

Chapter 16: Labour
Version 07 for global consultation (15th of April, 2024)
(Chapter 19 in the 2008 SNA, moved upwards, revised title and revised content)

A. Introduction

- 16.1 There are many key policy questions that hinge on a better understanding of the labour market and its links and interactions with various aspects of the economy. One can think of the impact on the labour market and the changing nature of “work” from changes in production arrangements, including those caused by legislation (e.g., introduction of a minimum wage or a working hours directive), technological innovation (e.g., demand for new skills and new jobs), process and product innovation, globalisation (e.g., jobs moving to lower income countries), digitalisation (e.g., impact of the GIG economy) and the move to environmental sustainability (e.g., the demand for labour in environmentally related activities). These issues can affect the numbers employed and how they are deployed. Wages and labour costs are another important dimension of labour as they represent both a large share of the production costs and often the main source of households’ income.
- 16.2 Like various aspects of economic developments, understanding the changing landscape of the labour market is becoming more difficult. More integration of the statistical domains is an important aid to understanding these changes. The transformation of the labour market and skills and knowledge needs in turn affect employment, unemployment, education, and, more generally, living standards, quality of life, and retirement.
- 16.3 The use of labour is at the heart of production, forming a primary input alongside capital. The two categories of labour input in the national accounts, that is, labour provided by employees and self-employed, are based on the SNA residency and production conventions. These are recognised in the integrated framework of economic accounts through remuneration of employees and, albeit implicitly, mixed income as well as labour input by industry. Labour has a prominent role in the SNA given its importance in the production process and its linkages to other areas of interest such as the analysis of unit labour costs, hours worked, labour productivity, income inequalities, per capita estimates, etc. It is also important to have better insights into related aspects such as human capital, education and health care as well as wider links to skills demand and skills shortages. Furthermore, labour market data also provide insights into aspects of living conditions and well-being.
- 16.4 The concept of labour used in national accounts matches the coverage of production in the SNA. This comprises multiple forms of work as defined in the international statistical standards (resolutions) on work and the labour force as endorsed by the International Conference of Labour Statisticians (ICLS) – in particular resolution I of the 19th ICLS Resolution concerning statistics of work, employment and labour underutilization) – a process hosted by the International Labour Organization (ILO). Section C contains a concise overview of the correspondence between the definitions applied in these ICLS Resolutions and the concepts used in national accounts.
- 16.5 This chapter on labour is structured as follows. Section B covers a brief overview of the SNA framework and its principles in relation to labour. Section C covers the types of labour and work in the SNA, including a comparison with the relevant ICLS Resolutions. Section D then follows with an overview of labour market tables, including their links to supply and use tables. Section E deals with some enhanced measures of labour inputs, while section F discusses some other specific issues.

B. Brief overview of the SNA framework and principles in relation to labour

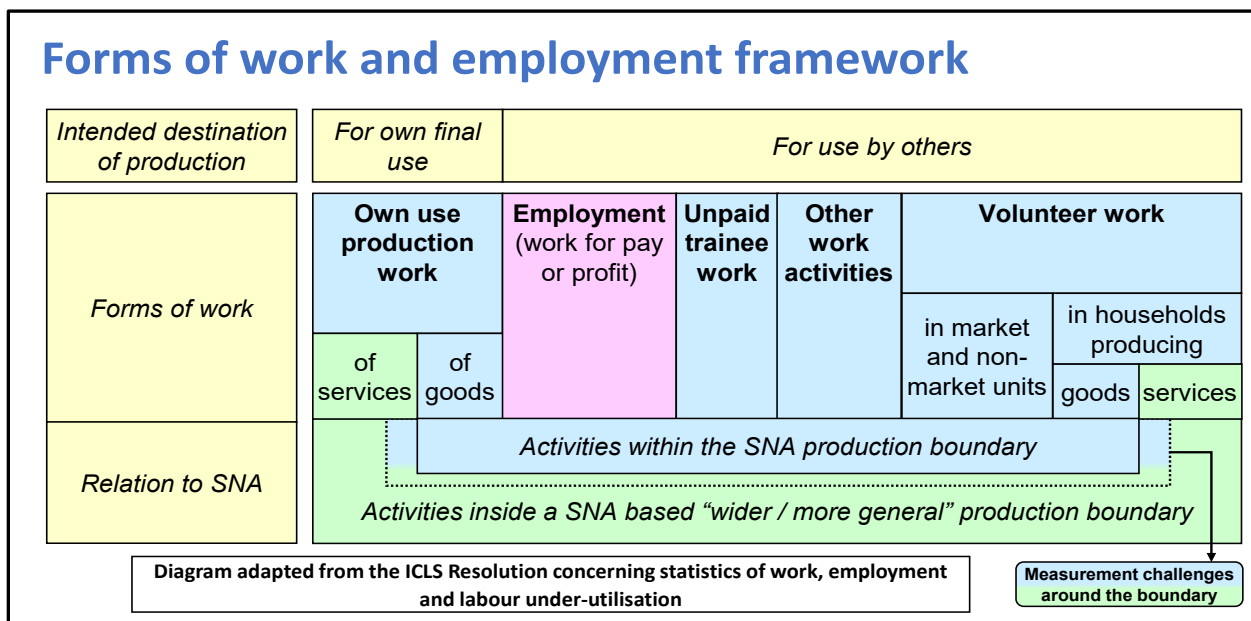
- 16.6 It is important to draw out some of the features and principles of the SNA in relation to labour, and its

connection to the output recorded in the SNA, which are key in the analysis of production activities. This in turn has links with the ICLS Resolutions on recording labour, which will be referred to as appropriate in the chapter.

1. SNA production boundary

- 16.7 In the SNA, production is defined as an activity, carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital and goods and services to produce outputs of goods and services. As such, there is a direct link between the production of goods and services and the labour used in this production. More specifically, production includes the production of goods and services supplied, or intended to be supplied, to units other than their producers; the own-account production of goods retained by their producers for their own final consumption or gross capital formation; the own-account production of housing services by owner occupiers; and the production of domestic and personal services by employing paid domestic staff. More details on the production boundary are provided in chapter 7.
- 16.8 The integrated framework of the SNA strictly confines the concept of labour input to the input to the production activities within the SNA production boundary, although in the extended accounts on unpaid household service work a broader concept of production is applied (see section F). On the other hand, the various forms of work identified in the 19th ICLS Resolution concerning statistics of work, employment and labour underutilisation, as presented in figure 16.1, can be aligned to either the general production boundary, when all forms of work are included, or the SNA production boundary, when direct volunteer work providing services and the production of services by households for own final use are excluded (with the exception of owner-occupied housing services and the production of domestic and personal services by employing paid domestic staff). In this respect, it is worth noting that activities may move in and out the SNA production boundary. For example, due to digitalisation, one can observe changes from households buying services from travel agencies to arranging travel themselves, or using the services provided by supermarkets to using self-service checkouts. On the other hand, one can observe a trend of purchasing services which were traditionally produced by households themselves (e.g., using the services of kindergartens instead of taking care of children at home, or eating outside instead of preparing and eating meals at home). Whatever the case, there is a clear link between what is defined as production in the SNA and the notion of labour.

Figure 16.1 SNA production boundary links to the forms of work and employment framework



* Diagram adapted from 19th ICLS Resolution concerning statistics of work, employment and labour underutilisation.

2. Population, labour and residency

- 16.9 In monitoring labour, the residency of the population and the residency of the units producing goods and services are equally relevant. Details on both notions are fully described in chapter 5. **The total population of a country consists of all persons who are resident in the economic territory at a given point in time.** The labour force consists of resident persons who are actively prepared to make their labour available during any particular reference period for producing goods and services that are included within the production boundary of the SNA. The labour force is further divided into those who are employed and those who are unemployed. Thus, the population of the country can be sub-divided into three categories: employed, unemployed and not in the labour force. A person's status depends on their activity (or lack of it) during a particular reference period (usually a week).
- 16.10 The above definition of the labour force is slightly different from the one defined in the ICLS Resolutions, which limits employment to all resident persons who are actively prepared to make their labour available during any part of the reference period for producing goods and services in return for pay or profit. For SNA purposes, the concept of labour input is somewhat broader, as it also includes labour which is used as an input into the household production of goods for own final use, some types of volunteer work as well as unpaid trainee work. However, in practice the differences might be marginal.
- 16.11 In monitoring labour input, the perspective of looking at the resident population is different from the focus of the national accounts: the labour input in domestic production, for which the residency of the units producing goods and services is the starting point. Employed persons providing labour input consist of two main groups: employees and self-employed. Self-employed persons provide labour input to production by resident institutional units by convention. This is not true for employees who do not have to be residents in the economy where they work. While labour input mainly consists of resident employees working for resident institutional units and self-employed persons, it also includes the following categories of persons employed by resident institutional units where there might be a question whether they are considered resident or not:
- non-resident border workers (sometimes called frontier workers), including non-resident workers working from home;
 - non-resident seasonal workers, that is, persons who move into the economic territory and stay there for less than one year in order to work in industries which periodically require additional labour;
 - members of the country's armed forces stationed in the rest of the world;
 - nationals who are on the staff of national scientific bases established outside the geographic territory of the country;
 - nationals who are on the staff of diplomatic missions abroad;
 - members of the crews of fishing boats, other ships, aircraft and floating platforms operated by resident units;
 - employees of general government bodies situated outside the geographic territory, for example embassies; and
 - students undertaking work are included or not according to their classification as resident or non-resident.
- 16.12 On the other hand, the following residents, though employees, are excluded from labour input in resident institutional units and hence from measures of labour input as used in the context of the SNA:
- residents who are border workers or seasonal workers, that is, who work as employees in another economic territory;

- nationals who are members of the crews of fishing boats, other ships, aircraft and floating platforms operated by non-resident units;
- residents who are employees of foreign government agencies located on the geographic territory of the country;
- the personnel of international civilian organizations located within the geographic territory of the country (including local employees directly recruited);
- members of the armed forces working with international military organisations located on the geographic territory of the country;
- nationals working in foreign scientific bases established in the economic territory.

16.13 In more general terms, the link between resident persons providing labour input, i.e., the labour force excluding unemployed persons, and persons providing labour input to domestic production can be described as follows:

Labour input to domestic production =

resident persons providing labour input

minus resident persons providing labour input to non-resident producer units

plus non-resident persons providing labour input to resident producer units

It is important to note, this is a key difference between the SNA and social statistics. While for the latter the resident population would be the normal reference point for compiling labour statistics, the national accounts mainly focus on labour input to domestic production. Having said that, the labour market tables discussed in section D also provide a link with resident employed persons within the (national) labour force, by deducting non-resident employees working for resident producer units, and adding resident employees working for non-resident producer units.

16.14 The labour force also includes unemployed persons, defined as persons who are not employed but available for work and actively seeking for work. In the SNA, the concept of unemployment is not directly incorporated, only the population of employed persons contributing their labour input to economic activities within the production boundary of the SNA is directly relevant. The concept of unemployment typically applied in labour statistics also slightly deviates from the concept of labour input in the SNA, by referring to more formal types of work, thus excluding, for example, work related to household production of goods for own final use (see also [paragraph 16.67](#)). Whatever the case, knowing about the numbers of unemployed is analytically important in understanding, for example, labour market tightness or surplus labour within an economy at any point in time (e.g., by monitoring unemployment to vacancy ratios). Unemployment also has a direct impact on well-being of people and may also affect government finance by increasing benefit claims and decreasing the tax base.

C. Types of labour and work in the SNA and links to the ICLS standards

16.15 As explained in the previous section, labour input, as defined in the SNA, consists of three groups of persons: residents who are employees of resident institutional units, residents who are employees of non-resident institutional units, and self-employed persons. (A self-employed person is necessarily associated with a resident household. If such a person provides goods and services abroad, these are recorded as exports.) In the SNA, labour input is defined as all persons, both employees and self-employed persons, engaged in some productive activity that falls within the production boundary of the SNA and that is undertaken by a resident

institutional unit.

16.16 This section first explains the concepts of employees and self-employed persons as defined in the SNA in more detail. Subsequently, some boundary problems are covered such as labour in NPISHs and volunteer work. The section concludes with a concise summary of the similarities and the differences between the SNA and the ICLS Resolution in defining labour market related concepts.

1. Employees

16.17 **Employees are persons who, by agreement, work for a resident institutional unit and receive remuneration for their labour.** As mentioned before, a resident institutional unit may employ both resident and non-resident persons. Their remuneration is recorded in the SNA as remuneration of employees. The relationship of employer to employee exists when there is an agreement, which may be formal or informal (written or verbal), between the employer and a person, normally entered into voluntarily by both parties, whereby the person works for the employer in return for remuneration in cash or in kind. There is no requirement that the employer should declare the agreement to any official authority for the status of employee to apply. It should be noted that the term “employees” for SNA purposes is not synonymous with the category “employees” as defined in Resolution I of the 20th ICLS Resolution concerning statistics on work relationships, which includes persons with an agreement of employment only.

16.18 Employees include but are not confined to the following categories:

- persons (manual and non-manual workers, management personnel, domestic staff, people carrying out remunerated productive activity under employment programs, independent of disabilities, citizenship, etc.) engaged by an employer under a contract, or an agreement, of employment;
- civil servants and other government employees whose terms and conditions of employment are laid down by public law;
- the armed forces, consisting of those who have enlisted for both long and short engagements and conscripts (including conscripts working for civil purposes);
- ministers of religion, if they are paid directly by general government or a non-profit institution;
- owners of corporations and quasi-corporations, if they work in these enterprises and receive paid remuneration other than withdrawal of earnings from the quasi-corporation;
- students who have a formal commitment whereby they contribute some of their own labour as an input into an enterprise's process of production in return for remuneration and (or) education services;
- disabled workers, provided that the formal or informal relationship of employer to employee exists; and
- persons employed by temporary employment agencies, who are to be included in the industry of the agency which employs them, and not in the industry of the enterprise for which they actually work.

16.19 Persons that have a commercial contract with an institutional unit for the provision of goods or services are not considered employees but as self-employed persons.

16.20 An outworker is a person who agrees to work for a particular enterprise or to supply a certain quantity of goods and services to a particular enterprise by prior arrangement or contract with that enterprise but whose place of work is not within it. An outworker is treated as an employee if there is an explicit agreement that the outworker is compensated based on the time worked, that is the amount of labour contributed as an input into some process of production. There is further discussion of the classification of outworkers in [paragraphs](#)

8.34 to 8.38.

- 16.21 Employers across a range of industries may use zero-hour contract workers. These contracts effectively mean that employers are not obliged to guarantee any working hours to a worker. Equally, the worker is not obliged to accept any work that is offered to them and they are also free to work for other employers. These workers provide labour input and are employees recorded under short-term and casual employees.
- 16.22 Persons temporarily not at work are also considered as employees if they have a job attachment. This attachment should be determined according to one or more of the following criteria:
- the continued receipt of wage or salary.
 - an assurance of return to work following the end of the contingency or an agreement as to the date of return.
 - the elapsed duration of absence from the job which, wherever relevant, may be that duration for which workers can receive compensation benefits without obligations to accept other jobs.
- 16.23 Persons included in the above classification are those temporarily not at work because of illness or injury, holiday or vacation, strike or lockout, educational or training leave, parental leave, reduction in economic activity, temporary reorganisation or suspension of work due to such reasons as bad weather, mechanical or electrical breakdown, or shortage of raw materials or fuels, or other temporary absence with or without leave. This includes persons in receipt of a wage such as during the COVID-19 lockdown period(s), even when no output was produced. For some purposes, it may be useful to distinguish employees temporarily not at work if this is possible. Under the 19th ICLS Resolution, for certain types of absence, a person is still considered employed (for example, maternity/paternity leave, sick leave, shift work/nature of the work and vacation), whilst for other reasons (for example, career break or unpaid leave), the person is deemed not to be employed but may have a job attachment which would need to be assessed.
- 16.24 Managers of corporations are treated in the SNA as employees. Accordingly, owners of some unincorporated enterprises which in the SNA are classified as quasi-corporations are treated as employees, if they provide labour input and receive compensation in the form of remuneration of employees. According to the ICLS Resolutions, owners of quasi-corporations are treated as independent workers in employment for profit or dependent contractors.
- 16.25 Trainees who have a formal commitment to contribute labour as an input to an enterprise's process of production in return for remuneration in cash or in kind such as education are also treated as employees. As defined in the ICLS Resolutions, trainees receiving remuneration in cash would also be counted as employees. However, if the only "remuneration" is education, then they are not considered as employed and classified under "unpaid trainee work".

2. Self-employed persons

- 16.26 **Self-employed persons are persons who are the sole proprietors or joint owners of the unincorporated enterprises in which they work, excluding those unincorporated enterprises that are classified as quasi-corporations.** Persons who work in unincorporated enterprises are classified as self-employed persons if they are not in paid employment that constitutes their principal source of income. If in paid employment, they are classified as employees. The compensation for self-employment is included in mixed income because it is not possible to observe separately the return to labour and the return to any capital used in production of goods and services by the unincorporated enterprise. In cases where a single person has multiple jobs and be both an employee and a self-employed person, the income earned as an employee should be shown as remuneration of employees and separate from the mixed income element. For some analytical purposes, however, it may be useful to estimate a breakdown of labour compensation for the self-employed and the return on capital (see paragraphs 16.83 – 16.86).
- 16.27 Within the SNA, self-employed persons also include the following categories:

- contributing family workers working in unincorporated enterprises;
- outworkers whose income is a function of the value of the outputs from some process of production for which they are responsible, however much or little work was put in;
- workers engaged in production undertaken entirely for their own final consumption or own capital formation, either individually or collectively. (An example of the last is communal construction.)

16.28 Contributing family workers are sometimes called unpaid workers but there are other forms of unpaid, or voluntary, workers. If family members contribute to the output of an unincorporated enterprise, the estimate of mixed income is assumed to include an element of compensation for them and thus they are all treated as being in the economically active population from an SNA point of view.

3. Boundary problems

Non-observed economy

16.29 National accountants are particularly concerned about ensuring that the whole of economic activity within the SNA production boundary is measured comprehensively. This is often referred to as the “exhaustiveness” of the coverage of the national accounts. In practice, it means ensuring that the value of production activities that are illegal or hidden (that is, the “underground economy” or the “hidden economy”) as well as those that are simply described as informal is included in the accounts. Further details on the delineation of these activities are provided in chapters 7 and 39.

16.30 The various parts of the non-observed economy are linked and they are not mutually exclusive. The delineation with observed activities may also be slightly blurred. The value of output and the corresponding labour used, either in hours worked or full-time equivalents (see paragraphs 16.71 ff), will vary across the different non-observed economy domains; they will also change over time, in particular through periods of economic recession. Persons may also be involved in more than one domain. Whatever the case, in principle, for the SNA, the labour used in these activities, including the compensation of all these workers, should be included in either remuneration of employees or mixed income. Therefore, when looking at comparisons between labour statistics and output, it is important to ensure that the persons providing labour inputs to non-observed activities are included in labour statistics.

Labour in NPISHs

16.31 The output of NPISHs is supplied free or at prices that are not economically significant so it is valued by the costs of production including a mark-up for the services provided by capital used in production. One of these costs is remuneration of employees. It is important that these employees be recorded in the labour input measures used in deriving productivity changes. However, NPISHs often have volunteer workers so the treatment of these deserves special attention.

Volunteer labour

16.32 A distinction can be made between those who have an agreement to provide labour for token remuneration or only income in kind, those for whom there is explicitly no remuneration and those where there is apparently no remuneration but the workers benefit directly from the output to which they contribute.

16.33 In the SNA, the remuneration of those working for token amounts or only income in kind is measured by these costs. No imputation for an additional element of remuneration is included. For example, if doctors or teachers work for only food and lodging, the value of this as income in kind is the only salary imputed to them. Such instances may arise in religious institutions or in the wake of natural disasters. If the unit employing these staff is responsible for whatever little remuneration is received, the staff are classified as employees.

- 16.34 If staff are purely voluntary, with no remuneration at all, not even in kind, but working within a recognised institutional unit, then these individuals are still regarded as providing labour input in SNA terms but there is no entry for remuneration of employees (or mixed income). Individuals providing services to groups of other individuals, such as coaching a children's football team, without any associated infrastructure are not regarded as providing labour input but rather engaging in a leisure pursuit, however worthy their efforts might be.
- 16.35 By convention, no labour services are attributed to the services provided by owner-occupied dwellings (see paragraphs 24.50 to 24.58). In contrast, if a group of individuals agrees to construct a building or structure, for example a school or a well, these individuals are regarded as providing labour input and receive mixed income for their efforts. Due to the difficulty in valuing such projects, unless a direct comparison can be made with a similar building, the value of construction should be based on the sum of costs incurred including a mark-up for the services provided by capital used in the production. Labour is a significant input into construction projects, so its value must be included as part of the total costs using wage rates paid for similar kinds of work on local labour markets (see paragraphs 6.127 and 7.30). This income is then used to value the result of their efforts which may subsequently be handed over to a third party for maintenance. The latter action is recorded as a capital transfer in kind.
- 16.36 As defined in the ICLS Resolutions, the main criteria for defining volunteer work are that it is unpaid, non-compulsory in nature and the intended destination of the goods and services produced for others outside the volunteer's household or family. Here, unpaid implies they do not receive a remuneration in cash or in kind for the work done or hours worked. They may receive some small form of support or stipend in cash or in kind usually meant to enable their participation. In the ICLS Resolutions, these volunteers are not treated as being in employment and thus not considered as employees.

4. Links between the SNA and the ICLS Resolutions

- 16.37 In the above, the most important elements of labour input in the national accounts have been covered. Some important differences with the ICLS Resolutions have also been mentioned. This sub-section covers the concepts and definitions of the ICLS Resolutions as well as the main differences with the concepts applied in the SNA.
- 16.38 The ICLS Resolutions provides a broad overarching definition of work, comprising five different forms of work, as shown in figure 16.2:
- employment;
 - own-use production work comprising production of goods and services for own final use;
 - volunteer work comprising non-compulsory work performed for others without pay;
 - unpaid trainee work comprising of work performed for others without pay to acquire workplace experience or skills; and
 - Other work activities (not explicitly shown in figure 16.2).
- 16.39 Each of these forms of work are discussed in slightly more detail below, including the main similarities and differences with the SNA. As described in paragraph 16.8 above the forms of work from the 19th ICLS framework can be combined to align to either the general production boundary or the SNA production boundary with the key difference being that direct volunteer work providing services and the production of services by households for own final use are within the general production boundary, but with the exception of owner-occupied housing services and the production of domestic and personal services by employing paid domestic staff, outside the SNA production boundary, and thus not part of SNA labour input.

Employment

- 16.40 As defined in the ICLS Resolutions, employment relates to work for pay or profit. As such, it is a narrower concept than the concept of labour input applied in national accounts. Households producing goods for own final use or for delivery to other households are excluded, as well as “volunteer work carried out through/for a non-household economic unit” (or “organisation based volunteer work”) and “unpaid trainees”.
- 16.41 Moreover, while in the SNA the distinction between employees and self-employed persons is highly relevant in view of the different types of compensation (remuneration of employees versus mixed income for self-employed persons), the term self-employed is not used in the ICLS Resolutions. Instead, the concept of independent worker is used within the International Classification of Status in Employment (ICSE-18) as adopted at the 20th ICLS, whereby dependent contractors and contributing family workers are included as distinct types of work relationships in the broader group of dependent workers. Employers and independent workers without employees are classified as independent workers. In addition, allowance is made for detailed categories based on their exposure to economic risk, thus creating a distinction between:
- workers in employment for profit, which includes dependent contractors, independent workers in household market enterprises, and contributing family workers; and
 - workers in employment for pay, which includes employees and the owner-operators of corporations.
- 16.42 More generally, those in employment might also provide additional labour input by carrying out forms of work other than employment. For example, an employed person may also provide, on a voluntary basis, caring activities for the elderly in the same period. The ICLS Resolutions promote the measurement and reporting of participation in all forms of work alongside indicators of labour force status.

Production for own final use

- 16.43 As defined in the ICLS Resolutions, the production for own final use relates to the production of goods as well as the production of services. The production of goods for own final use (e.g., food produce, self-built dwellings, etc.) is captured within the SNA production boundary and the numbers of persons involved would be included in the national accounts as labour input, whereas the production of services for own final use (e.g., childcare, meal preparation, cleaning, etc.) is excluded from the SNA production boundary. The latter would be captured in an extended account on unpaid household service work, see chapter 34 for more details.
- 16.44 In the SNA, the labour input related to household’s production of goods for own final use is always recorded as part of labour input. This is different from the approach taken to define different forms of work in the ICLS Resolutions, which relate to the main intended destination of the production. More specifically within the ICLS Resolutions, if the goods are mainly intended for the consumption of the producer or their household/family, it is classified as own-use production of goods, whereas in the case the production is mainly intended for sale, it is classified as part of employment.

Volunteer work

- 16.45 Two types of volunteer work are distinguished in the ICLS Resolutions:
- Direct volunteer work, this is work carried out directly by a household to help other people or another household directly (e.g., a neighbour); and
 - Organisation-based volunteer work, this is done through or for an organisation, community or group.

The distinction between the two types is that the work is done for different types of economic units with different types of dependency.

Figure 16.2 Links between the SNA and the 19th and 20th ICLS resolutions

SNA		Type of worker	19 th ICLS Resolution I	20 th ICLS Resolution I	
			Form of work	Category	
Outside the production boundary		<i>Households providing (unpaid) services to other households</i>	Volunteer work	Direct volunteers	
		<i>Output for own final use - services</i>	Own-use production work - services	Workers in own-use provision of services	
Production boundary	Labour input	<i>Output for own final use - goods</i>	Own-use production work - goods	Workers in own-use production of goods	
		<i>Households providing goods (without compensation) to other households</i>	Volunteer work	Direct volunteers	
		Self-employed	<i>Contributing family workers</i>	Employment	Contributing family workers
			<i>Owners of household market enterprises</i>		Independent workers in employment for profit
		Employees	<i>Owners of quasi corporations</i>		Dependent contractors
	<i>Owners of corporations</i>		Independent workers in employment for profit		
	<i>Persons with an agreement of employment</i>		Independent workers in employment for pay		
	<i>Volunteer work carried out through / for a non household economic unit</i>		Volunteer work		Employees
	<i>Unpaid trainees</i>		Unpaid trainee work		Organisation based volunteer work
			Unpaid trainee workers		

Note: (1) The figure shows the differences in the overlapping population between SNA and the 19th ICLS Resolution I.
(2) There will be differences across the categories whereby the SNA excludes resident employees being employed by non-resident enterprises and includes non-resident employees being employed by resident enterprises.
(3) 'Other work activities' is not defined in detail in either the 19th or 20th ICLS resolutions and thus excluded from this correspondence table. It refers to unpaid compulsory activities such as unpaid community service ordered by a court, unpaid military service, etc. This type of labour input is assumed to generate output within the SNA production boundary and to be covered by 'employees' in SNA terms if performed under instruction by or through an organisation in the same way people performing organisation based volunteer work are considered employees within the SNA framework.

16.46 As explained in the above, the treatment of volunteer work in the SNA differs from the treatment in the ICLS Resolution, as shown in figure 16.2. In the SNA, the following distinction can be made:

- If the volunteer work relates to a contribution to the production of an institutional unit, then the person is considered an employee and any income in kind or other support received is recorded as remuneration of employees.
- If the volunteer work concerns direct volunteering resulting in production of goods, then the person is considered to be self-employed and any income in kind or other support received is recorded as mixed income.
- If the volunteer work concerns direct volunteering resulting in provision of services, for which the third-party criterion is applicable, the relevant labour input would fall outside the SNA production boundary, and thus not qualify as part of labour input.

Unpaid trainee work

- 16.47 Unpaid trainee work refers to work performed for others without pay to acquire workplace experience or skills. It may also represent a traditional arrangement for gaining specific occupational skills in each trade or profession. In all instances, this form of work contributes to the production of goods and services and these trainees are treated as employees within the SNA, while the ICLS Resolutions identify it as a form of work for separate measurement.
- 16.48 In contrast to paid apprenticeships, traineeships and other such programmes which constitute a type of employment contract, unpaid trainee work is carried out without pay in cash or in kind for work done or hours worked. Nevertheless, unpaid trainees may receive some form of support, such as transfers of education stipends or grants, or occasional in cash or in kind support (e.g., a meal, drinks). In the SNA, this is recorded as remuneration of employees.

Other work activities

- 16.49 For completeness, other work activities include unpaid compulsory work performed for others such as community service and unpaid work by prisoners, when ordered by a court or similar authority, and unpaid military or alternative civilian service, which may be treated as a distinct form of work for measurement (such as compulsory work performed without pay for others). Persons involved in these activities are excluded from SNA labour input unless the work is performed under instruction by or through an organisation in the same way people perform organisation-based volunteer work.

D. Labour market tables framework and the links with supply and use tables

1. Introduction

- 16.50 There is a range of comprehensive labour market statistics produced by national statistical institutions to meet different user needs. However, the varying statistical outputs differ in source, scope, coverage and methodology. This can make comparisons and consolidation of the various datasets challenging. Different estimates may be available from a range of different sources, each with their own strengths and weaknesses, for example, household-based surveys often feed into the labour market data and business surveys feed into supply and use tables, thus the need for reconciliation.
- 16.51 The linking of supply and use tables with a labour market tables framework can help to integrate and confront numerous labour market statistics to provide time series estimates of labour input such as persons employed, jobs, hours worked and income earned for each industry in relation to the corresponding output produced into one coherent framework. The integration of this information can also provide a quality assurance feedback loop to the quality of the estimates of value added and output in the supply and use tables. Doing this at the time of compiling and balancing of supply and use tables will in turn improve the coherence of GDP/NDP, and its underlying components.

- 16.52 The supply and use tables provide a lot of detail on the supply and use of goods and services by product. They also contain detailed information by industry on the production process, by describing the inputs used to produce the goods and services: intermediation consumption by product, labour input, return to capital (operating surplus), and in the case of self-employed, mixed income. More information on supply and use tables is provided in chapter 15.
- 16.53 While the information on the inputs of intermediate goods and services used in production is usually quite detailed, the labour related information within the body of the use table only covers aggregate information on the remuneration of employees and mixed income, the latter being – as mentioned before – a mix of remuneration for labour input and return to capital, broken down by industry. For many kinds of analyses, there is a need to have much more detailed information on the volume and the value of labour input, which is consistent and coherent with the other information in supply and use tables.
- 16.54 Collecting the detailed information from the same resident unit in the same business survey(s) covering the outputs, intermediate inputs, labour as well as capital used for the same time period(s) would be preferential for consistency, coherency and comparability at source. However, such an approach may not be possible for a variety of reasons, and one will have to rely on the utilisation and combination of various data sources such as labour force surveys, household and establishment surveys, administrative data sources, population surveys and Census data, etc., to arrive at the preferred detail. In doing so, special care and attention will need to be paid to possible differences between the concepts applied in the relevant source data and the concept of labour input for production activities according to the SNA.
- 16.55 The labour market tables framework shows labour input through four dimensions: jobs, employed persons (both employees and self-employed), volumes (i.e., hours worked), and payments. The four quadrants of the framework identify specific relationships, which the aggregate statistics must satisfy, as shown in figure 16.3. Some relationships are direct, such as “employed persons in the total economy” being equal to “the number of main jobs”, while other relationships are considered indirect or derived, in that the relationship is based on an average or ratio measure such as average hours worked per job or average labour income per employed person.
- 16.56 The labour market tables can be extended by also including elements that go beyond the boundaries of the SNA, such as hours spent on the production of household services for own final use, including estimates of their monetary value (see chapter 34). An even more far-reaching objective in this respect would be the full integration of data on time use surveys, thus arriving at a comprehensive overview of all time spent consistent with hours spent on paid and unpaid work-related activities.
- 16.57 The remainder of this section discusses each of the four quadrants in the labour market tables framework in turn and figure 16.3 provides an illustration of the main content of these quadrants.

2. Jobs

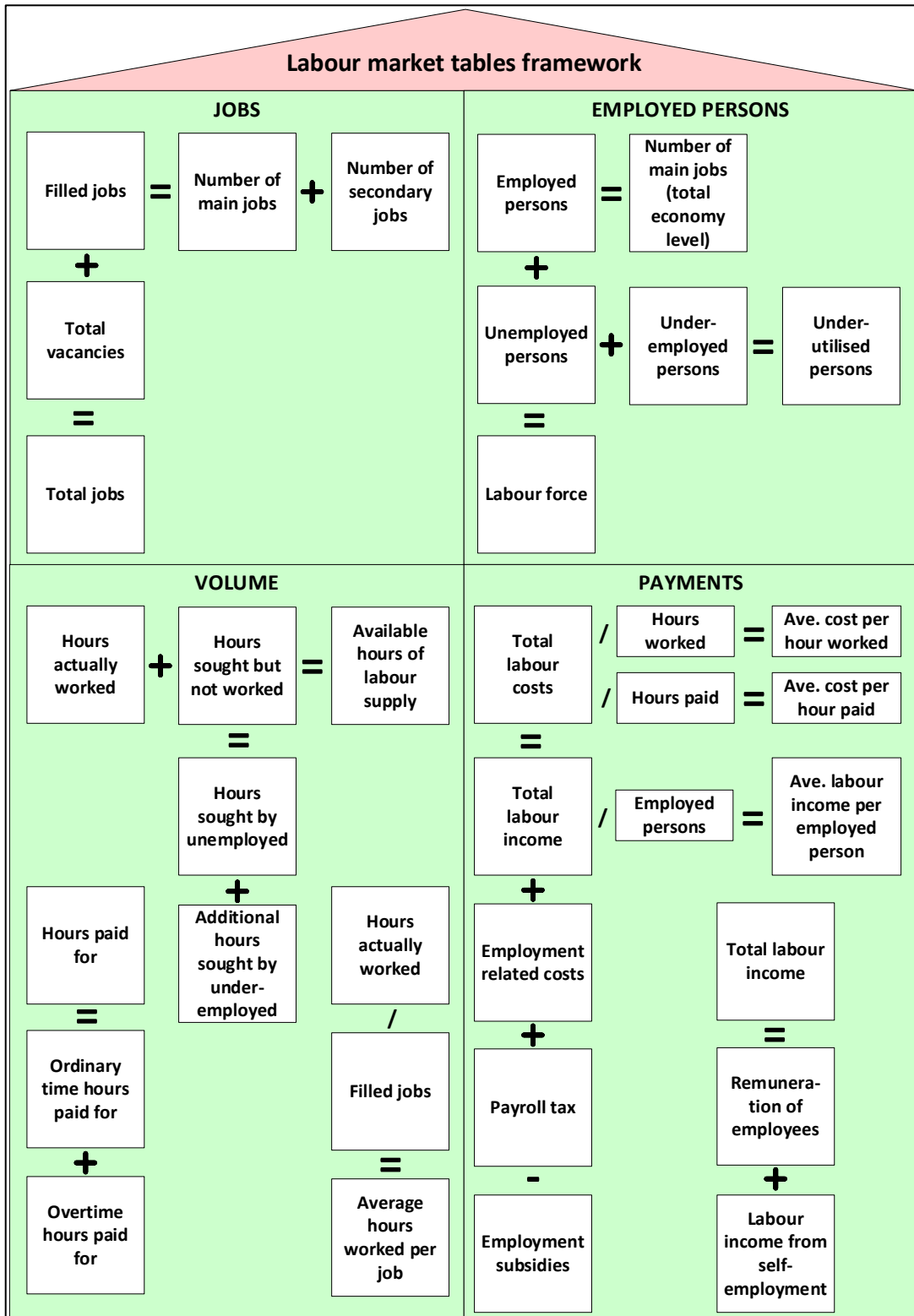
- 16.58 A job reflects a contract between an employee and a resident institutional unit to provide labour in return for remuneration for a defined period or until further notice. The concept of a job also applies to a self-employed person. More generally, a job is defined as a set of tasks and duties performed (or meant to be performed) by one person for a single institutional unit in relation to activities defined as employment. Applying this definition in the SNA context, remuneration should be interpreted in a wide sense, including remuneration for employees and mixed income for self-employed persons. Given the scope of labour input in the SNA, any person who provides such labour input is considered to have a job.
- 16.59 Persons may have several jobs during a given reference period. The separation between multiple jobs carried out by the same person may cut across different types of work, different industries and different institutional units producing goods and services. In some cases, too, a single job may be shared by two persons. In addition, there is not always a one-to-one relationship between jobs and people because a job may be vacant. Therefore, the number of jobs in an economy will almost certainly be different to the number of employed persons.

- 16.60 The jobs quadrant also shows information on vacancies. An estimate of the total jobs available in an economy can be obtained by adding the number of vacancies and the number of filled jobs. By its nature, vacancies usually refer to jobs that are available to be filled by employers in the formal sector. As such, the number of vacancies may not be fully aligned with the concept of labour input according to the SNA production boundary, which includes labour input beyond the formal sector.
- 16.61 Different estimates of jobs can be produced. These estimates may be based on administrative data sources, business survey sources and/or household survey sources (e.g., labour force survey). These would need to be reconciled generating a single balanced estimate by industry. The quality and coverage of the relative sources would need to be reflected, for example, in terms of the aggregate jobs picture and jobs by industry. Estimates of the numbers of filled jobs sourced from businesses may be considered more reliable in estimating the distribution of jobs across industries. The numbers of filled jobs reported by each business survey respondent are generally classified to the industry classification of that business. This implies that the labour input is more correctly linked to the related output and employment related costs. On the other hand, jobs data by industry collected in household surveys are generally less consistent and accurate, albeit more comprehensive, particularly in settings where the informal economy is large and establishment surveys do not cover the informal sector. Furthermore, in household surveys, people may be inaccurate in self-classifying the industry in which they work, for example, a security guard may work in a government office but employed and paid by an agency, their industry of employment being that of the agency and not the government body. Finally, statistics on vacancies would typically be collected from business surveys.
- 16.62 The jobs quadrant shows time-series estimates of total and filled jobs; filled jobs by industry; job vacancies; and main and secondary jobs. Other variations like market and non-market producers could also be considered.

3. Employed persons

- 16.63 The size of the labour force is a measure of the total number of people who are willing and able to work. In this context, employed persons refer to persons resident in a country. However, the SNA focuses on resident and non-resident persons providing labour input in the domestic economy. A link between the two concepts can be established by adding information on resident persons providing labour input to non-resident producer units to, and deducting non-resident persons providing labour input to resident producers from, the SNA concept of employed persons, to provide a measure of the resident persons providing labour input.
- 16.64 A person who, in a certain reference period, spends more than one hour of labour input to the production of goods and services, as defined within the SNA, should be counted as providing labour input. It should be possible to link their activities to one or multiple jobs. This is essential from a statistical perspective because such an approach allows the categorisation of persons to different types of jobs and the main characteristics of those jobs (e.g., working hours, industry, occupation, whether the job is seasonal, formal or informal, etc.). In other words, the job is a reference unit which facilitates the grouping of different forms of labour input by their characteristics and provides a meaningful description of the structure of labour input in a country.
- 16.65 Where a person has multiple jobs that fall into different categories of employment, the person should be classified to the main job for which the worker usually works the most hours, and if this information is not available, then to the job from which they get most of the income.

Figure 16.3 Labour market tables framework



- 16.66 The employed persons quadrant may include demographic breakdowns by sex or gender, age and educational attainment. Breaking the data by educational attainment would allow for an improved analysis of the quality of labour and would provide the starting point for deriving human capital estimates (see below). More generally, it is worth noting that the international comparability of estimates may be affected by legislative differences in working age, retirement age, etc. across countries. International child labour standards, for example, set the minimum age for light work at 13 years and general employment at 15 years, albeit differences exist across countries. Similarly, differences exist for the retirement age or the limit for the working age.
- 16.67 The employed persons quadrant also provides information on unemployed persons and underemployed persons. As noted before, unemployment relates to persons who are available for work and actively seeking work, or more precisely work for pay or profit. Thus, for example, a volunteer who receives no remuneration or an unpaid family worker may be considered to be unemployed if they are available for work and actively seeking work, even though their labour input may be contributing to activities within the SNA production boundary. In practice, measurement generally focuses on search and availability for work for pay or profit. It is important to consider these differences when reconciling statistics on unemployment and the persons providing labour input to production according to the SNA.
- 16.68 Statistics on unemployment are typically obtained from labour force surveys. They may also be obtained from administrative sources on persons claiming unemployment benefits although care needs to be taken if the basis for receiving such benefits is different to the statistical concept of unemployment. The number of people claiming unemployment benefits can be used as a proxy but only reflects those claiming benefits. Underemployment refers to persons who are employed but who would like to, and are available to, work additional hours. Statistics on underemployment are normally obtained from labour force surveys.
- 16.69 The employed persons quadrant shows time-series estimates of employed and unemployed persons; labour force (if data on resident persons employed by non-resident producer units are included); main job-holding; multiple job-holding and underemployed.

4. Volume

- 16.70 The volume part of the tables reflects the information on the volume of labour input, as typically measured using hours worked.
- 16.71 The volume quadrant describes the relationship between the hours of labour that are supplied by persons and the hours of labour that are used by enterprises. It quantifies the number of hours actually worked by persons in all jobs. Total hours (actually) worked is the preferred measure to be used in productivity estimates as this is the best, and closest, measure that relates to the labour time used as the input to produce the output measured, both by industry and the whole economy.
- 16.72 Measuring changes in the level of hours worked for different groups of employed persons (both employees and self-employed) is also important in order to monitor working and living conditions as well as analysing economic cycles. Information on hours worked enables various analytical insights such as: classification of employed persons into full-time and part-time status; the identification of under-employed persons; and the creation of high frequency (monthly or quarterly) aggregates on hours worked.
- 16.73 In practice, total hours actually worked and annual (full-time) hours actually worked may have to be estimated but substantial data on labour and output can be gathered from the same businesses to ensure consistency with the labour input to produce the output. In many countries, especially for monthly paid employee jobs, only normal hours or hours usually worked, any paid overtime, plus annual and holiday leave entitlements can be ascertained. An adjustment should be made to the total hours actually worked or annual (full-time) hours actually worked to account for the average level of absence from work due to illness. This difference will not affect full-time equivalent employment, as discussed further below, if sickness rates in part-time jobs are the same as in full-time jobs. However, if they are not, adjustments should be considered.
- 16.74 If the reference weeks used in the surveys have gaps in time coverage, as a consequence of which a complete

period, say a year, is not fully covered, then the best available information (even indicative data) suitable for filling the gaps should be used to ensure any seasonal variations are incorporated to generate an estimate for the complete period.

16.75 For the purposes of the SNA, working time is defined as the time spent in undertaking activities that contribute to the production of goods and services within the SNA production boundary. Seven concepts of working time are defined in the ICLS Resolutions:

- hours actually worked;
- hours paid for;
- normal hours of work;
- contractual hours of work;
- hours usually worked;
- overtime hours of work; and
- absence from work hours.

16.76 The concept of hours actually worked in the SNA covers:

- direct hours, the time spent carrying out the tasks and duties of a job in any location regardless of the amount of time agreed contractually between employer and employee;
- related hours, including time on call, travelling on work assignments, training and other tasks itemised in the resolution;
- down time, covering periods when a person is available for work but cannot because of temporary interruptions of a technical, material or economic nature; and
- resting time such as short periods of rest, for refreshment, etc.

16.77 However, hours worked exclude:

- all types of leave (annual, public holidays, sick leave, parental leave, civic duty, etc.);
- commuting time when no productive work is done;
- separate educational time other than training; and
- meal breaks and other longer periods of rest while travelling on business.

16.78 More exhaustive definitions of these criteria can be found in the relevant ICLS Resolutions.

16.79 For employee jobs, the calculation of hours worked being equal to hours paid less hours paid but not worked, plus hours worked but not paid, is a useful one, since many establishment surveys record hours paid, not hours worked, so that hours worked must be estimated for each job group, using whatever information is available about paid leave, etc.

16.80 For self-employed persons, labour force survey covering all industries may be a source of information for the estimation of hours worked. The respondents whose main job is self-employed are asked about the hours they usually work and the hours they actually worked in the reference week. Those respondents who have a

second job that is self-employed are also asked how many hours they worked in that job during the reference week. In the absence of a labour force survey, census information may contain relevant information that could be used as a benchmark, with the benchmarks extrapolated and interpolated using a suitable indicator (e.g., the estimated share of mixed income that goes to labour deflated by a labour price index).

- 16.81 In compiling the volume quadrant, adjustments will have to be made to reconcile the various data sources on hours worked. Further reconciliation adjustments to the relevant estimates may also need to be made on the basis of confrontation with data from other quadrants of the labour market tables framework.
- 16.82 The volume quadrant shows time-series estimates of total hours actually worked (as well as hours worked per job or per employed person); hours paid for (ordinary time and overtime); hours not worked; and hours sought but not worked.

5. Payments

- 16.83 The payments quadrant accounts for the remuneration of employees as well as other costs, less subsidies and other allowances, incurred by enterprises in employing this labour input. It also accounts for the (imputed) income from self-employment. It can be described as the total cost of labour and reflects the interactions between labour supply (persons in the resident labour force), labour demand (jobs and employed persons) and labour volume (hours worked). There are three key variables: (a) total labour costs; (b) labour costs of employees; and (c) imputed remuneration for self-employed.
- 16.84 The measure of total labour costs is based on the concept of labour as a cost to employers and includes wages and salaries, employers' social contributions and all other general employee costs borne by the employers, such as training costs, use of recruitment services, payroll taxes and so on. These other costs would not include the costs which are already accounted for as remuneration of employees, as this would lead to a double counting. Any government subsidies, rebates or allowances for wage and salary payments should be deducted from employers' labour costs. It should be noted that part of the other labour costs paid by the employer are recorded as intermediate consumption, while other elements may be recorded as other taxes, less subsidies, on production. Caution is thus needed when interpreting the results as not all labour costs align to value added. For this reason, it is also recommended to keep separate track of both remuneration of employees and other costs less subsidies and other allowances.
- 16.85 For some analytical purposes, it may be useful to estimate a breakdown of mixed income earned by self-employed persons into a remuneration for labour input and gross operating surplus. This would not only enable the estimation of a more accurate return on labour and return on capital, it would also enable "cleaner" comparisons of compensation for labour and gross operating surplus over time and across countries, as it would adjust for differences in the composition of the employees and self-employed.
- 16.86 There are different ways to achieve the separation of mixed income between remuneration of the capital and remuneration of the labour. Taking the agriculture industry as an example, one may start with estimating the remuneration for the labour input of self-employed persons (including family members) working on the farm(s), after which the return to capital can be calculated as the difference between total mixed income for the agriculture industry and this estimate for labour compensation. The imputed compensation for the labour input of self-employed persons could be based on the hours worked by these persons and the average remuneration per hour worked for employees employed by incorporated businesses in similar activities.
- 16.87 Alternatively, one may estimate the return to capital and derive the return on labour as a residual. Using estimates of the stock of capital used by the unincorporated enterprises and average rates of return to capital in similar incorporated businesses would establish a return to capital, and deducting this estimate from mixed income would generate a rate of return on labour.
- 16.88 The first method is conceptually preferable and from a practical point of view probably more feasible. However, it should be noted that the residual operating surplus could become negative. Whether this is plausible and realistic or a reflection of the estimation method may require further investigation. For industries such as agriculture, the levels of mixed income may be very volatile, with one year of low, or even

negative, levels of mixed income followed by a year with very high levels of mixed income. It seems more reasonable to reflect this volatility in the resulting operating surplus.

- 16.89 Like the persons quadrant, remuneration of employees and (imputed) labour income for self-employed could also be provided by age, sex or gender and educational attainment. Some of these may be derived from surveys and other sources, or they may require some methods of apportionment and disaggregation.
- 16.90 The payments quadrant shows time-series estimates of labour income (per person and per hour); labour costs (per job and per hour); remuneration of employees; other costs less subsidies and other allowances to employers; and (imputed) labour income of self-employed persons.

E. Other enhanced measures of labour inputs

- 16.91 This section covers some additional labour market measures. These labour input measures can be adjusted to provide various degrees of sophistication and quality, to cover for example, full-time equivalents and quality-adjusted labour inputs for use in productivity measurement and other analyses. More details on the measurement of (labour) productivity can be found in chapter 18.

1. Labour input measured on a full-time equivalent basis

- 16.92 Full-time equivalent labour input is the number of full-time equivalent jobs, defined as total hours actually worked by all employed persons divided by the average number of hours actually worked in full-time jobs.
- 16.93 The definition does not necessarily describe how the concept is estimated. Since the length of a full-time job has changed through time and differs between industries, lower quality crude estimation methods should be avoided and more sophisticated ones are to be preferred, such as one that establishes the average proportion and average working time of less than full week, full-time jobs in each job group separately.
- 16.94 The SNA does not recommend full-time equivalent labour input as the preferred measure of labour inputs but actual hours worked. However, if the data are good enough to permit an estimation of total hours actually worked, full-time equivalent labour input should also be estimated and published. One reason is that this facilitates international comparisons with countries which can only estimate full-time equivalent labour input. Since total hours actually worked is the preferred measure of total labour input, the use of full-time equivalents is likely to be gradually phased out.

2. Quality-adjusted labour input

- 16.95 Using total hours actually worked as the input measure for calculating (labour) productivity changes over time implicitly assumes that each hour worked is of the same quality (that is, there are no differences in the qualifications and skill levels of the labour employed). In other words, each hour worked by a highly skilled person, such as a brain surgeon, is assumed to produce the same quantity and quality of output as each hour worked by an unskilled worker. It is possible to produce a quality-adjusted measure of the labour inputs that takes account of changes in the mix of workers over time by weighting together indicators of quality for different grades of workers. (The term quality-adjusted is used as being parallel to the idea of quality-adjusted price indices but it could also be seen as an adjustment for the change in the composition of the workers involved.)
- 16.96 The quality indicators used can relate to variables such as academic qualifications, trade qualifications, experience (typically based on age of the worker), industry of employment and so on. The various populations are weighted together using average hourly wages for a worker falling into each category. The premise behind this approach is that workers are hired only until their marginal price (that is, their wages, including on-costs) is less than the marginal revenue expected to result from their production. The index formula used can be a fixed-weight (Laspeyres) formula or a more sophisticated formula such as the Tornqvist, which takes account of changing weights by using weights from each of the periods in the analysis.

16.97 Calculating a quality-adjusted labour input measure using this approach may seem to be very data intensive but does not require more detailed data than that needed for the labour market tables framework.

3. Labour input at constant remuneration

16.98 Total hours actually worked and full-time equivalent labour input are both physical measures of labour input. Output too can usually be measured in physical terms such as tonnes or cubic metres. However, this is not done in the national accounts because the basic value per tonne or cubic metre varies so much between products that these physical measures lack general economic significance. Also, the remuneration per hour or per full-time year of work varies enormously. Physical measures of labour input are only valid if the mix of different kinds of labour is much the same in the different countries or at the different times examined.

16.99 Since output is measured both at current prices and in volume terms using constant prices, it is natural to do the same with labour inputs using constant remuneration, as well as with intermediate inputs using constant prices. If, as recommended for the compilation of labour market tables, data on the (imputed) income for the labour input of self-employed persons are available, compensation for all labour input at constant remuneration could be estimated. If this is not the case, the labour input of employees only can be shown at constant remuneration. Whatever the case, both measures have their relevance for analysis.

16.100 The measurement of labour inputs at current prices and in volume terms is symmetrical with the measurement of output and subject to the following caveats:

- Market prices and market compensation are assumed to measure the relative economic importance of different goods, services and jobs. The advantages and disadvantages of this assumption are the same for inputs as for outputs.
- Although the volume measure and constant remuneration concepts are defined as revaluations of quantities at base period prices or remuneration levels, they can be estimated in practice as the sum, over all groups, of values at current prices or remuneration levels, each divided by an appropriate wage index.
- These group indices are estimates, calculated for a representative sample of jobs or of goods or services, with weights reflecting the relative importance of each of the sub-groups represented by a selected and specified job, or by a selected and specified good or service. In other words, a remuneration index is constructed like a price index.

16.101 While the value of (employee) labour input at constant remuneration can be estimated by deflating current values, as mentioned above, the data may also permit the direct approach of multiplying the current number of jobs in each job group by the base-period average annual remuneration for jobs in that job group.

F. Specific issues

1. Links to the Standard Occupational Classification

16.102 The occupation refers to the type of work done in the main job by the person employed irrespective of the industry in which the person's job is classified or the status in employment. Given the diverse nature of work done in the various economic activities, it is also recommended to have breakdowns by occupational group according to the International Standard Classification of Occupations (ISCO) for labour input by industry.

16.103 Data by occupation also create the building-blocks necessary to provide information on occupational demands. It also allows to assist areas of the country that have clusters of low-paid skills which, in turn, could help to target policy interventions.

16.104 Data on labour input with details on occupations are also important inputs to determining the value of the labour input in estimating the own-account production of various intangible assets such as R&D, computer software and data.

2. Paid and unpaid household services, and production for own final use

16.105 In contrast to the SNA production boundary, which is used for the integrated framework of the SNA and calculations of GDP/NDP, the general production boundary also includes own account production of unpaid services for own final use by households. Including them in complementary measures to GDP/NDP and providing the number of hours worked on unpaid household work would complement the standard national accounts' measures with more inclusive measures of economic activity, material well-being and the labour inputs required.

16.106 The third-party criterion used when defining the scope of activities to be covered is broadly defined as unpaid work performed within the household sector, which could be contracted out to a market service provider under regular conditions. This corresponds to the concepts of “output for own final use – services” and “households providing (unpaid) services to other households” in the ICLS Resolution; see figure 16.2.

16.107 More details on extended accounts on unpaid household service work can be found in chapter 34.

3. Education, training and human capital

16.108 From a measurement perspective, well-being encompasses data about several elements, including health, education, income, employment, care, consumption and leisure, that collectively support assessment of the progress of people and communities and the extent to which the needs of current generations are satisfied.

16.109 The idea of viewing human knowledge and abilities as an asset – as human capital – and to estimate its value is not new, but has gained prominence in recent years, especially in the context of measuring sustainable development. Policymakers are calling for ways to understand and quantify human capital, in order to better understand what drives economic growth and the functioning of labour markets, to assess the long-term sustainability of a country's development path, and to measure the output and productivity performance of the education sector. The core connections and dependencies between human capital, education, labour and production are depicted in the figure 34.2.

16.110 From an SNA perspective, there has been a long-standing discussion on the potential to capitalise education and training expenditures within the integrated framework of economic accounts and recognise human capital as an economic asset on the balance sheet. Thus, although human capital has not been included in the integrated framework of economic accounts for the reasons mentioned in paragraphs 4.118 – 4.121, the discussion is of high relevance for extending and broadening the integrated framework of economic accounts. This has been done by way of recommending the compilation of extended accounts on human capital, education and training. These extended accounts are further elaborated in chapter 34.

16.111 The labour market tables provide important elements for monitoring human capital, education and training. Especially the breakdowns of labour input by educational attainment are relevant in this respect. They do not only show the impact of education and training on the labour market but also account for the developments in the demand for different types of labour. In addition, the data on remuneration of labour input by educational attainment would provide important building blocks for the measurement of human capital using an income-based approach, in which human capital is approximated by the net present value of future benefits from education in the form of remuneration of employees.