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Agenda item: 6

Incorporating Informal Sector into National Accounts: Country Experience and Practice in Africa

The informal sector plays an important role in developing economies, especially in Africa, where a large proportion of people work in the informal sector. However, an exhaustive measurement of the size of the informal sector and the contribution of informal sector activities and informal employment to GDP is particularly challenging. In an effort to adopt common best practice for measuring the informal sector, international and regional organizations along with African countries are sharing country experience and practices with the aim to build capacities and harmonize methodologies for a better international comparison.

Documentation

Paper: Incorporating Informal Sector into National Accounts: Country Experience and Practice in Africa

Main issues to be discussed

The AEG is requested to:

- Take note of the country experience and practice in Africa.

Incorporating Informal Sector into National Accounts: Country Experience and Practice in Africa

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I. Contribution of Informal Sector to Economies

1. Employment in Informal Economy

Table 1 shows the share of employment in the informal economy in total non-agricultural employment, in African countries, while Table 2 indicates the share of informal sector employment in total employment in the informal economy vs. outside informal sector.

In the late 2000s, employment in the informal economy (excluding agriculture) culminated at 70% of total non-agricultural employment in Africa (except Northern Africa region) in average, with some high records for Benin (96.3%) or Burkina Faso (90.5%) and some low records for South Africa (32.7%) or Namibia (43.8%). The indicator was as high in Asia (69.7%) and lower for Latin America (57.7%) and for transition countries (22.6%). In all regions the informal economy is on the rise.

Table 1: Share of employment in the informal economy in total non-agricultural employment by 5-year period

Regions/Countries/Years	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-10	2010-15
Northern Africa	**39.6**		**34.1**		**47.5**	**47.3**	**53.0**	
Algeria	21.8		25.6		42.7	41.3	45.6	
Morocco		56.9			*44.8*	67.1	78.5	
Tunisia	38.4	35.0	39.3		47.1	35.0	36.8	
Egypt	58.7		37.3		55.2	45.9	51.2	28.3
The rest of Africa		***67.3***	***72.5***	**76.0**	**78.1**		**70.0**	
Benin				92.9			96.3	
Burkina Faso			70.0	77.0		78.4	90.5	
Cameroon							84.0	
Chad				74.2	95.2			
Cote d'Ivoire							*69.7*	
Dem. Rep. Congo (ex-Zaire)		59.6					77.0	
Ghana							65.3	
Guinea		64.4		71.9	86.7			
Kenya			61.4	70.1	71.6		*76.8*	
Lesotho							70.7	
Liberia							56.4	
Madagascar							73.7	
Mali	63.1		78.6	90.4	94.1	82.7		
Mauritania		69.4	80.0					
Mozambique				*73.5*			*87.2*	
Namibia							43.8	
Niger	62.9							
Nigeria					42.9			
Senegal		76.0						
South Africa						46.2	32.7	
Tanzania						*57.7*	*46.0*	
Uganda							73.5	
Zambia				*58.3*			76.3	
Zimbabwe						51.6		

Sources: Charmes (2002) for the ILO "Women and Men in the Informal Economy", 2002, Charmes (2009) for OECD in Jütting Johannes P. and de Laiglesia Juan R. (eds.), 2009 and Charmes, J. (2012) the informal economy worldwide: trends and characteristics. *Margin-The Journal of Applied Economic Research,* 6:2 (2012): 103–132. Updated for the most recent period with data compiled from the ILO statistics questionnaires (ILO, 2011) and from national sources.

The employment of the micro-enterprises and the self-employed in the informal sector represents the highest share of the informal economy in Africa (except Northern Africa region) (more than 80%) while informal employment outside the informal sector (i.e. in the formal sector or paid domestic services) is more extended in Northern Africa (35.6%), Latin America (35.4%) and the transition countries (49.5%).

Table 2: Share of employment in the informal sector in total employment in the informal economy (2000's)

Region	% informal sector in employment in the informal economy	% informal employment outside informal sector
Northern Africa	63.4	35.6
The Rest of Africa	80.4	19.6
Latin America	64.6	35.4
Asia	79.4	20.6
Transition economies	50.5	49.5

Source: Charmes, J. (2012) The informal economy worldwide: trends and characteristics. *Margin-The Journal of Applied Economic Research,* 6:2 (2012): 103–132.

However the magnitude of employment in the informal economy presented in the above tables may be somewhat underestimated in the sense that it has only captured the main activities of the persons occupied. The 1993 definition clearly stated "the informal sector is defined irrespective of the kind of workplace where the productive activities are carried out, (…), and its operation as a main or secondary activity of the owner" (ILO, 1993). Therefore a challenge of data collection is also to capture the secondary activities and more generally the multiple jobs of the labor force: most of the mixed surveys have dedicated a set of questions, if not an entire module, to secondary activities; furthermore the secondary activities feed the list of economic units to be surveyed during the second phase (establishment) of the mixed survey. It should thus be recommended – for national accounts purposes - that the indicators (output, value added, and income, per unit or per worker) be distinguished according to the main or secondary character of the activity.
In 1985, informal sector employment accounted for 70% of non-agricultural employment in Burkina Faso. Employment in this sector was predominantly male (59.1%), urban (54.5%) and tertiary (75%). However a huge number of women were engaged in secondary activities (78.2% of non-agricultural secondary activities were female), mainly in rural areas (98% of secondary activities) and in production (manufacturing) activities (60.9% of secondary activities), so that the informal sector, when including secondary activities, becomes predominantly female (68.9% of total jobs), rural (85%) and manufacturing (52.3%).

Table 3 below summarizes the contribution of the informal sector in various regions while Table 4 – bases for Table 3 – is an attempt to estimate the contribution of informal sector to GDP in African countries, based on detailed national publications and essentially on the compilation of national accounts by UNSD (2004).

Table 3: Contribution of informal sector to GDP by region, years 2000s

Countries (years)	Informal sector GVA (including agriculture) in % of total GDP	Informal sector GVA (excluding agriculture) in % of non-agricultural GVA	Informal sector GVA (excluding agriculture) in % of total GDP
Africa (except Northern Africa region)	63.6%	50.2%	31.3%
MENA	36.2%	29.2%	26.2%
India	54.2%	46.3%	38.4%
Latin America	29.2%	25.2%	24.0%
Transition countries	19.5%	13.9%	10.7%

Sources: Charmes Jacques (2012), 'The informal economy worldwide: trends and characteristics' in *Margin - The Journal of Applied Economic Research,* 6: 2 (2012): 103–132.

2. Value Added of Informal Sector

In Africa (except Northern Africa region), the informal sector in its broad sense (including agriculture) accounts for 63.6% of GDP in the years 2000s, and 31.3% in its restricted sense (without agriculture). It was the highest share observed in the developing regions, except in Southern Asia, especially India where the informal sector accounted for 38.4% of total GDP (but only 54.2% if agriculture is included). As a share of non-agricultural GDP (or rather non-agricultural GVA), the informal sector is at its highest in Africa (except Northern Africa region) (50.2%). Benin, Niger, and Togo are countries where the share of informal sector in non-agricultural GDP is above the regional average, while Burkina Faso, Cameroon, and Senegal are below the average.

Table 4: Contribution of informal sector to GDP in African countries (except Northern Africa region) - Years 2000s

Countries (years)	Agricultural Gross Value Added (GVA)	Non-agricultural GVA	Total GDP in national currency *	Currency	Informal sector GVA (including agriculture) (1)	Agricultural Household sector	Informal sector GVA (excluding agriculture) (2)	(1) in % of total GDP	(2) in % of non-agricultural GVA	(2) in % of total GDP
Northern Africa										
Algeria (2003)	510,033	4,202,980	4,713,013	Million Dinars	1,786,292	510,033	1,276,259	37.9%	30.4%	27.1%
Egypt (2008)	113,104	742,262	855,366	Million E£	237,690	111,994	125,696	27.8%	16.9%	14.7%
Tunisia (2004)	4,450	30,698	35,148	Million Dinars	14,708	4,242	10,466	41.8%	34.1%	29.8%
										The Rest of Africa
Benin (2000)	632	899	1,656	Billion FCFA	1,185	629	556	71.6%	61.8%	33.6%
Burkina Faso (2000)	590	1,036	1,729	Billion FCFA	965	590	375	55.8%	36.2%	21.7%
Cameroon (2003)	1646	5,756	7,402	Billion FCFA	4,260	1,596	2,664	57.6%	46.3%	36.0%
Niger (2009)	1,020	1,318	2,338	Billion FCFA	1,698	1,019	679	72.6%	51.5%	29.0%
Senegal (2000)	607	2,513	3,493	Billion FCFA	1,799	572	1,227	51.5%	48.8%	35.1%
Togo (2000)	439	622	109	Billion FCFA	790	439	351	72.5%	56.4%	32.2%
The Rest of Africa								**63.6%**	**50.2%**	**31.3%**

Note: The GDP estimates used for the calculation of ratios (and noted with *) are obtained by summing up the agricultural Gross Value Added and the non-agricultural Gross Value Added: they are excluding Financial Intermediation Services Indirectly Measured (FISIM), and including taxes less subsidies on products, and statistical discrepancy. Regional estimates are un-weighted averages.
Source: Charmes (2012).

Finally Table 5 is a tentative assessment of the trends observed in the contribution of the informal sector to GDP in various regions. In all regions, the share of informal sector in non-agricultural GDP has shown a noticeable increase over the past three decades, but it is in Africa (except Northern Africa region) that the increase was the most dramatic, especially during the last decade which may be due to the fact that there has been an improvement in both data collection and compilation.

Table 5: Trends in informal sector contribution to GDP in various regions.

	Number of countries			Informal sector (including agriculture) in % of total GDP			Informal sector (excluding agriculture) in % of					
							Non-agricultural GVA			Total GDP		
	1980s	1990s	2000s	1980s	1990s	2000s	1980s	1990s	2000s	1980s	1990s	2000s
Africa (except Northern Africa region)	12	19 (17)	6	38.5	54.5 (66.4)	63.6	32.5	37.3 (38.8)	50.2	22.0	24.1 (24.9)	31.3
Middle East North Africa (MENA)	3	3	5	38.8	37.9	36.2	28.3	29.3	29.2	23.9	25.6	26.2
Asia		5 (3)	4 (1)		33.6 (42.3)	30.2 (54.2)		24.3 (31.5)	17.2 (46.3)		19.9 (25.2)	14.2 (38.4)
Latin America		6 (5)	6		25.9 (32.0)	29.2		15.6 (21.6)	25.2		13.6 (18.8)	24.0
Caribbean		3			22.2			21.2			19.7	
Transition countries		11	15		23.8	19.5		12.3	13.9		9.9	10.7

Sources: Based on national sources and other sources quoted in references. UN. Department of Economic and Social Affairs. Statistics Division. (2004). National Accounts Statistics: Main Aggregates and Detailed Tables: 2002-2003. New York. 2004. 2 vol. 1332p. and 1302p. Updated 2008. Charmes. (2012).
Notes: Between brackets: a-typical countries are excluded.
It is not possible to calculate non-agricultural GDP; consequently the Gross Value Added is taken as a reference.

II. Data Collection and Processing: Surveys and Censuses

1. Overview

The most recent compilations of size and contribution of informal sector (not including subsistence agriculture) estimate the share of employment in the informal economy at nearly 70% of non-agricultural employment and 31.3 percent of total GDP in Africa (except Northern Africa region) (50.2% of non-agricultural Gross Value Added), respectively 53% and 23.8% (27.1%) in Northern Africa (Charmes, 2009 and 2012), all these indicators being on an upward trend since the 1980s. This is why it is important for African countries to move towards more exhaustive and direct methods of data collection as well as more harmonized indirect methods of measurement of this crucial and still growing sector of the economy.

African countries have gained experience in the estimation of informal sector in national accounts since the early 1970s (Charmes, 1985), in a period when the agricultural and more especially the whole traditional sector was by far exceeding a still tiny modern sector. But it is in the early 1990s that more and more countries undertook more systematic data collection through the so-called "mixed surveys" (a more generic term than the 1-2 or 1-2-3 surveys), following the adoption by the 15th International Conference of labor Statisticians in 1993 of an international definition of the informal sector, and its inclusion as a sub-sector of the institutional household sector in the 4th revision of the SNA also in 1993.

Defined as comprised all those economic units of own-account workers and informal employers not registered or non-registering their employees or employing less than 5 permanent employees, and which do not hold a complete set of accounts (the reason why they are included in the household institutional sector as unincorporated enterprises), the informal sector concept was later on completed by a definition of informal employment (17th ICLS 2003) which has further implications for the compilation of other institutional sectors in the national accounts as in the previous section.

2. Data Collection: The Current Status of Various Surveys

Table 6 shows, by sub-regions, the countries which have carried out some kinds of surveys incorporating some data collection on the informal sector or informal employment since the end of the 1980s and especially during the 1990s and the 2000s. These tables have been prepared on the basis of a systematic research on the National Statistical Offices' websites (complemented with Google search for each country + informal sector or informal employment or informality). This methodology does not ensure a complete exhaustiveness but it has clearly improved the information obtained through the ACS questionnaire survey on "measurement of informal sector aggregates and their compilation in the compilation of national accounts" which was filled by 24 African countries. Table 6 refers only to national survey (and occasionally to surveys covering urban areas) but exclude all surveys limited to capital cities as the latter cannot be a direct input in the compilation of national accounts.

40 countries, among the 54 African countries (74%) have been counted as having undertaken some form of data collection in this domain at national level, at least partially. The methodologies strongly diverge and Table 6 allows determining a typology of 4 different approaches. Table 6 details 5 different types of surveys: establishment/enterprise censuses and surveys, mixed household/establishment surveys, combined surveys of households and

establishments, living standard or living conditions surveys of households and labor force surveys.

Establishment/enterprise censuses and surveys: while most countries carry out industrial surveys or enterprises surveys in the formal sector for national accounts purposes (such surveys have not been listed in Table 6), 16 (40%) have implemented economic or establishment censuses on the basis of a door-to-door enumeration, sometimes regularly. 4 of these countries are located in Northern Africa and 7 in Western Africa. In Northern Africa, Egypt couples its establishment census with its decennial population census. Algeria carried out its first establishment census in 2011, as a basis for future enterprise surveys. Tunisia is a special case, having left the establishment censuses undertaken in the 1970s and 1980s for a national business register permanently updated through the national social security system, and the fiscal administration. In Western Africa, Benin, Gambia, Ghana and Liberia are countries with no mixed surveys on the informal sector, which seems to have opted for an establishment approach of this sector, while Cape Verde and Guinea Bissau maintain a dual approach: establishment-based and through a mixed survey. Mauritania and Niger moved from an establishment approach in urban areas in the 1980s-1990s to the mixed survey approach in 2012. In Middle Africa, Rwanda carried out an establishment census in 2006, repeated in 2011, and Cameroon in 2009 as a future basis for area sampling of enterprises. In Eastern Africa, the recent implementation of an Integrated Business Survey in Tanzania (2010) can be noted although it was limited to the construction industry and distributive trade sectors. In Southern Africa, Mauritius maintains a long tradition of economic census every 5-year, with a special operation for small establishments, and Sierra Leone conducted a census of business establishments in 2005.

The World Bank Enterprise Surveys (www.enterprisesurveys.org) collect firm-level data on the business environment from business owners and top managers. They cover a broad range of topics including access to finance, corruption, infrastructure, crime, competition, labor, obstacles to growth, and performance measures. Surveys on informal enterprises belong to this category: although their samples are rather small (100-150 units: a reason why they are quoted in italics on Table 6), they collect information on enterprise accounts and can provide national accountants with some bases for assumption in the informal sector, in the absence of other surveys on the informal sector (for instance in Côte d'Ivoire and Angola).

Mixed household/establishment surveys: Preceding (Mali, 1989 and Tanzania 1990-91) and following the adoption of the international definition of informal sector in 1993, the mixed surveys recommended by the ICLS 1993 flourished at the end of the 1990s and beginning of the 2000s, but they are often limited to capital cities of major towns. It is necessary to wait until the mid-2000s to see the extension of their coverage to the entire country. 21 countries (53%) have carried out a mixed survey in the recent period (out of which 13 are 1-2 type surveys) and some have already repeated it after 5 to 10 years: 1 in Northern Africa (Morocco 2000, 2006, 1-2 surveys), 7 in Western Africa (Senegal, Mauritania, Niger are the most recent in 2011 and 2012; Mali, Cape Verde and Guinea Bissau were carried out in 2007 and 2009; all being 1-2 type surveys, the only exception being the mixed survey in Chad, ECOSIT 1995-96, whose repetition in 2003-04 does not seem to have put a focus on informal sector and is not mentioned in Table 6), 4 in Middle Africa (all of them are 1-2-3 type surveys, but only two are nation-wide and have been repeated (DRC 2005, 2012 and Cameroon 2005, 2010), the two others have been limited to major cities (Brazzaville and Pointe Noire for Congo 2009, and 4 major cities in Burundi 2008). In Eastern Africa, 3 countries carried out mixed surveys (none of 1-2 type): Tanzania was one of the first in Africa in 1990-91, Kenya in 1999

and Ethiopia in 2003 (but at urban level only). And finally 6 countries carried out such surveys in Southern Africa (2 of 1-2 type): Madagascar started the implementation of a 1-2-3 survey as early as 1995 at capital city level, repeated in 1999, then extended to the 7 major cities in 2000 and 2001, and at national level in 2012; Comoros have carried out a 1-2 survey at the end of 2013; South Africa conducted its first mixed survey in 2002 (survey of non-VAT-registered businesses, repeated in 2010 (survey of employers and the self-employed); Botswana carried out a mixed survey in 1999, repeated in 2007, Mozambique did so in 2004 and Namibia in 2008.

Combined surveys of households and establishments: this type of surveys differs from the mixed surveys in the sense that they do not consider that household-based area sampling is an appropriate procedure for sampling establishments and they prefer organizing establishment-based area sampling to select a representative sample of establishments (except for home-based activities or mobile activities, which are selected on household-based area sampling as in mixed surveys, but strictly limited to these home-based activities). The implementation of these combined surveys requires the existence of a recent establishment census (Egypt) or an updated and rather exhaustive business register (Nigeria) or the preliminary organization of a census of industrial districts and market places (Kenya). To date, only three countries have opted for such an approach in Africa: Nigeria (2010), Kenya (2014) and Egypt in 2003, 2004 and 2011. In this approach, a representative (area-based and following the distribution of households across the country) sample of households is selected, the aim of which being the measurement of home-based and mobile activities of the households. In parallel, a representative sample of establishments (also area-based and following the distribution of establishments across the country) is selected, the aim of which being to measure the importance and performances of micro, small and medium enterprises in the country (large enterprises are generally surveyed from an exhaustive listing or register). Where possible, such procedures are preferable to mixed surveys, especially because they provide national accountants with detailed results on enterprises, by industrial sector, legal status and size of the enterprise.

Living standard or living conditions of households: Many countries in Africa (except Northern Africa region) carry out on a more or less continuous, or at least regular basis some kind of multipurpose or integrated household surveys. However, not all of them have included modules for the measurement of informal sector activities, and Table 6 lists only those that comprise some kind of data in this domain. 9 countries (23%) have carried out such surveys in the recent period. In Western Africa the living standard or living conditions surveys have turned to become multi-purpose surveys, including modules on labor force and employment, as well as non-farm enterprises operated by household members (a proxy for informal activities). The Ghana Living Standard Survey (GLSS), the Modular Integrated Survey on Living Conditions of the Households in Benin or the Survey of Living Conditions of the Households in Burkina Faso are regularly repeated, as well as the Permanent Household Survey in Madagascar or also the Uganda National Household Survey, the Integrated Household Budget Survey in Kenya, the Living Conditions Survey in Rwanda or the Sierra Leone Integrated Household Survey. In the absence of surveys on the informal sector, or in parallel with them, these household surveys can provide statisticians with data on informal employment or employment in the informal sector as well as – depending on a module on non-farm activities – on the performances of informal economic units.

Labor force surveys: these surveys are still not widely spread yet in Africa, and it is only in Northern and Southern Africa that labor force surveys have become quarterly and have

systematically included a set of questions for measuring informal employment and employment in the informal sector. However some 16 countries (41%) have carried out such surveys with an adapted set of questions or even a special module. Algeria, which is the only Northern African country with no survey on the informal sector, is also the only one to collect the complete set of characteristics necessary for measuring the informal sector (type of accounts, type of registration, size, legal status, industry) and informal employment (type of contract, social security contribution) on an annual basis since 2001 and soon (2014) on two rounds per year. Morocco collects data on social security contribution in its quarterly labor force survey, but the characteristics of the informal sector are collected only when the labor force survey serves as the first phase of the 1-2 survey (2000, 2006). In Egypt also, it is occasionally (2006) that the labor force survey is designed to capture the informal sector. And the Tunisian quarterly labor force survey has started to collect information on informal employment (social security contribution) and partial information on the informal sector (size) from the second quarter of 2013. Similarly, the South African quarterly labor force survey collects data on social security contribution, but not on the informal sector. In other countries, the labor force surveys are conducted on an irregular basis (between 5 and 8 years): Ethiopia (2005, but data were published only for the urban areas), Tanzania (2000, 2006, the Integrated Labor Force Survey being a multi-purpose household survey), Botswana (2008) and Zambia (2005, 2008). Other one-time labor force surveys that collected data on the informal sector are Liberia (2010), Lesotho (2008), Mozambique (2004-05), Namibia (2012), Seychelles (2011-12) and Zimbabwe (2004).

Table 6 hereafter summarizes the situation in Africa and in the sub-regions. ¾ of the 54 African countries have conducted surveys entirely (44.5% are multi-stage surveys, mixed or combined) or partially dedicated to the measurement of informal sector.

Table 6: Types of surveys for the measurement of informal sector, by sub-regions in Africa

Types of Surveys	Northern Africa	Western Africa	Central Africa	Eastern Africa	Southern Africa	Africa
Mixed surveys (1-2 or 1-2-3)	1	6	4		2	13
Mixed surveys (others)	1		1	3	4	9
Combined surveys		1		1		2
Establishment censuses and surveys	4	9	2		1	16
LSMS type surveys		6	1	2	2	11
Labor force surveys	4	2		3	8	17
Total number of countries	4	14	6	4	12	40

Sources: tables 7 below.
Note: there may be several types of surveys by country (but only one survey by type: no repetition).

3. Data Processing: Application of Data from Surveys and Censuses

The variety of surveys carried out in African countries allows drawing 4 major types of measurement approach for the informal sector and informal employment in Africa:

- The mixed survey approach is clearly the most popular in Africa, with 14 countries which adopted it: Morocco, Mali, Mauritania, Niger, Senegal, Burundi, Cameroon, Congo, DR Congo, Botswana, Madagascar, Mozambique, Namibia and South Africa,

and two more countries that are still balancing between the mixed survey approach and the establishment approach: Guinea Bissau and Cape Verde.

- The establishment-based approach is implemented in Tunisia with the regular updating of a national business register and a sample survey of micro-businesses every 5 years, in Algeria with the implementation of a national economic census in 2011 followed by a list-based sample of micro-enterprises (1 to 9) in 2013, in Rwanda with the organization of an establishment census followed by a sample survey of the informal sector every 5 years and in Ghana with the Integrated Business Enterprise Survey to be conducted in 2014. To a certain extent, it is also this approach, which is privileged in Benin, Gambia, Liberia, Sierra Leone, and Mauritius, while Guinea Bissau and Cape Verde are implementing it in parallel with the mixed survey approach. Tanzania is also complementing its mixed survey approach with some kind of data collection on establishments in trade and construction, for national accounts purposes.

- The combined survey approach seems to be the preference in emerging economies such as Kenya, Nigeria and Egypt where the micro, small and medium enterprises are a major engine of growth and a major component of employment. Kenya adopted this approach as early as 1999 and plans a repetition extended to the medium enterprises in 2014. Egypt adopted the approach in 2003 (with a follow up survey in 2004) within the framework of a regional program of MSE surveys. In 2011 the Egyptian MSE survey has been repeated with the support of the African Development Bank. Other countries of the region, with an experience of economic census or extended business register, might follow.

- Many countries have not yet clearly defined their approach or limit data collection to their usual household surveys: it is the case for Egypt whose approaches are oriented towards labor market analyses and policy design for MSEs rather than national accounts, or Ghana whose data collection operates through the periodic GLSS. Burkina Faso, Uganda, Angola, Lesotho, Seychelles, Zambia and Zimbabwe are still in the process of collecting data on employment in the informal sector only, while Ethiopia still restricts its data collection on the informal sector to urban areas, which is not sufficient to satisfy the needs of national accountants.

In conclusion, for countries where the lack of data co-exists with a lack of resources, the mixed surveys on informal sector should be given priority, together with the systematic inclusion of an appropriate set of questions in the various household surveys implemented more or less regularly. In countries where exists a sound basis for area-sampling frames on establishments and regular practice of economic/establishment censuses, the combined surveys (household survey for home-based and mobile activities + area-based establishment surveys for micro, small and medium-sized enterprises in detailed industrial sectors) should be privileged because they are more likely to provide national accountants with the full set of detailed indicators they need. In all cases, the combination of various types of surveys is not only recommended but should be systematically implemented. The existence of an ad-hoc survey on informal sector (whatever its type) carried out as one-shot survey or on a more or less regular basis, should not prevent statisticians to take advantage of any other household survey for integrating the appropriate set of questions in order to obtain a measure of employment in the informal sector as well as informal employment. Survey statisticians must keep in mind that national accountants need not only data on employment and production in the informal sector at one point of time, but also data on trends in employment in this sector.

As shown in the previous section, most countries in Africa have carried out some kind of surveys, which addressed the issue of informal employment and/or informal sector, at least on the employment side, if not on the production side. This is the case for instance in countries which did not conducted mixed surveys but attempted to measure informality in their labor force survey or their regular/periodic household survey on living conditions. This is an important point because, in the absence of data and statistics on production in the informal sector and in the informal economy, a better knowledge of the components of the labor force may have been a useful leverage for national accountants to build labor input matrices, making them able to distinguish the various forms of employment in the various industrial sectors of the economy and informing them about where are the holes in their understanding of the Supply and Use Tables (SUT) and what kind of assumptions they have to make in order to balance their SUT. Some very preliminary labor input matrices could be prepared to obtain estimates of the size of informal employment as the residual balance between total employment and employment in the modern sector. Nowadays statistics on employment in the informal economy help national accountants to refine their estimates without resorting on residuals.

Table 7 Surveys on informal sector and informal employment at national level (or urban level)

Countries	Establishment censuses/surveys	Mixed surveys	Combined surveys	LSMS type surveys	Labor force surveys with appropriate set of questions	Observations
Northern Africa						
Algeria	Economic census 2011, Survey on micro-enterprises 2013				Annual LFS since 2001	LFS capture both informal employment and informal sector
Egypt	Establishment census combined with population census		MSE survey 2003, 2004, 2011		Annual LFS since 2005 ELMS 1998 ELMPS 2006	ELMS and ELMPS have been carried out by CAPMAS and ERF
Morocco	Economic Census 2001-02	ENSI 1999-2000, ENSI 2006-07, ENSI 2013			LFS since 1999, LFS 2006	LFS capture only informal employment
Tunisia	Establishment census 1975, 1981 Survey on micro-enterprises 1997, 2003, 2008, 2013/ National Business Register				Quarterly LFS 2013	It is only since the second quarter of 2013 that the LFS collects data on informal employment
Eastern Africa						
Ethiopia		*National urban informal sector survey 2003*			LFS 2005 NLFS 2013	Surprisingly, all data are restricted to urban areas, even in the national LFS 2005
Kenya	*World Bank informal survey 2013*	MSE survey 1999	MSME survey 2014	KIHBS 2005-06	1998-99 LFS	

Countries	Establishment censuses/surveys	Mixed surveys	Combined surveys	LSMS type surveys	Labor force surveys with appropriate set of questions	Observations
Tanzania	*Integrated Business survey 2010*	Informal sector survey 1990-91			ILFS 2000-01, 2006	The business survey covers only construction and distributive trade
Uganda				UNHS 2009-10		
Southern Africa						
Angola	*World Bank informal survey 2010*					
Botswana	*World Bank informal survey 2010*	ISS 1999, 2007			LFS 1995-96, 2008	
Comoros		1-2 survey 2013				
Lesotho					ILFS 2008	
Madagascar	*World Bank informal survey 2009*	ENESI 2012		Periodic Household Survey 2001, 2002, 2004, 2005, 2010		The 1-2 survey became national only in 2012
Mauritius	Census of economic activities 1992, 1997, 2002, 2007			Continuous Multipurpose Household Survey (CMPHS)		
Mozambique		INFOR 2004		Continuous household survey 2012	IFTRAB 2004-05	
Namibia		Informal sector survey 2008			LFS 2012	
Seychelles					LFS 2011-12	

Countries	Establishment censuses/surveys	Mixed surveys	Combined surveys	LSMS type surveys	Labor force surveys with appropriate set of questions	Observations
South Africa		Non VAT registered business survey 2002, SESE 2005, 2009			QLFS since 2008	
Zambia					LFS 2005, 2008	
Zimbabwe					LFS 2004	
Western Africa						
Benin	Economic census 2008			EMICoV 2006-07, 2010, 2011		
Burkina Faso	*World Bank informal survey 2009*			ECVMB 2003, 2005 EA/QUIBB 2007		
Cape Verde	Economic Census 1998, 2004, 2007	IESI 2009				
Côte d'Ivoire	*World Bank informal survey 2009*					
Gambia	Economic census 2005-06					
Ghana	*World Bank informal survey 2013* Integrated Business Enterprise Survey 2014			GLSS 1995, 2000, 2008		

Countries	Establishment censuses/surveys	Mixed surveys	Combined surveys	LSMS type surveys	Labor force surveys with appropriate set of questions	Observations
Guinea Bissau	Census of establishments 2008	Inquerito 12 2009				
Liberia	Establishment census 2007				LFS 2010	
Mali	*World Bank informal survey 2010*	ENAE 1989 Employ 1996, EPAM 2007		EMCES 1994		
Mauritania	Informal sector survey 1992	ENRE/SI 2012				
Niger	Informal sector survey 1991	ENESI 2012				
Nigeria			MSME survey 2010	Survey on informal sector 2001	National Manpower and Employment generation survey 2010	
Senegal		ENSIS 2011				
Sierra Leone	Census of business establishments 2005			SLIHS 2003-04		
Central Africa						
Burundi		*123 survey 2008*				
Cameroon	*World Bank informal survey 2009* General Census of Enterprises 2009	EESIC 2005, EESIC 2010				

Countries	Establishment censuses/surveys	Mixed surveys	Combined surveys	LSMS type surveys	Labor force surveys with appropriate set of questions	Observations
Chad		ECOSIT 1 1995-96				ECOSIT 2 2003-04 did not publish results on informal sector
Congo		*123 survey 2009*				
DRC	*World Bank informal survey 2010, 2013*	123 survey 2004-05, 123 survey 2012				
Rwanda	Establishment census and informal sector survey 2006, Establishment Census 2011			EICV 2, 2005 EICV 3, 2011		

III. Data Compilation: Measuring Informal Sector

1. Introduction

Details of the procedures used for incorporating the informal sector, or more generally the informal economy, into the National Accounts remain scarce. Many countries still do not explicitly include the informal sector in the compilation of their GDP, although they indirectly but partially take it into account if they try to balance SUT for instance. In 2013, the African Centre of Statistics of the ECA has sent to all National Statistical Offices an informal sector questionnaire survey in order to assess the status of data collection on the informal sector and of its use in national accounts. Of the 54 African countries, 24 responded (44.4%): Table 8 below indicates in bold the respondent countries and marks with a star those countries for which information on the measurement of the informal sector were available in the previous section. Complemented with the second category of countries, the representativeness of the ACS survey can be ensured at sub-regional level.

Table 8: Respondent countries to the ACS survey

Northern Africa	Western Africa	Middle Africa	Eastern Africa	Southern Africa
Algeria	*Benin**	**Burundi**	*Djibouti*	*Botswana*
Egypt	**Burkina Faso**	**Cameroon**	*Eritrea*	*Comoros**
Libya	**Cape Verde**	*Central African Republic*	*Ethiopia**	**Lesotho**
Morocco	*Côte d'Ivoire*	*Chad**	**Kenya**	**Madagascar**
*Tunisia**	*Equatorial Guinea*	**Congo Republic**	*Somalia*	*Malawi*
	*Gambia**	**Congo, Dem. Rep.**	**South Sudan**	**Mauritius**
	Ghana	*Gabon*	*Sudan*	**Mozambique**
	Guinea	*Rwanda**	**Tanzania**	*Namibia**
	*Guinea-Bissau**		*Uganda*	**Seychelles**
	*Liberia**			**South Africa**
	Mali			*Swaziland*
	Mauritania			*Zambia**
	Niger			*Zimbabwe**
	*Nigeria**			
	São Tomé and Principe			
	Senegal			
	Sierra Leone			
	Togo			

Note: in bold: respondents to the ACS Survey; with*****: information on informal sector surveys available in the previous section.

While all 24 countries declared that they take the informal sector into account in the compilation of national accounts, 17 countries provided the date when the informal sector was taken into account for the first time. Among them, 8 (Senegal, Egypt, Kenya, Burkina Faso, Niger, Lesotho, Morocco, Algeria) declared that it was before 1993 (the year when the informal sector was internationally defined as a concept of labor force and it was referred to for the first time in the SNA).

Table 9: Years when countries started to incorporate informal sector into national accounts

1960	Senegal
1970	Egypt, Kenya
1975	Burkina Faso
1976	Niger
1982	Lesotho
1988	Morocco
1989	Algeria
1993	Cameroon, South Africa
1994	Mali
1998	Mauritania
2000	Burundi
2001	Sierra Leone, Tanzania
2004	Madagascar, Seychelles
2005	DR Congo

Source: ACS survey 2013.

As a matter of fact, most countries have more or less attempted – indirectly – measuring the contribution of informal sector to GDP since the origin of national accounts, and countries such as Senegal, Kenya or Burkina Faso refer to these experiences. Memory is an important issue for national accountants because it is rare that methodologies and experts' opinions or calculations used at a given period be written and most of the time they got lost (in confidential mission reports), so that the preparation of a new base year is often and unfortunately a new start from zero. Exceptionally, the methodologies have been preserved over the years (see Charmes, 1989 for Burkina Faso). Sometimes some national accountants attempt to review precisely what they have done and in such cases they take some preliminary precautions indicating that these explanations should not be taken as simplistic or giving too much freedom for leeway (Zidouni, 2012). For later periods and especially after 1993, the year when the informal sector has been taken into account often corresponds to the new availability of data on this sector and/or the implementation of a survey (even at capital city level or at sub-national level), at least on the employment side, if not on the production side, that allowed building a kind of crude labor input matrix, for instance in Cameroon (1993) or Mauritania (1998).

2. Direct Survey Approach vs. Indirect Approach

A direct survey approach to the informal sector supposes that data are made available, at national level on employment and production: it has already been indicated, in the previous section, that the mixed (household/establishment) or combined (household + establishment) surveys are the preferred methods aiming at providing national accountants with the full fledge of requested data. 18 countries (among the 24 respondents, or 75%) have indicated that they had conducted multi-stage surveys and 6 countries declared they did not (Algeria, Ghana, Lesotho, Mauritius, Seychelles and Tanzania, although the later implemented one in 1990-91). However this proportion must be interpreted with caution, because pure establishment multi-stage surveys also exist (for instance where an establishment census is followed by a sample survey of small establishments); moreover all mixed surveys are not 1-2 or 1-2-3 surveys and lastly, all multi-phase surveys have not been conducted at national level.

If we look at the details, 8 countries have conducted a multi-stage survey (1-2 or 1-2-3 type) at national level (often after a similar type of survey at capital city or urban level carried out a few years earlier); 4 countries have conducted a multi-stage/mixed survey (but not 1-2 type): Egypt, Kenya, Mozambique South Africa; 2 countries interpreted the multi-stage as establishment surveys (Sierra Leone and South Sudan) and in 3 countries, the multi-stage 1-2-3 survey was limited to the capital city (Burkina Faso), or the major 2 to 4 cities (Burundi and Congo). As many of these countrywide surveys have been implemented recently (2011 and 2012), not all the results have yet been available for use by national accounts: this is the case for Mauritania, Niger, and Senegal. More surprising is the case of Cape Verde, whose 1-2 survey conducted in 2009 was not used for national accounts yet. It is important to note that none of these surveys are conducted annually.

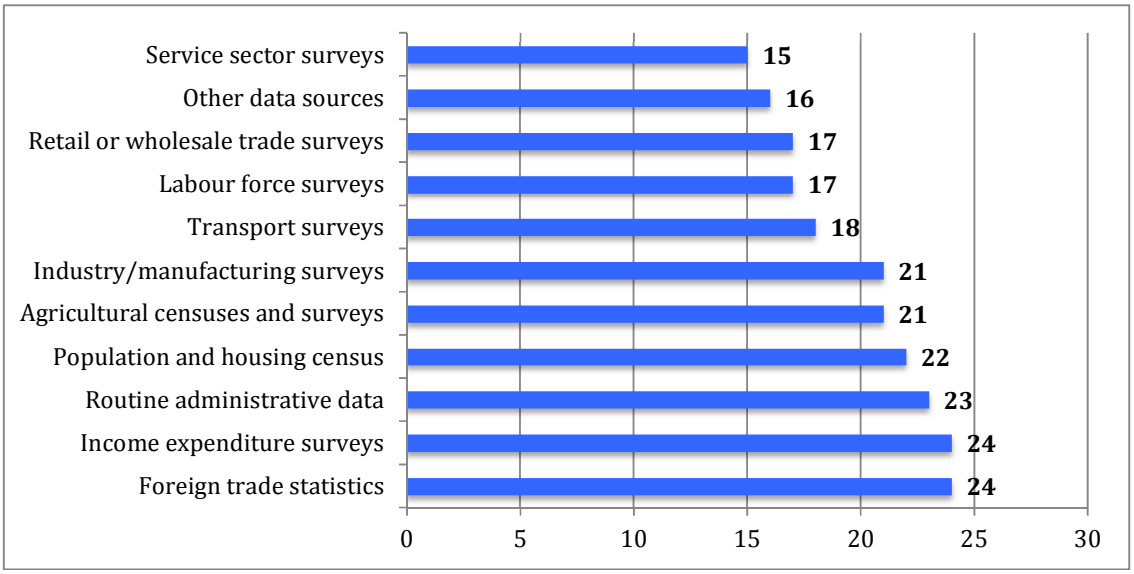
Notwithstanding the existence and use of multi-stage surveys on the informal sector, countries have carried out and used other types of surveys for assessing the size and contribution of the informal sector in the national accounts: 17 countries (71%) mentioned such other types of surveys and 15 (63%) declared that they used these surveys for national accounts: however some of these countries were referring to their previous establishment or mixed surveys on the informal sector (DR Congo 1992, Mali 1989, Mauritania 1992, Morocco 1988, Niger 1995, Senegal 1996), others refer to living standard surveys (Ghana 2006, Lesotho 2010, Sierra Leone 2011) or the Integrated Labor Force Survey (Tanzania, 2011), the Labor Force Survey (Egypt 2011, South Africa 2012), the Continuous Household Survey (Mozambique 2009, then 2012), the Integrated Household Budget Survey (Kenya 2005-06). 6 countries (Algeria, Burkina Faso, Cameroon, Cape Verde, Congo and Mauritius) did not mention any other surveys undertaken to measure the informal sector.

In the absence of mixed surveys or other surveys on the informal sector, or despite their existence, countries may use indirect approaches for the measurement of the informal sector (e.g. estimation of aggregates on informal sector based on exogenous or auxiliary data sources). 8 countries (Congo, DR Congo, Ghana, Madagascar, Mali, Niger, Senegal and South Sudan) declared they do not use the indirect approach at all. Among them, only two had carried out a mixed survey at national level in the recent period (DR Congo and Mali) that could make useless the indirect approach. At the opposite, 4 countries (Egypt, Kenya, Sierra Leone and Tanzania) made use of all three sources: labor force statistics, other official data sources, or other information including expert's opinion for the indirect approach: all of them have never carried out a mixed survey or have not done it in the recent period. Other countries may use one or two of these sources for the indirect approach: labor force statistics (Algeria, Cape Verde, Lesotho, Mauritius, Morocco, Mozambique, and South Africa), other official data sources (Algeria, Burundi, Cameroon, Mauritania, and Mozambique), other information (Burkina Faso, Cape Verde, Lesotho, Mauritania, Seychelles).

3. Methodology for Compilation of National Accounts

It is not easy to describe and explain in details in a short questionnaire the methodology for compilation of national accounts. The first major point is the use of various data sources. Chart 1 below shows that all 24 respondent countries compile foreign trade statistics (generally on a yearly or quarterly basis, exceptionally monthly or every 2 years or even 5 years), as well as income expenditure surveys (every 5 years in most countries, every year in South Africa, bi-annually in Egypt, and with no periodicity in other countries).

Chart 1: Data sources for compilation of national accounts (number of countries)



Source: ACS survey 2013.

23 countries compile routine administrative data (e.g. financial, monetary and government data banks, etc.).

Surprisingly population and housing censuses (carried out with a periodicity of 10 years in most countries, 5 years in the Seychelles) are not mentioned as being used for national accounts compilations by two countries (DR Congo due to the lack of such data collection in the recent period, and Mauritius where such data are available): yet population growth rates are commonly used to extrapolate various indicators and variables extracted from other household surveys.

Only Congo, Cape Verde and Ghana do not conduct any agricultural census or survey. Still Ghana is about to launch an integrated business enterprise survey, which will cover all sectors, including agriculture.

Then come industry/manufacturing surveys (21 countries), transport surveys (18 countries), retail or wholesale trade surveys (17 countries) and service surveys (15 countries).

17 countries mentioned labor force surveys, which is significant on a continent where such surveys are still rare. As a matter of fact, the first stage of multi-phase surveys on the informal sector is generally a labor force survey and plays the role of providing national accounts with labor force statistics.

16 countries mentioned other data sources. Ghana provides a typical list of such routine data and other sources (Box 1).

Box 1: Administrative data sources used for compilation of national accounts in Ghana

Box 1: Administrative data sources used for compilation of national accounts in Ghana
- VAT data from the GRA (Ghana Revenue Authority) - Mining and quarrying data from Minerals Commission - Crude oil-related from Ghana National Petroleum Corporation - Forestry and logging data from Forestry Commission (including information on illegal logging) - Cocoa data from COCOBOD - Crop output data from Ministry of Food and Agriculture - Fish output and price from Fisheries Department - Call volumes and rates from National Communication Authority - Profit and Loss Account of the banking industry from the Bank of Ghana - Output of Insurance industry from National Insurance Commission - Electricity production from the Volta River Authority - Electricity distribution from Electricity Company of Ghana - Water production and distribution data from the Ghana Water Company Limited - Imports and Exports data from Bank of Ghana - Cement production from cement manufacturing companies - Refined petroleum products from the Tema Oil Refinery - Roadworthiness renewals from the DVLA - Cargo handling data from Ghana Ports and Harbors Authority - Public Administrative data from the Controller and Accountant General's Department - Education data from Ghana Education Services - Health data from Ghana Health Services - Balance of payments

Among other sources, countries cited the Statistical and Fiscal Declarations, the surveys on Non-Profit Institutions Serving Households (NPISH) in Tanzania, Madagascar and Mozambique and also the accounts of local authorities such as the "communes" (Cameroon, Madagascar).

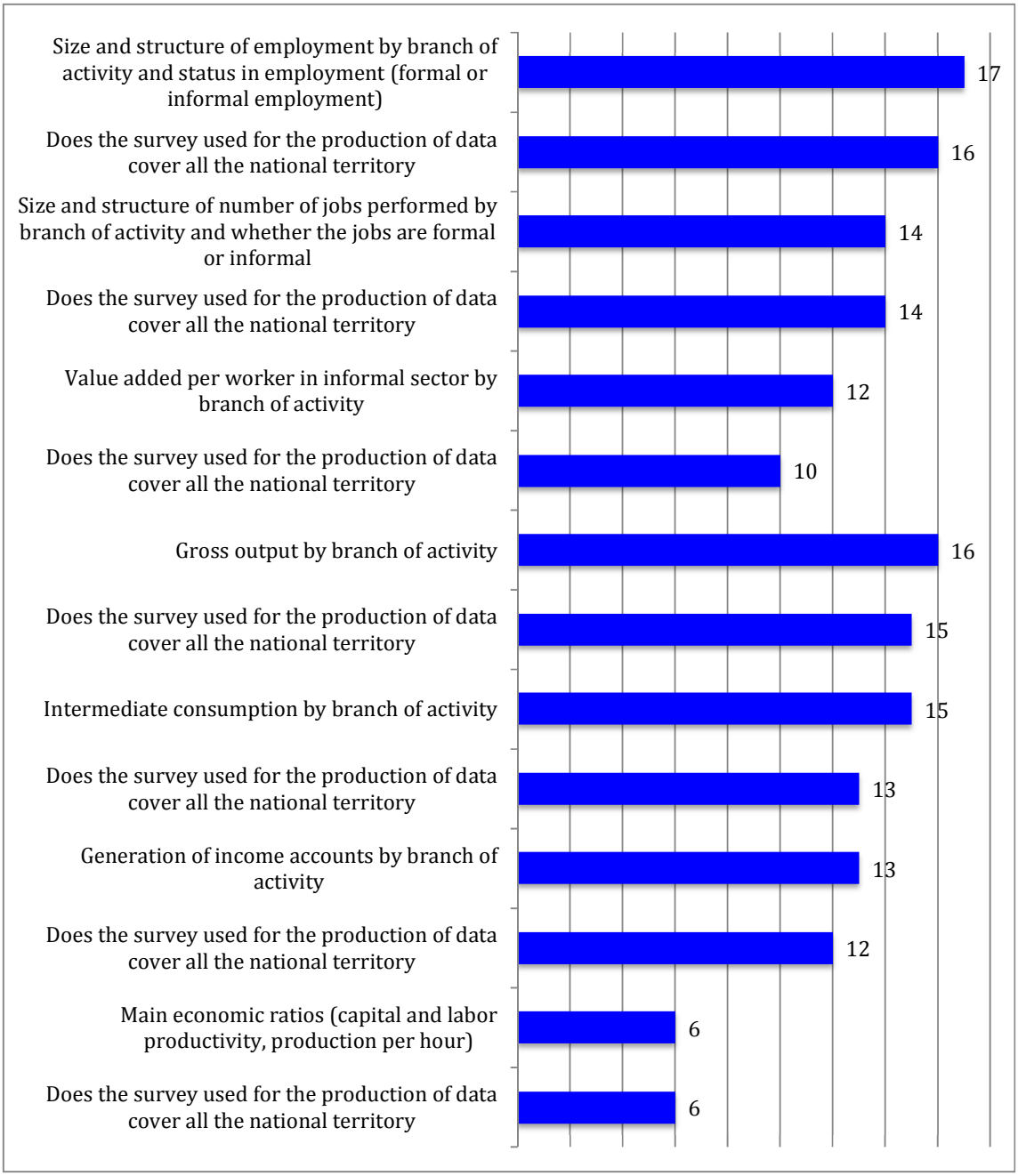
4. How the Data Are Use

Finally, within this broad landscape of widely-used sources, it is interesting to ask national accountants to what extent they use data from surveys on employment and informal sector (in other words: data from multi-stage mixed surveys). 4 countries responded they were not using such data at all: Congo, Lesotho, Mauritania and South Sudan. In this group, it might be surprising to find Congo and Mauritania, but the reason is probably that the 1-2 surveys conducted in these two countries are too recent for having made useful results already available. In 8 countries, the data from such surveys are used when data are recent, but not systematically: Burkina Faso, Cape Verde, Ghana, Mauritius, Mozambique, Sierra Leone, South Africa and Tanzania. In this group of countries, 3 countries have recently conducted mixed surveys: Cape Verde where the results of the 1-2 survey took long to be published and have been competing with the results of business surveys; in Mozambique, the mixed survey dates now from 2004: and in South Africa, the informal sector is not so large to be a major concern for national accountants. The 11 remaining countries (Seychelles did not respond to this question) indicated that they used extensively, systematically with adjustments, the data from the mixed surveys: Burundi, Cameroon, DR Congo, Egypt, Kenya, Madagascar, Mali, Morocco, Niger, Senegal and even Algeria referring to the labor force survey which collects data on informal employment and informal sector.

Chart 2 below explicates for what exact purpose countries use data on informal employment and informal sector.

In 17 countries, the data collected are used to elaborate a labor input matrix (even where the survey does not cover the entire national territory in one country: Madagascar until the 1-2 survey become nationwide in 2012). Another interesting finding of chart 3 is that many countries (14) use the data to prepare labor input matrices in terms of number of jobs, that is taking into account the multiple jobs and secondary activities of the persons. And in 16 countries also, the data on gross output by branch of activity are used (though the survey did not cover the whole territory (Burundi and South Sudan). Such a high response rate for these two indicators means that it is not only the multi-phase mixed surveys, which are used to these aims, but also the LSMS type surveys which capture informal employment and informal sector performances. Only 12 countries use the data on value added per worker, but 15 use the intermediate consumption, which indicates that national accountants give prominence to data on gross output and intermediate consumption over value added. 13 countries use data on the informal sector to compile the generation of income account: it means that they use data from surveys to generate values for the compensation of employees. Clearly, these countries fit more with those that have implemented mixed surveys (but still not entirely). Only 6 countries (Algeria, Cameroon, DR Congo, Mali, Morocco and Senegal) use data for calculating ratios on capital and labor productivity, or production per hour.

Chart 2: Data information usually used from surveys on employment and informal sector in the compilation of national accounts (number of countries)



Source: ACS survey 2013.

5. Supply and Use Tables and Input-Output Tables

As seen in the previous chapters, SUT and IOT are major tools for the compilation of national accounts in that they ensure the consistency of the data obtained from various sources and various approaches. ERETES, which is the French acronym for "Equilibre Ressources-Emplois/Tableau d'Entrées-Sorties" (SUT-IOT), is a computer model widely used for the compilation of national accounts, particularly in Africa: according to the website of ERETES (http://www.eretes.net/FR/index.htm), 19 African countries were equipped with the model. In the ACS survey, 22 countries (out of 24) declared that they know ERETES, but only 11 use it effectively. More surprisingly, 3 countries listed on the ERETES website as users declared that they were not using ERETES (Ghana, Madagascar, and Senegal).

Among the non-users of ERETES, 3 countries mentioned NADABAS (Kenya, Lesotho, and Mozambique) and 3 Excel (Ghana, Tanzania) or a combination of Access and Excel (Senegal). Mozambique explicitly refers to the UNSD Handbook of National Accounting "A Systems Approach to National Accounts Compilation". "The approach focuses on the design of a compilation framework, which includes Excel worksheets and a core set of SNA tables. The approach uses a database called NADABAS (National Accounts Database software) developed locally in a Visual Basic with Excel add-in to help to interact between the various Excel files."

In 2013, the AfDB carried out a survey to assess the reliability of GDP estimates in its 54 member countries. The survey dealt with the national accounts methodology, its conformity with the SNA 1993, whether countries were making all the imputations for non-monetary activities called for in the SNA (such as subsistence agriculture and livestock, imputed rents, own-construction of dwellings, etc.), and what kinds of survey on informal sector were available on which to base the GDP estimates.

According to the survey (AfDB 2013), approximately half of the member countries had undertaken one or more special survey focusing on the informal sector and 33 countries have compiled at least one SUT since 2000 and 14 countries now compile them every year (Burkina Faso, Cape Verde, Central African Republic, Congo Republic, Côte d'Ivoire, Malawi, Mauritania, Mauritius, Mozambique, Niger, Senegal, South Africa, Togo, and Tunisia).

IV. Country Case Studies

The ACS survey questionnaire ended by asking to describe concisely and step by step how informal sector data are integrated in the National Accounts, as regard methodology, assumptions, necessary conceptual adaptations (including classifications) and any other adjustments, and what are the methodologies used to reconstitute time series. 13 countries provide some details and a handful of them a rather comprehensive explanation. This was not an easy task as these methodologies are rarely written and belong to what is called 'the black box' of national accountants. The above case studies are supplemented by a recent EGM on informal sector, in which countries have presented and exchanged in more detail on their procedure and experience in incorporating informal sector into their national accounts. It is now necessary and useful to present an example of a good practice in order to see how the variety of methodologies and solutions depicted above, can be used consistently and logically through a comprehensive framework and procedure.

1. 1-2-3 Surveys

Democratic Republic of Congo

In the first stage, data entries of various sources are collected: including final consumption expenditures of households (extracted from phase 3 of the 1-2-3 survey, in the absence of an income-expenditure survey) is calculated with the population growth rate and the price index for each commodity. International statistical classifications are used: the Classification of Individual Consumption according to Purpose (COICOP) for the final consumption of households, and ISIC Rev3 for the production. Ratios are calculated to impute values for missing variables in the enterprise survey, such as output, intermediate consumption, and employment. Adjustment is done between data from balance of payments, customs and the Congolese Office of Control for external trade. In the second stage, the SUT are prepared with adjustments for determining intermediate consumptions and other variables. Finally accounts by branch are compiled by using the same ratios from the 1-2-3 survey and the share of informal sector is determined for each branch of activity.

Senegal

In Senegal**,** the available data on the informal sector come from a mixed 1-2 survey at capital city level. Its strategy of integration of informal sector in national accounts is described in three stages: (a) adaptation of the classifications used in the survey with the classifications of activities and the classification of products used in national accounts; (b) adaptation of the concepts used in the survey with the operations in national accounts (for instance payments in kind are incorporated within the compensation of employees); (c) adjustment between aggregates obtained from the informal sector survey and those obtained from the income-expenditure survey at sector level. Projections are based with the use of population growth rates and inflation rates, taking into account of the direct estimates of the value added and the value added per worker.

2. Household Surveys

Burundi

In Burundi, the first stage consists in the harmonization between the classifications used in the surveys and those used in national accounts; the second stage is the building of the labor input matrix with the data from the last population census, the most recent household survey, the number of civil servants from the administrative records, the number of persons working in the informal sector from ad hoc surveys or registers: data are classified by branch of activity, employment status and modes of production (public, private formal, private informal, etc.); the third stage elaborates the production and the generation of income accounts. For series, the population growth rate is used for employment data, and the evolution of indicators such as the output per head, the rate of value added, the rate of compensation of employees, the rate of mixed income of individual entrepreneurs are checked, based on the assumption that technologies remain stable since the most recent survey.

A national survey on the living conditions of households in Burundi (ECVMB) was conducted in 2014 with a clear objective to capture informal sector in the economy for establishing the production account in national accounts. The survey was designed based on the frame of the last population and housing census in 2008 (RGPH - 2008). In total, 7092 households were selected with 756 households in the province of Bujumbura Mairie (Town) and 396 households in each of the 16 provinces.

The definition of informal sector adopted by Burundi is operational and closely approximates that in the 2008 SNA: the informal sector is “all non- agricultural and non- registered individual businesses, not taking formal accounting, producing goods and/or services for the market." Thus, agricultural units were excluded from the scope of the definition. The criterion of number of employees below a certain threshold was not retained. While for informal employment, it is defined as employment without protection (social protection, written contract, salary slips, severance pay, etc.)

The informal production units were identified and selected in Phase I of the survey (employment section). The aim was to select all employed persons who are declared "boss" or "own-account worker" (either in their main job or second job) in an establishment that either do not have tax identification number (TIN) does not take into accounting. In accordance with the definition for the informal sector, these people lead an informal production unit (UPI). Filtered questions were designed for Phase 1 to ask to household members with 10-and-over year old which allowed us to identify and locate the UPIs.

For the activities and products, we used the classifications NAEMA / NOPEMA rev that are AFRISTAT adapted ISIC rev 4. The CSPro.5.0 software was used for data entry for all the questionnaires; and software SAS was used for analysis of statistics related to the informal sector.

Data items and indicators collected for informal sector including the following:

- Features of the unity;
- Demographic characteristics of workforce
- Production and sales
- Expenses and charges
- Customers, suppliers, competitors

- Equipment, investment and financing
- Problems and prospects
- Social security
- Value of production (including personal consumption): value of sales / shipments of goods and services; quantity of goods and services produced / shipped; value of production for own consumption, barter, etc.; value of shipments / sales of all products and services purchased for resale in the same condition as received
- Value of fixed assets for own account
- Value of intermediate consumption
- Changes in inventories
- Compensation of employees
- Taxes on production and imports

Besides production, other indicators of activity in the informal sector are value added (VA) and the gross operating surplus (GOS).

Based on the data, a table of "production, value added, and gross operating surplus" and a table of "labor input matrix" are compiled.

Egypt

For different industries, the industrial and business bulletins based on enterprise survey contain data of production, intermediate consumption, compensation of employee, capital formation, etc. Labor force survey provides data according to ISIC.4 including workers in both formal and informal sectors. First to calculate the difference between the number of workers from labor force survey in a particular industry and the number of workers in the bulletins for the industry to get the number of workers of informal sector in that industry. Then to estimate the informal sector depending on the productivity and other indicators compiled from the industrial production bulletins and the number of workers comes from labor force survey and not included in industrial production bulletins.

Household income expenditure survey is used to estimate informal sector in real estate activities, personal service activities, and home services activities. Household income expenditure survey is conducted every two years. The survey provides data about rent-occupied dwellings and owner-occupied dwellings. National account uses this data to estimate real estate production according to commodity flow approach. CAPMAS conducted a survey on rents in 2011. Egypt conducts Economic Census in every five years which provide a huge data. Economic Census 2012/ 2013 came after ten years from the last one. The census depended on the sample method for the establishments which be maximized at the final results. After the Economic Census, CAPMAS conducted informal sector establishment survey for the private economy not covered in economic census especially in construction, retail trade, and personal services activities**.**

Supply and Use Table (SUT) is used to conduct a consistency check. For example, for some products especially services it was found the use side is more than supply side. That means informal sector in services has been underestimated, especially the value of domestic production. Input-Output Table and related static input-output model is used to estimate the total output of the formal and informal sectors from household final consumption expenditure in the reference year according to each activity.

Ghana

Two important datasets used for measuring informal sector in Ghana are first the Ghana Living Standards Survey (GLSS) is a customized Ghanaian version of LSMS. It is an all-year round survey that captures seasonality in activities. Six rounds of the GLSS have been conducted with the maiden one in 1987/8 and the latest one (i.e. 6th round) in 2012/3. And second, the population census data on employed persons by sector of employment (public, private formal, private informal, etc.) cross-classified by industry of activity (retail trade, food preparation etc.). Employment data are used to raise the output per worker or value-added per worker in the household survey data to total size of each activity nationally. The Ghana Statistical Service adopts the international standard definitions, data collection guidelines and estimation procedures in the conduct of all its surveys and censuses.

The objective of the survey or census plays an important role to determine which information is needed and for what purpose. The 5th and 6th rounds of the GLSS had one of its objectives as "the provision of information for updating the national accounts". It is therefore clear that the questionnaire design took into consideration all relevant information needed to update the national accounts. Most non-farm household enterprises are very small in size in terms of capital and operations and rely almost exclusively on household members to provide the required labor and inputs. Results of the sixth round of the Ghana Living Standards Survey (GLSS6) conducted in 2012/3 showed that, 44.3% of households in Ghana operated non-farm enterprises, with 70.6% of these enterprises operated by women.

The GLSS is a nation-wide survey which collects detailed information on topics, including demographic characteristics of the population, education, health, employment and time use, migration, housing conditions, household agriculture and sources of household income and expenditure. Apart from the topics listed, each round has a specific focus. For instance, the 5th round conducted in 2005/6 introduced a special module on Non-Farm Household Enterprises and additional sections covering Tourism and Migration and Remittances. The questionnaire for the non-farm household enterprises is separate. The 6th round of the GLSS (conducted in 2012/3), collected information on all the topics in the 5th round, but had labor force as its special focus.

The GLSS adopts four separate survey instruments for data collection. For the purpose of this report, the household questionnaire for collecting information at the household and individual levels, as well as at the level of household economic activities (agriculture and home businesses) is the focus. Even with the household questionnaire, only the relevant sections is considered. The household questionnaire is divided into Part A and Part B. Section 4 of Part A covers employment and time use, while Section 9 of Part B covers non-farm household enterprises.

As stated, Section 4 of Part A of the household questionnaire is designed to solicit information on employment and time use. The members of a household often vary significantly in their economic characteristics, that is: activity status (employed, inactive), employment status (salaried workers, own-account workers, employers, contributing family workers), economic activity and occupation. So information on the economic activities of each eligible household member (aged 5 years or older in the case of GLSS 6) is requested. There are different parts under this section that help in identifying individuals eligible to answer the non-farm household enterprise questionnaire. Section 4A covers current economic activity status and characteristics of main occupation. Since many individuals hold multiple

jobs in developing countries, the questionnaire for the survey include questions which provide for the identification of employment in secondary jobs. Section 4B ask for information on economic activity status and characteristics of secondary occupation. For Section 4A and 4B, the reference period is 7 days preceding interview. Sections 4E and 4F have been introduced to cover usual economic activity and its characteristics for individuals who were not engaged in the last 7 days due to one reason or other but undertook some activities for economic gain within the past 12 months. The filter question for eligibility in each case (main occupation, secondary occupation and usual occupation) for responding to Section 9 is the activity status, either self-employed with or without employees.

Section 6 of Part A of the household questionnaire is designed specifically for identifying all household members eligible to answer Sections 8 (Agriculture) and 9 (non-farm enterprises) of Part B. A filter question (Q9) of Section 6 for non-farm household operators is as follows:

> "*During the past 12 months, has any member of the household worked for himself, other than on a farm or raising animals. (e.g. has anyone operated his/her own business/trade, worked as a self-employed, professional or craft man)?*" (Include non-working proprietors)

The population and housing census (PHC) collects information on employment status by detailed occupation and industry. These are used to raise the value added per worker to the national estimates of the informal sector. The 2000 PHC figures were projected to 2006 to be used as raising factors in the estimates for the informal sector activities. Aggregated data on employed persons by industry cross-classified by employment sector[1] from the 2010 PHC is shown as an example in Table 2. The variable in the employment status in Table 2 that is important for the estimation is "private informal." The information is available in 4-digit ISIC, sex (male and female) and type of locality (rural and urban).

Some activities were not covered well in the survey, and that needed a special survey to collect data on. For instance, the survey missed out owners of passenger and goods transport except taxis. Lake and river transport was also not covered. So, a small-scale land and river transport was conducted. This is very easy to do because vehicles are clustered in specific loading points. A one-page questionnaire was enough to gather input and output data from the different transport types, namely, taxis, commuter buses, long distance buses, haulage trucks, canoe transport etc. The sample estimates were raised to the national level by using the number of roadworthy certificates by type of vehicle issued by the vehicle licensing authority. As much as possible, suspicious production estimates of certain activities are cross-checked with the household expenditure component to ensure reliable estimates.

Estimates from such stand-alone surveys, together with that of the household survey and formal sector data, were then integrated into a Supply and Use Table (SUT). Many units responding to the GLSS were not used to keeping detailed records of the items used in the production process. Due to various reasons, some activities were not covered broadly enough to provide the quality of data required for the preparation of the SUT. Therefore, for activities where insufficient detail on intermediate inputs were recorded, other sources were used. In practice, two problems arose. First, the independent data sources were not fully consistent between them. Second, the GLSS has been conducted as a sample survey with a relatively small sample. This resulted generally in fairly large multipliers, while the number of

[11] Taken from Table 51 of the 2010 Population and Housing Census – Demographic, Social, Economic & Housing Characteristics, June 2013

observations in the GLSS for some activities was very small. In a number of cases, this resulted in unrealistic estimates for the total activity. It may be noted that these problems require adjustments at activity level, while the overall total number of workers from the population census were considered correct. The advantage of using a SUT is that data on expenditure are balanced with the production side to improve exhaustiveness.

Methods of extrapolation of informal sector output

Surveys and censuses are not conducted every year and at short intervals, there are different methods of extrapolating base year estimates. For each activity, administrative or secondary data available are used as extrapolators, whiles for some activities the assumption is that growth of the informal activity is the same as that of its formal counterpart for which data is available. The following are examples of how output of informal activities are extrapolated:

- *Retail trade*: VAT returns from the Ghana Revenue Authority is used as the extrapolator. Formal sector wholesale and retail services attract 17.5% VAT while a rate of 3% is levied on informal wholesale and retail services. The GRA provides data on the total output (sales) and the corresponding VAT by enterprise which are coded in 4-digit ISIC, but the informal ones are lumped together by ISIC because they are not on the VAT register. A disaggregated CPI is used to deflate the output values to constant values, which are used as proxies for extrapolation.

- *Transport:* Roadworthy certificates issued, by type of vehicle (taxi, buses, cargo trucks etc.) are used as volume indicators for commercial vehicles in operation. These are used as extrapolators.

- *Mining:* The Precious Minerals Marketing Company is the legal entity responsible for the purchasing of gold from small-scale operators as well as illegal miners. Data on precious metals bought are used as estimates for the output of the informal sector.

- *Manufacturing:* This is an area where data on informal output is almost non-existent. It is therefore assumed that production pattern mimics that of the formal activities.

- *Restaurants:* This is another problematic area. Like manufacturing the growth in the formal component is applied to the informal component.

- *Construction:* Commodity flow approach is used.

Lesotho

Population Census and Household Budget Survey (HBS) are the main data collection tool Lesotho uses to monitor and evaluate informal economy and informal employment in terms of the number and characteristics of the persons involved and the conditions of their employment and work. HBS provides information about household demand for goods and services produced in informal sector and it is the ultimate source used for actual GDP estimates. The observed and non- observed informal economy involves an important labor force which contributes to economic production.

Six Household Budget Surveys were conducted from 1972 to 2011. Here we focus on the 2010 / 2011 HBS. The current Household Budget Survey (2010 / 2011 HBS) is a bit different

from the previous ones because it is a module under the framework of the Continuous Multi-purpose Household Survey (CMS) that is conducted by BOS on quarterly basis. The primary objective of CMS is to provide permanent platform for the collection of data relevant to compute socio-economic indicators.

In its present form, HBS was instituted as a result of the need identified by the Government of Lesotho to determine the level of development in household income and expenditure. The survey was specifically designed to measure multiple facets of the consumer goods and services as well as the household distribution in terms of income and expenditure. The survey ran for four quarters of the year to capture seasonal variations. Specifically, the HBS was designed to update and strengthen vital aspects of the System of National Accounts (SNA) in terms of household consumption expenditure and income.

The sample of the 2010/ 2011 Household Budget Survey was drawn from 2006 population and Housing Census Master Frame which contained 4,250 enumeration areas (EAs) in total. Ultimately we gained a sample size of 267 EAs containing 6,060 households countrywide. The design for 2010/ 2011 HBS adopted a two stage stratified sampling procedure in which EAs constituted Primary Sampling Units (PSUs) while private household comprised the Secondary Sampling Units (SSUs). The design was best preferred amongst others to make a total sample representative and descriptive of the unequal distribution of the population across the ten Lesotho districts.

The approach used for household survey in general is household based approach where the survey unit (the individual) is studied through his/her household. The household sample is itself constituted from a multi- level selection, meaning that the random survey is also an area survey. In this regard, the sample of primary survey units must be established from the most recent population and housing census data.

The Household Budget Surveys are almost the only reasonable way to estimate the size and characteristics of informal sector in Lesotho. Measurement of informal sector has been approached from social and economic perspectives. The social approach focuses on the characteristics of informal sector as a source for employment, the contribution of the sector to total employment and the work conditions. The economic approach focuses on the contribution to the GDP.

According to the Lesotho HBS, informal sector (also known as a small scale business) is referred to as a privately owned and operated business, characterized by a small number of employees (less than 5). Small scale businesses are usually operated at household level and it excludes quasi-State enterprises and registered cooperatives. For sold agricultural products and other output in different industries, different shares of intermediate consumption are assumed. The informal sector topic in HBS covered the analysis of industry of the small scale business in line with International Standard Industrial Classification of all economic activities (ISIC Rev 3 and 4).

The design of the questionnaire was structured in a quarterly form in order to assess the seasonal variations in the household basket of consumption and expenditure and output of the informal sector. When a household is selected for the Household Budget Survey, (unlike the main HBS questionnaire filled by the household head only) an individual questionnaire specific to employment is always annexed and it is filled by each member of the household who is 10 years of age or above. Among the actively employed, namely persons who are

engaged in an economic activity, the employment characteristics are used to identify those who are in the informal economy, those who belong to an informal production unit, or those holding an informal job in a formal enterprise or in a household. The questionnaire used provides information on the possession of an employment contract, access to social security, the right to paid leave, sick leave, etc. The socio-professional category (employee, family helper, head of an enterprise…) of the individual, when it is crossed with other characteristics of the enterprise to which the individual belongs (registration, work force, area of activity), indicates which person is running or engaged in an informal production unit. Output per establishment is also estimated depending on the type of industry and the employment size.

Output: The output at current prices of the informal activity in ISICD28 was estimated as the turnover of all informal establishments in this industry in 2004. This was deflated by the implicit deflator for metal products of formal establishments to get output at constant prices. Then an annual volume increase of 2 percent was assumed to extrapolate for 2005 and other years until next bench-mark year. The same procedure was followed for ISICD26, but here output was extrapolated with the formal establishments' output at constant prices, and then output prices were used as deflators to get the current prices.

Intermediate consumption: Intermediate consumption of the informal activities for ISICD28 was calculated as the contribution of the intermediate consumption of the formal establishments to its output at current prices. At constant prices, intermediate consumption was estimated with the movement of its output at constant prices.

Value added: It has been explained in the introduction part of this paper that value added is the difference between output and intermediate consumption. Value added measures the value created by production. This means that value added represents the contribution of labor and capital to the production process. In other words, value added is the balancing item in the production account, as indicated below;

Compensation of employees: During the benchmark year, compensation of employees was found to be 5 percent of output in ISICD28. This was assumed to be constant for all other years after 2004 until the next benchmark year. However, compensation of employees for ISICD26 was discovered to be 10 percent of output in the same year, and then the same 10 percent rate was used for all other years until 2012.

Mozambique

Based on the data collected, Mozambique prepares a SUT and IOT as well as a labor input matrix with primary and secondary activities, formal and informal employment and finally elaborates the household institutional sector accounts.

The general picture arising from these experiences is that, whatever the quality and the coverage of their informal sector surveys (national/urban/capital city, household-establishment/establishment), countries attempt to derive ratios for strengthening the assumptions they make on the production of a sector which cannot be entirely left to indirect and residual estimates. Labor input matrices are a key instrument for national accountants and they are now integrating secondary activities in their estimates.

The Household Budget Surveys (HBS) are conducted once in every five years. Hereinafter is an introduction on the HBS conducted in 2002/3.

In 2004 and 2005 respectively the National Institute of Statistics have conducted the Labor Force Survey, LFS and Informal Sector Survey, ISS.

The criteria for defining informal sector are mainly related to absence of records, number of workers involved, destination of the production, physical address of the activity, and qualification of the labor force.

While according to the International Labor Organization (ILO), occupied people should be form 15 years old. To the contrary on the HBS and ISS, if someone with 7 years has declared to be employed, it was recorded as an economic active.

Like with the HBS, the ISS separated the households between agricultural and non-agricultural households. For those which the majority of their income comes from the agriculture activity were considered agricultural households.

The ISS was an operation of collection, processing, and dissemination of structural information regarding households and its members that are involved in an economic activity belonging to the informal sector.

The ISS had six questionnaires:

- The household (with household characteristics)
- NFMA, questionnaire for principal activity non agricultural
- NFSA, questionnaire for secondary activity non agricultural
- AMA, questionnaire for agricultural principal activity
- ASA, questionnaire for agricultural secondary activity, and
- EQ, the questionnaire for the end of interview.

The Population and Housing Census in Mozambique provides a sample frame for the household surveys, including the ISS.

Data collected from the household surveys are designed in tables:

- With description of the household structure which included variables like age, family relationship, gender, level of education attained among others.

- Crossing of household characteristics with informal activity indicators (employment status: formal employed, informal employed and unemployed), place of work, migratory dynamics, and so forth.

Two steps in incorporating the results of ISS into national accounts. First, to collect indicators from the ISS are: Information related to income for own account, total value spend for this activity in order to obtain the intermediate consumption, property income, income coming from land (plot) renting, housing renting, revenues coming from the small businesses; income coming from the principal activity, income coming from secondary activities according to category, economic activity; all the wages and salaries, mixed income and property income; taxes and subsidies; employment by activity, job characteristics; the duration of work expressed in number of hours, days, week dedicated to specific activity; production coming from the traditional household budget surveys in terms of measuring specifically which

production were coming from formal and informal sector; the remunerations (remunerations= pop economic active * average salary (by activity)).
Second, to compile household sector accounts including the production account and the generation of income accounts whose balance items are respectively gross value added and mixed income.

HBS conducted once in every five years provides detailed data on daily and monthly expenditures, the possession of durable goods, information of the characteristics of the household in terms of age, education, health, employment and other qualitative information. The first-time informal sector survey in 2004/5 in Mozambique with national coverage and provincial representative and by urban and rural areas. The ISS was very rich in terms of availability of data in terms of population economic active by provinces, regions, and type of economic activities that are predominant in one and other regions of the country. The informal sector survey was very important to delineate the sectors and bring the exact figures on the informal sector in terms of size and its importance for the economy. The ISS provided the size of the informal sector in Mozambique, 42%. This information has never been founded without the conduction of the ISS.

However, to conduct surveys at national wide is very expensive; Mozambique in particular relies on external aid to do s such kind of operations. As a result, we may still reply on the HBS given that it is very well structured to provide information related to the informal sector for information regarding informal sector for national accounts.

Due to the difficulty of measuring the informal sector, we know that the results of ISS does not cover the entire informal sector; so with help of labor force estimates and availability of economic active population data, it is possible to apply productivity ratios to informal sector data. In order to obtain exhaustive estimates of labor in informal sector, we suggest that labor input matrices based on HBS and the application of productivity ratios should be applied.

Nigeria

Nigeria rebased its GDP covering a period (2010- 2013), assessing the informal economy by using Harmonized Nigeria Living Standards Survey (HNLSS). The broad objective of the survey is to provide information on patterns of household consumption expenditure and income at a greater level of desegregation and to provide comprehensive benchmark data for use in the compilation of current statistics for labor force and National Accounts.

The Harmonized Nigeria Living Standard Survey (HNLSS) 2009/2010 was an enlarged scope of previous National Consumer Surveys and also a follow-up of Nigeria Living Standard Survey (NLSS) 2003/2004. The scope of the HNLSS 2009/2010 was enlarged to include: demography; health; and fertility behavior, education and skills/training; employment and time-use; housing and housing condition; social capital, agriculture; household consumption expenditure and income.

In Nigeria, informal sector is defined as household enterprises. By NBS definition, informal enterprises refers to micro enterprises as having less than ten persons with assets of not more than (5 million) operating outside government regulations.

The survey covered the entire 36 States of the federation and the Federal Capital Territory (FCT). It was designed to investigate both urban and rural areas of all the 774 Local

Government Areas (LGAs) of the country. The welfare approach component was conducted on 77,400 households which is an average of one hundred households per Local Government area, while the consumption approach covered 50 households in each Local Government Area. The overall concern of the study was to generate detailed, multi-economy and policy relevant data through welfare and expenditure approaches. In specific terms, the survey investigated the following areas of interest:

- Agriculture assets: land and equipment; agriculture crop: area cultivated, harvest of crops, and disposal of crops, seasonality of sales and purchases: crops, livestock and fishing; agriculture: processing and consumption from own produce; household expenditure: food expense, non-food expense, frequently purchased items and less frequently purchased items; non-farm enterprises:

- Basic characteristics of non-farm enterprises, assets of non-farm enterprises, expenditures on non-farm enterprises, revenue from non-farm enterprises, and net income and inventory of non-farm enterprises; credit and savings; income transfers: transfer payment made (out transfers), transfer payment made (in- transfers), miscellaneous income and expenditures.

Zimbabwe

In Zimbabwe, datasets used for measuring informal sector include household surveys particularly the Poverty Income Consumption and Expenditure Survey (PICES) complemented by the Labor Force Survey and the Population Census.

The size of the PICES is 33,000 households. The sample is drawn from the Zimbabwe Master Sample using sampling with Probability Proportional to Size (PPS) sampling. Sampling with probability proportional to size (PPS sampling) is used. There is no cut-off point for the informal sector as there is no separate sampling frame for the informal sector. The idea is to get a sample based on the population census and blow up the results to the total informal sector figures using PPS sampling techniques. After coding and editing, data is entered in the computer using CSPRO. Analysis is done using SAS Software.

The variables covered include employment, output, inputs, etc. on household enterprises to come up with value added for the informal sector.

This also involves employment data on the informal sector collected through questions in the Labor Force Survey questionnaire.

This also entails applying the labor input method by comparing data from the household surveys and data from the enterprise based surveys i.e. the Census of Industrial Production (CIP) and the Quarterly Employment Inquiry (QEI). The labor input method was also used and this was based on comparing the numbers of employees in the formal sector by kind of economic activity from the PICES with those from the establishment based surveys. The differences indicated under coverage by the establishment based surveys. This difference was multiplied by the gross value added per worker (GVAPW) for each kind of activity to estimate the under estimation of value added in the formal sector for that kind of activity. The informal sector estimate was then added to come up with a more exhaustive estimate of GDP

One of the objectives of the Poverty, Income, Consumption and Expenditure Survey (PICES 2011/12) was to come up with the contribution of the informal sector to GDP. In 2012 an

exercise was undertaken to incorporate the informal sector in the GDP estimates. The informal sector contributed 19.5 % according to PICES 2011/12.

The above-mentioned two methods were used to revise the GDP estimates backwards to 2009.

3. Labor Input Matrices

Burkina Faso

Data Sources Used for Compiling Labor Input Matrix

Two datasets are used: The General Census of Population and Housing (RGPH) conducted in 2006 and the household living conditions survey (EICVM) conducted in 2009. Based on the RGPH, the National Statistics Institute (INSD) has projected the size of the population by age up to 2020. In the EICVM, there is a well-developed module on employment with a structure on employment classified according to industries. It also provides the information of the employment status. Both are needed to develop the labor input matrix. The EICVM is a sample survey of households with data collection took place over a year to account for seasonal effects. These data were used to calculate the structure of the employed population according to the employer, the branch of activity and status.

In addition, the Industrial and Commercial Census (RIC) in 2009 and the National Survey of Employment and the Informal Sector (ENESI) in 2001 are also used for calculating the coefficients of productivity. The RIC provides information on the number of production units (formal and informal), the turnover, and the number of employees per unit of production.

Compilation of Labor Input Matrix

The above data are necessary to calculate the average turnover per employee by field of activity and the type of production unit (company, business individual formal and informal). This methodological approach proposes to use per capita production provided by this source as an indicator in the estimation of output per head. The RIC can be used to compile data by industry and by status of the production unit (formal and informal) the numbers of employees, turnover, and payroll paid.

The data of National account of 2008 accounts were used to estimate the technical coefficients “intermediate consumption / production” of informal sector by industry and the trade margin. They have been used to make a recovery of output per capita and per capita wage of branches that could not well be covered by the RIC because of the mode of organization of the activity in these branches. This is the branch of extraction, construction, transportation and financial activities. Informal production units of these branches do not have most often workroom.

The number of employed people in a particular sector is equal to the proportion of that population in that sector multiplied by the number of the employed population aged 15 years and older; following the ILO definition of the working population. There are four sectors of employers: public, para-public, private formal, and private informal.

Employed people in the informal sector can be classified according branches of activity and the occupancy status. The industry classification by activities adopted is the international standard industrial classification of all economic activities.

Similarly, the size of the working population in any particular branch of activity is the proportion of workers in the informal sector of the industry multiplied by the number of employed people in the informal sector.

For each branch, the working population in the informal sector can be broken down according to the occupancy status such as employees of informal sector, independent, employers, family helpers, apprentices, trainees and volunteers. The family aids, apprentices, trainees, and volunteers can be grouped in a category other employed.

For the informal sector, we have informal private sector, own-account workers (independent), informal sector employers, and other employed. The number of people in each of them is equal to the proportion of employees in the informal sector in the sub-sector multiplied by the number of employed people in the informal sector.

Estimates of Value Added and/or Output per Workers

To estimate production and the average wage per worker in the informal production units in 2009, two sources of information are used: the ENESI and RIC. The ENESI is a household survey that takes place in two phases; the first phase takes place from households and contains an employment section that identifies the household members who own informal production units; the second phase takes place with the Informal Production Units (UPI) identified during the first phase. This survey is the ultimate source of information that can calculate a number of indicators for the estimation of production per head and value added of the informal sector.

The calculated indicators include the following:

- Intermediate consumption / production
- The numbers of workers in informal sector units
- *T*he accumulation of their turnover and their payroll paid
- The trade margin (gross margin / turnover)
- Production of non-commercial informal production units is equal to their turnover; their second production trade is considered negligible.
- The accumulated production of the non-commercial sector
- The production of the branch
- Output per worker in industry
- The salary per worker of the branch

Estimates of Value Added for Informal Sector Disaggregated

There are several methods to estimate the added value of informal sector; that practiced by Burkina Faso consists of projecting production of the year N-1 by industry and by product. The indicators used in this projection are the growth rate of the employed population and the price indices for production. Intermediate consumption is then estimated during the projection work of intermediate consumption which is based on the following fundamental assumption: The technical coefficients of “Intermediate consumption / production” is assumed to be

constant between the current year and the previous year. The value added by industry is then obtained by difference between output and intermediate consumption.

The total production of each branch is estimated by using the array of employment and output per worker of each branch. The value added of the branch is obtained by multiplying the total output of the industry through its technical coefficient.

Table 10: Labor Input Matrix

	Agriculture, hunting and forestry	Fishing	Mining and quarrying	Manufacturing	Electricity, gas and water supply	Construction	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	Hotels and restaurants
Public employees	3 299	297	594	570	3 139	1 649	1 560	989
Formal private employees	213		4 863	25 890	2 698	8 167	19 490	1 974
Informal private employees	38 188	53	5 762	157 096	558	19 260	11 899	6 816
Independent	1 003 831	3 590	2 359	150 052			75 000	
Employer	4 853	11	3 729	1 196	82	6 777	17 877	276
Other assets	2 208 042	444		64 296	182	26 278	491 655	1 172
Total	3 258 426	4 395	17 307	399 100	6 659	62 131	617 481	11 227

	Transport, storage and communications	Financial intermediation	Real estate, renting and business activities	Public administration and defence; compulsory social security	Education	Health and social work	Other community, social and personal service activities	Private households with employed persons
Public employees	1 498	4 663	1 118	26 332	50 642	20 811	1 835	
Formal private employees	16 411	3 090	7 479		14 567	4 911	2 014	
Informal private employee	11 792		14 278		1 800		15 801	877
Independent	1 500		1 832			1850	7 153	
Employer	819		520		257		372	
Other assets	4 912		2 670				2 407	74 236
Total	36 932	7 753	27 897	26 332	67 266	27 572	29 582	75 113

Table 11: Production and value added by industry of the non-agricultural informal sector

In millions of CFA francs unit	Agriculture, chasse et sylviculture	Pêche, pisciculture, aquaculture	Activités extractives	Activités de fabrication	Production et distribution d'électricité, de gaz et d'eau	Construction	Commerce ; réparation de véhicules automobiles et d'articles domestiques	Hôtels et restaurants
Production			16 206	731 418	1 555	207 143	467 126	105 326
added value			14 262	380 337	1 345	121 179	410 136	13 587
Salary			9 724	276 445	107	28 377	40 745	5 581

In millions of CFA francs unit	Transports, activités des auxiliaires de transport et communications	Activités financières	Immobilier, locations et services aux entreprises	Activités d'administration publique	Education	Activités de santé et d'action sociale	Activités à caractère collectif ou personnel	Activités des ménages en tant qu'employeurs de personnel domestique
Production	32 058		73 715		564	812	23 393	63
added value	22 697		62 437		481	700	17 943	55
Salary	6 396		4 954		253		3 224	53

Types of Accounts Compiled for Informal Sector

Integration of informal sector into a base-year national accounts: It is necessary to have a recent survey on employment and the informal sector to calculate the technical coefficients "Intermediate consumption / production" and the structure of the intermediate consumption by industry according to the products consumed. The integration of the results provided by the method can operate in five steps:

Step1: during this step, you have to load into the database of the national accounts production, total intermediate consumption by branches, wages and employee numbers. This step may well happen during loading work of sources or pre- arbitration work.

Step2: Perform work balance between resources and jobs and make the necessary adjustments to production. When adjustments were made to the production of a given branch, its intermediate consumption demand must be recalculated in order to keep the technical coefficient provided by the survey on employment and the informal sector.

Step 3: Calculate retail intermediate consumption by product using the overall intermediate consumption by branches and intermediate consumption by branch structures as products consumed that is provided by the survey on employment and the informal economy.

Step 4: Perform the confrontation between supply and demand for intermediate consumption by product. If the comparison shows large gaps between demand and supply IC for a given product, the testing must be conducted to understand the reasons for the deviation. In such a situation, we must analyze the production branch, the "Intermediate consumption / production" ratio and the structure of the IC product. It is crucial to focus on the branches that require the most the product for which the gap is important and also those that primarily produce. Adjustments can be made to significantly reduce the gap between supply and demand for CI.

Step 5: Determine the level of production by branch, "Intermediate consumption / production" rates; recalculate the numbers of employees and salaries to reflect the adjustments made on the production assuming that per capita production remains unchanged, the per capita wage remains unchanged. Skip to the work of synthesis accounts while balancing the supply and demand of CI. At this level, the adjustments are not possible on the IC structure by product.

Integration of informal sector into a current-year national accounts: It is necessary to have a price index (for final consumption, the production of some products, imports and exports) or volume index (index of industrial production). One hypothesis is issued: technical coefficients "Intermediate consumption / production" and the intermediate consumption structure by sector as the products consumed does not vary at constant prices from one year to another. The structure of the previous year's accounts may be renewed. Production, wages and employees by branches are given as recorded in the results; the price or volume indices will calculate output at constant prices by the method of deflation and therefore the CI at constant prices. Output per capita and per capita wages are revised as described by the method, and the process of integration of data in the national accounts may be described in five steps; these steps are a few differences similar to those described for the integration to a base year of national accounts; the

difference lies in the fact that analysis of aggregate trends between the current year and the previous year to ensure that the data fairly reflect reality.

Cameroon

Operational Definitions Used in Cameroon

Informal production units (IPU) is defined as all production units without taxpayer identification number and/or not taking a formal written accounting under the OHADA[2] accounting plan.

Informal employment and informal jobs are those of the non-agricultural informal sector units and agricultural labor regardless of their employment status or the principal or secondary employment. Analysis of employment focuses on individuals aged 10 and over in the Cameroonian context. The survey also captures informal employment in the formal private sector and in public administration.

Data Sources Used for Compiling Labor Input Matrix

Two main sources were used for the estimation of the informal sector: the Cameroon's *Household Survey* (ECAM 2007), which was a typical living standards survey, collecting data on labor force, income-expenditures, agricultural production, etc. for agricultural and more generally rural activities, and the *Survey on Employment and the Informal Sector* (EESI conducted in 2005 and 2010) for all the other non-agricultural activities. The EESI is a two-phase statistical survey. The first step is an employment survey seeks to understand employment and the second is an informal sector survey to assess the economic activities of non-agricultural informal sector.

Moreover a systematic comparison between ECAM (2007 retrapolated for 2005), EESI 2005 and data on employment provided by the Statistical and Fiscal Declarations (DSF) for formal enterprises allows arbitration for imputing numbers of undeclared paid employees.

For the years after the benchmark estimates of informal sector, the employment by industry and socio-professional categories is estimated by using the annual population growth rate. After, assuming the constancy of the economic ratios, the output at constant prices by industry is obtained by multiplying the output per capita by industry of the benchmark year by the estimated employment. The result of the output at constant prices by industry is multiplied by the price index to obtain the output at current prices by industry. These estimations of the output by product are confirmed or modified in the supply and use balance where all resources (production and imports) were confronted with the demand (consumption, investment, exports and changes in inventories).

Coverage and methodology of surveys: The sampling frame used for the first phase of the EESI 1 in 2005 is provided by the mapping of the third General Census of Population and Housing (RGPH) in 2005. There were 8,540 households selected. The cities of Yaoundé and Douala were each regarded as a survey area; total with about 6,060 non-agricultural informal units (IPU).

[2] Organization for the Harmonization of Business Law in Africa

However, the second phase has involved a sample of 5 274 units, which resulted in the full survey of 4 815 IPU, representing a coverage rate of 91.3%.

In 2010, the sampling frame was updated and allowed to randomly select a sample of 8,160 households stratified according to the same stratification as in 2005. The first phase identified 4705 non-agricultural informal production units (IPU) and 4 592 were surveyed in the second phase, representing a coverage rate of 97.6%.

Data collected from the EESI surveys cover informal production units (IPU) engaged in industry, trade and services, the primary sector activities are excluded with the exception of forestry and logging. The composition of household members, characteristics of housing and household equipment's and at the individual level, the activity status, unemployment indicators, labor income, business conditions, etc.

Compilation of Labor Input Matrix

Based on these data, a labor input matrix was constructed: a detailed table of national employment by activity, by institutional sector (public, private formal, non-agricultural informal and agricultural informal) and occupational status (employee, employer, own account worker, family aid and apprentice).

Building the labor input matrix is the first step for the compilation of national accounts. To this aim, national accountants distinguish work at level 2 of the classification of industrial activities (prepared by AFRISTAT on the basis of ISIC Rev.4): 158 activities are distinguished in the detailed calculations (but only 43 divisions and 17 sectors will be officially published), which are disaggregated into 8 "modes of production":

- Individual unincorporated enterprises filling DSF (household formal)
- Incorporated enterprises filling DSF
- Incorporated enterprises not filling DSF (non-respondents), but due to fill one
- Capture of underestimation by incorporated enterprises (by re-estimating production through technical coefficients)
- Public administration and social security
- Informal sector-households
- Household non-market production
- Non-profit institutions serving households (NPISH)

This classification is a mix of institutional sectors (non-financial/financial incorporated enterprises, government, non-profit institutions serving households and households) and sub-categories of these institutional sectors. For instance, non-financial and financial incorporated enterprises are comprised of categories 2, 3 and 4: DSF require holding a complete set of accounts; some enterprises have not sent their DSF for one reason or another and as it is verified that they are still operating and registered, their performances can be estimated by using the technical coefficients of other enterprises of the same category of activity and size for instance (category 3). Moreover, comparisons within branches and categories of size may reveal that some of these incorporated enterprises have underestimated some of their performances: for

instance if the share of intermediate consumption is much higher than in the other enterprises of the same categories, it may be decided to apply the average technical coefficient rather than the figure provided in the DSF: in other words, category 4 of the classification of modes of production is an estimation of the underground economy in the formal sector.

On the other side, the household institutional sector is comprised of 3 categories: the informal sector itself (category 6), the household non-market production (category 7) which is comprised of subsistence agriculture, fetching water and firewood, self-construction and imputed rents, as well as all production of goods for own-consumption. But the household institutional sector is also comprised of individual unincorporated enterprises filling DSF (category 1: household-formal) and this option could be debated: if this unincorporated firms fill a DSF, it means that they hold a complete set of accounts, are fully registered and can be clearly distinguished from the household of the owner, so that they could be considered as quasi-corporations and classified within the institutional sector of the non-financial (or financial) incorporated enterprises.

Status in employment is also taken into account (employers, own-account workers, paid employees, contributing family workers) and data are prepared in terms of number of jobs, not in terms of number of occupied persons (in other words, secondary activities are also taken into account). Although the labor input matrix is not fully presented in the national accounts, table 12 hereafter has been prepared for 15 sectors of activities and it could also be prepared for 43 divisions of the classification of activities. It is directly derived from the results of EESI 2005 and takes account of secondary activities: the data are numbers of jobs, not numbers of persons: there are 14,333,000 jobs in the economy while, according to ECAM 3 (2007) the number of occupied persons is only 8,127,000, but according to EESI 2005 the pluri-activity rate (i.e. the number of persons with multiple jobs compared with the number of occupied persons) is as high as 37% at national level (44.7% in rural areas and 17.4% in urban areas).

As a matter of fact, among the peculiarities of the labor input matrix for Cameroon, it should be noted that it is the number of households - rather than the number of persons involved – that has been retained for activities such as fetching water or firewood: this accounts for some 1,886,000 jobs in table 12. Similarly imputed rents have been counted for some 2.7 million households (assimilated to jobs in the labor input matrix) and 230,000 households for self-construction. Therefore, any household with at least one active member, may have been counted twice (if occupying its own house) or three times (if the household is not connected to tap water). The next round of ECAM in 2014 should be able to provide sounder data thanks to its time-use section. Another peculiarity regards employment in the public administration: 127,000 persons are working in the public administration (plus 114,000 in education and 11,000 in health), but in the details of the 127,000, it is indicated that this is the figure for registered workers and it should be added 107,000 more for the non-registered (an example is given with the 17,000 persons who were temporarily hired by INS for the population census in 2005: INS, 2012b: 128).

Table 12: Employment by sector of activity and status in employment, Cameroon 2005 (in thousands)

Industries	Paid employees (registered)	Paid employees (not registered)	Employers	Own-account workers	Contributing family workers	Total
Primary sector	31	97	51	2,386	1,826	4,382
Agriculture	22	85	45	2,308	1,682	4,133
Animal husbandry	5	6	3	45	99	158
Forestry	4	3	2	14	41	64
Fishing		3	1	19	4	27
Secondary sector	148	293	91	2,876	478	3,895
Extractive industries	4	2		12	3	30
Of which : hydrocarbons	3					3
Agro-food industries	42	43	17	531	345	978
Other manufacturing industries	69	45	29	268	119	529
Electricity, gas and water	6	1		1,886		1,893
Construction	27	202	45	179	11	465
Tertiary sector	454	635	197	4,555	334	6,056
Trade, restaurants, hotels	38	187	86	1,123	272	1,705
Transport communication	47	132	23	133	8	344
Bank and finance	10	1				11
Other services	359*	315*	88	3,299	54	3,996*
Total	633	1,025	339	9,817	2,638	14,333

Source: based on data from INS (2012b).
Note: * in public administration, total employment is lower than the sum of its components (107,000 non registered paid employees are not counted in the total).

Table 13 is the second step of the labor input matrix: in order to impute the jobs presented in Table 12 to the various modes of productions and institutional sectors, some arbitrations are necessary which require a systematic comparison between various sources. The methodology presented for each of the 43 divisions of activities in INS (2012b) shows clearly that for most activities the three surveys or sources of data available (EESI 2005, ECAM3 2007 and DSF 2005) are mobilized: it may happen that DSF figures for paid employment be higher than EESI or ECAM figures for a given activity. In such a case the final figure will be arbitrated after examination of the tentative explanations for such discrepancies. Quality and reliability of household surveys regarding the classification of economic activities or the status of the persons

may be questioned while the reliability of the DSF may also be questioned regarding the numbers or the assignment of employees to a particular activity (main or secondary) in the enterprise. Consequently it is interesting to note that it is never a single source that is privileged but that all sources must be questioned and that the final figure is always the result of arbitration, not only on the basis of sources on employment, but also after balancing the supply and use tables by product. Table 20 must be looked at and interpreted as such.

Table 13: Employment by sector of activity and mode of production, Cameroon 2005 (in thousands)

Industries	Incorporate-rated enterprises	Public administration	Individual Enterprise formal	Informal	House-holds	NPISH	Total
Primary sector	20.49		13.19	2,042	2,315		4,390.68
Agriculture	16		7	1,860	2,259		4,142
Animal husbandry	0.49		6	109	43		158.49
Forestry	4		0.19	50	9		63.19
Fishing				23	4		27
Secondary sector	111.91		50.98	1,585.63	2,136.31		3,884.83
Extractive industries	3.17		0.01	16			19.18
Of which : hydrocarbons	2.63						2.63
Agro-food industries	35.99		9.36	918	15.31		978.66
Other manufacturing industries	56.75		19.61	452.63			528.99
Electricity, gas and water	6			2	1,885		1,893
Construction	10		22	197	236		465
Tertiary sector	261.2	359	143.11	2,660.03	2,848	33	6,304.34
Trade, restaurants, hotels	32.2		43.07	1630			1,705.27
Transport communicatio n	27		27	290			344
Bank and finance	139						139
Other services	63	359	73.04	740.03	2,848	33	4,116.07
Total	393.6	359	207.28	6,287.66	7,299.31	33	14,579.85

Source: based on data from INS (2012b).
Note: Totals slightly differ from table 12, due to rounding and imputations.

Estimates of Value Added and/or Output per Workers

Data from the survey of employment (phase 1) provides a detailed table of:

- National employment by industry,
- National employment by institutional sector (public, private formal, non-agricultural informal and agricultural informal) and
- Occupational status (employee, employer, own account worker, family aid and apprentice).

Data on public employment are confronted with those provided by the Ministry of Finance and the Ministry of Public Service on the number of civil servants. Those of the private formal sector are also compared with the data of the National Social and Insurance Fund and the Business Register or statistical and tax statements.

Data from the survey of informal production unit (phase 2) allow detailed tables on:

- The output by industry and product
- Trade margin by product
- Self-consumption by industry and product
- Intermediate consumption by industry and product
- Compensation of employees by industry
- Taxes paid by industry and
- Gross fixed capital formation by industry and product

These data are used to calculate the economic ratios such as technical coefficient by industry, output per capita by industry, productivity per worker by industry, average wages by industry, etc.

Estimates of Value Added for Informal Sector Disaggregated

Integration of informal sector and informal employment in national accounts: The main objective of this work is essentially turned to the comprehensive measure of gross domestic product (GDP). It is important to assess the outcomes of the informal sector contribution to employment and GDP. This section presents the integration process of mixed data surveys from 2005 and 2010 in the national accounts. It includes (i) the treatment of elements to be included and (ii) analytical work: supply and use balance of products and production account.

To incorporate the informal sector data into national accounts, first is to determine the principal activity of the IPU. As part of the survey, the principal activity of the IPU is determined by the product generating the highest turnover instead of added value as in national accounts. The principal activity of the IPU may therefore change from one period to another depending on economic conditions. Thus, the passage from IPU to industry in the national accounts sometimes poses problems because of the difficulty of determining the principal activity of certain IPU.

The second is to conduct a consistency check through supply and use balance of products and production account. All previous data are loaded into the national accounts database. They are

used to elaborate the supply and use balances of products and the production accounts by industry. These data are made consistent with other data sources which give information on the import and export of products, the output of the formal sector, the final consumption of households and public administration, the gross fixed capital formation, the change in inventories, etc.

Types of Accounts Compiled for Informal Sector

Once the preliminary labor matrix is built, the tentative building of production accounts and generation of income accounts by branch of activity can start. The starting point is the estimation of value added from production at 158 levels of industrial activities and for the 8 modes of production. The production for the various modes of production is derived from the various sources (DSF for the formal incorporated enterprises: categories 2, 3 and 4 of the classification of modes of production; DSF for the individual unincorporated enterprises: category 1; EESI for the informal sector: category 6; ECAM for household non market production: category 7) by imputing the ratios generated from the surveys to the various categories of employment in the labor input matrix.

To this aim, several ratios are calculated from the surveys and sources:

- Productivity: production/employment,
- Intermediate consumption/production (technical coefficient),
- Value added/employment,
- Wages per head,
- Gross operating surplus or mixed income per unit,
- Social contributions/wages

A typical sequence of accounts is presented in table 21 below:

Table 14: Sequence of accounts for the meat and fish industries (Cameroon, 2005)
In billions CFA Francs

Transactions	Modes of production				
	Incorporated firms	Individual entrepreneurs	Informal	Household	Total
Production	4	0.51	242	11	257
Intermediate consumption	2	0.26	175	3	180
Gross Value added	2	0.25	67	8	78
Gross wages	0.28	0.03	2		2
Social contributions of employers	0				0
Net taxes on production	0.02		0.32		0
Gross operating surplus or mixed income	1	0.22	65	8	75
Employment	0.79	0.17	69	2	73

Transactions	Modes of production				
	Incorporated firms	Individual entrepreneurs	Informal	Household	Total
(thousands)					

Source: INS (2012b).

The sequence is complemented by a table presenting the distribution of the value added between meat and fish industries (level 158 industries) and another table for the ratios for the industry:

Table 15: Distribution of the value added between meat and fish industries (Cameroon, 2005) (in billions CFA F)

Items	Production	Intermediate consumption	Value added	Wages	Social contributions	Taxes	Operating surplus	Employment
Production, processing and preservation of Meat	203	148.7	54.3	2.1	0	0.31	51.9	34.5
Production, processing and preservation of Fish	54.4	31.2	23.2	0.3		0.04	22.8	38.1
Total	257.4	179.9	77.5	2.4	0	0.35	74.7	72.6

Source: INS (2012b).

Table 16: Economic ratios for the meat and fish industries

Items	Technical coefficient	Productivity (thousands CFAF)	% registered wages	Wages per head		Social contributions/ registered wages
				Registered	Not registered	
Meat	0.73	5,892.29	14.7	0.32	0.18	0.66
Fish	0.57	1,426.58			0.35	
Total	0.70	3,547.05	12.6	0.32	0.20	0.66

Source: INS (2012b).

Remarks

The results from the data integration of mixed surveys in the national accounts show that the contribution of informal sector to GDP is 37.3 percent in 2005 and 38.4 % in 2010. In terms of informal employment, it represents about 95% of the total employment in 2005 than in 2010. Otherwise, the non-agricultural informal sector accounts for almost 60 % of the jobs and about 30 % of GDP in 2005 than in 2010. However, despite this very high job, productivity per worker remains relatively low compared to the formal sector: 5.83 and 5.97 million per year against 0.32 and 0.37 million CFAF per year in the informal sector respectively in 2005 and 2010. Analysis by industry reveals that the retail trade generates the highest contribution of the non-agricultural informal sector to GDP: 8% in 2005 and 9.2% in 2010. It is followed by wholesale trade (3.4 against 3.9%) and manufacture of foods products (3.4%).

Madagascar

Data Sources Used for Compiling Labor Input Matrix

Three sets of data are used:

- An employment survey
- 1-2-3 survey, *and*
- The public administration data: the social security and the demographic data

The number of total employment (TE): These data are provided by the general census of the population and the estimates for the posterior years to the basic year. The principal component of this data is the occupied working population (OWP). The first source of the data necessary is thus demographic. It is necessary to have the working population (PA) of the year, for this document it is a question of year 2012. For Madagascar, the working population consists of the 5 year-old individuals and more. To be able to calculate the working population occupied it is necessary to have also the activity ratio (ar) and the rate of unemployment (ru). The activity ratio and the rate of unemployment are provided by the 1-2-3 survey of year 2012. The working population occupied is estimated by the formula: OWP=Population*ar*(1- ru). The occupied working population is not sufficient to have total employment because an occupied person can have more than one employment. This wants to say that one needs to have information on secondary employment. Survey 1-2-3 is still the source of these data.

The employment of the formal sector: The formal sector can be subdivided in private formal sector and the sector of the Public administration. The Public administration is still made up of the Central Public Administration and the decentralized Administration. The data of the employment of the formal private sector and the Central Public Administration are administrative sources while those of the decentralized Administration are obtained survey carried out near the local level. The source of the data on the employment of the formal private sector is the Caisse Nationale de Prévoyance Sociale (CNaPS). It is a publicly-owned establishment related to commercial industrial and placed under the supervision of two Ministries: Ministry of Work and Social Laws and Ministry of Finances and Budget. It has the role of contributing to the achievement of the policy of social protection of the State in favor of the workers of the private sector. It is in particular charged to serve the family allowances, of industrial accidents and occupational diseases and retirement pensions to the workers and comparable like with their families, to make apply the regulation of the social welfare and to undertake activities within the framework of the medical and social action: prevention of the accidents of the work and the occupational diseases, promotion of hygiene and health at the work, popularization of the texts governing the social welfare and social actions in favor of the recipients and their families. It manages the file of the statistics of the workers and employers who pay the social security contributions. The data are available by branches of industry. Let us note however that these branches of industry are more aggregate than the branches of activity used for the national accounts.
The third source is the Central Public Administration incorporate mainly by the Ministry in charge of the budget which manages the wages of the civil servant, the Ministry of education and

the Ministry of the higher level education for the statistics of the teachers and the Ministry of health for the statistics of the personnel of the hospitals and the centers of basic health. For the decentralized Public administration, the source is a survey carried out near of a sample of urban and rural Communes.

Compilation of Labor Input Matrix

The employment matrix is a two-dimensional board where on the lines there are the activity sector and on the columns the institutional sectors. It gives the distribution of the employments of the Public administration, of the formal private sector, of the sector component and thus total employment by branch of activity.

The following paragraphs explain each the various components of the institutional sectors and their branches of activity.

Total employment at the national level: The vision of the whole of the economy is based on this component. It is about the employments of the whole of the economy of all statutes: formal, informal, illegal, not observed. The principal source for total employment is the number of the population. Part of the population is not active for several reasons: education, the infirmity, the age, unemployment etc. What interests this paper is the occupied working population, i.e. working-age population and which has an occupation.

For Madagascar, this fringe of population is obtained by using the 5 year old population and more and to which one removes the unemployed who according to last survey 1-2 account for 1,3% of the working population. This rate has been practically always very low for several years. Indeed, like there is no unemployment benefit in Madagascar, this made that in general they are the members of the easy families which can allow themselves to be unemployed. As soon as somebody loses his employment and if it does not find employment in the formal sector, which is the case in the case of a big economic crisis, then the person is turned over towards the informal sector. Moreover, a person can have, in addition to her principal employment, other employment secondary, for an additional income.

According to still the same survey employment 2012, 9% of the formal workers seek secondary employment. It is considered that formal employment is the employment declared on the level of CNaPS and the employments of the sector of the Public administration. The number of secondary employment is thus estimated starting from this rate and of the number of formal employment. Total employment is obtained by adding secondary employment city above to the working population occupied.

- Total=Population employment activates X (1-1.3%) + secondary employment.
- Total employment by branch of activity is calculated by using the structure of the employment obtained by the survey 1-2.

Public administration
The sector of public administration is composed of the following under-sectors: central public administration, local public administration and the Caisse Nationale de Prévoyance Sociale. The

national accounting subdivides the sector public administration in three principal branches of activity of which general administration sector, the education sector and the health sector. In this communication, one keeps these branches of activities for the sector administration.

It is supposed that there is no informal employment in the public administration. Thus, the employments of the sector are thus composed of the employments of its three under-sectors and the publicly-owned establishments. The principal source of the data is the file of the wages of the civil servant managed by the Ministry in charge of the budget. The employees of the Communes come from the survey near a sample of Commune while the employees of the publicly-owned establishments are also obtained starting from a survey near the publicly-owned establishments.

To avoid double counting, one removes the civil servant who work in the local governments and the publicly-owned establishments whose remuneration is managed by the Ministry in load of the budget. The employees of the public administration have also secondary employment apart from this sector.

The table below explains the calculation of total employment in the sector Public administration which are the total of the employees managed at the central level, Ministry of the budget, and the employment only managed by the local governments which for Madagascar are the Communes and by the publicly-owned establishments.

Employment by level of management of remuneration

Employment in the Public administration central	Employment in the Local government		Employment in the publicly-owned establishments		Employment in the Public administration
Managed at the central level	Managed at the central level	Managed at the local level	Managed at the central level	Managed by the publicly-owned establishments	
A	B	C	D	E	A+C+E

Household sector

The household sector can also have manufacturing units. However these activities are not always informal, they can be neither formal nor informal like the work of household and the hiring of its house by itself. The rate of use of the sector component provided by the survey employment 2012 reveals that 9 out of 10 of employment are created by the sector component. The evaluation of the informal sector employees thus requires that one must burst this employment of the household sector in employments of the sector of the informal sector and other employments of the sector component.

The job created by the hiring of its house to the household itself and by the paid house works constitute employments of the sector component non formal. The creation of job by the production of charged rent, i.e. the household is its own tenant, is not significant thus one

supposes that the created job is null. In this paper one could estimate the number of the domestic employees paid starting from the survey employment 2012. One supposed that the informal use of the informal sector is the difference between the use of the sector component and domestic employees. That supposes that the employments of the informal sector are over-estimated because the use of the sector component included also the use of the non-formal economies not observed. Up to now, the use of the informal sector is not yet the breakdown by branch of activity. The following part explains the approach for breaking-down by activity sector.

Formal private sector and decomposition by branch of activity

The formal private sector consists of the non-financial institutions, the financial institutions and the non-profit-making institutions with the service of the households. The principal data source on their employment is the Caisse Nationale de Prévoyance Sociale which manages the social security contributions paid by the workers of the private sector. The data on these workers are available by branch of activity. The weakness of this source is that it does not express the totality of the employments of the private sector. Indeed, certain companies make under-declaration to reduce certain production costs, to be more competitive and for better positioning on the market or for another reasons. To supplement the measurement of the employment of this sector, it is thus necessary to consider employment under-declared by branch of activity.

As the total employment, the employment of the sector administration and the employment of the households are available, so one can deduce informal employment from it from the private sector. It thus remains to do breakdown by branch of industry the informal employment of the private sector and the employment of the household sector and consequently the employments of the informal sector. And to do it, the approach chose the method RAS because one knows the total column i.e. the total by branch of industry and the total by line i.e. total employment by branch of activity. This made that the total use of the sector deprived by branch of activity and the use of the informal sector rise directly from this method. And the result is given by the table below.

Calculation details

The following table gives the details of calculations for the adopted approach. The table represents the structure of the matrix employment. In column are the institutional sectors and in line the branch of industry. The methods used and the sources of the data are explained in the cells. The yellow lines express the sequence of calculations or operations carried out. The result of these calculations is the data contained in the matrix employment below.

Table 17: Calculated Labor Input Matrix

Activities	Formal Sector		Administration	Household Sector		Total Employments
	Formal Employment	Informal Employment		Informal Employment	Non Informal Employment	
Primary	78 917	5 245	-	1 915 995	-	2 000 157
Extractive	14 898	-	-	56 666	-	71 564
Food	30 216	-	-	101 772	-	131 988
Confection	67 985	490	-	234 537	-	303 012
Wood	3 209	-	-	12 207	-	15 416
Other Industries	37 635	-	-	143 153	-	180 788
Energy	7 207	320	-	-	-	7 527
Construction	32 733	236	-	112 925	-	145 894
Trade	64 625	3 993	-	748 804	-	817 422
Transport	12 002	1 771	-	148 889	-	162 662
Household	7 360	-	-	-	234 618	241 978
Education	38 881	9 460	133 951	63 212	-	245 505
Health	17 058	704	16 373	27 762	-	61 897
Other Services	95 524	331	-	216 218	-	312 073
Public Administration	-	-	124 650	-	-	124 650
TOTAL	508 250	22 550	274 974	3 782 141	234 618	4 822 532

Types of Accounts Compiled for Informal Sector

Production account and operating statement of the informal sector: The estimate of the account of production and the operating statement of the informal sector is obtained by using the result of the survey informal sector which gives the apparent productivity by branch of activity. The apparent productivity is the value added created by employment in a branch of industry. The value added is calculated by multiplying the number of the use of the informal sector by the productivity of employment for each branch of activity. The apparent productivities are presented in the table below.

The structures of account of production and operating statement are also calculated starting from the survey into the informal sector. The structure of account of production expresses the share, by branch of activity, of the value added in the production. The structure of the operating statement gives the share, by branch of activity, of, tax and the rough surplus compensation of employees of exploitation per added value. The following table gives the account of production and operating statement of the informal sector by branch of activity.

Table 18: Production and Operating Statement Accounts of the Informal Sector (billion Ariary)

Activities	Production	Value added	salaries	Taxes	EBE
Primary	2 792	1 793	326	104	1 363
Extractive	42	39	3	0	36
Food	321	128	8	1	119
Confection	206	127	4	1	122
Wood	18	10	1	0	9
Other Industries	176	107	10	1	96
Energy	-	-	-	-	-
Construction	224	203	40	0	163
Trade	2 490	1 635	57	38	1 541
Transport	630	438	36	9	393
Household	159	144	1	0	143
Education	224	112	13	2	97
Health	98	49	6	1	43
Other Services	766	384	45	8	332
TOTAL	8 148	5 169	550	165	4 454

In brief, the estimated value with the indirect approach is higher than the one of the directly calculated by the informal sector survey. It is 7% higher than the directly calculated. There are many reasons for this difference. First, it is from the indirect method which is a global method because the informal sector employment is calculated per fiscal balance after adding of the occupied active population of the secondary employment. As calculation was made, starting from the total population then employment covers the employments of all types of activity which they are formal, informal or different. Moreover, there are supplements by introducing secondary employment. And finally, the Informal sector was over-estimated because one simply removed employment of the sector component the paid domestic employees whereas it is not the only employ of the non-Informal sector of the household.

4. Other Approaches

Mauritius

Once in every five years a Census of Economic Activities (CEA) is carried out covering all production units including informal sector but excluding agriculture, government units, and domestic activities, concealed and illicit activities. The last one was carried out in 2007 and the next CEA was scheduled for 2013.

During the CEA, for 'large' units, that is those with 10 or more persons engaged, the coverage is 100% while for 'small' units, which includes itinerant units, a sample survey is carried out.

To identify the informal sector, a set of questions has been asked at the 2007 CEA. The questions addressed to the head of enterprise pertain to: (a) Ownership (to determine whether the unit belongs to household members); (b) Legal organization (if assets of the enterprise are not separate from the owner's household ones, the enterprise is not a legal entity separate from its owner); and (c) Accounts available (receipts and expenditure).

From the 'small' entities identified as forming part of the informal sector, the number of establishments, employment, gross output and value added are estimated.

The CEA estimates, for small and large units, are used as benchmark for each activity group. Each year, a sample survey of 'large' units as well as administrative sources are tapped to make annual estimates for large units. For activities where the contribution of small production units are quite significant, such as manufacture of bakery products, structural metal products and furniture, land transport, travel agency, forwarding agents, and personal services, indirect indicators are used to estimate the output of the small units. For the remaining activities, small units are assumed to grow at the same pace as large.

For Agriculture, annual estimates are made using administrative data, the 2005 Agricultural Cost of Production Survey (ACOPS) and quarterly/annual surveys carried out by the Office.

For annual estimates of government units, administrative data are tapped and estimates for domestic services are made using employment data.

Another source to estimate employment in the informal sector is the Continuous Multipurpose Household Survey (CMPHS) carried out every month. In 2007, the same set of questions as asked in the CEA have been addressed to all respondents who are identified as being self-employed (own account worker and employer). As from 2007, the same questions have been included in the CMPHS questionnaire every year. Employment in the informal sector as estimated from the CMPHS is compiled every year.

Seychelles

In the Seychelles, the informal sector is not large, due to strong regulation and implementation of business licensing. It is implicitly included (e.g. within total estimates for fishing, agriculture) rather than explicitly estimated on an annual basis. The issue would be reviewed with the next the Household Budget Survey in 2015.

South Africa

The informal sector in South African national accounts is defined as those businesses that are not registered in any way as opposed to the formal sector, which includes all businesses that are registered for income tax and value-added tax at SARS. Informal businesses are generally small in nature and are seldom run from business premises. They are run from homes, street pavements, or other informal arrangements.

Stats SA includes estimates of informal sector in the GDP estimates, although it is not shown separately. A variety of data sources are consulted for the annual estimates of the informal sector production. These include periodically conducted household based surveys which measure in monetary values the different variables required for the calculation of value added estimates and ad hoc surveys from research institutions.

Information obtained from the survey of employers and self-employed (SESE) and the labor force surveys are used for the levels and trends of the informal sector. The SESE started in 2001 and is conducted every four years. Individual running businesses are screened during the

quarterly labor force survey (QLFS) and persons that qualify to be part of the informal sector will form part of the SESE sample.

The QLFS sample size is 30,000 dwelling units per quarter. A quarter of the sampled dwellings rotates out of the sample each quarter and is then replaced by new dwellings. In the QLFS questionnaire there are two screening questions to identify businesses that are involved with informal activities. The two questions are: (a) Did you run or do any kind of business, big or small, for yourself or with one or more partners even if it is only for one hour? And (b) is your business (or household business where you work) registered for VAT?

Individuals who answered "yes" to the first question and "no" to the second question will then form part of the SESE sample. The sample size of the SESE depends on the individuals who qualified for inclusion as per the screening questions and it varies per period. In cases where two or more members in a household were running the same business, the main owner is selected for the SESE interview. In cases where more than one person in a household are running separate businesses not registered for VAT, all relevant persons are selected.

In 2001, 5,702 individuals running businesses were identified in the QLFS to be included in the SESE sample, which were then used to estimate the 2.3 million people who run non VAT registered businesses in 2001. In 2009, 2,761 individuals running businesses were identified to represent the 1.1 million non VAT registered businesses in 2009. The sampling weights for the data collected are constructed in such a manner that the responses could be properly expanded to represent the entire civilian population of South Africa. The weights are the result of calculations involving several factors, including original selection probabilities, adjustment for non-response, and benchmarking to known population estimates from the Demographic Division of Stats SA.

Informal sector has been estimated for the following industries:

- Agriculture, forestry and fishing
- Mining and quarrying
- Manufacturing
- Construction
- Trade, hotels and restaurants
- Transport, storage and communication
- Finance and business services
- Personal services

In addition, **Sierra Leone** makes use of the indirect method to estimate retail trade output to capture informal activities in trade. **Tanzania** makes use of extrapolated Input-Output Tables ratios. **South Sudan** complements the formal data sources by adding the value of informal imports and exports to the formal to get total exports and imports: the major assumption is that the informal cross border trade surveys fairly accurately capture the data on informal cross-border trade.

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