58 and 9.55 times the national rural average), than in urban areas (between 0.40 and 4.49 times the national urban average).

(6) The proportion of the labour force that is self-employed varies enormously by industry: 1% or less in mining, finance, utilities, and government, social, cultural & recreational services, and more than 75% in trade & transport services, restaurants, livestock, and food processing. Converted into full-time equivalents, seven out of 10 self-employed people work in two industries, i.e. food crops cultivation and trade & transport services. At the most detailed level of our computations, the average wage rates imputed to the self-employed are the same as those earned by their salaried colleagues. Nevertheless, at a more aggregate level their wage rate is much lower, because they are over-represented in low-paying labour categories and industries.

(7) Not surprisingly, the group of professionals, managers, etc. has the highest average wage rate in all industries, while agricultural and manual workers typically earn the least per hour. At the national level, the average wage of the professional, manager, etc. category is 7.1 times that of the agricultural workers. The variation across industries of average wage rates by occupational category is also substantial: for example, for professionals, managers, etc. the rates range from0.28 to 4.87 times their national average.

30. The fully fledged SESAMEs for Indonesia also contain tables on the supply side of the labour market. Using the same classification of employed persons as in Table 2, the allocation of labour income and employment to various household groups is then shown. In addition, a linkage is provided between a detailed national accounts framework to one or more core macro-indicators on the labour market. This essential SESAME feature is elaborated in the next section of this paper.

II. SESAMEs for the evaluation of economic development and social change

A. Overall trends

31. Table 3 lists the summary indicators selected in the Indonesian SESAMEs. All these measures have been derived from two fully consistent and comparable SESAMEs for 1975 and 1980. The indicators fall into two categories: (1) main indicators, which are meant to capture the most important facets of social and economic change, and (2) supplementary indicators, throwing additional light on these issues. The former set should monitor core socio-economic policy objectives, such as promoting longevity, raising living standards, eradicating poverty, ensuring a sustainable use of the environment, improving human capabilities, increasing employment opportunities, maintaining external equilibrium, keeping down inflation and reducing socio-economic inequalities. Since not every indicator is equally relevant to all countries, the exact list should be tailored to national circumstances and needs.[6] A standard subset should then be defined for the sake of international comparisons. Such a core set is not yet available.

32. Table 3 shows that conventionally defined economic growth in Indonesia was an impressive 7.7% per year during the period 1975-1980 (indicator 8).[7] This amounts to a per capita growth rate of 5.4% per year, in view of the 2.3% annual population growth (indicator 9). The other indicators modify and supplement this conclusion. For instance, the actual improvement in real income per capita is as high as 8.2% per year (indicator 1). The enormous terms-of-trade gain during this period plays an important role here.

33. Other factors behind this growth are illuminated by indicators 3, 4, 10, 11, 12 and 14. Employment increases by 4.2% per year (indicator 10). This entails a modest (1.3%) annual rise of the potential labour force participation rate (indicator 4), as the potential labour force expands at a somewhat higher rate (2.9%) than the population at large (see Keuning [1996, 1997]). The other side of the picture is a substantial improvement in labour productivity (indicator 11). However, this coincides with a shift of labour to better paid jobs and with the use of a rapidly increasing fixed capital stock (indicator 14), so that multi-factor productivity growth is negligible (indicator 12). At the same time, the formal educational attainment of the labour force progresses at a slow pace (indicator 3). All in all, it appears that increases in the quantity and quality of labour are not the driving force behind the prosperous economic development in this period.

34. Apparently, it is the oil boom which has enabled the expansion of the fixed capital stock and of the production volume in general. From the detailed SAMs it appears that the export value increases by more than 32% annually, substantially above both the average use of commodities and the supply of imports. This also entails a spectacular, favorable turn of the current external balance (indicator 5). The oil price hike has come on top of a major (34%) devaluation of the Rupiah at the end of 1978 (indicator 13). When viewed over the whole five year period, though, this devaluation was a stern necessity, to compensate for the divergence between the domestic inflation rate and the rise in competitive world market prices. For the import price still rises less than the output price (for the same product group), while *export volume* growth lags behind both output and import volume growth; cf. Keuning (1996: Chapter III.. That source also demonstrates that deliberate government policies, notably a higher oil product subsidy and a much lower mark-up rate in public utilities, have been successful in restricting the radiation of the oil price shock (27%) to the rest of the economy, through higher energy costs. Partly because of this intervention, the increase in the CPI (15.6%; see indicator 6) and in the GDP-deflator (18%) are way below the oil price rise. Simultaneously, the enormous terms-of-trade gain has pushed up real National Income growth, both directly and indirectly through its impact on effective demand.

35. This pattern of economic growth has also influenced its distribution. The Labour Income Share (indicator 17) declines from an already low level (42%) in 1975 to only 38% in 1980. The share of the household sector in Net National Income drops from 76% to 70%. The real growth of ('tertiary') income per capita in the household sector thus lags behind the increase in overall National Income per head: 6.3% versus 8.2%. At the same time, the distribution of this income among sub-groups becomes significantly more unequal (indicator 7).

36. On the other hand, the situation in the poorest sub-group, as summarized in indicators 2 and 16, improves substantially.8 Yet, this poverty reduction seems smaller than the overall growth in living standards, which also points to an increasing income inequality.

37. Concerning the use of income, the rise of the national saving rate (indicator 19) is striking. In the household sector this rate more than doubles, from 7% to 15%. A partial explanation is that earnings are swelling in particular at the end of the reference period. In general, government consumption rises faster than private consumption; in volume terms, +11% versus +7% per year. *A fortiori*, this applies to public expenditures on health and education (+16.5%). Yet, the educational attainment of adults (indicator 3)

and the literacy rate of female adults in the poorest sub-group (indicator 15) hardly increases. This demonstrates once again that raising the educational level of the population requires a long-term policy.

38. The energy price hike also yields a vast increase in government resources, through the special oil corporations tax. This enables both an expansion of public expenditures and a reduction of the budget deficit. In 1980, the government is even able to generate a small surplus (indicator 18).

B. Shifts in inequality

39. Table 4 subdivides the 1980 potential labour force in each sub-group by sex and highest level of schooling attained.[9] The last columns give the average number of years of formal education in 1980 and 1975. During that period, this figure has increased from 3.47 to 3.57 years; more specifically, from 4.06 to 4.15 years for males and from 2.90 to 3.01 years for females. So women are slowly catching up. On the whole, the proportion with a university degree remains very low, despite its doubling from 0.1% to 0.2%. The percentage of the population that has completed at least senior high school rises from 3.3% to 4.7%, while the percentage with no more than primary education drops from 91.3% to 89.6%. Finally, the proportion without any formal education falls from 29.0% to 27.8%.

40. Huge and increasing differences exist between sub-groups. For males aged 10 or more, the average number of years of schooling in 1980 varies from 3.05 for agricultural labourers to 8.24 for urban higher level households. There exists a clear correlation between this variable and the standard of living in each sub-group. In fact, during the second half of the seventies the average educational level even falls among the economically inactive and in most agricultural sub-groups. For the economically inactive this is largely explained by a disproportionate increase in the number of the elderly. For agricultural households this trend signifies that relatively well-educated people have left the farm. Meanwhile, the greatest increase in the level of schooling takes place in the urban lower level and both higher level sub-groups. For females, the sub-group pattern and the trends are similar. Note that the educational gap is less pronounced between sexes than between sub-groups; e.g. in the urban higher level sub-group the average number of years of schooling of females equals 6.47 years, which exceeds the mean for males in all sub-groups except both higher level ones.

41. Next, Table 5 presents (per capita) disposable income and adjusted disposable income per household group in 1975 and 1980. Social transfers in kind from the government to households are presented by receiving sub-sector in columns (2) and (6) of this table. These transfers concern public education and health expenditures, excluding a small amount for the training of civil servants. On average, they account for 3% of disposable income in 1980 and their growth exceeds the growth in household income, except for the urban economically inactive and higher level sub-groups. Nevertheless, these two sub-groups and the rural elite still receive the highest per capita transfers in 1980. On the other hand, the transfers do have a moderate equalizing effect on income distribution because the ratio between the receipts of the rich and of the poor is smaller than the original income disparities.

42. The last column of Table 5 gives net disposable income per head at constant 1980 prices. Based on the 1975 and 1980 SESAMEs' detailed tables of consumption expenditure by household group and product group, sub-sector-specific inflation rates have been computed and applied to the disposable income estimates. This had a quite substantial impact on the evaluation of (the change in) income distribution in Indonesia. In nominal terms, the average annual growth rate of adjusted disposable income per head varies from 18% for the rural economically inactive to 27% for rural higher level households (cf. the one but last column in Table 5c). For the other sub-groups this rate is 20-23%. However, if account is taken of sub-group-specific inflation rates, the relative spread of the income growth rates increases substantially. According to the last column of Table 5c, the rural and urban elites realize by far the highest real increments (11.1% and 7.6% per capita, respectively), followed by lower level non-

agricultural households in these areas (6.1% and 5.7%). Agricultural sub-groups rank next, all with a below-average growth rate (4.4%-5.5%), and urban and rural economically inactive households come last (4.2% and 2.6%, respectively). The ratio between the poorest and richest sub-groups' real per capita income increases from 4.69 to 5.31. This confirms that inequality rises in this period. The next sub-section of this paper will look into the determinants of these shifts in income distribution.

C. An example of the analytical use of the SESAME

43. Table 3 above shows that the essence of social and economic development may be captured in less than twenty figures. More importantly, all these indicators are connected through the underlying SESAMEs. This enables further analysis of the factors behind the main trends.

44. For instance, Tables 6a and 6b decompose real income changes by household sub-group into a number of components. The former table deals with real labour income growth, according to the following formula:

$$\left(\frac{\dot{U}_h}{J_h}\right) = \left(\dot{H}_h\right) + \left(\frac{\dot{A}_h}{H_h}\right) + \left(\frac{\dot{E}_h}{A_h}\right) + \left(\frac{U_h/\dot{L}_h}{W_h}\right) + \left(\frac{\dot{W}_h}{J_h}\right) \qquad h = 1, \ldots, 10, \quad (1)$$

where U = total (imputed) labour income,
J = (sub-group-specific) consumer price index (CPI),
H = number of households,
A = potential labour force,
L = employment (in full-time equivalents),
W = average wage rate (labour input compensation deflator).

45. The subscript h indicates the household sub-group concerned, and the dot points to the logarithmic rate of change of the term in parentheses.

46. Because of the logarithms, column (6) of Table 6a is exactly equal to the sum of columns (1) through (5). The content of the first three columns should be clear from equation (1). Column (4) shows the effect on sub-group income from the shift of the sub-group's labour force participants to better (or worse) paid jobs, corresponding to the fourth term on the right-hand side of equation (1). It gives, for each sub-group, the change in labour income per full-time worker equivalent relative to the average labour input price. Note that if a person has obtained a better paid job between 1975 and 1980, not the price but the volume of his labour input has risen (labour quality improvement). Column (5) shows the effect of changes in the terms of trade of labour supply versus commodity demand by household sub-groups. Sub-group variations in column (5) are thus the result of differences in wage rate developments by occupation and by industry, and of differences in the sub-group-specific CPI.

47. The five determinants in this table can be grouped into two categories: a) demographic factors (the first two columns) and b) economic factors (the next three columns). Further, the last factor represents a relative price effect, while the first four are volume effects, including changes in the quality of the labour input. The sum of the first four components equals the labour input volume growth, or the weighted employment growth.

48. At the national level, real labour income increases at an annual rate of 8.8%. Economic factors clearly dominate: they account for 5.9%-points and demographic factors for 2.9%-points. Again, the paramount influence of the terms-of-trade improvement appears; its direct contribution equals 2.9 percentage points. Moreover, a large part of the volume effect has been induced by the terms-of-trade

gain, as domestic spending by oil corporations and the government has boosted employment. All in all, the oil *price* hike has substantially contributed *to real* labour income growth. In an economy with near full employment of production factors, there is nothing like a terms-of-trade gain or productivity improvement, from a national welfare point of view. These are the only changes that do not require an increased input of resources. In fact, as productivity growth is sluggish in the period under observation, the real gain comes from the terms-of-trade effect.

49. The annual growth rate of real labour income varies enormously by sub-group: from -4.8% for the rural economically inactive to +13.3% for urban lower level households. All factors distinguished in Table 6a play a role in this divergence (see the last six columns). For instance, the below-average income increase in the agricultural sub-groups is largely caused by a decline in the number of households, except for small farmers. In that category, a relatively meager wage rate growth and a shift to lower paid jobs are the dominant factors. This shift is probably caused by the necessity for new entrants on the labour market to accept jobs that are of lower quality, on average, than the 1975 standard for this sub-group. In turn, that necessity may be related to the relatively large number of new entrants from this sub-group. Among small farmers the potential labour force growth is more than twice the national average (cf. the sum of columns (1) and (2) in Table 6a). The same applies to the urban economically inactive sub-group. But for this sub-group labour income is only a minor portion of total income; see column (1) of Table 6b.

50. The real labour income growth in the two lower level non-agricultural sub-groups is related to a large increase in the number of hours worked, leading to a very high labour force participation rate in 1980 (cf. Keuning [1996, 1997]). Furthermore, the terms-of-trade change of their labour is relatively favorable. Among the urban elite, the volume effect (more households, more hours worked per adult) dominates. Finally, in the rural higher level sub-group, a remarkable shift to higher paid jobs plays an important role. The detailed SESAMEs reveal that in this sub-group the share of generated income earned by clerical, sales and services own-account workers declines from 15% to 7%, while the share earned by (better paid) professional, technical and managerial employees increases from 41% to 48%.

51. Next, Table 6b combines labour income with the two other components of real changes in *tertiary income per household,* i.e. (i) real changes in non-produced capital income and (ii) real changes in the balance of property income and transfers received minus those paid, including social transfers in kind from the government.[10] This table shows that, in the average Indonesian household, labour income accounts for 58%, capital income for 34% and the balance of property income and transfers received minus those paid for 8%. The last category grows very rapidly, though, at a yearly rate of 10.5% per household in real terms. Both other sources are also thriving: real labour income +6.7% (equal to column (6) minus column (1) in the previous table) and real capital income directly accruing to households +5.5% per year.

52. The spread of growth rates by sub-group is smaller for total tertiary income than for just labour income. The variation in growth rates of the non-labour income components thus exerts a counteracting influence. Nevertheless, the sub-group real growth rates of tertiary income per household are still far from equal and the ranking of sub-groups is about the same for total tertiary income growth as for labour income growth. The most significant difference is that, in terms of total income growth, the rural and urban elites top the list.

53. In the last five columns of Table 6b, the deviation of each sub-group's income growth from the national average is ascribed to a deviating growth rate of the three income components and to the effect of a different weights structure. These four factors correspond with the terms in square brackets below:

$$[(\overline{US}_{\cdot})(\hat{U}_{h} - \hat{U}_{\cdot})] + [(\overline{NS}_{\cdot})(\hat{N}_{h} - \hat{N}_{\cdot})] + [(\overline{TS}_{\cdot})(\hat{T}_{h} - \hat{T}_{\cdot})] +$$

$$+[(\dot{U}_h^r)(\bar{U}\bar{S}_h - \bar{U}\bar{S}_\cdot) + (\dot{N}_h^r)(\bar{N}\bar{S}_h - \bar{N}\bar{S}_\cdot) + (\dot{T}_h^r)(\bar{T}\bar{S}_h - \bar{T}\bar{S}_\cdot)] \approx [\dot{D}_h^r - \dot{D}_\cdot^r], \quad h = 1,\ldots,10 \quad (2)$$

with U = total (imputed) labour income,
N = non-produced capital income,
T = balance of property income and transfers received minus paid,
D = net adjusted disposable income,
US = share of labour income in disposable income,
NS = share of capital income in disposable income, and
TS = share of the balance of property income and transfers received minus paid in disposable income (US + NS + TS / 1).

54. The superscript r plus a dot above a variable points to the *real* rate of change per household (e.g. $\dot{U}_h^r \equiv (U_h / H_h J_h)^\cdot$), a dash above a variable points to the average 1975 and 1980 value, and a dot below a variable refers to the national total.

55. Among agricultural laborers, both capital income and the balance of property income plus transfers rise quite rapidly, yet their total real income growth is slightly below average. This is the result of (a) their rather modest labour income growth (see column 8) and (b) the very low weights of the two other income categories in this sub-group (see columns 2, 3 and 11). The same factors play a role in determining the real income growth of small farmers, albeit that a low labour income growth (as decomposed in Table 6a) is the most important factor for them. The economically inactive also have a low labour income growth. However, in these sub-groups labour income accounts for only a small share of total receipts and thus the 'weights effect' partly compensates for their sluggish labour income growth. Besides, they rank first in terms of capital income growth. The thriving income growth of the rural elite is mainly caused by their high factor income growth, which includes a substantial terms-of-trade gain. Finally, the urban elite fares very well thanks to the weights effect (high income share in the fastest growing third category) and a relatively favorable labour income growth (mainly a high growth of employment per household; cf. column 3 of Table 6a).

56. As usual, an analysis like this raises new questions. A great number of these questions can be answered with the SESAMEs. Take, for example, the high labour income growth among the urban elite observed in Table 6a. Employment in this sub-group grows so rapidly because it is the main supplier of urban professionals, technicians, managers and supervisors. The detailed SESAMEs show that the demand for these workers increases quickly. In turn, that extra demand is induced by the expansion of government services. Finally, that expansion derives from swelling oil corporation tax receipts. This brings us back to the main economic event of this era in Indonesia: the oil boom. This boom created circumstances which were particularly favourable to the urban elite. It gave rise to, first, a dramatic rise of profits, of which a large share accrues to this sub-group, and second, an upswing in the demand for highly skilled urban labour, mainly supplied by this sub-group. In this way, a comparison of two successive SESAMEs reveals the interdependence of the pattern of economic growth and distributional changes.

57. Meanwhile, the SAMs and SESAMEs have been institutionalized inside the Indonesian Central Bureau of Statistics. They have carried this work forward, with special emphasis on the SAM and the labour accounts part of the SESAME. This is elaborated in the next section of this paper.

III. The present role of SESAME in Indonesia

A. National income statistics in Indonesia

58. Several attempts have been made to estimate the income of the population of Java and Madura before the World War II. One of the most important was the effort of J.J.Polak to estimate the National Income of the so-called Netherlands Indies for the years 1921-1939. After the independence of the Republic of Indonesia, estimates of the National Income of Indonesia covering the period of 1951-1952 were reported by S.D. Neumark, advisor from the United Nations to the National Planning Boards of the government of Indonesia. He laid down the basic principle of income compilation during the decade. Mulyatno followed up that activity estimating the National Income of Indonesia for1953-1954.

59. Since 1962 the Central Bureau of Statistics (BPS, Biro Pusat Statistik) of Indonesia has institutionalized the work to compile the National Income Statistics of Indonesia annually. Under the auspices of the UNDP, Mr. K.N.C. Pillai, together with the staff of BPS, established the basic concepts and definitions, methods of estimation and sources of data for producing national income statistics in Indonesia. The comprehensive series of data on income statistics was published by the BPS in 1970, entitled National Income of Indonesia 1960-1968. The publication sets out the Gross Domestic Product (GDP) by industrial origin as well as by expenditure category at current and constant 1960 prices. In the following years, national income statistics were presented in the format of supplementary series to the third publication containing the main tables of national income of Indonesia 1968-1973.

60. In 1980, the BPS published a new series of GDP estimates with 1973 as the benchmark year for the constant price estimates. The publication was entitled Main Tables of National Income of Indonesia 1973-1979. The series described the concepts and definitions of the macro-economic aggregates, analyzed the structural changes and sectoral growth, and reviewed the achievement of the economy of Indonesia. The format of the series of national income statistics continued to be published by the BPS until the period 1979-1983. The implementation of the Five-Year-Development-Plan (PELITA) had a significant impact on the structural change of the Indonesian economy from decade to decade. The development of macro economic conditions in the 80s were rapid compared to previous decades. In the meantime, various basic data and information supporting the economic statistics and national income estimates became gradually available and were constantly improved. This favorable development of the data system and statistical activities in Indonesia enabled the BPS to regularly adjust and change benchmark year estimates of current and constant prices. Hence, since 1984, the BPS has published the national income as a statistical series with 1983 as the new benchmark year. The series of national income statistics for the years of 1983-1992 published by the BPS have been adjusted to the new benchmark year for constant price estimate. Recent developments have changed the economic structure of Indonesia even further, and the dynamic condition of the society required the benchmark year of the national income statistics to be updated again. Hence, 1993 was chosen as a new base year for the series of national income statistics 1988-1995. Various studies and special surveys related to economic indicators had been carried out by the BPS and other governmental agencies.

61. The compilation of Indonesian input-output tables started early in 1973 when the agreement on the IO joint Research Project was signed by both representatives from Indonesia and Japan. The project's aim is to study the inter-industry relation of the economy of Indonesia during 1971. The project ended in October 1976 with two publications released. These publications are Input-Output Table Indonesia 1971, volume I containing the general framework, and Input-Output Table Indonesia 1971, volume II, containing the data, published in October 1976. The second effort in the development of an Indonesian IO table was the full responsibility of the BPS supported by the National Development Planning Board (BAPPENAS). The staff of BPS' National Income Division compiled the input-output table for Indonesia for the reference year 1975. The activity was carried out during a four year period until the end of 1980.

62. Then, the Bureau of National Accounts of the BPS institutionalized the work publishing the IO table once every five years. Hence, in 1984 the BPS published the third IO table for 1980. The fourth IO table is for the reference year 1985, the publication entitled Indonesian IO table 1985. It consists of two volumes and was published during 1989 and early 1990. Volume I consists of the conceptual framework, the description of sectors and aggregated tables of the 19 and 66 sector classification. Volume II contains aggregated analytical tables including the employment matrix. The fifth IO table is for the year 1990, published in 1994 and updated to the IO 1993 which was published in 1995. The IO table for the reference period 1995 is in the final process of reconciliation.

63. The Indonesian Social Accounting Matrix (SAM) is developed from the IO table supplemented by detailed data derived from various surveys such as the Socio-Economic survey, Labour Force survey and Household Saving and Investment Survey. The SAM relates production factors such as labour and its remuneration, households and their consumption patterns and the expenditures of other institutions. The SAM presents various distributional aspects of society, not only in monetary terms, but also in terms of labour, calorie, protein and fat intake. The consistent data framework derived from SAMs can be utilized as a basis for the analysis of the distribution of income, patterns of consumption of various social groups and their relationship to sources of income, as well as the process of the production of goods and services. The SAM method is new to the BPS and probably to the data users in the country. This pioneering endeavor to develop the system of socio-economic accounts for Indonesia was done by the BPS in cooperation with the Institute of Social Studies (ISS) of The Hague/The Netherlands. The Bureau also cooperated with Prof. Erik Thorbecke of Cornell University. The SAM publication was the first of its kind for Indonesia. The material presented a combination of various accounts for 1975 at national level within the SAM framework. The publication of the Indonesian SAM 1975 was released in 1982. Since then the BPS has developed a regular program to produce SAM once every five years. The fourth SAM of Indonesia 1990 was released in 1994. The updated data for the 1993 SAM was made available recently and the forthcoming 1995 SAM will be finalized simultaneously with the IO Table for 1995.

64. Starting in 1987, the BPS has been involved in the work of constructing Flow-of-Funds (F.O.F) Accounts for Indonesia. The accounts ideally present information for the institutional sectors in terms of: (a) a deconsolidation of their current account activities; (b) their asset and liability transactions and; (c) the balance of payments. The first results of the study were released in 1990 in the form of an annual Indonesian F.O.F. In the following years, the BPS continued to develop the system of annual FOF accounts, its basic concepts and definitions and methods of estimation. In addition, further data sources were identified to improve the system. In 1990 the annual FOF of Indonesia 1984-1988 was released and presented at a seminar. Since then the FOF account has been published every year by BPS. However, due to lack of available data on a number of transactions of the institutional sectors, the time-lag of some data needed for the annual FOF is quite large. The latest publication of FOF Accounts of Indonesia for 1988-1993 was released in 1996. Since 1992, the BPS has started a study on quarterly FOF accounts to improve the timeliness of the data produced with the aggregated sector classification and transaction categories of the accounts. The first quarterly FOF account for Indonesia was released in 1994. The latest available publication on quarterly FOF Accounts 1993-1996 was released in early 1997.

65. To meet the rising demand for a sound environmental policy, a joint effort in a project entitled Natural Resources and Environmental Accounting for Indonesia was started in September 1990. A team consisting of the BPS, the State Minister for the Environment, and Environmental Management Development in Indonesia (EMDI) was set up. During the first stage of the study, concepts and methods for Natural Resources Accounting were developed and a technical guide entitled "Concepts and Methods for Natural Resources and Environmental Accounting" was published (Jakarta 1992). The second stage of the study was to apply the concepts and methods to compiling the resource account for oil, gas, coal and

forest products. The empirical results of the study covering the physical as well as monetary accounts of the above-mentioned resources was published by the BPS in 1996 in the Integrated System of Environment and Economic Accounting.

66. Since 1990, the BPS has studied the consolidation of the macroeconomic cycle of Indonesia. The result has been the first presentation of an integrated set of accounts: the production accounts, the income-and-outlay account, the capital accumulation account and the external account (the so called Four Accounts of The Nation) for the years 1987 and 1988. Unlike the existing production accounts of Indonesia, as regularly published in the series National Income of Indonesia, which are statistics based on estimates of production and demand by type of commodity and industry, the estimates of the integrated accounts, including its production accounts, are compiled on the basis of basic data from the financial reports of institutional sectors (covering enterprises, government agencies and households). The accounts give a clear picture of all the transactions taking place in the economy, and may already be used for a global analysis of the performance of the institutional sectors in Indonesia.

67. Data on capital stock and capital formation are probably among the most difficult to compile. In this regard, the BPS has come up with an alternative approach in the development and estimation of Gross Domestic Fixed Capital Formation. Indonesian Gross Domestic Fixed Capital Formation (GDFCF) consists of the acquisition of new capital goods domestically produced, and new or second-hand capital goods imported from abroad. Capital goods consist of buildings and structures, and machinery and equipment used in the process of production in the Indonesian economy. The method applied to estimate GDFCF is the commodity flow approach. This approach utilizes data on the supply of goods (fixed assets) intended for capital formation. Manufacturing industry statistics and foreign trade statistics are the main sources of data for the estimation of GDFCF. Other related information and parameters were also derived from various special surveys designed for the compilation of GDP, Input-Output Table, Social Accounting Matrix, Flow of Funds Accounts and other related macroeconomic indicators. The further information required for planning purposes is the breakdown of capital formation into detailed classifications by institutional sector, industrial origin and by type of assets. To develop this investment matrix, an Asian Development Bank (ADB) project, entitled "Institutional Strengthening of the CBS", is currently implemented by the BPS with technical assistance from Statistics Netherlands and ISS The Hague. The project will first evaluate the work that the BPS has already done on the compilation of an investment matrix. It was decided to start with the construction of matrices, showing: (a) which industry invests in which type of capital good; (b) which institutional sector invests in which type of capital good; and (c) the prospect of institutional investment by industry.

68. Since the 70s there has been a growing interest in regional studies in Indonesia. Several universities, research institutes and various agencies together with the BPS organized the activities of compiling the regional income of several provinces. In August 1970, the BPS and the Faculty of Economics of the University of Indonesia in Jakarta took the initiative to coordinate and establish the Regional Income Research Group (RIRG). This stimulated the BPS and its branch offices to coordinate data collection, formulate a standard methodology, and carry out special surveys and studies to support the estimation of regional production in every province in Indonesia. The BPS branch offices in the province play an important role in the development of regional economic studies supported by the regional development plan of the local government and universities in the region. Recently the BPS also published the Gross Domestic Product of the Region (GDPR) of 27 provinces in Indonesia by industrial origin and by expenditure category, compiled from individual province publications. The estimate of GDPR at constant prices in every province has also been adjusted to the national benchmark year 1983 and then 1993. This will facilitate the analysis and comparative study of regional economies in Indonesia. The latest publication on regional income in Indonesia is for the years 1993-1995 and was published by the BPS in 1996.

B. Towards the implementation of the 1993 SNA

69. Concerns about economic and social development as a field of inquiry and as a process which can be influenced by appropriate policies became stronger after the end of the third PELITA in 1980s. More and more the need was expressed that the development objectives of the country should cover not only economic growth represented by GDP measures but also income distribution, employment, and other welfare oriented measures. Hence, the framework of the data system needed to be extended.

70. The newly released System of National Account (1993 SNA) provides the basis for a considerable expansion of the analytical data set on national accounting and has vastly improved the links and interaction between the data sets, in order to better serve analysis and the design of policies and strategies.

71. To implement the 1993 SNA in Indonesia, various programs have been planned by the BPS. Among these are (a) to carry out training measures on the 1993 SNA for both users and producers of economic statistics; (b) to review the concepts, definitions and classifications; (c) to identify the various sources of data and information needed.

C. The development of the 1975 SAM

72. The speed of implementation of various development programs is increasing in many respects and more complicated planning techniques are needed. This requires the availability of accurate, comprehensive and up-to-date data in many fields of activity. The Development Trilogy Principle, as part of the National Directional Outline (GBHN, Garis Besar Haluan Negara) states that the goals of the development programs are equity, growth and stability. As reflected in the GBHN, one of the objectives of development is to realize social justice for all the people of Indonesia. Therefore, the development strategy in PELITA III gives high priority to the equity aspects. Equity has been manifested in various policy measures via the *Eight Paths to Equity,* namely: (a) equitable fulfillment of the basic necessities of the mass of people, especially food, clothing and housing; b) equal opportunities to obtain education and health services; (c) equitable distribution of income; (d) equal employment opportunities; e) equal business opportunities; f) equal opportunities to participate in development, especially for the young and for women; g) equitable distribution of development over the whole nation; and h) equal opportunities to obtain justice. The implementation of development through these eight paths to equity is a new horizon which should be supported by an increasingly improved data system as well as improved methods of analysis. The currently available data system, however, is generally more inclined to produce aggregate measures of economic growth such as GNP from which the equity aspects of development are difficult to interpret. On the other hand, in order to minimize poverty and inequality, the development objective must emphasize not only growth but also an equitable distribution of the pie.

73. Consequently, data collection activities must also be evaluated to comply with the new demands. Therefore, the BPS must continually attempt to improve the efforts to translate and quantify various national development policies in such a way that the data supply meets the data needs of the planners and decision makers. As a first step to these ends it seems worthwhile to compile and present the already collected data in a form that is able to reflect how the results of economic development effects various social groups, and how fast the economy is growing. One of the efforts made by the BPS is to compile data from various sources and combine them in an integrated system which is called a SAM. A social accounting matrix has two principal objectives. The first is concerned with the organization of information, usually information about the economic and social structure of a country, though it could as well be about a region in a country or any other unit, in a particular year, which one is interested in. The second objective of a SAM is to provide the statistical basis for developing an analytical model. Complaints about the inconsistency and unreliability of economic and social data in developing countries have reached the point of being trite. While there is justification for these complaints, they are not the

whole story. There is often information, dispersed or fragmentary, which is not used for lack of a consistent framework within which to make the maximum use of the available information and to pinpoint, with greater accuracy and specificity than is usually done, the salient gaps and inconsistencies. Once the data have been organized in the form of a SAM, they present a static image which can reveal much about the economic structure. Even so, the analytical model is only a snapshot. In order to analyze how the economy works and predict the effects of policy interventions in order to change it, more is needed than just a static model.

74. The main tables of the 1975 Indonesian SAM are structured according to a matrix of the size 62. To see various patterns of distribution of various aspects of social life and their inter-relationship, four main types of table were presented in the publication of the 1975 SAM, namely: (a) the table of estimates of income distribution according to factors of production and occupation, showing the participation of various production factors in various sectors of production; (b) tables of estimates of income distribution to households and other institutions showing the ownership of factors of production by various household groups for the purpose of studying the causes of the incidence of income inequality; (c) tables of estimates of expenditures by households and other institutions, showing the consumption patterns of various household groups as well as other institutions. These tables show the consumption behaviour of various household groups for goods and services produced by the production sector, so that, by tracing its relation with the technology of the production process (labour, capital), the causes and consequences of poverty and inequality of income distribution can be analyzed; d) tables showing the distribution of other socio-economic aspects of households, which cannot be measured in monetary terms, for example, the ownership of durable goods, housing, calorie intake, etc.

75. The sources of data used as the basis for preparing the 1975 SAM also described in the publication are as follows: population census, national labour force survey, national socio-economic survey, industrial census, agricultural census, production statistics, export and import statistics, special surveys to calculate national and regional incomes, and Indonesian Input-Output tables.

76. Further, the reconciliation of data, both by computer and manually, is described. Reconciliation is a process in which the data from various sources are examined with respect to their consistency with other sources, and the measurement of the degree of accuracy thereof. Differences in the concepts and definitions, classifications used in the respective sources, and the methods of data collection are eliminated using proper assumptions. Hence, it can be seen that the direct benefit of a SAM is that the quantity as well as quality of the available statistical data can be tested. The benefit of using a SAM as a framework of analysis is its ability to illustrate the relation between the detailed quantitative data concerning the distribution of various socio-economic variables of the various social groups with investment levels, public savings, balance of payments, government expenditures and other policy instruments. SAMs also provide consistent basic data for building models in the form of functional relations or algebraic equations between the numerous variables covered in this system. These equations can then be used to monitor and measure the direct and indirect effects of government policies on each of the social groups.

D. The SAM of Indonesia 1993

77. The BPS decided to change the benchmark year for the estimate of GDP at constant price from 1983 to 1993. Hence, the BPS made special efforts to update the 1990 IO table with the latest data available for the year 1993. With the availability of an updated 1993 IO, the 1993 SAM was simultaneously generated based on the 1993 IO table. After the 1975 SAM, the BPS decided to institutionalize the production of SAMs once every five years, simultaneously compiled with the IO tables. In each consecutive compilation of the SAM, improvements in its coverage and content were gradually made following improvements in the quality of the basic data available.

78. The main features of the 1993 SAM were not so different from the previous table, except for the updated data and the improvement in the reconciliation process and alternative methodology of the estimation procedure supported by the recent information available. However, the 1993 SAM also presents several analytical tables using time-series data available from the previous SAMs (see tables 7-16 in the annex).

E. The usefulness of SAMs

79. In preparing the SAM, the primary as well as secondary basic data collected from various sources for the compilation of various economic as well as social indicators, have been examined in respect to their accuracy as well as consistency concerning the classifications and definitions used. The SAM also provides sufficient information concerning priorities in statistical data collection for obtaining new information.

80. Quality improvement of the statistical data: For example, for the compilation of SAMs it is necessary to compare data concerning household income from household surveys and data from the calculation of national income. The SAM tries to indicate which is the closest estimate among the data collected from both sources. Matters of consistency are raised in order to find out the underlying reasons for the differences. Then, by studying the classifications, scope and definitions of the data from the respective sources, one can decide to make adjustments. This process in preparing the SAM is known as data reconciliation, which naturally has to be supported by various sound assumptions, in order to obtain a relatively reliable estimate.

81. The SAM concept can also become a common basis for the planners of socio-economic development as well as statisticians. A sufficiently detailed and accurate SAM table constitutes an exhaustive source of information in the socio-economic field, particularly for constructing models.

82. A SAM can be applied in two ways, namely: using only a part of the SAM (certain sub-matrices); and using the entire SAM (comprehensive matrix).

(a) For a particular purpose we usually only use certain matrices. For example, for analyzing the effective rate of protection of the nominal tariff imposed on the import of certain commodities, it is sufficient to analyze the input-output sub-matrix, which constitutes the production sector matrix of a SAM. However, from a complete, consistent and detailed SAM, the factor of production, the institution as well as the sector classifications, can be summarized into the I-O table. Further, we can compose the coefficient tables as well as the inverse matrix from the aggregative tables for the analyses we require, such as structural path analysis.

(b) Utilizing the SAM completely and in detail, covering the main tables, the supplementary tables and the information in them, can in principle be conducted via multiplier analyses. With such analysis we are able to know the effect of a change in one or some variables of a SAM, which causes a change in all the variables in the system.

83. Basically, the SAM is a data coordination system supported by consistent classifications and definitions, so that the tables presented can be utilized as a macro analytical framework. In fact, the direct benefit is the testing of the quantity as well as quality of the available statistical data. The strength of the SAM as a basic framework of analysis lies in its ability to encompass and illustrate the relations of the detailed quantitative data concerning the distribution pattern of various socio-economic aspects of a

society in a certain period to the investment rate, public savings, balance of payments and other various policy tools.

IV. Evaluation of the case study for Indonesia

A. SESAME's contribution to the understanding of Indonesian development

84. The main contribution of the SAMs, and in particular of SESAMEs, to the understanding of economic and social development in Indonesia concerns the integrated presentation of the underlying causes of economic growth and distributional change. Structural shifts in the economy have been connected to changes in the living standards of various layers of society through a detailed description of e.g. labour markets, demographic developments and relative price changes of consumer goods. Among other things, the analysis based on the 1975 and 1980 SESAMEs has shown that the shift in employment towards better paying labour categories is an important element in explaining both the overall income growth and the difference in income growth between lower and higher level sub-groups. It has been concluded further that a relatively large share of the newly hired civil servants are highly skilled workers, with a quite beneficial effect on the income of the urban and rural elites. In general, several factors that have caused the increasing skewness of income distribution by sub-group would not have been identified if the SESAMEs had not been compiled (cf. Table 6).

85. On the expenditure side, the SESAMEs have presented not only the shifts in the composition of the consumption basket by household group, but also the linkage of these figures to the price and volume changes of consumer goods, and to changes in calorie intake. It has been demonstrated that the consumption pattern is determined by the income level, but also by several other factors, such as location (relatively higher transport and housing expenses in cities) and occupation (farmers eat more food). The linkage to non-monetary data has shown that the poorest sub-groups obtain almost twice as many calories from a Rupiah spent on food as the richest. As a consequence, calorie intake is much less unequally distributed than consumption outlays. The highest per capita calorie intake is actually found among the large farmers.

86. The demographic module in the SESAMEs has revealed several social trends that are of relevance for policy purposes. They can be listed as follows:

(1) fairly high population growth (2.3%);
(2) still rising household size (averaging almost 5 persons in 1980);
(3) continuing positive relationship between living standards and family size;
(4) steady urbanization (yet only 20% of the 1980 population lives in a city);
(5) considerable partitioning of farms between 1975 and 1980;
(6) exodus of relatively well-educated families with young children from agriculture;
(7) relatively high growth in the number of economically inactive households (the elderly, students and the unemployed), who mainly depend on transfers from other households;
(8) increasing importance of migration of breadwinners (and not of complete families) as indicated by the relatively high growth rate of female adults in economically inactive households;
(9) opposite developments in the number of children among the rural (up) and urban (down) elites, which may point to differences in the acceptance of family planning devices;
(10) increasing labour force participation rate of males (reaching 55% in 1980) and stable labour force participation rate of females (31%);
(11) coincidence of relatively high (or low) male and female potential labour force participation rates by subgroup;

(12) gradually increasing educational level of the potential labour force (having completed on average 3.57 years of schooling in 1980, up from 3.47 years in 1975);
(13) hardly decreasing difference in average educational level between males and females (from 1.16 to 1.14 years); and
(14) increasing gap in average educational level between the richest and the poorest households (from 4.41 to 4.79 years).

87. The SESAMEs' tables on schooling are a first step towards accounting for human capital. Ideally, the role of each type of capital in the dynamics of an economy should be identified. Concerning fixed assets, the present SESAMEs have also extended the traditional national accounts presentation. Fixed investment per sector has been linked to demand for capital goods by inserting a fixed capital formation account per industry. That account has shown that particularly investment in real estate and government offices is booming, with a concomitant positive effect on the construction industry. In turn, the increasing demand for construction workers has been a major factor behind the rapid growth in both the number of households and the labour force participation rate in the lower level non-agricultural sub-groups.

88. A SAM at constant prices can play a special role in the analysis [Keuning, 1996]. For instance, it yields estimates of multifactor productivity change that are integrated within a national accounts framework. These productivity changes are then also allocated to the benefiting sub-sectors. In addition, the comparison of SAMs at current and constant prices enables the derivation of a nation's trading gain from a consistent meso-level data set, namely as the sum of the trading gains (from a change in the terms-of-trade) accruing to the sub-sectors distinguished. This method is methodologically and numerically preferable to a direct estimation of this gain at the aggregate level, because it applies actual price changes relevant at the meso-level. Concomitantly, real National Income change is then estimated in conformity with meso-level figures, namely as the weighted average of real income changes per sub-sector. At the same time, a consistent view of shifts in real income distribution is obtained. This also applies to National Disposable Income and National Saving.

89. The comparison of SAMs at current and constant prices also means that a sub-sector-specific Consumer Price Index (CPI) is computed within an overall national accounts framework. In our case study, this 1980 index ranges from 213.8 for the urban elite to 220.2 for small farmers (1975=100). Further, the real change in the Current External Deficit or Surplus is estimated through a meaningful deflation of all other elements in the rest-of-the-world account.

90. All in all, the comparison of both SESAMEs has provided a more comprehensive insight into Indonesia's social and economic development than could thus far be obtained. Of course, on most of the above issues separate statistics were already available. However, integrating such figures into a common analytical framework and ensuring their consistency has enhanced the possibilities for analysis. It goes without saying that a comparison of two SESAMEs only enables a comparative static analysis. For more insight into the dynamics, a longer time-series of SESAMEs is required.

B. Agenda for further research

91. Further research on the SESAMEs for Indonesia should focus on two issues: first, on an improvement of some of the classifications, concepts, etc., and secondly, on an extension of the present frameworks.

92. The main weakness of the present SAMs concerns the recording of some property income flows and current transfers, notably interest payments, social contributions and benefits, insurance premiums and claims, and land rent. For interest payments, social contributions and benefits, only the balance of

receipts and payments has been recorded. Further, the gross flows have not been led via the actual intermediaries such as banks, social security funds, etc. Similarly, insurance transactions have been cursorily treated. In the present SAMs, the rent on agricultural land has already been settled in sub-matrix (4,3), where agricultural capital income is allocated to household sub-groups. Instead, land rent should have been shown as a property income flow in sub-matrix (4,4).

93. Other possible improvements relate to the replacement of an input-output block by a fully fledged supply and use block, and to the partition of indirect taxes. These taxes should be broken down into taxes on products, to be allocated to the government in the Goods and Services Account, and other taxes on production, to be allocated to the government in the Generation of Income Account. Output and value added are then recorded at basic prices. In general, the concepts of the 1993 SNA's SAM chapter have not yet been fully applied in this case study, because the necessary data were lacking.

94. Concerning classifications, the household taxonomy is of special importance. At present, the complete SESAMEs distinguish only ten sub-groups. The forty categories that were designed originally (cf. Figure 1) would have provided a better insight into social stratification and would have made more homogeneous categories. Besides, some sub-groups may have been defined less suitably in the present system. These concern the landless and small land-owning farmers, the economically inactive and non-agricultural employers.

95. The main problem with the landless agricultural operators is that this category also includes such different groups as fishermen, cattle breeders and hunters. This deficiency has been remedied only partly in the official 1980 SAM [Biro Pusat Statistik, 1986], in the sense that these groups have there been lumped together with estate crop farmers, to form an additional sub-group of non-food crop cultivating agricultural operators.

96. Furthermore, in numerous circumstances *de jure* ownership significantly deviates from *de facto* ownership in Indonesia. Such circumstances are: shifting cultivation, ownership without possessing a formal legal title, communal land given in permanent use to village officials, and plots formally owned by a richer relative who does not collect a rent on it. These cases illustrate that survey questions on land ownership should be very carefully formulated. Another factor that complicates a proper identification of landless and small farmers has to do with the agricultural output by non-agricultural households. It should be carefully checked whether the main source of income of the whole household over the whole year is indeed from agriculture. Otherwise, a household harvesting vegetables from a small plot of its own, but living on a teacher's salary, say, may be grouped incorrectly with small farmers.

97. The economically inactive are a quite heterogeneous category, combining students, the elderly, single-parent families depending on transfers from a spouse working and living somewhere else, renters, etc. Probably, these subcategories are better explicitly defined, instead of using age of the household head as a proxy. However, it must be thoroughly checked whether the main source of income of the whole household, during the whole year, is indeed from property or transfer income.

98. The group of employers outside agriculture is rather heterogeneous too. The situation of entrepreneurs employing just a few people may actually bear much resemblance to that of own-account workers. Own-account workers are usually assisted by unpaid family workers, so that the size of their firm is not necessarily smaller than that of an employer. To complicate matters further, numerous self-employed workers hire casual labourers for peak periods only. The combined category of own-account workers and small employers should evidently be further subdivided, by location, by occupation, and by economic activity. Especially in developing countries, it makes all the difference whether one is self-

employed by own choice, as a doctor, say, or one is self-employed for lack of a proper job. In those countries, being an employee is usually seen as a prerogative.

99. For many purposes of the SESAME, it is expedient to single out civil servants, or a broader category of public sector workers, as one of the sub-groups that mainly depend on wages and salaries. Furthermore, the present breakdown of non-agricultural employees by occupation has created some difficulty, particularly concerning the distinction between 'managers' and a more professionally oriented label such as 'clerical, sales and service workers'. When compiling the 1975 and 1980 SESAMEs for Indonesia, in the first instance an incredibly large decline in the number of own-account managers and supervisors in trade was found, counterbalanced by a huge increase in the number of sales workers in this activity. This shift was found for both males and females, and in both rural and urban areas. Probably, a minor change in phrasing a question or in editing procedures of the basic survey meant that in 1980 many shopkeepers with a few assistants were no longer classified as managers, but as salesmen.

100. Some other refinements may be considered in the Indonesian SESAMEs. These are: a more extensive regional breakdown of households, a subdivision of farmers according to the quality of their land in addition to its area, a subdivision of the corporate and government sectors, a categorization of labour by educational level instead of by occupation, and an additional breakdown of workers by age group. A more general recommendation is to explore the feasibility of including questions on household history in surveys. Information on household history would enable the estimation of transition matrices from one period to the next, which paves the way to a more dynamic analysis of social issues.

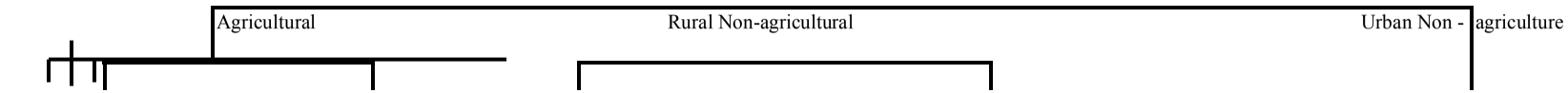
101. Priorities for a further extension of the present SESAMEs are the following:

(1) Full financial accounts and more detailed capital accounts; refer to Thorbecke [1992];
(2) Environmental accounts and summary indicators; refer to Keuning [1993] and De Haan and Keuning [1996];
(3) Tables with sex- and age-specific numbers of deaths per sub-group, so that life expectancy can be added as a summary indicator;
(4) More extensive tables on e.g. household composition, schooling, housing situation and possession of durables by sub-group; refer to Downey [1984];
(5) A subdivision of government expenditure by function, as in Keuning and Thorbecke [1992].

102. However, despite these suggestions for further improvements and extensions, it should be noted that Indonesia is a forerunner when it comes to the implementation and institutionalization of household satellite accounts in general and SESAMEs in particular.

Figure 1: The household taxonomy in a SAM for Indonesia

(I.-X.) 1.-40. All Non-institutional households



I.1. EMPLOYEES	Employers and Own-account Workers	V. LOWER LEVEL	VI. ECONOMIC INACTIVE	VII. HIGHER LEVEL	VIII. LOWER LEVEL	IX ECONOMIC. INACTIVE	X. HIGHER LEVEL
	II. SMALL FARMERS 2. Owning 0.00 ha. 3. Owning 0.0-0.10 ha. 4. Owning 0.11-0.20 ha. 5, Owning 0.21-0.30 ha. 6, Owning 0.31-0.40 ha. 7. Owning 0.41-0.50 ha.	15. Own-account Workers, excl. Professionals 16 Lower level clerical, sales and services employees	18. Head <25 years 19. Head 25-54 years	22. Employers 23. Own-account professionals 24. Managers and supervising employees	28. Own-account workers, excl. professionals 29. Lower level clerical, sales and services employees	31. Head < 25 years 32. Head 25-54 years 33. Head > 54 years	35. Employees 36. Own-account professionals
	III MEDIUM FARMERS 8. Owning 0.51-0.75 ha. 9. Owning 0.76-1.00 ha.	17. Manual employees	20. Head > 54 years	25. Professional & technical employees	30. Manual employees	34. Unclassified	37. Managers and Supervising employees 38. Professional & technical employees
	IV. LARGER FARMER 10.. Owning 1.01-1.50 ha 11. Owning 1.51-2.00 ha. 12 Owning 2.01-3.00 ha. 13. Owning 3.01-5.00 ha. 14. Owning > 5.00 ha.		21. Unclassified	26. Higher level clerical, sales and services employees 27. Military employees		34. Unclassified	39. Higher level clerical, sales and service employees 40. Military employees

Source Downey {1984}

Table 1: An Aggregate SOCIAL ACCOUNTING MATRIX for Indonesia, 1980 (billion of Rupiah)

ACCOUNT (classification)	Codes	Goods and Services (Product Groups) 1	Production (Industries) 2	Generation Of Income (Primary input Categories) 3	Allocation of Primary Income (Institutional Sectors) 4	Secondary Income Distribution (Institutional Sectors) 5	Use of Income (Institutional Sectors) 6	Capital (Institutional Sectors) 7	Fixed Capital Formation (Industries) 8	Rest of the world (ROW) Current 10	Rest of The world (ROW) Capital 11	TOTAL
Good and services (Product Groups)	1	Trade and Transport Margins 0	Intermediate consumption 29967				Final Consumption Expenditure 31210	Changes in Inventories 1419	Gross fixed Capital Formation 10476	Exports 16161		89231
Production (Industries)	2	Output 79048										79048
Generation of income (Primary input Categories)	3		GROSS DOMESTIC PRODUCT. At factor cost 49081							Compensation of Employees from ROW 0		49081
Allocation of Primary Income (Institutional Sectors)	4	Taxes on Production -Subsidies 298		NET GENERA TED INCOME, at factor cost 461215	Property Income 2671					Property Income from ROW 75		49169
Secondary Distribution of Income (Institutional sectors)	5				NET NATIONAL INCOME 43499	Current Taxes and Transfers 10202				Current Trans-fers from ROW 30		53731
Use of Income (Institutional Sectors)	6			Consumption of Fixed Capital 2956		NET DISPOSABLE INCOME 43529						46485
Capital (Institutional Sectors)	7						GROSS SAVING 15275	Capital Transfers 1236			Capital Trans-fers from ROW 1219	17730
Fixed Capital Formation (Industries)	8							Gross Fixed Ca-pital Formations 10476				10476
Financial Balance	9							NET LENDING of the Nation 4600			NET LENDING of ROW -4600	0
Rest of the World (ROW) Current	10	Imports 9886		Compensation of Employees to ROW 0	Property Income to ROW 2990	Current Taxes and Transfers to ROW 0						12885
Rest of the World (ROW) Capital	11							Capital Trans-fers to Row 0		CURRENT EX-TERNAL DEFICIT 13381		-3381
TOTAL		89231	79048	49081	49169	53731	46485	17730	10476	12885	-3381	

Table 2: Labour Income and Employment by Labour Category and Industry in Indonesia, 1980 based on a detailed SESAME

EXPENDITURES					PRODUCTION ACTIVITIES																					TOTAL
					Food crops cultiva-tion	Other crops cultiva-tion	Life-stock	Fore-stry	Fish-ery	Oil, gas, coal & metal ore mining	Quarry-ing	Food proc-manuf. struc-tion	Wood Pr. manuf; & cons-truction.	Tex-tile manuf.	Paper & metal-prod. manuf.	Chemi-cals & basic mineral manuf.	Uti-lities	Trade & transp-port. serv.	Restau-rants	Hotels	Land trans-port	Other transp-port and comms.	Banking and Insu-rance serv.	Real estate & busi-ness	Govt. soc. and recr. serv.	Perso-nal & house hold serv.	
			SAM- Code		2Aa	2Ba	2Ab	2Bb	2Ac	2Ca	2Cb	2Ad	2Cc	2Cd	2Ce	2Cf	2Cg	2Da	2Db	2Dc	2Dd	2De	2Ea	2Eb	2Ec	2Df	Column 2
RECEIPTS																										
					45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	46-66
Labour Income (billions of Rupiah)																										
Agricultural workers	**Paid**	**Rural**	**3Aa**	**69**	**862**	**296**	**51**	**46**	**81**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1336**
		Urban	**3Ab**	**70**	**43**	**31**	**12**	**6**	**24**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**115**
	Unpaid	**Rural**	**3Ba**	**71**	**2103**	**326**	**201**	**146**	**132**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2908**
		Urban	**3Bb**	**72**	**63**	**8**	**15**	**4**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**109**
Manual workers	**Paid**	**Rural**	**3Ca**	**73**	**6**	**12**	**1**	**11**	**0**	**29**	**49**	**160**	**644**	**57**	**67**	**71**	**14**	**18**	**0**	**0**	**127**	**40**	**1**	**7**	**48**	**76**	**1435**
		Urban	**3Cb**	**74**	**1**	**5**	**0**	**2**	**0**	**36**	**21**	**116**	**378**	**88**	**153**	**480**	**28**	**51**	**1**	**2**	**189**	**63**	**4**	**8**	**142**	**68**	**1436**
	Unpaid	**Rural**	**3Da**	**75**	**5**	**3**	**1**	**12**	**0**	**0**	**52**	**132**	**256**	**35**	**35**	**44**	**0**	**29**	**0**	**0**	**155**	**9**	**0**	**4**	**1**	**191**	**963**
		Urban	**3Db**	**76**	**0**	**0**	**0**	**1**	**0**	**0**	**7**	**34**	**89**	**19**	**22**	**8**	**1**	**24**	**0**	**0**	**157**	**5**	**0**	**1**	**1**	**142**	**509**
Clerical, sales and service workers	**Paid**	**Rural**	**3Ea**	**77**	**2**	**10**	**1**	**5**	**1**	**25**	**5**	**19**	**15**	**3**	**7**	**18**	**5**	**101**	**16**	**7**	**18**	**11**	**32**	**14**	**282**	**49**	**647**
		Urban	**3Eb**	**78**	**1**	**6**	**2**	**5**	**1**	**50**	**10**	**23**	**37**	**11**	**48**	**49**	**16**	**353**	**45**	**38**	**29**	**80**	**110**	**44**	**511**	**109**	**1576**
	Unpaid	**Rural**	**3Fa**	**79**	**4**	**1**	**2**	**2**	**1**	**0**	**3**	**6**	**6**	**1**	**2**	**1**	**0**	**1479**	**77**	**0**	**6**	**1**	**0**	**0**	**2**	**82**	**1677**
		Urban	**3Fb**	**80**	**1**	**1**	**1**	**1**	**0**	**0**	**1**	**8**	**5**	**1**	**4**	**2**	**0**	**1364**	**106**	**1**	**7**	**2**	**0**	**3**	**2**	**103**	**1600**
Professional, technical & managerial workers	**Paid**	**Rural**	**3Ga**	**81**	**1**	**3**	**1**	**1**	**0**	**12**	**4**	**7**	**47**	**2**	**5**	**15**	**7**	**1**	**1**	**1**	**2**	**5**	**10**	**4**	**1183**	**4**	**314**
		Urban	**3Gb**	**82**	**0**	**3**	**1**	**1**	**0**	**29**	**4**	**24**	**85**	**13**	**52**	**51**	**15**	**24**	**2**	**6**	**11**	**29**	**81**	**23**	**1377**	**7**	**1838**
	Unpaid	**Rural**	**3Ha**	**83**	**9**	**1**	**1**	**1**	**0**	**0**	**0**	**4**	**36**	**1**	**1**	**2**	**0**	**1**	**7**	**0**	**2**	**1**	**0**	**0**	**8**	**7**	**82**
		Urban	**3Hb**	**84**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**24**	**69**	**13**	**7**	**2**	**8**	**9**	**22**	**1**	**11**	**1**	**1**	**15**	**10**	**21**	**207**
Male			**3Ai-Hi**		**2266**	**546**	**230**	**218**	**255**	**170**	**146**	**412**	**1606**	**162**	**350**	**286**	**82**	**2390**	**154**	**47**	**711**	**236**	**206**	**110**	**2876**	**622**	**14280**
Female			**3Aii-iii**		**634**	**161**	**59**	**25**	**5**	**11**	**7**	**147**	**59**	**83**	**52**	**56**	**4**	**1054**	**121**	**10**	**4**	**10**	**33**	**13**	**691**	**235**	**3475**
TOTAL LABOUR INCOME			**3A-H**		**3099**	**707**	**289**	**242**	**260**	**181**	**154**	**558**	**1665**	**245**	**402**	**342**	**86**	**3443**	**275**	**57**	**715**	**246**	**239**	**123**	**3568**	**858**	**17755**
Employment (x 1000 full-time equivalents)																										
Agricultural workers	**Paid**	**Rural**	**3Aa**	**69**	**5006**	**1226**	**200**	**99**	**279**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6811**
		Urban	**3Ab**	**70**	**182**	**85**	**19**	**12**	**75**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**372**
	Unpaid	**Rural**	**3Ba**	**71**	**16719**	**1408**	**860**	**333**	**461**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19781**
		Urban	**3Bb**	**72**	**381**	**25**	**33**	**8**	**58**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**505**
Manual workers	**Paid**	**Rural**	**3Ca**	**73**	**26**	**64**	**2**	**30**	**2**	**23**	**99**	**604**	**1520**	**387**	**168**	**287**	**19**	**76**	**2**	**0**	**405**	**87**	**0**	**10**	**206**	**333**	**4350**
		Urban	**3Cb**	**74**	**3**	**13**	**1**	**4**	**1**	**27**	**31**	**290**	**694**	**411**	**316**	**200**	**33**	**99**	**4**	**2**	**453**	**116**	**2**	**14**	**239**	**257**	**3211**
	Unpaid	**Rural**	**3Da**	**75**	**23**	**16**	**2**	**34**	**2**	**0**	**191**	**505**	**853**	**280**	**82**	**259**	**1**	**115**	**2**	**0**	**493**	**21**	**0**	**6**	**4**	**963**	**3850**
		Urban	**3Db**	**76**	**2**	**1**	**0**	**1**	**1**	**0**	**16**	**88**	**180**	**88**	**44**	**30**	**1**	**56**	**0**	**0**	**375**	**9**	**0**	**1**	**2**	**560**	**1456**
Clerical, sales and service workers	**Paid**	**Rural**	**3Ea**	**77**	**9**	**45**	**2**	**10**	**2**	**9**	**5**	**36**	**35**	**15**	**13**	**42**	**5**	**258**	**56**	**13**	**74**	**19**	**16**	**28**	**493**	**315**	**1499**
		Urban	**3Eb**	**78**	**2**	**13**	**1**	**7**	**2**	**15**	**8**	**35**	**49**	**30**	**68**	**73**	**14**	**540**	**106**	**43**	**82**	**92**	**67**	**58**	**680**	**580**	**2564**
	Unpaid	**Rural**	**3Fa**	**79**	**21**	**6**	**5**	**6**	**5**	**0**	**3**	**19**	**11**	**4**	**3**	**3**	**0**	**4842**	**526**	**1**	**27**	**1**	**0**	**0**	**7**	**525**	**6012**
		Urban	**3Fb**	**80**	**1**	**2**	**1**	**1**	**1**	**0**	**0**	**10**	**8**	**5**	**4**	**2**	**0**	**2796**	**348**	**2**	**18**	**3**	**0**	**3**	**4**	**535**	**3746**
Professionals, technical and managerial workers	**Paid**	**Rural**	**3Ga**	**81**	**2**	**6**	**0**	**1**	**0**	**3**	**3**	**20**	**38**	**8**	**5**	**8**	**3**	**2**	**1**	**0**	**4**	**8**	**3**	**2**	**1273**	**21**	**1411**
		Urban	**3Gb**	**82**	**0**	**3**	**0**	**1**	**0**	**4**	**2**	**18**	**44**	**19**	**26**	**20**	**5**	**14**	**2**	**2**	**15**	**31**	**20**	**9**	**972**	**17**	**1225**
	Unpaid	**Rural**	**3Ha**	**83**	**22**	**3**	**1**	**1**	**0**	**0**	**0**	**11**	**29**	**7**	**1**	**2**	**0**	**3**	**24**	**0**	**4**	**1**	**0**	**0**	**11**	**35**	**154**
		Urban	**3Hb**	**84**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**36**	**18**	**3**	**1**	**0**	**5**	**29**	**0**	**14**	**1**	**0**	**6**	**8**	**47**	**184**
Male			**3Ai-Hi**		**16339**	**2031**	**906**	**470**	**859**	**76**	**312**	**879**	**3133**	**610**	**602**	**698**	**74**	**4909**	**513**	**53**	**1947**	**373**	**89**	**116**	**3094**	**2564**	**40646**
Female			**3Aii-Hii**		**6061**	**884**	**221**	**79**	**31**	**5**	**48**	**772**	**363**	**662**	**131**	**228**	**5**	**3898**	**589**	**10**	**16**	**16**	**19**	**19**	**804**	**1624**	**16488**
TOTAL EMPLOYMENT			**3A-H**		**22400**	**2915**	**1127**	**549**	**890**	**81**	**360**	**1651**	**3496**	**1272**	**732**	**926**	**79**	**8807**	**1102**	**63**	**1963**	**389**	**109**	**135**	**3899**	**4188**	**57134**

Table 3: INTEGRATED SUMMARY INDICATORS of economic and social change in Indonesia, 1975-1980, derived from both SEMAMEs

	Summary indicator	Value 1975	Value 1980	Average annual rate of change (%)
I.	Main indicators:			
1.	Per capita Net National Disposable Income, at 1980 market prices (* 1000 Rp.)	197	297	8.2%
2.	Per Capita Daily Calories Intake in the poorest of ten household groups	1757	2262	5.0%
3.	Average Number of years of Schooling of the potential labour force	3.47	3.57	0.6%
4.	Potential Labour force Participation rate (%)	0.513	0.548	1.3%
5.	Balance on current account of the Balance of Payments / Net National Income (%)	-0.042	0.078	+
6.	Consumer Price Index (1980=100)	45.9	100	15.6% *)
7.	Income Inequality (Gini-coefficient, based on average per capital net adjusted disposable Income, at 1980 market prices, in ten household groups)	0.246	0.286	3.0% *)
II.	Supplementary indicators:			
8.	Gross Domestic Product, at 1980 market prices (trillions of Rupiah)	33.5	49.4	7.7%
9.	Populations (millions)	131	147	2.3% *)
10.	Employment (millions of full-time equivalents)	46.3	57.1	4.2%
11.	Net Domestic Product per worker equivalent, at 1980 factor cost (* 1000 Rp.)	672	807	3.7%
12.	Index of Total Factor Productivity (1980=100)	99.6	100	0.1%
13.	Exchange rate (Rupiah per U.S.$)	415	627	8.3% *)
14.	Fixed capital stock, at 1980 market prices (trillions of Rupiah)	67	102	8.5%
15.	Share of female potential labour force with > =3 years of education in poorestest of ten household groups (%)	0.524	0.537	0.5%
16.	Budget share of rice in the poorest of ten household groups (%)	0.311	0.247	-4.6% *)
17.	Labour Income Share: (imputed) Labour income/ Net Domestic Product. (%)	0.42	0.38	-2.0%
18.	Government Net Borrowing / Net National Disposable Income (%)	0.058	-0.006	- *)
19.	Net National Saving / Net National Disposable Income (%)	0163	0.283	11.0%

*) The optimal rate of change of this indicator is small, zero or negative.
Source: Keuning [1996]

Table 4a: Distribution of Highest Levels of SHOOLING Attained by the MALE Potential Labour Force in each Household Subgroup, Indonesia. 1980 (Row %)

Household sub-sector	No school	Some primary school	Primary school graduate	Junior High Gene-ral	Junior High Voca-tional	Senior High Gene-ral	Senior High Voca-tional	Aca-demy	Uni-ver-sity	Average Number of years 1980	Average Number of years 1975
Agricultural Employees	26.7%	51.3%	17.5%	2.2%	0.5%	0.7%	0.9%	0.1%	0.1%	3.05	3.11
Small Farmers	25.8%	48.6%	21.2%	2.5%	0.6.%	0.5%	0.7%	0.0%	0.0%	3.16	3.10
Medium Farmers	23.7%	49.4%	21.9%	2.8%	0.7%	0.6%	0.8%	0.0%	0.0%	3.30	3.34
Large Farmers	21.8%	50.3%	22.2%	3.2%	0.7%	0.8%	1.0%	0.1%	0.0%	3.41	3.64
Rural Lower Level	16.3%	47.6%	26.7%	4.9%	1.4%	1.3%	1.7%	0.1%	0.0%	3.97	3.87
Rural Economically Inactive	31.6%	39.2%	20.0%	5.2%	1.1%	1.3%	1.3%	0.1%	0.1%	3.29	4.32
Rural Higher Level	5.8%	30.3%	27.4%	11.3%	3.4%	6.2%	13.6%	1.2%	0.9%	6.59	5.73
Urban Lower Level	8.3%	35.4%	30.5%	12.2%	2.6%	5.9%	4.4%	0.4%	0.3%	5.58	5.22
Urban Economically Inactive	11.8%	27.7%	25.1%	16.3%	2.8%	10.5%	4.5%	0.8%	0.5%	6.07	6.27
Urban Higher Level	2.1%	20.8%	22.7%	17.0%	2.9%	16.6%	10.6%	3.6%	3.7%	8.24	7.97
ALL HOUSEHOLDS 1980	**19.2%**	**44.2%**	**23.3%**	**5.7%**	**1.3%**	**2.8%**	**2.7%**	**0.4%**	**0.3%**	**4.15**	
ALL HOUSEHOLDS 1975	**20.3%**	**41.1%**	**27.3%**	**5.2%**	**1.4%**	**2.0%**	**2.0%**	**0.4%**	**0.2%**		**4.06**

Table 4b: Distribution of Highest Levels pf SCHOOLING Attained by the FEMALE Potential Labour Force in each Households Subgroup, Indonesia, 1980 (Row %)

Household sub-sector	No School	Some Primary School	Primary School graduate	Junior High Gene-ral	Junior High Voca-tional	Senior High Gene-ral	Senior High Voca-tional	Aca-demy	Uni-ver-sity	Average Number of Years 1980	Average Number of Years 1975
Agricultural Employees	46.3%	40.8%	10.9%	1.1%	0.2%	0.3%	0.4%	0.0%	0.0%	2.08	2.09
Small Farmers	43.2%	39.5%	15.2%	1.2%	0.3%	0.2%	0.4%	0.0%	0.0%	2.30	2.19
Medium Farmers	41.0%	40.9%	15.7%	1.4%	0.3%	0.2%	0.4%	0.0%	0.0%	2.40	2.40
Large Farmers	38.8%	42.4%	16.0%	1.6%	0.4%	0.3%	0.5%	0.0%	0.0%	2.51	2.70
Rural Lower Level	36.2%	41.5%	18.0%	2.5%	0.5%	0.5%	0.8%	0.0%	0.0%	2.76	2.70
Rural Economically inactive	57.0%	27.5%	11.9%	2.2%	0.5%	0.4%	0.5%	0.0%	0.0%	1.89	2.56
Rural Higher Level	18.1%	34.6%	28.4%	8.1%	2.0%	2.3%	6.0%	0.3%	0.2%	4.73	4.20
Rural Lower Level	22.2%	36.3%	25.9%	8.8%	1.2%	3.0%	2.3%	0.2%	0.1%	4.23	3.79
Urban Economically Inactive	30.8%	26.7%	21.7%	11.4%	1.8%	4.8%	2.2%	0.3%	0.1%	4.22	4.44
Urban Higher Level	9.5%	26.3%	26.3%	15.8%	2.5%	9.7%	7.9%	1.2%	1.0%	6.47	6.04
ALL HOUSEHOLD 1980	**36.2%**	**38.3%**	**17.9%**	**3.8%**	**0.7%**	**1.4%**	**1.5%**	**0.1%**	**0.1%**	**3.01**	
ALL HOUSEHOLDS 1975	**37.4%**	**37.0%**	**19.4%**	**3.2%**	**1.0%**	**0.9%**	**1.1%**	**0.1%**	**0.0%**		**2.90**

TABLE 4c: Distribution of Highest Level of SCHOOLING Attained by the TOTAL Potential Labour Force in each Household Subgroup, Indonesia, 1980 (Row %)

Household sub-sector	No school	Some Primary school	Primary School graduate	Junior Hihg Gene-ral	Junior Hihg Voca-tional	Senior High Gene-ral	Senior High Voca-tional	Aca-demy	Uni-ver-sity	Average Number of years 1980	Average Number of years 1975
Agricultural Employees	36.9%	45.9%	14.1%	1.6%	0.4%	0.5%	0.6%	0.0%	0.0%	2.55	2.58
Small Farmers	34.6%	44.0%	18.2%	1.8%	0.4%	0.4%	0.5%	0.0%	0.0%	2.73	2.63
Medium Farmers	32.3%	45.2%	18.8%	2.1%	0.5%	0.4%	0.6%	0.0%	0.0%	2.85	2.87
Large Farmers	30.1%	46.4%	19.1%	2.4%	0.5%	0.5%	0.8%	0.0%	0.0%	2.97	3.18
Rural Lower Level	26.5%	44.5%	22.2%	3.6%	0.9%	0.9%	1.2%	0.1%	0.0%	3.35	3.26
Rural Economically Inactive	46.9%	32.2%	15.2%	3.4%	0.7%	0.8%	0.8%	0.0%	0.0%	2.45	3.29
Rural Higher Level	11.9%	32.4%	27.9%	9.7%	2.7%	4.3%	9.8%	0.7%	0.5%	5.66	4.95
Urban Lower Level	15.3%	35.8%	28.2%	10.5%	1.9%	4.5%	3.4%	0.3%	0.2%	4.90	4.50
Urban Economically Inactive	22.3%	27.1%	23.2%	13.6%	2.2%	7.4%	3.2%	0.5%	0.3%	5.04	5.28
Urban Higher Level	5.9%	23.6%	24.6%	16.4%	2.7%	13.1%	9.2%	2.4%	2.3%	7.34	6.99
ALL HOUSEHOLDS 1980	**27.8%**	**41.2%**	**20.6%**	**4.8%**	**1.0%**	**2.1%**	**2.1%**	**0.3%**	**0.2%**	**3.57**	
ALL HOUSEHOLDS 1975	**29.0%**	**39.0%**	**23.3%**	**4.2%**	**1.2%**	**1.4%**	**1.5%**	**0.3%**	**0.1%**		**3.47**

Table 5a: Disposable Income and (constant price) Adjustable Disposable income by Household Group in Indonesia, 1980

Income component	(billions of Rupiah)				per Capita (Thousand of Rupiah)			
	Net disposable income	Social transfers in kind	Adjusted disposable income	Adjusted disposable income at 1980 prices	Net disposable income	Social transfers in kind	Adjusted disposable income	Adjusted disposable income at 1980 prices
Household subsectors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Agricultural Employees	1771	75	1846	1846	113	4.8	118	118
Small Farmers	4222	194	4416	4416	110	5.0	115	115
Medium Farmers	1854	65	1919	1919	151	5.3	156	156
Large Farmers	3274	85	3359	3359	212	5.5	218	218
Rural Lower Level	3951	140	4091	4091	167	5.9	173	173
Rural Economically Inactive	568	24	593	593	148	6.3	154	154
Rural Higher Level	2350	72	2422	2422	292	8.9	301	301
Urban Lower Level	5053	117	5170	5170	296	6.9	303	303
Urban Economically Inactive	835	22	857	857	320	8.5	329	329
Urban Higher Level	5757	92	5849	5849	602	9.6	611	611
ALL HOUSEHOLDS	**29635**	**887**	**30522**	**30522**	**202**	**6.0**	**208**	**208**

Table 5b: Disposable income and (constant price) Adjusted Disposable Income by Household Group in Indonesia, 1975

Income Component	(billions of Rupiah)				per Capita (thousands of Rupiah)			
	Net Disposable Income	Social Transfers in kind	Adjusted Disposable income	Adjusted Disposable Income at 1980 prices	Net Disposable Income	Social Transfers in kind	Adjusted Disposable Income	Adjusted Disposable Income at 1980 prices
Household sub-sector	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Agricultural Employees	589	12	601	1323	40	0.8	41	89
Small Farmers	1197	26	1223	2699	41	0.9	42	92
Medium Farmers	846	17	863	1911	53	1.1	54	120
Large Farmers	1372	23	1395	3081	76	1.3	77	171
Rural Lower Level	1114	22	1136	2486	57	1.1	58	127
Rural Economically inactive	192	7	199	436	60	2.3	62	135
Rural Higher Level	588	14	602	1312	78	1.8	79	173
Urban Lower Level	1327	20	1347	2928	103	1.6	105	227
Urban Economically Inactive	209	8	217	468	119	4.3	124	267
Urban Higher Level	1444	26	1471	3150	191	3.5	195	417
ALL HOUSEHOLDS	**8878**	**176**	**9054**	**19795**	**68**	**1.3**	**69**	**152**

Table 5c: Average Annual Percentage Change of (constant price) (adjusted) Disposable Income by Household Group in Indonesia, 75-'80

Income Component	(growth rate - %)				Per capita (growth rate- %)			
	Net disposable income	Social transfers in kind	Adjusted disposable income	Adjusted disposable income at 1980 prices	Net disposable income	Social transfers in kind	Adjusted disposable income	Adjusted disposable income at 1980 prices
Household sub-sectors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Agricultural Employees	22.0%	36.2%	22.4%	6.7%	20.8%	35.0%	21.2%	5.5%
Small Farmers	25.2%	39.8%	25.7%	9.8%	19.8%	34.4%	20.2%	4.4%
Medium Farmers	15.7%	26.9%	16.0%	0.1%	20.8%	32.0%	21.1%	5.2%
Large Farmers	17.4%	25.8%	17.6%	1.7%	20.5%	29.0%	20.7%	4.9%
Rural Lower Level	25.3%	36.9%	25.6%	10.0%	21.5%	33.1%	21.8%	6.1%
Rural Economically Inactive	21.7%	23.9%	21.8%	6.1%	18.1%	20.4%	18.2%	2.6%
Rural Higher Level	27.7%	32.9%	27.8%	12.3%	26.5%	31.7%	26.7%	11.1%
Urban Lower Level	26.7%	35.3%	26.9%	11.4%	21.1%	29.6%	21.3%	5.7%
Urban Economically Inactive	27.7%	21.5%	27.5%	12.1%	19.7%	13.5%	19.5%	4.2%
Urban Higher Level	27.7%	25.1%	27.6%	12.4%	22.9%	20.4%	22.9%	7.6%
ALL HOUSEHOLDS	**24.1%**	**32.3%**	**24.3%**	**8.7%**	**21.8%**	**30.0%**	**22.00%**	**6.3%**

Table 6a: A Decomposition of Real Changes in LABOUR INCOME by Household Sub-sector in Indonesia, 1975-1980

Rates of change	Number	Potential labor force		Labour	Terms-	Ral	Deviation from national average growth rate					
	of House-	per	participation	upgrading	of-	labour	Number	Potential labour force		labour	terms-	Real
Household sub-sectors	hold (1)	household (2)	rate (3)	effect (4)	trade (5)	income (6) = (1-5)	of house-holds	per household	participation-rate	upgrading effect	of-trade	labour income
Agricultural Employees	0.2%	0.7%	0.8%	1.1%	2.2%	4.9%	-1.8%	-0.1%	-0.5%	-0.6%	-0.7%	3.8%
Small Farmers	5.0%	1.7%	-0.6%	-0.6%	0.6%	6.1%	3.0%	0.8%	-1.9%	-2.3%	-2.3%	2.6%
Medium Farmers	-5.8%	2.7%	-0.2%	-0.3%	1.8%	-1.7%	-7.8%	1.9%	-1.5%	-1.9%	-1.1%	-10.5%
Large Farmers	-3.3%	2.5%	-0.7%	-0.1%	1.9%	0.3%	-5.4%	1.7%	-2.0%	-1.8%	-1.0%	-8.5%
Rural Lower Level	3.3%	0.1%	3.6%	-0.4%	3.6%	10.2%	1.2%	-0.8%	2.3%	-2.0%	0.7%	1.5%
Rural Economically Inactive	4.8%	-1.9%	-2.8%	-5.6%	0.7%	-4.8%	2.8%	-2.8%	-4.1%	-7.3%	-2.2%	-13.6%
Rural Higher Level	1.1%	-0.7%	1.4%	6.0%	4.3%	12.1%	-1.0%	-1.5%	0.1%	4.3%	1.4%	3.3%
Urban Lower Level	4.4%	0.9%	4.1%	-0.1%	3.8%	13.3%	2.4%	0.1%	2.8%	-1.8%	0.9%	4.5%
Urban Economically inactive	10.1%	-3.5%	-2.7%	-5.9%	1.5%	-0.5%	8.0%	-4.4%	-4.0%	-7.6%	-1.4%	-9.3%
Urban Higher Level	4.7%	0.1%	3.0%	1.9%	2.9%	12.7%	2.7%	-0.7%	1.7%	0.2%	0.0%	3.9%
ALL HOUSEHOLDS	**2.1%**	**0.8%**	**1.3%**	**1.7%**	**2.9%**	**8.8%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Table 6b: A Decomposition of Real Changes in NET ADJUSTED DISPOSABLE INCOME per household by Household Sub-sector in Indonesia, 1975-1980

Per household figures	AVERAGE 75-'80 WEIGHTS			GROWTH RATES			Real Growth of Net	Deviation from national average growth rate				
	Labour Income	Net- non-produced capital income	Property income & Trans.Re-ceived-Paid	Labour income	Net non-produc. capital income	Property income& Trans.Re-ceived-Paid	Adjusted Disposable Income *)	Labour income	Net non-produced capital income	Property income & Transf. Re-ceived-Paid	Weights Effects	Net Adjusted-Real Disposable Income
Household sub-sector	(1)	(2)	(3)	(4)	(5)	(6)	1x4+2x5+3x6	(8)	(9)	(10)	(11)	(12)
Agricultural Employees	0.77	0.22	0.01	4.7%	11.4%	26.2%	6.5%	-1.2%	2.0%	1.3%	-2.3%	-0.2%
Small Farmers	0.61	0.38	0.01	1.1%	10.1%	24.6%	4.8%	-3.3%	1.6%	1.2%	-1.2%	-1.8%
Medium Farmers	0.48	0.52	0.00	4.1%	7.3%	-19.5%	5.9%	-1.5%	0.6%	-2.5%	2.7%	-0.7%
Large Farmers	0.33	0.70	-0.03	3.6%	5.2%	-8.4%	5.1%	-1.8%	-0.1%	-1.6%	1.9%	-1.5%
Rural Lower Level	0.77	0.22	0.00	7.0%	4.9%	0.0%	6.7%	0.1%	-0.2%	-0.9%	0.8%	0.1%
Rural Economically Inactive	0.04	0.32	0.64	-9.6%	14.8%	-4.6%	1.3%	-9.5%	3.1%	-1.3%	2.4%	-5.3%
Rural Higher Level	0.75	0.13	0.12	11.0%	13.8%	9.4%	11.2%	2.5%	2.8%	-0.1%	-0.6%	4.6%
Urban Lower Level	0.88	0.35	-0.03	8.8%	2.1%	-8.1%	6.9%	1.2%	-1.1%	-1.5%	1.8%	0.3%
Urban Economically Inactive	0.02	0.24	0.74	-10.6%	17.3%	-2.5%	2.0%	-10.0%	4.0%	-1.1%	2.7%	-4.6%
Urban Higher Level	0.56	0.17	0.27	7.9%	4.3%	9.1%	7.6%	0.7%	-0.4%	-0.1%	0.8%	1.0%
ALL HOUSEHOLDS	**0.58**	**0.34**	**0.08**	**6.7%**	**5.5%**	**10.5%**	**6.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

*) The formula in column (7) does not always apply exactly: similarly, column (12) is roughly equal to the sum of the previous four columns.

Table 7: DISPOSABLE INCOME BY HOUSEHOLD GROUPS 1975-1993
(Billion Rupiahs)

	Household groups	1975	1980	1985	1990	1993
	(1)	(2)	(3)	(4)	(5)	(6)
1	**Agricultural employee household**	613.7	1,588.4	2,888.7	6,883.2	9,391.2
2	Operator, land owner 0,0-0,5 ha agriculture household	1,259.2	4,214.7	9,292.8	28,155.1	40,116.2
3	Operator, land owner 0,5-1,0 ha agriculture household	905.8	2,401.8	4,560.5	7,652.9	10,939.4
4	Operator land owner>1,0 ha agriculture household	1,526.9	4,433.9	9,030.1	12,219.7	17,821.0
5	Non Agricultural lower level rural household	1,031.9	4,435.3	6,932.5	10,375.1	14,003.2
6	Non labor force rural household	275.3	836.6	2,611.2	2,619.5	3,856.9
7	Non agricultural higher lever **Rural household**	1,193.0	1,933.4	7,112.8	24,852.3	45,050.9
8	Non agricultural lower level urban household	1,183.3	5,051.9	11,470.7	18,850.7	24,574.4
9	Non labor force urban household	210.5	1,127.4	3,748.2	4,470.4	6,310.4
10	Non agricultural higher level urban household	2,077.6	4,438.7	12,510.6	40,468.2	68,636.4
	TOTAL	**10,277.2**	**30,462.1**	**70,114.1**	**156,547.1**	**240,700.0**

Table 8: NUMBER OF POPULATION BY HOUSEHOLD GROUPS 1975-1993

(Millions)

	Household groups	1975	1980	1985	1990	1993
	(1)	(2)	(3)	(4)	(5)	(6)
1	Agricultural employee household	15.3	15.3	11.5	15.7	18.7
2	Operator, land owner 0,0-0,5 ha agriculture household	29.1	30.9	39.1	49.7	51.3
3	Operator, land owner 0,5-1,0 ha agriculture household	15.7	15.4	13.1	11.2	11.6
4	Operator, land owner>1,0 ha ha agriculture household	18.0	22.0	15.9	11.6	12.0
5	Non agricultural lower level rural household	19.3	21.9	21.9	16.2	16.6
6	Non labor force rural household	3.9	5.5	8.4	2.8	2.9
7	Non agricultural higher level rural household	7.8	5.7	13.4	23.7	24.3
8	Non agricultural lower level urban household	12.1	17.3	20.7	22.7	23.3
9	Non labor force urban household	1.9	4.6	6.3	4.7	4.8
10	Non agricultural high lever urban household	8.0	8.1	13.8	21.5	22.1
	TOTAL	**131.1**	**146.7**	**164.1**	**179.8**	**187.6**

Table 9: AVERAGE PER CAPITA INCOME BY HOUSEHOLD GROUPS 1975-1993

(Thousand Rupiahs)

	Household groups	1975	1980	1895	1990	1993
	(1)	(2)	(3)	(4)	(5)	(6)
1	Agricultural employee household	40.1	103.8	247.4	438.4	502.2
2	Operator, land owner 0,0-0,5 ha agriculture household	43.3	136.4	237.7	566.5	782.0
3	Operator, land owner 0,5-1,0 ha agriculture household	57.7	156.0	348.1	683.3	943.1
4	Operator, land owner>1,0 ha agriculture household	84.8	201.5	567.9	1,053.4	1,485.1
5	Non agricultural lower level rural household	53.5	202.5	316.6	640.4	843.6
6	Non labor force rural household	70.6	152.1	310.9	935.6	1,330.0
7	Non agricultural higher level	152.9	339.2	530.8	1,048.6	1,854.0
8	Non agricultural lower level urban household	97.8	292.0	554.1	830.4	1,054.7
9	Non labor force urban household	110.8	245.1	595.0	951.1	1,314.7
10	Non agricultural higher level urban household	259.7	548.0	906.6	1,882.2	3,105.7
	TOTAL	**78.4**	**207.7**	**427.3**	**807.7**	**1,283.1**

Table 10: WAGES AND SALARIES BY LABOR FORCE OCCUPATION 1975-1993

(Billion Rupiah)

	Labour force occupation	1975	1980	1985	1990	1993
	(1)	(2)	(3)	(4)	(5)	(6)
1	Paid agricultural employees	539.1	1,269.3	2,565.5	6,174.6	10,981.2
2	Unpaid agricultural employees	1,231.0	4,086.8	9,348.5	18,496.2	29,355.7
3	Paid production, operator, manual employees	786.7	3,016.6	6,675.7	21,402.0	35,546.6
4.	Unpaid production, operator, manual employees	362.8	1,551.0	3,018.9	4,320.4	7,406.6
5	Paid clerical, sales and services employees	622.2	2,769.7	8,415.1	21,548.3	33,742.6
6	Unpaid clerical, sales and services employees	641.2	3,309.5	6,779.5	13,919.2	22,091.7
7	Paid professional, technician, managerial and non-civilian employees	904.9	2,435.2	5,247.3	6,612.9	11,208.9
8	Unpaid professional, technician, managerial and non-civilian employees	157.5	96.6	390.6	313.4	629.4
	Sub Total paid employees	**2,852.9**	**9,490.8**	**22,903.6**	**55,737.8**	**91,479.3**
	Sub Total unpaid employees	**2,392.5**	**9,043.9**	**29,537.5**	**37,049.2**	**59,483.4**
	TOTAL	**5,245.4**	**18,534.7**	**42,441.1**	**92,787.0**	**150,962.7**

Table 11: NUMBER OF WORKER EQUIVALENT BY LABOUR FORCE OCCUPATION 1975-1993

(Million WEs)

	Labour force occupation	1975	1980	1985	1990	1993
	(1)	(2)	(3)	(4)	(5)	(6)
1	Paid agricultural employees	7.03	5.37	4.62	6.80	7.70
2	Unpaid agricultural employees	17.17	21.51	23.95	24.68	28.12
3	Paid production, operator, manual employees	5.15	7.54	9.02	14.44	14.30
4	Unpaid production, operator, manual employees	3.21	5.49	6.91	8.15	8.96
5	Paid clerical, sales and services employees	4.01	4.48	7.17	5.98	7.17
6	Unpaid clerical, sales and services employees	7.08	9.81	11.10	11.15	12.63
7	Paid professional, technician, managerial and non-civilian employees	2.04	2.23	2.78	1.15	1.41
8	Unpaid professional, technician, managerial and non-civilian employees	0.69	0.13	0.40	0.14	0.20
	Sub Total paid employees	**18.23**	**19.62**	**23.59**	**28.37**	**30.58**
	Sub Total Unpaid employees	**28.15**	**36.94**	**42.36**	**44.12**	**49.91**
	TOTAL	**46.38**	**56.56**	**65.95**	**72.49**	**80.49**

Table 12: AVERAGE WAGES AND SALARIES BY LABOUR FORCE OCCUPATION 1975-1993

(Thousand Rupiah)

	Labour force occupation	1975	1980	1985	1990	1993
	(1)	(2)	(3)	(4)	(5)	(6)
1	Paid agricultural employees	76.7	236.5	554.7	1,090.2	1,425.3
2	Unpaid agricultural employees	71.7	190.0	390.4	749.5	1,044.0
3	Paid production, operator, manual employees	149.2	400.2	740.0	1,482.0	2,485.5
4	Unpaid production, operator, manual employees	112.8	282.6	436.7	530.0	826.6
5	Paid clerical, sales and services employees	155.2	617.7	1,174.4	3,603.2	4,707.8
6	Unpaid clerical, sales and services employees	90.6	337.2	610.6	1,248.6	1,749.3
7	Paid professional technician, managerial and non-civilian employees	443.8	1,093.0	1,890.0	5,768.1	7,943.3
8	Unpaid professional, technician, managerial and no-civilian employees	228.2	752.2	968.8	2,321.6	3,221.7
	Sub Total paid employees	**156.5**	**483.9**	**971.0**	**2,008.5**	**2,991.0**
	Sub Total unpaid employees	**85.0**	**244.8**	**461.2**	**839.9**	**1,192.0**
	TOTAL	**113.1**	**327.7**	**643.5**	**1,297.2**	**1,875.6**

Table 13: HOUSEHOLD CONSUMPTION EXPENDITURE BY HOUSEHOLD GROUPS 1975-1993

(Billion Rupiahs)

	Household groups	1975	1980	1985	1990	1993
	(1)	(2)	(3)	(4)	(5)	(6)
1	Agricultural employee household	650.1	1.517.5	2,682.7	6,195.9	8,877.9
2	Operator, land owner 0,0-0,5 ha agriculture household	1,354.4	4,000.2	8,491.3	25,709.2	36,511.6
3	Operator, land owner 0,5-1,0 ha agriculture household	813.7	2,079.4	3,930.2	6,246.3	9,145.7
4	Operator, land owner >1,0 ha agricultural household	1,140.3	3,551.8	7,342.6	8,364.6	13,606.8
5	Non agricultural lower level rural household	999.3	3,918.3	5,775.9	8,702.6	12,164.1
6	Non labor force rural household	274.7	789.1	2,258.6	2,227.4	3,317.1
7	Non agricultural higher level rural household	1,071.5	1,630.2	5,810.5	19,430.7	31,308.5
8	Non agricultural lower level urban household	1,068.8	4,378.6	9,531.6	15,897.4	21,272.9
9	Non labor force urban household	210.2	994.3	3,121.8	3,706.6	5,274.7
10	Non agricultural higher level urban household	1,691.7	3,448.9	9,778.2	30,796.2	47,080.2
	TOTAL	**9,274.7**	**26,308.3**	**58,723.4**	**127,330.9**	**188,559.5**

Table 14: PER CAPITAL HOUSEHOLD CONSUMPTION EXPENDITURE BY HOUSEHOLD GROUPS 1975-1993

(Thousand Rupiahs)

	Household groups	1975	1980	1985	1990	1993
	(1)	(2)	(3)	(4)	(5)	(6)
1	Agricultural employee household	42.5	99.2	233.3	394.6	474.8
2	Operator, land owner 0,0-0,5 ha agriculture household	46.5	129.5	217.2	517.3	711.7
3	Operator, land owner 0,5-1,0 ha agriculture household	51.8	135.0	300.0	557.7	788.4
4	Operator, land owner >1,0 ha agriculture household	63.4	161.4	461.8	721.1	1,133.9
5	Non agricultural lower level rural household	51.8	178.9	263.7	537.2	732.8
6	Non labor force rural household	70.4	143.5	268.9	795.5	1,143.8
7	Non agricultural higher level rural household	137.4	286.0	433.6	819.9	1,288.4
8	Non agricultural lower level urban household	88.3	253.1	460.5	700.3	913.0
9	Non labor force urban household	110.6	216.1	495.5	800.1	1,098.9
10	Non agricultural higher level urban household	211.5	425.8	708.6	1,432.4	2,130.3
	TOTAL	**70.7**	**179.3**	**357.9**	**708.2**	**1,005.1**

Table 15: HOUSEHOLD SAVING BY HOUSEHOLD GROUPS 1975-1993

(Billion Rupiahs)

	Household groups	1975	1980	1985	1990	1993
	(1)	(2)	(3)	(4)	(5)	(6)
1	Agricultural employee household	(39.1)	47.6	76.7	554.6	394.0
2	Operator, land owner 0,0-0,5 ha agriculture household	(101.8)	138.4	432.0	1,999.3	3,209.2
3	Operator, land owner 0,5-1,0 ha agriculture household	84.8	304.5	543.3	1,315.6	1,712.4
4	Operator, land owner>1,0 ha agriculture households	349.5	829.1	1,429.7	3,616.3	4,014.0
5	Non agricultural lower level rural household	19.1	464.3	874.2	1,381.1	1,598.7
6	Non labor fore rural household	0.4	35.3	150.1	245.5	502.9
7	Non agricultural higher level rural household	91.0	284.5	1,201.9	3,789.4	10,406.9
8	Non agricultural lower level urban household	73.9	601.0	1,641.9	2,170.0	2,370.9
9	Non labor force urban household	0.3	110.4	300.3	639.1	980.2
10	Non agricultural higher level urban household	288.6	930.1	2,487.5	8,328.3	19,703.6
	TOTAL	**766.7**	**3,745.2**	**9,137.6**	**24,086.2**	**44,892.8**

Table 16: HOUSEHOLD SAVING RATE BY HOUSEHOLD GROUPS 1975-1993

(Percentage)

	Household groups	1975	1980	1985	1990	1993
	(1)	(2)	(3)	(4)	(5)	(6)
1	Agricultural employee household	(6.38)	3.00	2.69	8.06	4.20
2	Operator, land owner 0,0-0,5 ha agriculture household	(8.33)	3.28	4.65	7.10	8.00
3	Operator, land owner 0,5-1,0 ha agriculture household	9.37	12.68	11.91	17.19	15.65
4	Operator, land owner >1,0 ha agriculture household	22.89	18.70	15.83	29.59	22.52
5	Non agricultural lower level rural household	1.85	10.47	12.61	13.31	11.42
6	Non labor force rural household	0.13	4.22	5.75	13.19	13.04
7	Non agricultural higher level rural household	7.63	14.71	16.90	15.25	23.10
8	Non agricultural lower level urban household	6.25	11.90	14.31	11.23	9.65
9	Non labor force urban household	0.14	9.80	8.01	14.30	15.53
10	Non agricultural higher level urban household	13.89	20.95	19.88	20.58	28.71
	TOTAL	**7.46**	**12.29**	**13.03**	**15.39**	**18.65**

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Endnotes

[1] Refer to Chapter XX of the 1993 System of National Accounts (SNA) [United Nations et al., 1993] for a general introduction to the SAM and to Keuning [1996, 1997] for a general introduction to the SESAME. Part of the results shown in this paper have also been presented in Keuning [1994].

[2] This SAM is very similar to the 1993 SNA's Table 20.4. As a consequence, it is referred to the SNA's section XX.C, and to Keuning [1996: Chapter 2] for a more elaborate discussion of this table. Here, we focus on the differences between this SAM and the one presented in the SNA. For instance, because of data limitations, the account for financial transactions has been replaced by a financial balance account.

[3] In line with the 1993 SNA, property income from and to abroad in the Indonesian SAMs includes reinvested earnings on direct foreign investment. The reinvestments are not included, though, because the SAMs shown here do not break down the transactions in financial instruments.

[4] In principle, purchases of land and other non-produced assets are also recorded in cells (7,7), (7,11) and (11,7); cf. Keuning and de Gijt [1992].

[5] Refer to Thorbecke [1992] for a 1980 Indonesian SAM including financial flows.

[6] In the Indonesian case, the data needed for the computation of e.g. average life expectancy, aggregate productive time-use and summary environmental measures must still be integrated.

[7] All growth rates are logarithmic (cf. Lorenzen [1990]).

[8] The 1980 estimate for average calorie intake in the poorest sub-group (2262) is above the absolute poverty line (2130). Obviously, this does not hold for every Indonesian citizen, as our indicator of structural deprivation conceals significant within-sub-group heterogeneity [Downey, 1984]. Moreover, our level-estimate for both years may be somewhat too high, as wasted food has not been subtracted; Van Veen's [1993: Vol. 2, Table 7.2] estimate is 17% lower.

[9] Refer to Downey [1984: Chapter 6] for a more comprehensive integration of schooling accounts into a SESAME-type framework.

[10] Refer to Keuning [1996: Chapter III] for the derivation of these real changes, based on a constant price SAM.

Chapter VI

Measurement of Social Issues

Measuring social phenomena 1954 to 1997- Progress?[1]

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I. Introduction

1. Why should we measure social phenomena? Why not be content with economic measures? What indicators should we use in measuring social phenomena? These questions are the focus of this paper. We shall first consider the question of why the measurement of social phenomena is important and then we shall discuss two of the major international approaches by statisticians to measuring and reporting on the human condition.

2. Since the beginning of this century national income accountants have developed and applied a framework that values the production of goods and services in the monetarized sectors of the economy. The most well developed version of this analysis is represented by the 1993 System of National Accounts (see Commission of the European Communities et al., 1993). These guidelines were adopted by the Statistical Commission and endorsed by the Economic and Social Council of the United Nations. Of course the 1993 SNA includes more than production analysis including generation, use and distribution of income. In practice, however, production analysis predominates. While economists in different countries sometimes disagree about the best way to implement the 1993 SNA, its general approach is the framework for what we know about national economies, their relative strengths, weaknesses, and capacity to produce goods and services. These figures underlie economic decisions made by governments, private citizens and corporations. They also have a substantial influence on economic activity, helping to shape decisions that directly affect each of us.

3. Policy makers, private business leaders and ordinary people use these growth and income figures to describe the kinds of lives people can and do live. In other words, we often act as if the SNA captures information that tracks and compares standards of living in different parts of the world and within nations. However Nussbaum and Sen[2], for example, have pointed out that the SNA is not designed to measure standard of living, but only the economic resources required to achieve a desired standard of living. It tells us about the availability of resources but not how they are used or distributed at the micro level.

4. We can understand the need to get beyond national income indicators if we consider the economic and social forces that lead to, for example, hunger and famine. Dreze and Sen's[3] analysis sums up a great deal of research which shows that hunger is only marginally related to food scarcity. In fact, they cite numerous examples to show that famines have occurred when food production increased and been avoided when scarcity conditions occur. The social processes, including expectations about the availability of food and decisions relating to distribution, are critical. In these instance, the 1993 SNA may record the effect of mal-distribution when production eventually declines, but it hardly helps to understand the underlying problems. Without considering the social phenomena that interact with production, we can hardly understand why famines or hunger occur.

5. In the decades since the United Nations was founded, development efforts have focused attention on the conditions of people living in different nations around the world. The demise of colonial regimes legitimized the entitlements of these peoples and increased the requirements for statistical data that represent their needs. Analysis that merely focuses on the product of national economic activity does not fully serve these needs because leaders and the public need to know about the conditions of life.

6. In other words, social change brought on by development has increased the need for statistics about many aspects of people's lives, not just what resources they have, but what those resources do for them. At the same time, the new social relationships affect the kinds of data that can be collected, compiled and presented; and the data we believe it is meaningful to collect.

7. Many researchers, such as Mahabub ul Haq, argue for statistics focused on people's lives. He asserts that societies with similar natural resources and investments develop differently "because of differences in their human capabilities."[4] Haq argues for a human development strategy and statistical indicators centered on people's capabilities and health. He stresses the role of human choices in the use of income and wealth and the effect of these choices on education, health and personal well-being. He argues that "the use of income by a society is just as important as the generation of income itself." In his words, "income expansion leads to much less human satisfaction in a virtual political prison or cultural void than in a more liberal political and economic environment. "Since its inception, the United Nations has been grappling with the problem of how these concerns can be met and at least to know how well we are doing in regard to them.

II. Two milestones in measuring social phenomena

8. We would like to concentrate on two major milestones. The first one is the presentation of a comprehensive list of social indicators by a committee of experts[5] convened by the Secretary-General of the United Nations jointly with other specialized UN organizations in the year 1954.[6] In the preface to this report the Secretary-General of the United Nations stated "The international organizations have for some time recognized the desirability of obtaining a clearer understanding of the concept of 'standards of living' from an international point of view, and of the methods by which progress in raising levels of living is to be measured". Particular interest was put on the measurement of the standard of living within developing countries to assess the need for development programmes as well as to record progress in meeting the need.

9. The second milestone which we want to discuss in this paper was the adoption of a Minimum National Social Data Set (MNSDS) by the Statistical Commission in 1997.[7] MNSDS was developed by an expert group which was created by the United Nations Statistical Commission in 1995 "to consider further the statistical implications of the follow-up to the World Summit for Social Development" which took place in Copenhagen in 1995 and to "draw up a work programme reflecting the major action areas identified by the Summit and indicating where international statistical work in the social field should be concentrated" with due regard to other UN Conferences such as the International Conference on Population and Development in Cairo 1994 (Population Conference) and the Fourth World Conference on Women in Beijing 1995.

III. Features of the 1954 and 1997 sets of social indicators

10. Although the 1954 report was not used as a basis for the MNSDS, the similarities are striking. Both groups began by identifying policy themes and main areas of social concern (in the following we apply the terms of the 1997 set in order to avoid confusion). These included population and development, eradication of poverty, expansion of productive employment and reduction of unemployment. In other words, the themes developed by the expert group in 1954 were consistent with the policy themes arising from the International Conference on Population and Development, the Social Summit and the World Conference on Women. The 1954 expert group identified 11 indicators as priority indicators and the MNSDS comprises 15 priority indicators (see table in the annex).

11. One decision taken by the 1954 expert group concerned the use of aggregate versus what they called component indicators. Their report stated "... the Committee was led to the conclusion that the most satisfactory approach to international measurement of levels of living would be through the measurement of clearly delimited aspects or parts of the total life situation that are amenable to quantification and reflect international aims." They further stated "... the Committee regarded it as desirable to approach the question of the level of living from the point of view of its components and to treat these components separately from each other." This is a very important decision and was echoed by the 1997 expert group.

12. Examination shows that both indicator sets are almost identical in their structure with regard to social concerns. The only two indicators included in the MNSDS and not on the 1954 list are: population estimates by sex and age and contraceptive prevalence. While noting the great similarities between the 1954 and 1997 efforts one must also note the differences. First is the lack of emphasis in the 1954 work on disaggregation of data by sex. This has been corrected in the 1997 work and demonstrates how movements in society affect the collection of statistical data. Certainly this can be seen as progress from the 1954 work. More subtle changes can be noted in some of the other indicators. Although they appear to be the same indicator, there has been progress in the definition of the indicators themselves. For example, the standard for access to safe drinking water has become more stringent and more attention is being paid to the contribution of the informal sector.

13. One also notes an interesting change in the indicator on food requirements. The 1954 indicator is an indicator which is a type of catastrophic indicator, it measures the average availability of food against average calorific needs. It represents concern about the distribution system. The emphasis seems to have changed in 1997 to one of trying to measure the ability to purchase food, not its availability.

14. It is assumed that the 1997 group of experts was unaware of the work done by the 1954 group. This prompts three reactions. First, it is troubling, but certainly not unprecedented, that this work was, at least temporarily, lost. Thus a certain amount of reinvention of the wheel was required. Second, when one thinks of breaking new ground it is useful to be reminded that often others have gone there before. Finally, it is in fact comforting that, operating independently, both expert groups arrived at substantially the same outcomes.

15. The United Nations Statistics Division is in the process of establishing an MNSDS web page. We have decided that the data should be country data and not more consistent synthetic series. It is not intended that the data then be used for international comparison but rather to demonstrate, by using a country's own data, where the MNSDS is for each country. The MNSDS is a minimum data set and it is not intended that it not be supplemented if necessary. As discussed at the Statistical Commission, however, it is a basic list which all countries should be able to provide. While we will do what we can to help countries improve the level and quality of their MNSDS data, the help of other international agencies and bilateral donors will be needed.

IV. Conclusions

16. By comparing the two sets of indicators one could ask whether there has been any progress made in the 43 years between both milestones in the history of social indicators? How can we call the results of 1997 still a milestone when there seems to be no significant difference to the first milestone? The 1954 committee presented a system of social indicators which is in general still valid. They defined indicators as a compromise between data availability and usefulness for policy and analysis about which one can still find (with only some minor modifications and additions) agreement on an international basis. Why, 43 years later, are we still trying to get the majority of countries to collect the basic information provided for in the MNSDS?

17. On one level the answer lies in the capacity of national statistical offices. Providing the data in the MNSDS requires a mixture of sound civil registration and vital statistics systems and sample surveys and censuses. These systems require significant resources in both money and in trained personnel. For many countries, not only developing ones, national statistical offices do not have the capacity to consistently produce high quality data in these areas. Why is this capacity still missing after 43 years? One answer lies in the competition between economic indicators and social indicators. Official statistics are, of course, not collected for their own sake. Society expends resources on the collection of official statistics because of the perceived need by the society for the data in public policy decision-making. Most of the central discussions, in market economies at least, have been economic ones. In many cases social discussions have taken a back seat to economic ones. Some change in that is now being seen but economic arguments still retain their primacy in most countries. The distribution of resources naturally follows this pattern. Therefore, if society puts more value on social phenomena can we expect there to be a concomitant improvement in the quality of social statistics?

18. It is not enough, of course, merely to point out the problems with these types of indicators. They exist because of the legitimate need to understand the relationships among social indicators and between them and economic indicators.

19. Measuring social phenomena by setting up a list system of social indicators, like the Minimum National Social Data Set, is an important step in the right direction. However, a set of social indicators without an analytical framework lacks links to each other and to other important social and economic indicators. The question, then, is the extent to which one can embed social indicators into a wider framework and analyze the relationship between social and economic phenomena. It is in that connection that the System of National Accounts, Social Accounting Matrices and Satellite Accounts, are discussed (see also chapter V.)

Annex: Comparison of social indicators 1954 and 1997

Indicators of highest priority according to the 1954 Report of a UN-Expert Group	Minimum National Data Set (MNSDS) of an 1996 UN Expert group and as adopted by the UN Statistical Commission 1997
• Expectation of life at birth • Average expectation of life (at birth and) at various ages • Infant morality rate	• Life expectancy at birth, by sex • Infant mortality, by sex • Child mortality, by sex • Maternal morality
• National average food supplies in terms of calories at the "retail level" compared with estimated calories requirements	• Monetary value of the basket of food needed for minimum nutritional requirement
• Proportion of children 5-14 years of age attending or enrolled in schools • Percentage of population literate, above some appropriate age, total and by sex	• Average numbers of years of schooling completed, by urban/rural, sex and, where possible, by income classes
• Proportion of economically active population unemployed • Percentage distribution of economically active population by principal industrial and occupational categories	• Unemployment rate, by sex • Employment-population ratio, by sex and, where appropriate, formal and informal sector
• Macroeconomic items related to national income • Ratio of the index of change in national income (in constant prices) to the index of change in population	• GDP per capita • Household income per capita (level and distribution)
• Area per occupant • Number of persons per dwelling unit	• Number of people per room, excluding kitchen and bathroom
• Water supply - drinking water and for other purposes • Toilet facilities and sewage disposal	• Access to safe water • Access to sanitation
	• Population estimates by sex, age and where appropriate and feasible, ethnic group • Contraceptive prevalence rate

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Endnotes

[1] This paper is based on a presentation at the 51st ISI Session in Istanbul, Turkey, 18-26 August 1997. An extended version of this contribution will be published in International Statistical Review.

[2] Martha C. Nussbaum and Amartya Sen. The Quality of Life. Clarendon Press. Oxford, 1993

[3] Jean Dreze and Amartya Sen. Hunger and Public Action. Clarendon Press, Oxford, 1989.

[4] Mahabub ul Haq. Reflections on Human Development. Oxford University Press, New York, 1995.

[5] The experts convened for this purpose were particularly notable and included: Raymond Firth, Phillip M. Hauser, Erland Hofsten, Louis Joseph Lebret, Alexander Moraes and V.K.R.V. Rao (Chairman).

[6] International Definition and Measurement of Standards and Levels of Living. United Nations, 1954

[7] Statistical Commission. Report on the twenty-ninth Session. United Nation,. New York, 1997

Capability poverty and complementary methods of poverty measurement

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I. Introduction

1. The concept of capability poverty or human poverty is relatively new. It was first explicitly formulated in the 1996 Human Development Report with the introduction of a new composite index, the Capability Poverty Measure. But the basic idea derives essentially from the work of Amartya Sen, who, in a number of articles and books over a long period of time, has persuaded many of us to regard the objective of all development efforts as human development and has identified human development first and foremost with the achievement of an array of basic capabilities, such as living a life free from avoidable morbidity, being well-nourished and being informed and knowledgeable.

2. The first popular representation of the human development approach in the space of measurement was the Human Development Index, which was offered as an alternative to gross domestic product per head, the prevailing barometer of human well-being.

3. Following logically from the concept of human development, the concept of capability poverty is based on identifying thresholds that define a critical lack of an essential capability, such as being in ill health, suffering from malnutrition or being illiterate. The Capability Poverty Measure, for example, uses such indicators as the percentage of children under five years of age who are underweight and the percentage of female adults who are illiterate as measures of poverty.

4. The concept of human poverty differs from human development in the sense that the former represents a range of critically low achievement of a particular capability: it is the bottom tail of the distribution of the full range of development of that capability. As with income poverty, the definition of capability poverty hinges on the definition of a threshold, in this case one that separates those who have an unacceptably low level of human development from those who have attained a minimally adequate level. Since human development is multi-dimensional, so is human poverty. This implies that thresholds have to be defined relative to each essential dimension.

5. Even those who are familiar with the concept of human development and with the Human Development Report tend to forget that the Human Development Index was originally conceived as a deprivation index. In the first version of the HDI, presented in the 1990 HDR, average income per head is given a logarithmic transformation up to an international poverty line and a zero value above that line. Also, for educational attainment, only an indicator for adult literacy was used. The composite index "score" for the HDI was derived first from calculating the "shortfall" from the maximum value for each indicator. For literacy, for example, the maximum value was universal literacy, or a value of 100 percent.

6. Soon after the publication of the 1990 Human Development Report, the HDI was criticized for not being able to differentiate well among industrial countries. All of these countries were assumed, for example, to have 99% adult literacy and all had incomes above the international poverty line. Thereafter, income per head was allowed to take on values above the International poverty line (albeit discounted values), and the indicator of mean years of schooling (and later the gross combined enrollment ratio) was used to supplement the indicator for adult literacy. The HDI was now regarded as reflecting more the "average" level of human development in a country rather than the extent of human deprivation

7. It therefore became necessary to complement the HDI with a composite index focused on the lack of human development, i.e., on capability poverty. The original conceptual and methodological breakthrough in this regard was achieved with the Capability Poverty Measure (CPM) in the 1996 HDR. In the following year, the Human Poverty Index (HPI) was presented as a successor to the CPM and was justified on the basis of reflecting the same three dimensions of human development as the HDI, namely, life expectancy, educational attainment and material standard of living.

8. Differing from a measure of income poverty, such as a headcount index that registers the percentage of the population with unacceptably low levels of real consumption, both the CPM and the HPI are designed to measure human capabilities rather than the means to such capabilities. This distinction is based on the assumption, which has governed the human development approach from the very beginning, that income is not an end in itself, but only a means to human development. For eight developing countries, Table 1 presents comparisons between the estimates of human poverty of the CPM and HPI and estimates of income poverty based on an internationally-comparable $1-day-day poverty line. The table demonstrates that substantially different results can be derived from the different measures.

Table 1: Capability poverty and income poverty

Country	CPM (% poor)	HPI (% poor)	Population in poverty $1 a day (%) 1989-94
Bangladesh	79.6	48.3	29
Morocco	49.7	41.7	1
Zimbabwe	22.3	17.3	41
Colombia	13.4	10.7	7
Zambia	35.1	35.1	85
China	17.5	17.5	29
India	61.5	36.7	53
Egypt	43.7	34.8	8

Sources: UNDP. 1996 and 1997 Human Development Reports

9. The following paper tries to build on the work of the 1996 and 1997 Human Development Reports by moving beyond the narrow focus on simple composite indices of human deprivation and attempting to elaborate a more comprehensive and operational system of complementary poverty measures, which focuses on capability poverty, but also incorporates measures of expenditures, access to public services, and access to assets and employment. Although most poverty assessments are based on drawing a monetary poverty line, we maintain that this can provide only a partial picture, and that more

valuable information is provided by reflecting people's lack of basic capabilities. We begin by examining the conventional income approach to poverty and contrast it to the capability approach.

II. Income poverty and capability poverty

A. The conventional approach: Income poverty

10. Poverty is defined conventionally in income terms, based on the assumption that a person's material standard of living largely determines her human well-being. The poor are then identified as those who have an unacceptably low material standard of living.

11. Such an approach has well-developed techniques to identify poverty and generate aggregate measures of it. The usual yardstick for identifying the poor is either income or expenditures. Most extensively used nowadays is expenditures, because, among other reasons, they fluctuate less and are more reliably reported. Wealth is a third alternative, but one rarely used. All three choices imply the use of a money metric, to gauge the flow of income, the value of goods and services or the magnitude of assets. Everything is reduced to common monetary units, and prices provide the weights for each item.

12. Whatever the yardstick, a threshold or "poverty line" has to be chosen to distinguish the poor from the non-poor. This line is a monetary value, such as the minimally adequate level of expenditures deemed necessary to satisfy basic needs, but the choice of the value is necessarily somewhat arbitrary. Why one particular value is chosen rather than another is based on the assumptions one employs to determine the threshold. Vary the assumptions somewhat and the "poverty line" moves.

13. Once a line is determined, the poor can be aggregated into a summary measure or index in order to estimate the seriousness of poverty. The number of poor can be aggregated to produce a "headcount index"; the average depth of their poverty can be included to produce a "poverty gap" index; and inequality among the poor can also be highlighted with a "weighted poverty gap" index. These three measures together can reveal the extent, depth and severity of poverty. But they still rely on how accurately poverty is identified.

B. Problems with the money metric approach

14. There are a number of problems with the money-metric approach to measuring poverty. We list four major ones, assuming that expenditures are used as the yardstick.

15. The first is that money is only an approximate way of measuring the value of goods and services. Money's purpose is to facilitate exchange; it has no value in itself. Goods and services may be useful to people, but their monetary value is ascribed to them as a proxy for their use value.

16. The second problem is that goods and services are also not valuable in themselves. They are a means to human well-being: food is an input, for example, into people's nutrition.

17. Thus, money turns out to be an indirect means to human well-being: it is useful only for purchasing the direct means to human well-being, such as food, clothing and shelter. Also part of the problem is the fact that money does not cover some vital inputs into people's well-being, such as public goods, community resources, social relations, culture and the natural environment.

18. There is moreover a third problem: the variable translation of all these inputs into human development. For instance, the same amount of calories from food can be converted into substantially different levels of nutrition, depending on differences in such variables as people's age, gender, metabolic rate, activity level and health. A poverty line assumes an average conversion of food calories into

nutrition, and in this sense is misleading. The use of adult equivalence scales, which assumes that different age groups have different consumption needs, is a beginning in addressing this problem. Instead of adjusting the poverty line, these scales adjust each person's level of expenditures. This illustrates that a poverty "band" is more realistic than a poverty line to identify the poor. This approach either expands the line into a band or adjusts household expenditures around the line. At least the poverty-band approach does not convey a false sense of precision that is often associated with identifying poverty through drawing a line.

19. A fourth problem is that poverty is not a homogeneous phenomenon that can be accurately measured along one dimension alone in some convenient common unit of measurement such as calories or money. Human development occurs in multiple dimensions, such as health, nutrition, education and reproduction; and human deprivation denotes a lack of basic capabilities in these same dimensions.

III. Capability poverty

20. Examples of basic capabilities are leading a life free of avoidable morbidity, being adequately nourished, being informed and knowledgeable, being capable of healthy reproduction, enjoying personal security and being free to actively participate in society. Each of these capabilities will be measured differently, with different indicators, based on capability-specific thresholds.

21. Human deprivation should not be defined in terms of all important capabilities, but only essential or "foundational" capabilities. Capability poverty occurs when people are unable to reach a certain minimally acceptable level of essential human achievement or functioning. This would be the case, for example, if people were malnourished, illiterate, in ill health from a preventable disease or experiencing the physical hardship occasioned by inadequate shelter. Being able to function on the basis of these essential capabilities is an objective, observable phenomenon; it is not a matter of subjective perception, nor is it culture-specific.

22. This implies that there is an absolute core to human deprivation. In this sense the concept of capability poverty is similar to Basic Needs. The difference is that Basic Needs tended to concentrate on the means to satisfy human needs, e.g. food, shelter, health care, and not on human capabilities themselves.

23. While based on an absolute notion of deprivation, capability poverty incorporates relative aspects as well. While basic capabilities may not vary by society, the means to form and maintain them may. For example, while malnourishment can be measured the same way in different countries (e.g. in terms of standards for stunting or wasting), the types of food consumed and their relative costs may vary widely.

24. This is a major reason why indicators should focus as much as possible on people's basic quality of life. The more we focus on means, the more variation there is likely to be in our findings. Moreover, the capability approach puts the emphasis on people as active agents, with abilities and capacities; Basic Needs tends to see them in a more passive role, in need of certain goods and services.

A. The measurement of capability poverty

25. How should capability poverty be measured?

- The method for measurement should be centred on people and the quality of their lives. It should focus as much as possible on capabilities, not on the means to capabilities:
- The measure should be multi-dimensional since human capabilities are multi-faceted;
- The measure should focus on basic capabilities: not all capabilities are equally crucial;
- The measure should strive to be objective, not subjective. Determining the extent of people's capabilities is an empirical question;

- The indicators of capabilities should be based on data that can be collected on households and individuals.

26. For many of the basic capabilities, a measure of human deprivation can be operationalized. Indicators can be found to gauge whether there are "capability shortfalls" in the various essential dimensions. Measures of capability poverty can thus be used to complement an income measure of poverty.

27. One issue that invariably arises is whether to aggregate the various indicators of capability poverty into a composite index. Since human deprivation is multi-dimensional, it would be consistent to leave the various indicators unaggregated, as individual angles, as it were, on a complex reality. It is likely for people to be deprived in some dimensions, such as education, but not in others, such as health or nutrition. But conventional poverty measures have popularized the view that the extent of poverty can be captured in one summary measure: the distinct consumptions of qualitatively different goods and services can be combined, for example, through the conveniently-provided weights of purchase prices.

28. A composite index does have the advantage of presenting one consistent summary picture of poverty, instead of a multitude of potentially conflicting perspectives. However, such a composite index should never be presented without simultaneously presenting its components, otherwise the inherent complexity of human deprivation is ignored. A composite index always entails normative judgments about the respective weights of individual components and the trade-offs among them that are built into the structure of the index.

29. One alternative is to simply use the percentage of the population below an expenditure-based poverty line as a point of reference, and compare this to the percentages of the population deprived in other non-income dimensions. The deviations in percentages from this reference poor population may be significant. For example, the percentage of the population that is illiterate could be considerably higher than the percentage below the poverty line. This would be an important difference to highlight for policy purposes. Table 1 above illustrates that estimates of human poverty might differ substantially from estimates of income poverty. With respect to an income-based poverty line, a choice has to be made between using national poverty lines, which are not internationally comparable, and an international poverty line such as that based on purchasing power parities.

B. Indicators of capability poverty

30. The Capability Poverty Measure (CPM) in the 1996 Human Development Report is an example of a simple composite index of human deprivation. It includes three equally-weighted indicators: the percentage of under-five children who are underweight, the percentage of adult women who are illiterate, and the percentage of births unattended by trained health personnel. The first two are direct measures of human capabilities, namely, the capabilities of being adequately nourished and being informed and knowledgeable. The third is not a direct measure: it is an access indicator that acts as a proxy for the capability of safe and healthy reproduction. The percentage of low-birth weight babies would be a desirable indicator for the latter capability, except that the data for it come mainly from births in hospitals whereas many low-birth weight babies are born outside medical facilities.

31. The CPM itself illustrates that capability poverty can be measured directly in terms of capabilities or indirectly in terms of access to opportunities, namely, to the means to capabilities. Deprivation in capabilities results from lack of opportunities, i.e. from lack of access to services, assets and employment. Where possible, direct measures should be used. Often, however, they are not available. As the human development approach to measuring poverty becomes more prevalent, additional indicators that directly

reflect capabilities will be developed.

32. A number of such indicators are already in common use. Also a number of close proxies for capabilities are available.

Direct Measures of Capabilities

- Children under-five who are underweight;
  -- Children under-five who are stunted;
  -- Children under-five who are wasted;
- Low-birth weight babies;
- Adult illiteracy.

Close Proxy Measures of Capabilities

- Net primary enrolment ratio;
- Primary school completion rate;
- Immunization rates;

33. For eight developing countries, Table 2 shows illustrative estimates of the five indicators that can serve as direct measures of human capabilities. The results depend both on the nature of the indicator and on the country's performance.

34. An immunization rate is a good illustration of a close proxy to a direct measure of capabilities. Morbidity and mortality rates can be used as such direct measures because they are outcome indicators. Immunization, an intermediate outcome resulting from a medical effort, is a condition that prevents morbidity and mortality. Similarly, net primary enrolment ratio and completion rate, taken together, can help determine whether children are actually being educated.

35. Where such outcome indicators, whether for ultimate or intermediate results, are not available, indicators reflecting access to the means to capabilities can be used. Where possible, however, these should register actual use of such means instead of only potential access to them:

Access to the Means to Capabilities

- Attendance of trained health personnel at births;
- Access to potable water;
- Access to adequate sanitation;
- Access to electricity.

Potential Access to the Means to Capabilities

- Access to health services;
- Access to public transportation.

Table 2: Direct measures of capabilities

Country	Adult illiteracy rate (%) 1995	% Low Birth-weight babies (1990-1994)	% of Under-fives underweight (1990-1996)	% of Under-fives stunted (1990-1996)	% of Under-fives wasted (1990-1996)
Zambia	22	13	28	53	6
Pakistan	62	25	38	50	9

Bolivia	17	12	16	28	4
Morocco	56	9	9	23	4
China	18	9	16	32	2
Cameroon	37	13	14	24	3
Costa Rica	5	6	2	8	2
Turkey	18	8	10	21	3

Source: UNICEF, The State of the World's children 1997

36. The distinction betwen actual and potential access sometimes becomes a matter of how an indicator is defined. Access to health services usually means, for example, that a facility is located a certain distance from the household; it does not imply that households actually use the facility or that it is adequately stocked with medicine and equipment. Also, access to public transportation does not indicate how long one has to wait for a bus, for example, or how expensive it is.

C. Indicators of access to public services

37. The distinction between capabilities and the means to capabilities leads logically to a separation of the indicators for these two dimensions. A number of indicators reflecting access to public services, such as education and health, would provide an important perspective on capability poverty, and serve as a cross-check on results from indicators directly reflecting lack of capabilities.

38. Some poverty analysts attempt to impute monetary value to such public services and include them as part of total household expenditures. It is difficult, however, to determine the market prices for many of these services. If we try to be comprehensive and take account of all expenditures, both explicit and implicit, our results become arbitrary. The more comprehensive this effort, the more numerous the prices that have to be imputed, and the more arbitrary the results.

39. Instead of forcing the money metric to cover so much ground, it is better, for operational purposes, to develop a separate, non-monetary set of access variables for public services. These would include such indicators as access to health services, to education, to potable water, to adequate sanitation, and to electricity. Expenditures should be confined to those items that are more easily priced because they regularly pass through markets. We return now to examine in more detail estimates of poverty based on expenditures.

IV. Poverty estimates based on expenditures

40. If a money metric of poverty is desired, one could use current household per capita income. As mentioned earlier, however, the preferred alternative is current expenditures. Although, like income, they require an exhaustive inventory, they are considered to be a more reliable indicator. Since they fluctuate less than income, because of the capacity of households to access savings or borrowing, they are supposed to give a more accurate accounting of the household's long-term economic condition. Expenditures are also more reflective of the value of goods and services, which are, unlike income, direct means to human well-being. However, expenditures are still only monetary estimates of the value of consumed goods and services. In welfare theory, monetary expenditures are used as a proxy for real consumption, and units of money used as indicators of the magnitude of utility derived from consumption. It is worth noting that in this theory, the valued end is utility, not human capability. What is being proxied through a money metric is a psychological condition of satisfaction or lack of it, of pleasure

or pain. The measure is not intended as a barometer of human achievements or activity levels.

41. As mentioned previously, methods to draw poverty lines based on household per capita expenditures are well-established. There are a number of assumptions employed to construct an expenditure-based poverty line, all of them subject to some plausible modifications. What is important to note again at this juncture is that not all goods and services enter markets and don the mask of monetary values. In developing countries, many areas of economic activity have not been completely penetrated by market relations. As one well-known example, farming households may consume a significant proportion of their own output. As previously discussed, public services, such as education and health, can also be provided largely independently of markets.

42. Since expenditure-based poverty lines are in such common use and tend to have a false air of precision associated with them, it makes sense to examine a little more closely the methodologies that underpin them.

43. The first step in establishing an overall poverty line is to draw a "food poverty line". Because calories are conveniently expressed in cardinal numeric form, they are used as an abstract quantitative measure of essential food requirements. For India, for example, 2,250 calories per person per day is considered the minimum requirement. Of course, as previously noted, the need for calories varies by individual. For some individuals, minimum calories could be lower, for others they should be higher. A food poverty line assumes an 'average' minimum requirement. In addition, if you change this 'average' level, that is, if you vary the number of calories, selecting, for example, 2,100 calories instead of 2,500, the food poverty line will shift.

44. Using a quantitative measure such as calories masks potential controversy on what should be considered essential food requirements. What about requirements, for instance, for such essential nutrients as protein, vitamins or minerals? Minimum calories can be achieved with a diet in which basic staples, such as rice or corn, predominate, but if meat or vegetables are added, the cost may rise dramatically. This highlights the difficulties in determining the cost of a food basket that meets the minimum calorific requirements. It should be a typical food basket, but typical for whom, the poor, the near-poor, the average household? As has often been pointed out, even the poor consume food for reasons other than calorific intake.

45. Controversies multiply when non-food requirements are considered. What should be regarded as essential non-food items? There is no working consensus on this issue. Essentially, the dispute is avoided by examining the total expenditures of a low-income household and determining what share it devotes to food. The inverse of this share is then used to multiply the food poverty line to derive the overall poverty line. If the food share of total expenditures is 1/2, say, than the food poverty line is multiplied by 2. But again the issue of how to determine a typical household arises. In the United States, for example, the food share of a household with mean per capita income is chosen. Since this share is about 1/3, the food poverty line is scaled up by a factor of 3.

46. An underlying difficulty of this round-about approach is how to decide what the total expenditures of a household are. How comprehensive should one be? For many publicly-provided items, prices do not reflect economic value. For a host of non-market items, prices would have to be imputed. Prices are now imputed, for example, to goods consumed directly by the household. Services provided within the household are rarely priced, however. If a household owns its own dwelling, a rental value can be imputed. But what about the stream of services from consumer durables? How to price these? Also, how should one value the use of common property resources?

47. It is often difficult to decide what prices to use when markets for items are not clear. This is the case for such commonly subsidized or rationed public services as water and electricity. Even more problematic is putting a price on education or health services.

48. Whatever decisions are made about the nature of the essential consumption basket, the more comprehensive it is, the smaller the food share will be, and the higher the overall poverty line will be.

49. Beyond the issue of what to include in the essential consumption basket, the fact remains that the needs of households vary based on their size and on the individuals in them. A child does not have, for instance, the same consumption needs as an adult, or a retired person the same needs as a younger working member. But there is no straightforward way to establish scales for individuals, even based on age and sex. An additional consideration is that because of economies of scale, larger households do not require proportionately higher expenditures than smaller households. A refrigerator, for example, may be adequate whether a household has two members or four. But again, how should size of household be taken into account? For some items, such as consumer durables, there may be clear economies of scale, but for others, such as food, few economies.

50. The more these factors are taken into account and the more comprehensive the consumption basket, the more arbitrary the final poverty line will be.

V. The asset dimension of poverty

A. Productive assets

51. The level of household consumption depends on the level of disposable household income. But in order to generate income, households need access to productive assets and employment opportunities. Hence, a set of such access indicators is also needed in order to present a comprehensive picture of human deprivation.

52. For the most part, access to productive assets and employment opportunities is an indirect means to human well-being. Because of the social division of labour, people are customarily not able to provide for all of their own needs, and thus money intervenes to provide the means of purchasing items they do not produce. Having access to private or public assets and being afforded the opportunity to employ one's own abilities (i.e. human capital, which is also a productive asset) enables one to generate an income or a non-monetary flow of livelihood (e.g. self-consumed farm produce). Thus, through such a process, assets and/or employment are converted into a command over goods and services.

53. Productive assets encompass a broad array of public and private wealth, e.g. land, capital stock, public infrastructure, but whatever the type of asset, if it is used for economic purposes, it will generate income (explicit or implicit). One can aggregate all the different sources of income and impute income where receipt of benefits does not take a monetary form. Such an exercise could give a comprehensive picture of the economic circumstances of a household at a particular point in time. This assumes of course that households are able and willing to report all their income sources. Assuming the best possible results, income is still, however, only a current flow: it can fluctuate dramatically from one year to the next, especially among poorer households that can experience bad harvests on low-quality land or frequent loss or irregularity of employment.

54. The following diagram helps illustrate a useful classification for poverty analysis. It is based on our differentiation among (1) indirect means to human well-being, (2) direct means, and (3) human well-being itself. It distinguishes between foundational indirect means, such as productive assets and employment; derivative indirect means, such as private or public income; direct means, such as privately-purchased food, clothing and shelter or publicly-provided services; and ultimate ends, such as being well-nourished, healthy and secure. Most importantly, the schema allows us to categorize poverty indicators accordingly:

Productive Assets and Employment	>>>>>>>>	Private and Public Income (indirect means)

Private Income	>>>>>>>>	Food, Clothing, Shelter et al. (direct means)
Public Income	>>>>>>>>	Public Services and Facilities (direct means)
Public and Private Goods and Services	>>>>>>>>	Nutrition, Health, Security et al. (human development ends)

B. Other categories of assets

55. With regard to assessing poverty, other asset categories can be included: natural capital, human capital, and social capital. In the case of the latter three terms, 'capital' is a metaphor, denoting that "something durable" in the sense of an accumulated 'asset' (no matter how vaguely defined in some cases) can be construed to have an identifiable impact on society's production of commodities. This is clearly the case with regard to some parts of nature, such as land used for agriculture and forests used for timber resources. But much of nature is not natural capital although it may provide such free direct amenities as clean air and water, which could be construed as "natural services", similar in form to public services.

56. Human capabilities are ends in themselves: being literate is valuable in itself, for example, although it can also be interpreted as an aspect of human capital that can increase people's productivity. The same is true of social relations: cooperation among people, for instance, should be valued in itself as a "social good", although it can also be harnessed as a relation of production to increase output. It is only in this latter restricted sense that inter-relationships among people could be seen as "social capital".

57. If natural capital, such as farmland or a fishing pond, is privately or publicly owned, it is usually possible to identify it through household surveys and develop indicators for it. It is also possible to capture some aspects of common property resources, such as forests, lakes and pastures. However, information on some direct amenities provided by nature, such as clean air, are not easily provided at the level of a household survey.

58. Human capital is best captured with direct indicators of human capabilities, in such areas as health, nutrition and education. Although these could be included under an inventory of productive assets, it is more appropriate to include them under measures of capability poverty.

59. Finding suitable indicators for social capital is the most difficult task. As with human capital, there is usually confusion between ends and means. Also, the impact of social relations on economic conditions is not well-defined. Given these considerations, it is better to regard social relations, such as cooperation, as ends. For purposes of identifying poverty, indicators of the lack of, or the breakdown in, critical supportive social relations may make sense. A high crime rate in a community might be one such indicator.

60. What is really being discussed, however, is people' personal security. Whether one is able to walk the streets of one' community at night without the likelihood of becoming a victim of crime might be a good indicator. Of course, this a public condition, applying to the rich (in income terms) as well as the poor, just as a breakdown in natural conditions, such as air pollution, affects everyone in a certain area. Both lack of personal security and exposure to air pollution can denote a "poverty of public goods".

61. Being able to elicit assistance from informal or formal social networks could be construed as a vitally important "social asset", the lack of which, much like the lack of productive assets, could mean the difference between poverty and prosperity, between human deprivation and human development. In fact,

households rendered vulnerable by an absence of productive assets are heavily reliant on such forms of "social security" to avoid poverty.

C. Employment and the engagement of assets

62. Assets cannot generate income unless they are put to productive use. Many people possess only their own labour power, built up perhaps as human capital through education, training and experience. But such human capital needs to be employed in order to generate a livelihood. The same is true of productive assets in general.

63. How one utilizes one's assets depends on how one is employed. As a cross-check on the usefulness of information on productive assets, one should include some indicators of current employment. Accounting for the income generated in employment, although informative about the quality of employment, would necessitate an exhaustive inventory of different sources for each household. An alternative is to utilize a few simple non-income indicators. An initial indicator could be the basic character of one's employment, i.e. whether one works for others, is self-employed, or employs others. If one works for others, it could be on a non-cash basis. It could also be only on a part-time basis: how many days in a month and how many hours in a typical day one works would be useful information. If one operates a household enterprise or business, how many household and non-household members it employs could give indications of its importance.

64. With such indicators, one would be interested in being able to answer a number of basic questions on people's employment status: whether they are unemployed, whether they have irregular or part-time employment, whether they work in the cash economy, whether they could be considered part of the formal sector of the economy. Through an inventory of each household member's economic activities (e.g. in what position and sector they work and for how many hours), a comprehensive picture could be developed of the household's capacity to generate a collective livelihood.

D. Housing and consumer durable assets

65. Housing and consumer durables could be categorized as household expenditures or wealth. As suggested previously, the value of consumer durables is not accurately captured by current expenditures. Some consumer durables are quite informative of the economic circumstances of a household, but the stream of services that these durables provide (such as the continuous flow of benefits provided by a refrigerator) are not customarily counted as part of current expenditures.

66. In the light of these considerations, we choose to regard these items as forms of wealth. Instead of artificially attempting to incorporate them into total current expenditures, we consider it more practical to simply conduct an inventory of the household's major standard durables. It is because these items represent an accumulation of assets over time that they provide valuable information on the long-term economic condition of the household.

67. The largest such asset is housing. One could estimate the net value of housing and impute the rental value of owner-occupied dwellings. This is often done with information from household surveys, and the amount is then worked into calculations of current income. Alternatively, one could formulate questions on the size of the dwelling (in terms of rooms or total space) and its quality (such as the material of which the roof and floor are constructed). Questions could also identify accompanying household amenities such as piped-in water, electricity, and toilet facilities.

68. One of the problems resulting from ascribing a monetary value to an asset, whether it be a household's dwelling or a productive asset such as a tractor or irrigation pump, is that it is difficult to

determine a plausible poverty threshold. Values would have to be ascribed to all productive assets, including presumably human capital, and then aggregated together to generate an estimate of total productive wealth. The cut-off point for poverty would then have to be determined on the basis of lack of wealth itself or on the basis of some other standard, such as the translation of wealth into an essential level of expenditures to meet basic needs or an essential level of human capabilities. Translating productive wealth into an average flow of expenditures is possible, even if problematic; trying to convert the same wealth into an average capacity for human well-being would certainly be quixotic. The critical problem is that human capabilities are not easily tracked by a money metric.

69. A number of threshold indicators could be usefully developed for housing and consumer durables. With regard to housing, for instance, the poor could be identified as those who are homeless, do not have a permanent structure (e.g. make-shift slum dwellings), or have a structure without a covered floor or a permanent roof. Individual consumer durables could also be considered threshold indicators, such as having at least a mattress or bed, a table and chairs, a radio and a bicycle.

VI. Implementing a system of indicators

A. The sets of indicators

70. The above discussion helps us determine the basis for a number of possible parallel sets of indicators for measuring poverty. Given the considerations mentioned above, we discard income as an essential dimension. Income could be used to measure poverty, but assuming that vital information on productive assets and consumer durables is gathered and that data on expenditures are available, the income method of estimating poverty may be superfluous. The sets of indicators that we recommend are as follows:

1. Human capabilities

71. These are the most valuable indicators. However, those in regular use are a small set. Efforts need to be undertaken to formulate more. Currently, UNICEF collects a number of indicators of this type, but they are focused on such issues as child and maternal health.

72. Capability indicators focus on ultimate outcomes, registering changes in various dimensions of people's well-being. All other indicators are tracking means, whether they be productive assets, consumer durables, expenditures on goods and services or public services.

2. Access to public services

73. Many of the vital means to human well-being cannot be adequately valued through monetary methods. Public services, such as education and health, are prime examples. The provision of heat, electricity, water, sanitation, public transportation and means of communication are others. Many of these services can be direct inputs into human well-being as well as inputs into the production of commodities.

74. A set of indicators can be used to monitor access to such services and provide a perspective on poverty not available from the conventional expenditure method: the percentage of the population without access to individual services may be significantly higher or lower than the headcount index for an expenditure-based poverty line.

3. Current expenditures

75. This is the preferred monetary indicator for identifying poverty and estimating its extent, but it requires extensive information. Any poverty line based on it is no more than a rough approximation of the

threshold between human development and human deprivation.

76. The methodology for estimating poverty in this manner is however well-established and widely used. The headcount index that it generates can be used as a benchmark for comparison with percentages of the population deprived in other, non-monetary dimensions. But for this purpose it may be advisable to have some degree of standardization of the methodology for drawing a poverty line. One option to use as a reference is a : food poverty line". As previously discussed, this estimates the expenditure level necessary to purchase a minimum essential number of calories on the basis of a typical diet in a country. This is usually considered a line for extreme poverty since non-food essentials are not included. In order to standardize even a food poverty line", there would have to be some consistency in the choice of a required minimum calorific intake and the typical food basket.

4. Asset categories

(a) Productive assets and employment

77. Also included in a system of poverty monitoring should be an inventory of a household's major productive assets. In the rural areas of most developing countries, the most important item would be land, and the second, livestock. Little is gained from attempting to ascribe monetary values to productive wealth. Difficult enough for many assets, this is complicated by households that possess negligible productive assets but are well-off because of having members employed in high-paying jobs.

78. Thus, an inventory of productive wealth could not stand on its own as an accurate barometer of poverty. It should be directly supplemented with indicators of employment. But since access to both productive assets and employment are merely indirect means to human well-being, they should be used primarily as cross-checks on results derived from measuring other dimensions of poverty.

(b) Housing and other consumer durables

79. Housing and other large consumer durables are also important forms of wealth, but they are outcomes from having access to productive assets and employment. Whether a household owns a large set of productive assets or merely has members in high-paid jobs, its income can be converted into durable forms of wealth that provide direct benefits to its members. These durables include housing, of course, but also such items as household appliances or furniture (e.g., a refrigerator, television, gas or electric stove). The purchase of such items is a form of 'investment' that requires the kind of surplus income that is scarce among the poor. Lacking a number of certain essential low-cost items, such as a bed, radio or bicycle, could be used as an indication of poverty.

80. Different variations are possible with regard to the relationship between consumer durables on the one hand and current income and expenditures on the other hand. A household that is non-poor in current income could be poor in such forms of wealth. Also, a household that has a poverty level of current expenditures may own quite a few consumer durables. Thus, the ownership of consumer durables can also serve as a cross-check on the results from a poverty measure based on current expenditures alone.

B. Summing up

81. To sum up, the above discussion implies that we can utilize a system of four major sets of indicators for monitoring poverty: (1) indicators of capability poverty; (2) indicators of access to public services; (3) an expenditure-based poverty line; and (4) asset and employment indicators (including both productive assets and consumer-durable wealth).

82. This systemic approach is based on the assumption that none of the four sets is adequate by itself:

(a) Direct measures of human deprivation are the priority indicators in this system. Since it is not possible to deploy a comprehensive set, the other three sets of indirect measures, i.e. indicators of means, are used.

(b) Indicators reflecting access to such public services and goods as those in the education and health fields which are vitally important inputs into human development, should also constitute aeparate set to monitor poverty. The value of access to these services is not well captured by a measure of monetary expenditures.

(c) An expenditure-based poverty line can be drawn based on existing methodologies, but the distinction it provides between the poor and non-poor is somewhat arbitrary. One reason is that expenditures are merely a monetary valuation of goods and services, which are means to human well-being, not ends in themselves. The picture that an expenditure-based method provides is also incomplete. Expenditures on housing and consumer durables are difficult to incorporate, for example. Also, some forms of consumption, such as of goods or services from household activity or from common property resources, do not involve the exchange of money. In addition, not all goods and services are bought by private income but are provided publicly.

(d) An inventory of a household's major assets and its members' employment status is a good barometer of a household's long-term economic circumstances. But both productive assets and employment are indirect means to human development. Housing and consumer durables can be

considered direct means, but their contribution to current expenditures would be difficult to calculate and aggregating them into a summary measure would also be difficult to do.

83. The general justification for using this system is not only that each of the four sets gives only a partial picture, but also that the four can be used as cross-checks on one another. Since the four measure different aspects, three different kinds of inputs and one ultimate outcome, they can provide varied results. While expenditure-measured poverty may be high, for instance, the basic asset position of households may be better-off, indicating perhaps that a significant short-term worsening in poverty has taken place. In contrast, even if expenditure-measured poverty is low, the provision of public services may be inadequate and, as a result, capability poverty high.

84. In such a system, the severity of human deprivation is measured by the number of the four major dimensions in which a household is deprived. If a household has few assets and employment opportunities, has low current expenditures, enjoys little access to public services, and its members lack basic capabilities, then surely its poverty is extreme.

85. Within each of the four dimensions, with the exception of expenditures, the severity of poverty can also be gauged by the number of aspects in which the household is found wanting. For example, in terms of public services, a household that lacks access not only to education and health facilities, but also to potable water, adequate sanitation and electricity is certainly severely deprived.

86. Composite indices for both access to public services and for human capabilities could serve the purpose of measuring severity by aggregating the percentages of the population deprived in the various dimensions. Depending on how trade-offs among dimensions of deprivation are handled, a high aggregate percentage for the composite index would indicate, for example, relatively high percentages in a number of dimensions.

87. Since assets and employment are a conglomerate category, in which productive assets and employment opportunities can be substitutable for each other and the extent of housing and consumer durables result from having productive assets and/or employment, it would inadvisable to develop a composite index for this whole dimension. However, a set of indicators registering the lack of certain essential consumer durables can provide one limited alternative. These would be similar in character to the indicators reflecting lack of access to essential public services.

88. This proposal does not simplify the task of measuring and monitoring poverty, nor has this been its aim. It attempts to highlight the multi-dimensional nature of poverty from a human development perspective and offer a workable system to identify it. It focuses on capability poverty as the critical dimension. But since it recognizes that it is not practical to monitor poverty through this dimension alone, it supplements this focus by monitoring access to public services, the level of household per capita expenditures and access to assets and employment. The proposal recognizes the value of the conventional expenditure-based measurement of poverty, but incorporates it into a larger system whose hub is capability poverty and which includes dimensions that are not well reflected in expenditures. Overall, this is a pragmatic approach to measuring and monitoring poverty that does not rely on one method alone but utilizes the strength of each in a complementary way.

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A Guide to Living Standards Measurement Study Surveys

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I. Introduction

1. The Living Standards Measurement Study was established by the World Bank in 1980 to explore ways of improving the type and quality of household data collected by government statistical offices in developing countries.[3] The objectives of the LSMS were to develop new methods for monitoring progress in raising standards of living, to identify the consequences for households of current and proposed government policies, and to improve communications between survey statisticians, analysts, and policy makers (see Chander, Grootaert and Pyatt, 1980, for the original statement of purpose and work programme).

2. To accomplish these objectives, LSMS activities have encompassed a range of tasks concerned with the design, implementation and analysis of household surveys in developing countries. In the initial years, work centred on evaluating survey experience prior to the 1980s, identifying what information it would be most useful to collect, and how the collection of such information could be made feasible. From 1985 to about 1991, LSMS work concentrated heavily on the implementation of LSMS surveys. As the number of resulting household survey data sets grew, so did the use of those surveys to analyze the linkages between household behaviour, household living standards and the constraints they face, including how those constraints are changed by government action. Since about 1991, survey implementation and analysis has continued with greater emphasis in the project on building analytic capacity as well as data collection capacity. Furthermore, greater weight than previously is being put on documenting past surveys, ensuring that surveys are available to interested researchers, providing pedagogical materials and evaluating the experience of the first surveys.

3. This document serves as a brief introduction to and history of the LSMS. For those unfamiliar with LSMS, it will provide a basic overview. For those familiar with LSMS surveys in the context of one or two countries, it provides a broader picture. Since there is greater diversity in country experiences than is commonly recognized, this emphasis is important.

II. What is an LSMS survey?

4. Two characteristics distinguish LSMS surveys: (i) multi-topic questionnaires designed to study multiple aspects of household welfare and behaviour and (ii) extensive quality control features. In the past, there was a time when a survey was considered to be an LSMS survey because it was carried out with technical assistance from staff in the relevant division at the World Bank (now called the Development Research Group), but, as the number of surveys grows and as the role of the division changes, this is no longer a reliable indicator of how well a survey fits the LSMS prototype. Here, we wil look at each characteristic in turn, and then we will examine the variations that there have been in the design and content of existing LSMS-type surveys.

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A. Multi-topic questionnaires

5. The main objective of LSMS surveys is to collect household data that can be used to assess household welfare, to understand household behaviour, and to evaluate the effect of various government policies on the living conditions of the population. Accordingly, LSMS surveys collect data on many dimensions of household well-being, including consumption, income, savings, employment, health, education, fertility, nutrition, housing and migration (see Box 1). A more detailed summary of the questionnaires used in Ghana is provided in the Annex. See Grootaert (1986) for the household questionnaire used in Cóte d'Ivoire, and Ainsworth and others (1992) for the Tanzanian household questionnaire.

6. Three different kinds of questionnaires are normally used: the household questionnaire, which collects detailed information on household members; the community questionnaire, in which key community leaders and groups are asked about community infrastructure; and the price questionnaire, in which market vendors are asked about prices. A fourth type of questionnaire, the school or health facility questionnaires, is sometimes used as well.

7. *Household Questionnaire*. Because welfare is measured by consumption in most LSMS research on poverty,[4] the measurement of consumption is strongly emphasized in the questionnaires. There are detailed questions on cash expenditures, on the value of food items grown at home or received as gifts and on the ownership of housing and durable goods (for example, cars, televisions, bicycles and sewing machines) to make it possible to assign them a use-rental value. A wide range of income information is also collected. For individuals in formal sector jobs, most surveys contain detailed questions about wages, bonuses and various forms of in-kind compensation. Information is usually sought on secondary as well as principal jobs. At the household level, lengthy agriculture and small enterprise modules are designed to yield estimates of net household income from these activities. Other sources of miscellaneous income, such as the receipt of private transfers (for example, child support or remittances from abroad), public transfers (in cash or in kind), lottery winnings and interest income, are recorded as well.

8. Collecting data on a variety of household characteristics (including those on health, education, fertility and migration) from the same households makes it possible to analyze the important relationships among different aspects that make up the quality of life, such as the impact of parents' education on child nutrition or the effect of health status on employment. The sectoral modules collect such information. However, they are shorter, and the amount of detail provided on any one topic is smaller, compared to a single-topic survey.

9. *Community Questionnaires*. In order to limit the length of the household questionnaire, information on local conditions that are common to all households in the area is gathered in the community questionnaire. These questionnaires are typically used only in rural areas, where local communities are easier to define than in urban areas. The information covered by the questionnaire usually includes the location and quality of nearby health facilities and schools, the condition of the local infrastructure such as roads, the sources of fuel and water, the availability of electricity, means of communication and agricultural conditions and practices.

10. *Price Questionnaires*. In countries where prices vary considerably between regions, it is important to gather information on the prices that households are faced with in practice (see Ravallion and Bidani, 1992). Thus, in most LSMS surveys, questionnaires have been developed to compile information on the prices of commonly purchased goods.

Box l : Modules in LSMS Questionnaires

Module	Respondent	Subject
Household Questionnaire		
Household Composition	Head of household/principal respondent	Household roster, demographic data, information on parent of all household members
Consumption Modules		
Food expenditures	Best informed household member	Food expenditures in the past 14 days and past 12 months; consumption of home production in past 12 months
Non-Food Expenditures	Best-informed household member	Expenditure in the past 14 days and past 12 months; remittances to other households
Housing	Head of household/principal respondent	Type of dwelling; housing and utilities expenditures
Durable Goods	Best-informed household member	Inventory of durable goods and their characteristics
Income-related Modules		
Non-farm self-employment	Best-informed household member for each of three businesses	Income, expenditures, and assets for three most important household businesses
Agro-pastoral activities	Best-informed household member	Land, crops, income, and expenditure from raising crops and animal; livestock and farm equipment inventory
Economic Activities	All household members 7 years and older (all adults must respond for themselves)	Employment, income, and time data for the main and secondary jobs in the last 7 days and the last 12 months; employment history; unemployment spells in the last 12 months; time use in the home.
Other income	Best-informed household member	Income for other sources, including remittances from other households
Saving and credit	Best-informed household member	Saving and net debt the day of the interview; characteristics of outstanding loans to and from household members

Box 1: Modules in LSMS Questionnaires (continued)

Module	Respondent	Subject
Sectoral modules		
Education	Head of household/principal respondent	Completed schooling and schooling expenditures for all household members 5 or older, schooling and other information of all non-member children under 30
Health	All house members (parents respond for young children)	Utilization of health services and medical expenditures for any illness in the last four weeks; utilization of and expenditures for preventive services in the last 12 months
Migration	All household members 15 years and older	Place of birth, time and current place of residence, and reasons for first and last moves.
Fertility	One randomly selected woman 15 years or older	Birth history; use of maternity services and duration of breast feeding for last live birth
Anthropometrics	----	Height and weight measurements of all household members
Community Questionnaires		
Demographics	Community leader	Size, growth, ethnic mix
Economy and infrastructure	Community leader	Economic activities, access to roads, electricity, water, public services such as public transport, mail service, Etc.
Education	Headmaster or Community leader	Location and characteristics of schools serving community
Health	Health workers or Community leader	Location and characteristics of health facilities serving community
Agriculture	Extension agent or Community leader	Farming practices, agricultural services available
Price Questionnaire		
	Market, shops	Price on frequently purchased items

11. *Special Facility Questionnaires*. Sometimes very detailed information on schools or health clinics is desired. When this is the case, special facility questionnaires may be developed to supplement or replace those sections of the community questionnaire.

B. Extensive quality control procedures

12. In order to minimize errors and delays in data processing, LSMS surveys are implemented using procedures that resolve inconsistencies in the data before they reach the central statistical office. Here, we will highlight those elements that are distinctive in LSMS surveys, as opposed to those that LSMS surveys share with other good household surveys.[5]

13. *Questionnaire Format*. Several features of the questionnaire help to minimize interviewer error. For example, the questionnaire makes extensive use of screening questions so that the skip pattern is automatic, requiring virtually no decision-making by the interviewer. All of the questions are written out exactly as they are to be asked. Moreover, suggested questions for further probing are printed on the questionnaire for consumption items, crops and durable goods. Together, these features reduce the conceptual skills required of the interviewers and the potential for variation among them, and also save time as the interviewer does not have to pause to consider how to phrase each question or how to follow the skip pattern.

14. Other features eliminate a number of steps (and thus the opportunity for error and delay) in the processing of data. Almost all potential responses to each question are marked on the questionnaire with a numbered code, and the interviewer writes only the response code on the questionnaire.[6] Furthermore, the household questionnaire is designed so that the data can be entered into the computer straight from the completed questionnaire, thus eliminating the additional step of transcribing codes onto data entry sheets.

15. An important element in the design of the LSMS questionnaire is that changes can be made to the questionnaire quickly and easily, either in response to the field test or over the years as policy needs change. The questionnaires are produced on microcomputers using special formatting packages.[7] This also simplifies translations as the verbal parts can be overwritten in the local language, leaving the skip codes, the response codes and the general format intact.

16. *Organization of Fieldwork.* Fieldwork and data entry are highly decentralized in fully-fledged LSMS surveys. The core work is performed by a team consisting of a supervisor, two interviewers, an anthropometrist, a data entry operator and a driver. The team is based in a regional office equipped with a personal computer for data entry. The data entry operator works only at the field office, while the other members of the team travel between the field sites and the office. Teams are supervised and supported by a national survey directorate, consisting of the survey director and assistants responsible for field operations and data management.

17. The field work is carried out in two rounds of interviews two weeks apart. It is therefore possible to check the data from the first round for consistency before the second round of interviews. Thus, any inconsistencies detected from the first round of interviews can be cleared up directly with respondents during the second round of the interviews.

18. The standard fieldwork plan is as follows. During round one, which takes a week in each village, two interviewers each administer the household questionnaire to eight households, while the supervisor administers the community and price questionnaires (step 1). The supervisor personally observes and evaluates one interview per interviewer during this week, discussing improvements with the interviewer and recording the results on a form to be sent to the national office (step 2). Following round one in the field, the half-completed questionnaires are taken to the field office, where the data are recorded on computer disk by the data entry operator (step 3). This takes about one week. The data entry program prints out the data recorded for each household, highlighting any errors or inconsistencies. The supervisor then reviews, circling

on the original questionnaires the questions that must be repeated by interviewers during the second round (step 4).

19. During round two of the interview, the team returns to the field to complete the second half of the questionnaire and to correct errors found in round one (step 5). This is followed by field supervision (step 6), data entry (step 7) and quality control of data entry (step 8), as in round one. Errors detected after round two are corrected only if they are data entry errors. Thus, supervision in the field is especially critical during the second round, when there is no subsequent opportunity to capture missing information or to correct field errors. In the final step (9), the disks of data are sent from the field office to the national office to be reviewed by the data management specialist and consolidated with data from the other field teams. Throughout this cycle, staff from the national office make unannounced visits to field offices and to interviewing sites to observe the efforts of the team members and evaluate their performance.

20. *Sample Size.* The number of field teams is kept small so that it is feasible to supervise them closely. LSMS surveys tend to use small samples, often in the order of 1,600 to 3,200 households and rarely more than 5,000 households. Although larger samples would have smaller sampling error, it was judged by the survey designers that non-sampling errors would increase more than concomitantly.[8] Having a small number of teams also helps to keep the cost of supplying them with vehicles and computers within bounds.

21. *Data Management.* The LSMS surveys use personal computers in the field, where all the stages of data collection, data entry and editing are carried out. This dramatically reduces the length of time between when the fieldwork ends and when the data become available for analysis. It also improves the quality of the data. The data entry programs that have been used for LSMS surveys have each been custom designed. This was a major innovation at the time of the first survey in 1985. The use of commercially-available packages for this purpose has now become widespread, though the thoroughness of the checks in the fully-fledged LSMS surveys is probably well above average even today.

22. As the data are keyed in, they are first submitted to a set of range checks. Numeric variables are constrained to lie between minimum and maximum values, qualitative variables can only have defined valid codes and chronological variables are supposed to contain valid dates. When all of the data from a single questionnaire have been recorded, consistency checks are run on data from different parts of the questionnaire. When values are out of the allowed range or are inconsistent with other variable values, the computer gives audible and visual signals to the operator. A printout is then made of all the data for each household in a format similar to that of the questionnaire. Missing data and errors in the skip pattern appear circled in black, and a list of specific inconsistencies between different sections of the household questionnaire is produced. If the error is due to a typographical mistake, the data entry operator corrects it immediately. If the questionable value is on the original questionnaire, it is referred back to the supervisor and interviewer. An additional set of consistency checks were developed for the anthropometric module, which automatically compares survey data on individuals' age, height and weight with standard reference tables from the World Health Organization. The data entry program then produces a list of those individuals with seemingly erroneous measurements so that they can be remeasured during the second round.

23. *Resulting Data Quality.* When all of these procedures are scrupulously followed, data quality can be very high, as shown by evidence on some dimensions of data quality for the Côte d'Ivoire and Peru surveys. These data sets were subjected to data entry checks and corrections in the field as explained above, but were not subjected to any further "cleaning" in the central office. Table 1 presents statistics on missing data at the level of individuals, farms, and business. Missing data in both surveys are extremely rare. Among the 55,843 persons in the three surveys, for example, only 46 persons have a missing age. There are also very few missing modules.

Table 1: Missing Data

Variable or module	1985 Cote D'Ivoire LSS			1986 Cote d'Ivoire LSS			1985 Peru LSS		
	Potential observations	Number missing	Percent missing	Potential observations	Number missing	Percent missing	Potential observations	Number missing	Percent missing
Sex	14,531	2	0.01	13,867	0	0.00	27,445	0	0.00
Age	14,531	3	0.02	13,867	0	0.00	37,445	43	0.16
Parental characteristics	13,396	5	0.04	12,902	3	0.02	26,323	15	0.06
Schooling	11,145	44	0.40	10,718	3	0.03	22,870	26	0.11
Health	13,396	7	0.05	12,902	4	0.03	26,323	121	0.46
Employment	10,164	5	0.05	9,868	8	0.08	22,121	121	0.55
Migration	7,041	13	0.18	6,725	32	0.48	15,721	100	0.64
Fertility	1,498	10	0.67	1,495	0	0.00	4,125	13	0.32
Farming	1,054	8	0.76	1,020	1	0.10	3,174	61	1.92
Family Business	733	1	0.14	747	0	0.00	2,751	49	1.78

Note: Total observations as follows: for sex and age, all persons enumerated; for parental characteristics and health, all household members; for schooling module, all household members 5 and older; for employment module, all members 7 and older for Côte d'Ivoire and 6 and older for Peru; for migration module, all members 15 and older; for fertility module, number of households with at least one woman 15 and older (Côte d'Ivoire) or 15-49 (Peru); for a farm module and business modules, number of households that said they had a family farm or business in round one.

24. Statistics on the coverage of the anthropometric module in the first two years of the Côte d'Ivoire LSMS are provided in Table 2. At least one height and weight measurement was obtained for almost 90 percent of all household members.

25. The *accuracy* of results is difficult to evaluate in the absence of other independent and reliable sources. Accuracy should be enhanced, however, by insisting that individuals respond for themselves. Interviewers were instructed to administer the schooling, health, employment, migration and fertility modules individually to each household member, and to avoid proxy responses for adults. According to Table 3, at least 93 percent of all women responded for themselves to the fertility section and 79-89 percent of all adult household members responded for themselves to the employment module. Non-response by entire households was due mainly to problems locating addresses or abandoned housing. Refusal rates were 1.4 percent or less in both surveys.

Table 2: Percent of Individuals Measured, Anthropometric Module

	1985 Côte d'Ivoire LSS	**1986 Côte d'Ivoire LSS**

Category	Number of Individuals	Percent Measured at Least Once	Number of Individuals	Percent Measured at Least Once
Total	5,383	89.9	12,868	88.4
Children				
- Age 0-4	914	91.9	2,171	91.4
- Age 5-14	1,651	90.1	3,983	89.3
Adults	2,818	89.1	6,713	86.9

Note: Anthropometric measurements were begun midway through the 1985 CILSS. They were not undertaken in Peru.

Table 3: Self-Reporting by Respondents

	1985 Côte d'Ivoire LSS		1986 Côte d'Ivoire LSS		1985 Peru LSS	
Module	Number of observations	Percent self-response	Number of observations	Percent Self-Response	Number of Observations	Percent self-response
Employment	10,159	69.3	9,860	67.3	22,000	71.5
- Children	3,120	44.6	3,139	42.9	6,423	28.7
- Adults	7,039	80.3	6,721	78.8	15,577	89.2
Fertility	1,488	93.3	1,495	92.8	4,119	97.0

Note: In Côte d'Ivoire, children are age 7-14; in Peru, they are 6-14.

26. A final indicator of the quality of the data is their internal consistency. A few illustrative checks on internal consistency are reported in Table 4. Before classifying individuals as household members, the LSMS collects information on all persons usually living in the household as well as those temporarily present. The first check looks at the characteristics of the persons not classified as household members to see if they were correctly classified. Only 16 persons in the two surveys fail this check (see Table 4). According to the second check, among individuals able to provide a birth document, fewer than one percent reported an age that is inconsistent with the date of birth. The LSMS questionnaire provides extensive linking between different family members within a household; the results for the third consistency check between children and their fathers is indicative of the exceptionally high degree of internal consistency between household members in the surveys. The last check in the table is not absolute, since it is quite possible that a household had a vehicle but did not purchase gasoline in the last 7 days. Over three-quarters of the households nevertheless did report expenditure on gasoline in the two surveys.

27. Turnaround Times. The LSMS is noted for the short turnaround time between the end of data collection and the availability of data for analysis. Theoretically, this is a matter of only a week or two, and in several countries basic abstracts have been completed within two to six months of the end of fieldwork. This speed has contributed markedly to the relevance of the data to policy-making. The quick turnaround between the completion of fieldwork and the availability of data for analysis is largely due to

the pre-coding in the questionnaire, the extensive quality control during the fieldwork, and the decentralized, concurrent data entry.

Table 4: Internal Consistency

Consistency Check	1985 Côte d'Ivoire LSS			1986 Côte d'Ivoire LSS			1985 Peru LSS		
	Number of observations	Number failing check	Percent failing check	Number of observations	Number failing check	Percent failing check	Number of observations	Number failing check	Percent failing check
Non-household members correctly classified as non-members	1,135	8	0.7	965	2	0.2	1,122	6	0.5
Among those with birth certificates, date of birth and age are consistent	7,485	45	0.6	6,653	16	0.2	27,120	157	0.5
Among those with father in household, code given as father's ID is a valid ID of an adult male	6,084	17	0.3	5,912	16	0.3	12,581	32	0.3
ID code of correspondent to fertility section is valid ID of an adult female and corresponds to the ID of randomly selected female	1,490	24	1.6	1,495	16	1.1	4,119	9	0.2
Household reporting an automobile also report gas expenditure in the past 7 days	143	31	21.7	133	28	21.1	355	88	24.8

Note: The number of observations is as follows: total non-members of households; total individuals with both birth certificates and reported ages; total persons reporting father in the household; number of fertility modules completed; total households reporting an automobile.

28. The length of time between the decision to carry out a survey and the time when data are available, however, is almost always much longer. Depending on the starting point of the country's survey infrastructure (notably the adequacy of the sample frame, availability of equipment and general adequacy of management), six to eighteen months of preparation may be required before the survey is carried out. When the full LSMS field procedures are used, data collection itself takes place over a full year (though a preliminary analysis is sometimes done with the first six months of data). Thus from the first idea to the full abstract of results can take two to three years.

29. *Surveys by Implementation Characteristics.* About half of the surveys have almost all the hallmarks of an LSMS survey (though they still differ in detail). An equal number of surveys sometimes referred to as LSMS surveys, however, are missing one or more of the hallmarks. The decisions to deviate from the LSMS prototype were taken for a variety of country-specific reasons: to fit better into the local institutional framework, to provide estimates of key variables representative of sub-national political jurisdictions, to focus more specifically on a particular policy issue, to lower costs, etc. Though they may have offsetting advantages, these decisions often have negative implications for the quality of the data or the range of analysis that is possible.

30. There are also a growing number of surveys that have been influenced by the LSMS design, and in ordinary conversations may be called "LSMS-type" surveys or otherwise linked with the LSMS. This labelling usually comes about because of the questionnaire content, the use of a multi-topic questionnaire strong on measures of consumption, diverse sources of income and use of public services, and sometimes with accompanying community or price questionnaires. Much less often have the LSMS' distinctive quality control features (e.g. high supervision ratios during fieldwork and data entry in the field prior to a second visit to the household) been incorporated in these "LSMS-type" surveys. The data and documentation for these surveys are not always available from the Development Research Group, though in several cases the Development Research Group does archive and disseminate the data or can at least steer the reader of this document to the right contact in the responsible division of the World Bank.

31. The reader should note that as this document is being written, LSMS-type surveys are being planned in Nepal, Brazil, Paraguay, Bulgaria, Kazakhstan, Mongolia, Turkmenistan, Uzbekistan, and Tunisia and possibilities are being explored in several other countries as well. Furthermore, additional rounds of fieldwork are being contemplated in some countries where surveys have already been carried out.

32. Finally, the Social Dimensions of Adjustment Project (SDA), carried out in the Africa Technical Department's Human Resources and Poverty Division of the World Bank, has assumed responsibility for the LSMS surveys in C⌠te d'Ivoire, Ghana and Mauritania. It is sponsoring "Integrated surveys, which are very similar to LSMS surveys, in Uganda, Mauritania, Madagascar, Senegal and Guinea as well. Less complex household surveys covering some of the same themes have been sponsored in a much larger number of Sub-Saharan countries. The regional unit should be contacted directly for information on the contents and availability of those surveys. The Cornell University Food and Nutrition Policy Program has also sponsored surveys of similar characteristics for Guinea and Mozambique.

III. A brief history of LSMS to date

33. The LSMS surveys are not a static, uniform product. Each is different from previous surveys and sometimes the differences are considerable. We expect that more differences will appear in the future, and that these may become increasingly large. This section describes some of the factors shaping the evolution of LSMS surveys, a history of those carried out to date, their use, and the Development Research GroupÆs present activities in support of the surveys.

A. Evolution in LSMS surveys

34. *Motivation.* First, the main motivation for the surveys has shifted from research to operational policy analysis. The earliest LSMS surveys were carried out as research projects. The first goal was to determine whether it was feasible to gather such comprehensive data. The second goal was to conduct research to better understand household behaviour and its implications for government programs. Emphasis was on analysis of the determinants of many aspects of welfare and their interaction, rather than on precise measurements of a few aspects of welfare. When the first surveys proved feasible and their analysis fruitful, policy makers and their advisors realized that data from the surveys could be very useful in policy-making. The descriptions of the welfare of the population and of the use of government services were especially valued. Some of the results from the more sophisticated studies of the determinants of welfare and the impact of policies were also valued by the operationsÆ audience, but perhaps less so than by the academic community.

35. The shift in motivation for the surveys is leading to some changes in them and considerable variation from country to country. Some of the content is being adjusted. Often there is a desire to have estimates of indicators accurate at sub-national levels. This requires a much larger sample and thus raises the question of whether quality and comprehensiveness can be maintained. The need to build local

analytic capacity in addition to capacity-building for data collection is also growing as a result of this trend.

36. *The Actors.* The second factor that is changing is the cast of actors involved and their roles in implementing new surveys. In the early years the LSMS division wore many hats simultaneously. It usually provided the impetus to carry out a survey in a particular country. It often arranged and administered the financing for the survey. It provided all the technical assistance and it was often the main user of the data.

37. Now these hats are being worn by many different actors. The main impetus to carry out a new survey is now much more likely to come from the operational staff of the World Bank or some other international agency or from the country itself rather than from the LSMS division. Financing is arranged and administered by the operational staff of the Bank or other international agency. Some of the technical assistance is still provided by the LSMS division, but, increasingly, other parties are providing technical assistance instead. In addition the LSMS division does a smaller proportion of the analysis on any one country's data.

38. *Building Local Analytic Capacity.* When the first few survey projects were designed, the principal constraint to the use of data in policy-making was taken to be the lack of data. The projects therefore concentrated on collecting data. Experience soon showed, however, that there is another constraint to using data to inform policy decisions i.e. weak local analytic capacity. Most recent survey projects have begun to address this constraint. The range of options has varied extensively. At minimum, a few tens of thousands of dollars are included in the project to commission local analysis or to provide a little training to staff of the statistical agency in how to produce an abstract. In South Africa, when the basic abstract was ready, a set of seminars were held to publicize the survey, its results and the public availability of the data and their documentation. A second seminar was held to present the results of some of the studies done by those who received the data at the first conferences. In Tanzania, a similar strategy is being used, with several months of short, intensive workshops (in the use of appropriate computer software, on statistics, on microeconomics) planned as well. In Jamaica, the first survey project dedicated $0.5 million to data collection. After several years, a second project was developed that spent $3 million to build analytic capacity in the planning agencies, the university and the ministries of health, education and welfare, and $0.5 million was provided for further data collection.

39. *Changing Technological Environment*. Many of the practical issues in survey implementation are heavily influenced by computer technology. Indeed, it was the dawn of the personal computer age that made possible the original innovations of the LSMS, such as concurrent data entry, error detection and revisiting households while still in the field.

40. Since their beginning, LSMS surveys have not changed much with respect to their use of technology, though certain things have become easier. For example, the original custom-designed software to format the questionnaire is no longer necessary now that a variety of commercially available graphics and word processing packages are adequate for the task. With the advances in analytic, word processing and graphics software, survey abstracts can now present more sophisticated analysis in much more appealing form.

41. Three new changes in technology that may affect how LSMS surveys are implemented are already in view, and more are surely developing. Commercially supported data entry packages may soon supersede the customized data entry programs that have been used to date for LSMS surveys. When these are used, it will be crucial to maintain technical assistance and training in the conceptual issues of how to handle hierarchical file structures and how to determine range and consistency checks.

42. Soon hardware will have evolved to the point where it is simple to take the data entry function on the road with the interviewers rather than having the data entry operator and computer located at a base

station in the region where surveying is taking place. This may lead to some changes in how the day-to-day management of fieldwork and quality control are done. Such a system will be pilot-tested on the LSMS survey being developed in Nepal.

43. Advances in computer technology also permit considering a still more ambitious proposition. The interviewers might enter the data directly into the computer during the interview, thus dispensing with the paper questionnaire altogether. This system has been piloted already in Bolivia and was scheduled for piloting in the Indonesia Family Life Survey in 1996. Just what the implications for management, quality control of interviews and data management will be is still unclear, though it is obvious that the changes will be substantial.

B. Data use

44. The total volume of studies supported by the LSMS surveys is impressive. A partial listing compiled in early 1995 lists about 320 studies. An earlier accounting conducted in 1992[9] listed about 180. In the earlier listing, three quarters were conducted using the Côte d'Ivoire, Peru 1985, or Ghana data. Jamaica accounted for about half the remainder, and the rest were spread between Peru 1990/91, Bolivia and Pakistan. Morocco and Mauritania each had only one study reported. The heavy use of the Ivoirian, Ghanaian and the early Peruvian data sets compared to the others is probably largely accounted for by the fact that those data come from the earliest surveys, so there has been more time for them to be used in research.

45. The pattern of data-use by topic has been fairly even. Poverty, employment, health, education and gender issues have been the focus of slightly more analysis than agriculture or household enterprises. The degree of satisfaction among analysts with the information also seems higher for the employment and social sector modules. Furthermore, many more analysts from more diverse backgrounds have used these modules. Analysts report, with overwhelming frequency, that each single paper drew upon information from many different modules. This attests to the value of the multi-purpose design, which is one of the distinguishing characteristics of the LSMS surveys.

46. An ongoing question about the LSMS surveys is whether they are useful for operations or "merely" for research. The answer is clearly both, though their use in research has been more extensive. Of all studies done for all countries in the earlier (1992) listing, about one tenth qualify as operational (see definition below). If the first two countries done explicitly as research projects (Côte d'Ivoire and Peru) are excluded from the calculation, about one quarter of the studies are operational. Focusing on the middle and later phases of implementation when operational uses were an explicit intended outcome (i.e. excluding Côte d'Ivoire, Peru 1985, Ghana and Mauritania), about half of all analysis is operational. Thus, operational work is both a substantial and growing share of all analysis done using LSMS data.

47. The figures in the previous paragraph were calculated by defining "operational uses" as analysis requested or performed by the government or by the Bank's operational staff to provide useful information about policies or programmes on the table for active discussion. By this definition, the demand for the health-care study for Jamaica counts as operational because the government commissioned it at a time when user fees were being raised. Similar work led by the same analyst using Ivoirian and Peruvian data sets does not count as operational because it did not feed directly into a government decision process. Thus the preponderance of research over operational use is partly definitional. Studies with clear policy implications are counted as operational only if they were done at the time of the policy decision and the results were presented to decision makers. The contribution of other studies whose clear policy implications indirectly inform policy debates is not counted. This influence can be substantial but is very difficult to measure. Private Peruvian researchers, for example,

have carried out extensive analysis of the effects of economic crisis and adjustment on poverty in Peru using the 1985 and 1990 LSMS data sets. The results have been widely disseminated in academic and policy circles as well as in the popular press. Similarly, the influence of more humble abstracts produced for each survey is not included within the definition of operational analysis, even when government staff do appear to make regular use of them. The Bolivian and Jamaican abstracts, for example, are quite detailed and have been disseminated actively to government and international agency staff and are apparently used by them in understanding the state of social development.

48. The Jamaican data have had the greatest operational influence achieved to date. The government has commissioned Jamaican academics to use them to set a poverty line, to compare food assistance programmes and to redesign the food stamps programme. Staff from the Ministry of Health actively collaborated (with the RAND Corporation) in studying the effectiveness of perinatal care, patterns in the quality of health-care services, aging and functional ability, and patientsÆ choice of health services, including willingness to pay for them. Other studies under way both by local and international researchers will eventually feed into background discussions of social policy. Furthermore, the data sets are being used in a quantitative methods course at the university, which should help to stimulate more and better quantitative social policy analysis in the long run. In Bank operations, the Jamaican LSMS data have been used in discussions of poverty, safety nets, targeting and the reform of secondary education.

49. The Ghanaian and Peruvian (both 1985 and 1991) data have been analyzed by or at the request of World Bank operational staff and fed into poverty assessments, country economic memoranda and other sector work in each country. Indeed, the Ghanaian country department hired a research analyst full time primarily to do operational analysis using the Ghanaian survey and integrate it into the policy dialogue. The Bolivian data were used to analyze the impact of the Emergency Social Fund, which served as a model for several internationally financed social funds. Plans exist for the Bolivian data to be used in the evaluation of the impact of BoliviaÆs Social Investment Fund and the project design of a new childcare project. Operationally driven work began on the Moroccan, Pakistani, Venezuelan, Nicaraguan, Guyanese, and Vietnamese data virtually as soon as they became available. Little or no operational work has been done for Mauritania. C⌠te dÆIvoire's data were not immediately used for policy analysis, but the Africa Technical Department has recently carried out an ambitious programme of operationally relevant research using those data.

C. LSMS today

50. The Development Research Group currently works on several fronts in support of LSMS. The emphasis put on the various lines of action changes over time, as do the specific activities carried out under each. The following is a brief snapshot of activities at the beginning of 1995.

51. *Analysis of Data.* The analysis of LSMS data for both policy and research is probably the largest single activity in the Development Research Group and so pervades the division's work that it is difficult to quantify.

52. *Assistance in Implementing New Surveys*. The Development Research Group continues to assist in implementing new surveys. During the 1994 fiscal year, fieldwork was completed for a new survey or round of an annual survey in seven countries, and preparation for future surveys was moving forward in ten other countries. In a few cases, divisional staff or consultants spend several months working on a single country to help develop the project and to provide technical assistance themselves. With increasing frequency, the Development Research Group helps to identify suitable independent consultants, to write their terms of reference and to review their work, but does not actually provide large quantities of technical assistance itself. This greater reliance on individuals outside of the Development Research Group reflects the increased demand for LSMS surveys beyond what the Development Research Group

can provide.

53. *Management, Documentation and Dissemination of Existing Data Sets to Researchers.* The Development Research Group archives and disseminates data from LSMS surveys to eligible users. Dissemination of existing data sets continues at the rate of about one per day. Clients are mostly researchers from the World Bank and academia, with a lesser proportion of World Bank operations staff. Data are also available from the institutions that carried out the fieldwork. These agencies service most in-country requests for data. For the period from June 1993 to June 1995, the division devoted significant resources to improving survey documentation in order to reduce start-up costs to new users, safeguard and rebuild institutional memory with regards to these surveys, and to reduce the unit costs to the division of disseminating the data sets.

54. *Training and Preparation of Written Pedagogic Materials.* Periodically the division produces written materials on the lessons from LSMS implementation experience. For example, in the fall of 1994, the division began to draft a comprehensive manual on how to implement an LSMS survey from beginning to end. In 1992, the Development Research Group began an annual in-house training course for World Bank operations staff in charge of LSMS surveys.

55. *Publications.* The Development Research Group supports the LSMS Working Paper Series which publishes papers on issues relevant to the collection or analysis of multi-topic household surveys. Some papers focus on the methodology of data collection or statistical analysis, others focus on the description or analysis of household behaviour or the effects of government policies.

56. *Research on Survey Methodology.* From time to time, the Development Research Group sponsors research on survey methodology. In the fall of 1994, it embarked on a multi-year research project to improve the policy relevance of LSMS surveys through (i) increasing the range of topics they address; (ii) improving data quality; and (iii) improving or simplifying implementation. The work will involve field experiments, and extensive analysis of the different ways in which things have been done in multi-topic household surveys since the inception of the LSMS.

57. *Further information.* For further information on any of the surveys supported by the Development Research Group, the reader should do one of the following:

check the LSMS home page:	SMS Home Page http://www.worldbank.org/lsms/lsmshome.html
send paper mail to:	LSMS Surveys Development Research Group World Bank 1818 H Street, N.W. Washington, D.C. 20433
send faxes to:	LSMS Surveys Development Research Group 1-202-522-1153
send electronic mail to:	LSMS@worldbank.org

Annex: An illustration of a "prototypical" LSMS questionnaire: A summary of the questionnaire design for Ghana

This annex describes the household, community and price questionnaires of Ghana's LSMS survey. While there is no formal prototype for the LSMS, the questionnaires used in Ghana come as close as any to being a prototype. They are described in this annex with that purpose. Annotated versions of the C⌠te d'Ivoire and Tanzanian questionnaires are available in Grootaert (1988) and Ainsworth et al (1992). The C⌠te d'Ivoire questionnaire might also be called a ôprototypicalö LSMS. The Tanzania questionnaire is also similar to the "prototype" but with more detail in some modules than usual.

The Ghana LSMS was first conducted in 1987-88. This nationwide survey gathered individual and household level data using a multi-purpose household questionnaire. Community level data were collected using a community questionnaire in rural areas and a price questionnaire was used in both urban and rural areas. In 1988-89 the household, community and price questionnaires were repeated. [10]

The household questionnaire

The household survey contains modules (sections) to collect data on household demographic structure, housing conditions, schooling, health, employment, migration, expenditure and income, household non-agricultural businesses, agricultural activities, fertility and contraceptive use, savings and credit, and anthropometric (height and weight) measures.

The individual designated by the household members as the household head provided responses to questions on general household information, or indicated which member would know the answer. If the household head was not available, a member of the household who was able to provide information on household affairs was selected. In most sections of the questionnaire, each member of the household was asked to respond for himself or herself, except that parents were allowed to respond for younger children.

The household questionnaire was completed in two interviews two weeks apart: Sections 0-8, 16A, 17A and 17C were conducted in the first interview.[11] Sections 9-15, 16B and 17B were conducted in the second interview. The survey was designed so that more sensitive issues such as fertility and savings were discussed near the end. The content of each module is briefly described below.

I. FIRST INTERVIEW

Section 0 SURVEY INFORMATION
- 0A HOUSEHOLD HEAD AND RESPONDENT INFORMATION
- 0B SUMMARY OF SURVEY RESULTS
- 0C OBSERVATIONS AND COMMENTS

The date of the interview, the religion and language of the household head, the language used by the respondent and other technical information related to the interview are noted.

Section 1 HOUSEHOLD MEMBERSHIP
- 1A HOUSEHOLD ROSTER
- 1B INFORMATION ON PARENTS OF HOUSEHOLD MEMBERS
- 1C CHILDREN RESIDING ELSEWHERE

The roster in Section 1A lists the age, sex, marital status and relation to the household head of all

the people who spent the previous night in that household and for other household members. The household head is listed first and receives personal id # 1. Household members were defined as including "all the people who normally live and eat their meals together in this dwelling." Those who were absent more than nine of the last twelve months were excluded, except for the head of the household and infants less than three months old. An historical calendar prepared for the 1984 population census was used to help respondents accurately date births and other long-ago events for which documentation could not be produced.

Information on schooling and occupation for non-resident (including deceased) parents of household members and on the age, sex, and schooling of (currently living) non-resident children of household members were collected in Sections 1B and 1C, respectively.

Section 2 HOUSING
- 2A TYPE OF DWELLING
- 2B HOUSING EXPENSES

Section 2A contains the type of dwelling and years at current residence. Household expenses, including rent and utilities, source of water, cooking fuel and light, and type of toilet, are in Section 2B.

Section 3 SCHOOLING
- 3I ATTENDANCE
- 3II EXPENSES

In Section 3I, data were collected for each household member five years or older on self-reported literacy and numeracy, school attendance, completion and current enrolment. For all individuals who attended school during the previous 12 months, data were collected on expenses, scholarships, and distance and travel time to school in Section 3II. The translation of the highest grade completed into the number of years of schooling is provided in Appendix F.

Section 4 HEALTH

Individual members and parents of children were asked to respond to the health questions in Section 4. The respondent reported on at most one illness or injury, if any, sustained in the last four weeks, the type, location and cost of any care sought, and the amount spent in the last twelve months on vaccinations, Maternal and Child Health or other health consultations. Women age 15 and older were asked how many live births they had had.

Section 5 ECONOMIC ACTIVITIES
- 5A TIME USE AND JOB SEARCH
- 5B MAIN JOB DURING THE PAST SEVEN DAYS
- 5C SECONDARY JOB DURING THE PAST SEVEN DAYS
- 5D SEARCH FOR ADDITIONAL EMPLOYMENT
- 5E MAIN JOB DURING THE PAST TWELVE MONTHS
- 5F EMPLOYMENT HISTORY
- 5G SECONDARY JOB DURING THE PAST TWELVE MONTHS
- 5H OTHER ACTIVITIES

All individuals aged seven and older were asked to respond to the economic activity questions in Section 5, beginning with the questions on the nature of their work in the previous seven days. For persons that did not work in the previous seven days, data were collected on job search, reservation wage,

and reason for not seeking employment. For work in the previous seven days, information was collected on hours, length of employment, type of employer, taxes, distance and travel time to work, money and compensation in kind, and benefits. Similar questions were asked on the secondary job in the previous seven days. Questions were asked on search for additional employment, including the kind of work sought and the lowest acceptable wage. If the main work in the previous twelve months was different from the main or secondary job in the previous seven days, the complete set of questions was answered for that work as well. Type of work and years of experience at any work prior to that of the main job in the previous twelve months were collected. Again, if there was a secondary job in the previous twelve months different from the other jobs, data on work conditions and compensation were collected. Days and hours spent doing household chores were collected for each household member aged seven and older.

Section 6 MIGRATION

All household members aged seven or older also responded to the questions on migration in Section 6: If not born at current residence, was place of birth a village, town, city, or other? How old were the individuals when they left? What was the main reason for leaving? What was the main reason for coming to the current place of residence? From what region did the person come to the current place, was it a village, town or city? In how many places has the person lived for periods of more than three months in his or her life?

Section 7 RESPONDENTS CHOSEN FOR ROUND TWO (the second interview)

In Section 7, the principal respondent was asked to identify (1) the household member who knows the most about all the agricultural and livestock activities of the household, (2) the household member who shops for food and (3) the household member who knows the most about the other household expenses, income and savings of household members. The respondent was also asked to identify the three most important businesses and trades belonging to the household. Finally, a woman was selected at random from among the women in the household between the ages of 15 and 50 to respond to the fertility module. All these women would then be interviewed in the second round (interview) of the survey.

Section 8 CHARACTERISTICS OF HOUSING

Section 8 notes the construction material of the household dwelling's walls, flooring, roof and windows, and the floor area in square meters.

II. SECOND INTERVIEW

Section 9 AGRO-PASTORAL ACTIVITIES
- 9A LAND
- 9B CROPS
- 9C AGE OF TREE CROPS
- 9D FARM INPUTS
- 9E SALES OF FOOD PRODUCTS MADE FROM HOMEGROWN CROPS
- 9F LIVESTOCK
- 9G ANIMAL PRODUCTS
- 9H EXTENSION CONTACTS FOR LIVESTOCK
- 9I LIVESTOCK EXPENDITURES
- 9J HAND TOOLS
- 9K FARMING EQUIPMENT

In Section 9, the respondent was the household member identified in Section 7 as the one most knowledgeable about the household's agricultural and pastoral activities. Most questions refer to the previous twelve months. Because interviews were conducted throughout the year, the prior twelve months differs among households. This also means that crop production (harvest) over that time period may be from the previous agricultural cycle while the inputs correspond to the current agricultural cycle. Section 9A covers land owned, rented and cultivated by the household, land sales, gifts and trades, and land sharecropped in and out. Section 9B collects information on acreage, production, distribution, loss to pests and market value of 32 crops. Section 9C notes the proportion of tree crops in each of the three categories: (1) too young to produce, (2) in full production, and (3) near the end of productive life. Section 9D surveys farm inputs, including seeds, young plants, fertilizer, manure, herbicides and insecticides, and twine and sacks. Information was collected on the amounts used, costs, and source of credit for purchase. Information on expenses for transport, storage, paid labour, rented animals, fuel, and machinery rental and repair was also collected. Sharecropping in and out, including the proportion of harvest exchanged, was also noted, as was contact with an extension agent.

Section 9E contains information on the processing of homegrown crops for sale. Who did the processing? For how many months of the year? How often was it sold? How much was it sold for? How much was spent on tools, transport and labour? Section 9F contains data on the value, sale, consumption and purchase of livestock in the previous twelve months. Section 9G asks about the processing for sale of animal products produced by the household, including the value of the amount sold. Contact with animal husbandry or veterinary extension workers in the previous twelve months is covered in section 9H. Expenditures on, and source of, supplies and services for livestock are noted in Section 9I. Ownership of hand tools is surveyed in Section 9J. Section 9K surveys ownership, value, sale and purchase of heavier farm machinery including tractors, ploughs, carts, vehicles and draft bullocks.

Section 10 NON-FARM SELF-EMPLOYMENT
- 10A WORKING CONDITIONS
- 10B EXPENDITURES
- 10C REVENUES
- 10D BUSINESS ASSETS

Section 10 gathers data on Non-Farm Self-Employment for the three most important enterprises operated by the household. The respondent for each enterprise is the household member most familiar with its operation (as identified in Section 7). Data are gathered on the ownership, number of employees, and type of employee compensation for each enterprise. For each business, expenditures over the previous twelve months on wages, raw materials, and taxes are collected. The respondent was asked how much, in money and goods, was received from sales and how much of the enterprise's product had been consumed by the household since the first interview. Information on ownership, sales and purchases of assets, buildings, land, vehicles, tools and durable goods, in the previous twelve months is also collected.

Section 11 NON-FOOD EXPENDITURES & INVENTORY OF DURABLE GOODS
- 11A DAILY EXPENSES
- 11B ANNUAL EXPENSES
- 11C INVENTORY OF DURABLE GOODS
- 11D EXPENSES FOR REMITTANCES

Section 11 collects information on household expenditures from the household member identified in Section 7 as the one most able to answer non-food expenditure questions. Respondents were asked to recall the amount spent since the first interview (approximately two weeks) on daily expenses such as

lottery tickets, cigarettes, soap, personal care products, cooking fuel, matches and candles, and gasoline. Expenditures on other goods, both in the previous two weeks and the previous twelve months, were collected for shoes, cloth, clothing repairs, public transport, paper supplies, furniture, kitchen equipment, medical services, domestic servants, jewelry, entertainment and other goods (see household questionnaire). The purchase price, length of ownership and resale value of durable goods owned were collected in Section 11C. The relation and location of the recipients of remittances sent out of the household were noted in Section 11D (remittances received by the household are recorded in Section 14A). Susu contributions are recorded in this section as an expense. ("Susu" is a rotating savings scheme in which participants contribute a fixed sum regularly. The total is then allocated among the participants in turn.) Income from susu is recorded in Section 14.

Section 12 FOOD EXPENSES AND HOME PRODUCTION
- 12A FOOD EXPENSES
- 12B CONSUMPTION OF HOME PRODUCTION

In Section 12A, information on the amounts spent since the first interview (about two weeks) on 60 food items was collected. In addition, questions were asked on the number of months the item was purchased during the previous twelve months. Information on the frequency of purchases within a month, and the amount spent each time was collected for the same 60 food items. This allows for a rough calculation of annual expenditure. Section 12B asks about the amount consumed and market value of foods grown or raised by the household in the previous twelve months.

Section 13 FERTILITY
- 13A FERTILITY HISTORY
- 13B FAMILY PLANNING

In each household one woman, randomly selected as explained in Section 7, responded to the questions in Section 13. The woman was asked if she had been pregnant and, if so, had she given birth. Women who respond that they have are asked the birth date and sex of all children they have given birth to, including those who did not survive. If the child is not alive the woman is asked how long it survived. The woman is asked about the birth and breastfeeding of her last child, the age at which she started cohabiting, and the number of miscarriages she has had. Section 13B gathers information on knowledge, use, source and cost of six modern and six traditional methods of family planning.

Section 14 OTHER INCOME
- 14A INCOME FROM REMITTANCES
- 14B MISCELLANEOUS INCOME

Section 14 collects data on money and goods that come into the household as remittances or from other sources such as employee welfare funds, dowries or susu.

Section 15 CREDIT AND SAVING
- 15A MONEY AND GOODS LENT AND BORROWED
- 15B LOANS CONTRACTED
- 15C SAVINGS

Section 15 collects information on the amount of indebtedness of household members to people or institutions outside the household. If money or goods have been borrowed and repaid by any household member in the last twelve months then the details of those loans are collected. Information includes the

source and amount of loan, interest, side payments, collateral, repayment schedule, reason for borrowing, and number of loans from the same source. The household is asked to list the location of its savings, if any, including bank, housing saving bank, rural savings bank, foreign currency account, other bank accounts, bonds, stocks and home. The total value of all savings accounts is noted.

Section 16 ANTHROPOMETRICS
16A ROUND ONE
16B ROUND TWO

Anthropometric measurements are taken for each household member. Section 16A measurements were taken in the Round One interview and Section 16B measurements were taken in the Round Two interview. Data were collected on the household member's sex, date of measurement, weight and height. It was also noted if female respondents were pregnant or breastfeeding. The survey was designed so that 20 percent of the respondents, including those whose measurements deviated substantially from the norm, would be re-measured and re-weighed in Round Two. Due to a data-entry program error not connected with the accuracy of the data, the majority of respondents were re-weighed and re-measured in the first three months of the first year. The error was subsequently corrected.

The community questionnaire

A Community questionnaire was administered by the team supervisor and completed with the help of village chiefs, teachers, government officials and health care workers. Supervisors were instructed to conduct interviews for all rural areas and in other areas where agricultural pursuits were followed. The questionnaires were completed for almost all rural, most semi-urban clusters and one urban cluster. (Cluster refers to a group of 16, 32 or 48 households within one geographic area that were surveyed. Cluster is explained in Section 3 of this document.) Where the households in one cluster were located in more than one distinct community, questionnaires were completed for each community. In those cases, each community questionnaire contains a list indicating which of the households in that cluster belong to that community. Data were collected on a variety of topics as discussed below.

Section 1 (DEMOGRAPHIC INFORMATION) includes the population of the community, a list of principal ethnic groups and religions, the length of time the community has existed and whether or not it has grown. Section 2 (ECONOMY AND INFRASTRUCTURE) questions include a list of principal economic activities, access to a motorable road, electricity, pipe-borne water, restaurant or food stall, post office, bank, daily market and public transport. There are also questions on employment, migration for jobs, and the existence of community development projects. Section 3 (EDUCATION) asks distance to primary and middle schools. For up to three primary schools, the nearest middle school and the nearest secondary school, information is obtained on whether it is public or private, whether it is for boys or girls, or both, how many classes there are, and when it was built. Enrolment rates and reasons why children do not attend school are also collected. Section 4 (HEALTH) collects data on distance and travel time to the nearest of each of several types of health workers (doctor, nurse, pharmacist, midwife, family planning worker, community health worker, traditional birth attendant and traditional healer) and each of several types of health facility (hospital, dispensary, pharmacy, maternity home, health post and family planning clinic). The questions in Section 5 (AGRICULTURE) include the type of crops grown in the community, how often and when they are planted and harvested, and how the harvest is generally sold. This section also includes questions on the availability of an extension center, agricultural cooperatives, and machinery, and questions on the use of pesticides and irrigation. Qualitative data on the last year's rainfall, the local land market, the prevalence of sharecropping, and agricultural wages in the community are also gathered.

In several sections respondents were asked to list the problems experienced by the community. The responses were noted and codes were assigned after all the questionnaires had been entered. These codes are provided in Section 3 of Appendix G. In clusters that were surveyed in both years of the GLSS (1987-88 and 1988-89), the community questionnaire was not administered in the second year.

The price questionnaire

A Price questionnaire was to be completed for each cluster. Prices from up to three vendors are collected for 28 food, 6 pharmaceutical and 13 other non-food items. The items were selected because they are important in most household budgets and because they are usually available in most areas of the country. Weighing scales were used to determine the exact weight of food items.

In clusters that contained more than one locality, a questionnaire was completed for the market closest to each locality. The price questionnaire was administered in both years to half of the clusters that were surveyed in both 1987-88 and 1988-89

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Endnotes

[1] This paper is an extract from a longer paper, A Guide to Living Standards Measurement Study Surveys and Their Data Sets, Grosh, Margaret E. and Paul Glewwe, May 1995, Living Standards Measurement Study Working Paper No. 120, World Bank, Washington, D.C.
The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors and should not be attributed in any manner to the World Bank, to its affiliated organizations, or to members of its Board of Executive Directors or the countries they represent.

[2] Writing this paper required keeping straight innumerable details of context, survey technicalities and survey analysis for surveys in eighteen countries. In this effort, we relied heavily on the following individuals: Martha Ainsworth, Harold Alderman, Benu Bidani, Carlo del Ninno, Emmanuel Jimenez, Dean Jolliffe, Valerie Kozel, Juan Muñoz, Raylynn Oliver, Kinnon Scott, Jacques van der Gaag and Qing-hua Zhao. Drafts of the paper were edited by Stephanie Faul and Fiona Mackintosh. Document desktopping was provided by Jim Shafer. Any remaining inaccuracies in the document are most likely due to a failure to pester these people even more often than we did.

[3] Originally the LSMS referred to a set of activities funded by a specific research grant. Over the years, the term has come to refer to a larger set of activities that share the same objectives, regardless of the source of their financing. This paper refers to the latter definition.

[4] Of course, the LSMS data are rich enough to allow other indicators of household welfare to be used (see Glewwe and van der Gaag, 1988).

[5] This subsection draws heavily from Ainsworth (1986). See also Ainsworth and Munoz (1986) and Grosh and Munoz (1996).

[6] Typically no more than a dozen questions are not pre-coded.

[7] One of the first of these, GRIDS, was developed specifically for the first LSMS surveys. Since then, other suitable packages have appeared on the market, such as the FORMTOOL or PERFORM graphics packages and more recently the advanced versions of some word processing packages.

[8] Unfortunately, it is impossible to quantify this tradeoff.

[9] In the fall of 1992, we sent letters to 89 researchers for whom we had some record of having used LSMS data sets, usually because they had obtained them from The Development Research Group (or its precursor units). We asked them to list the papers they had written with the data, and the country, year, and modules used in the analysis. We received 49 replies. Nearly 200 individual books, papers or monographs were reported. This is a rough estimate only. There a few cases of double counting where papers with two authors each reported an item, but there are many more cases of unreported work. We also asked the staff involved in supervising each survey to list the papers they knew about that had been done by government or university analysts in the countries surveyed. This is probably insufficient to capture all such work, and thus omits much analysis done in the developing world.

[10] Additional community level data were collected through a health and family planning facilities questionnaire, a pharmacy questionnaire, and a school questionnaire. Additional household and individual level data relevant to education were also collected, including testing of household member's

mathematics, reading and abstract thinking skills. These exercises are not at all prototypical and are thus not described in this annex.

[11] Sections 17A, 17B, and 17C apply only to those households in the 1988-89 survey that participated in the collection of cognitive skill test score data.