Operational Guidebook on Accounting for Informal Sector in National Accounts

United Nations
Economic Commission for Africa

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Abbreviations

ACS	African Centre for Statistics
AfDB	African Development Bank
AFRISTAT	Economic and Statistical Observatory for Sub-Saharan Africa
AUC	The Commission of the African Union
BOS	Bureau of Statistics (Lesotho)
BR	Business register
CAPMAS	Central Agency for Public Mobilization and Statistics (Egypt)
CFC	Consumption of fixed capital
CMS	Continuous Multi-purpose Household Survey (Lesotho)
CIP	Census of Industrial Production (Tanzania and Zimbabwe)
CIS Stat	Interstate Statistical Committee of the Commonwealth of Independent States
CNaPS	Caisse Nationale de Prévoyance Sociale (Madagascar)
COFOG	Classification of the Functions of Government
COICOP	Classification of Individual Consumption According to Purpose
CPI	Consumer price index
CZSO	Czech Statistical Office
DSCE	Strategy Document for Growth and Employment (Cameroon)
EA	Enumeration area
ECASEB	Central African Survey for Monitoring and Evaluation of Welfare
EESI	Survey of Employment and the Informal Sector (Cameroon)
EICVM	Ultimate survey on household living conditions (Burkina Faso)
ENESI	National Survey of Employment and the Informal Sector (Burkina Faso)
ESAP	Economic structural adjustment programme
ESCAP	Economic and Social Commissions for Asia and the Pacific
FADN	Farm Accountancy Data Network (Czech Republic)
FCF	Fixed capital formation
FE	Formal employment
FIRST	Fully Integrated Rational Survey Technique
FISIM	Financial intermediation services indirectly measured
GCF	Gross capital formation
GLSS	Ghana Living Standards Survey
GDP	Gross domestic product
GFCE	government final consumption expenditure
GFCF	Gross fixed capital formation
GRA	Ghana Revenue Authority
GVAPW	Gross value added per worker
HBS	Household budget survey
HFCE	Household final consumption expenditure
HNLSS	Harmonized Nigeria Living Standards Survey
HUEM	Household Unincorporated Enterprises with some Market Production
IBES	Integrated business enterprise survey
IC	Intermediate consumption
ICASEES	Central African Institute of Statistics and Economic and Social Studies
ICLS	International Conference of Labour Statisticians
ICP	International Comparison Program

IE	Informal employment
ILC	International Labour Conference
ILFS	Integrated labour force survey (Tanzania)
ILO	International Labour Organisation
IMF	International Monetary Fund
INSD	National Statistics Institute of Burkina Faso
IPU	Informal Production Unit
ISIC	International Standard Industrial Classification
ISCO	International Standard Classification of Occupations
ISS	Informal sector survey
KAU	Kind of activity unit
LFS	Labour force survey
LSMS	Living Standards Measurement Study
MDGs	Millennium Development Goals
MONSTAT	Statistical Office of Montenegro
NACE	The Statistical classification of economic activities in the European Community
NIS Cameroon	National Institute of Statistics (Cameroon)
NOE	Non observed economy
NOS	Net operating surplus
NPISH	Non-profit institutions serving households sector
NSO	National Statistical Office
OECD	Organisation for the Economic Cooperation and Development
OWP	Occupied working population
PHC	Population and Housing Census (Ghana)
PICES	Poverty Income Consumption and Expenditure Survey (Zimbabwe)
PPI	Producer price index
PPS	Probability Proportional to Size
PSU	Primary sampling unit
QEI	Quarterly Employment Inquiry (Zimbabwe)
RGPH	General Census of Population and Housing (Burkina Faso, Central African Republic)
RIC	Industrial and Commercial Census of Burkina Faso
SNA	System of national accounts
SSU	Secondary Sampling Unit
SUT	Supply and use table
TAE	Tabular approach to exhaustiveness
TE	Total employment
TIN	Tax identification number
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNECA	United Nations Economic Commission for Europe
UNSC	United Nations Statistical Commission
USU	Ultimate sampling unit
VAPW	Value added per worker
VAT	Value added tax
WB	World Bank
WBC	Western Balkan Countries

Chapter 1. Introduction

The objective of this chapter is mainly to provide a brief outline of the guidebook and its structure. The chapter presents the concepts of GDP exhaustiveness and the corresponding production boundary as defined in the System of National Accounts, 2008. The chapter identifies accounting for informal sector as the key to improving GDP exhaustiveness among the developing countries.

Contents

1.1. GDP exhaustiveness

National accounts provide a comprehensive and detailed record of the complex economic activities taking place within an economy and of the interaction between different economic agents, and groups of agents that takes place on markets or elsewhere. These data are used extensively by a wide variety of users for informed, rational policy and decision making. The governments, businesses, researchers and international agencies use the national accounts statistics for monitoring the economy, macro-economic analysis, forecasting and international comparison of economies. Among the national accounts aggregates, gross domestic product (GDP) is the most frequently quoted indicator and represents economic performance during the period of reference.

Considering the importance of national accounts among the macro-economic data used for policy-making, it is essential that the GDP estimates are exhaustive and all the economic activities undertaken in the economy are appropriately measured and included in these estimates. This is a complex and painstaking effort, as GDP estimation depends upon large amount of source data (on production, income, consumption, investment and external transactions) in considerable detail from all the economic agents, classified under institutional sectors[1] and industries[2]. In the developing countries, availability of required data for compiling the national accounts is generally limited, and countries are often required to resort to indirect methods and alternative data sets. Thus, measuring GDP exhaustively is a challenging task in the developing countries in view of the incompleteness of required source data. This is mainly due to lack of a business register (or an updated business register, if such a register exists), lack of regular enterprise surveys, non-response in the business surveys, informal sector units not being covered in the surveys, lack of access to business accounts, data reported in the surveys being inadequate and accounting for non-market production, in these countries.

Non-exhaustiveness in the GDP measure results in the loss of international comparability of the data and may lead to incorrect policy making, since many financial parameters, such as tax collections, fiscal deficit, government debt, health and education expenditures, etc. are

[1] The SNA five institutional sectors are non-financial corporations, financial corporations, general government, households and non-profit institutions serving households (NPISH)
[2] Economic activities classified under the International Standard Industrial Classification (ISIC) of the United Nations. The latest version of the classification is ISIC Rev 4.0

benchmarked to GDP estimates. Ratios of these economic parameters are calculated with GDP as the denominator, which makes these ratios unit free. These ratios are comparable across countries and also facilitate the planners and policy makers in taking appropriate policy measures. For example, current external balance and the fiscal deficit expressed as a ratio of GDP provide critical ratios for monitoring the economy. Tax-GDP ratios provide information on the extent of taxation levied on production and income, and can be compared with the corresponding ratios of other countries. Further, non-exhaustiveness in measuring total production of the economy may lead to incorrect estimation of GDP growth rate, which is a key indicator of the performance of economy and influences many policies that governments take, such as the monetary policy and fiscal policy.

Among the three approaches for measuring GDP (production, income and expenditure), exhaustiveness primarily refers to the production approach, in which gross output and intermediate consumption of goods and services are considered, by activities and sectors. Since the three approaches are conceptually consistent and give raise to a single estimate of GDP, exhaustiveness on the production side (or supply side when imports are added) reflects on the expenditure side as well, when supply and use tables (SUT) and commodity flow methods are applied. For example, output of own account construction of dwellings and farm buildings if accounted for on the supply side, the same can be included on the use side under gross fixed capital formation (GFCF). Similarly, output of paid domestic servants and services of owner occupied dwellings have correspondence with household final consumption expenditure (HFCE) on the use side.

Supplies of goods and services at purchasers' prices =	**Uses of goods and services (at purchasers' prices) =**
domestic production + imports + trade and transport margins + taxes less subsidies on products	inter industry consumption + final consumption expenditure of households, government and non-profit institutions serving households + gross fixed capital formation + change in inventories + exports

Exhaustiveness achieved on the production side also normally ensures consistency with the income approach GDP estimates, since income side GDP data is mostly derived from the same set of data sources that are used in the production approach GDP estimation. At the establishment level and within each institutional sectors, all the information that is needed for compiling estimates of value added from both production and income approaches is mostly available[3]. Also, the net operating surplus is normally derived as a residual with the production approach GDP being treated as the firmer estimate.

Achieving exhaustiveness on production side involves addressing the following main problem areas in GDP estimation:

- General government units that are often excluded
    - Local administrative units or local governments in decentralised government structure;
    - Extra-budgetary units;
    - NPIs that are non-market producers and controlled by a government

- Registered units not fully accounted for

[3] With few exceptions, such as allocation of FISIM, consumption of fixed capital and other conceptual adjustments, which are normally carried out externally and at industry/sector level.

    - All registered units are not in the survey frame, as the frame is not updated (these are usually the new units);
    - Some of the registered units did not respond to the survey.

- Unregistered units not exhaustively covered
    - Survey frame does not include small/unregistered units (for example, informal sector units).

- Common problems
    - Units deliberately under report production or over report intermediate consumption;
    - Illegal units or producers of illegal goods and services (drugs, narcotics, prostitution, etc.).
    - Household production for own consumption (subsistence agriculture, services of owner occupied dwellings and paid domestic services)

- Data issues
    - Statisticians failed to make conceptual adjustments (for example, wages paid in kind, secondary activities, own account capital formation, etc.);
    - Non-response is not properly handled;
    - Consumption of fixed capital estimates not included in government output.

The document *National Accounts Framework in the ICP2011: Operational Material* (ICP2011 Global Office, World Bank) makes a mention of typical problem areas in the estimation of GDP in the developing countries. These are reproduced in Box 1.1 below:

Box 1.1: Areas of possible under-estimation in GDP

(ICP 2011 Global Office, Operational Material: National Accounts Framework in the ICP)

In ensuring that the GDP estimates are exhaustive, national accountants should look closely at the following areas, which experience has shown can be under-estimated in (or even omitted from) countries' accounts:

- consumption of crops and livestock products that households have produced for themselves;
- food, clothing and household goods sold by street traders or in village markets;
- goods and services that are provided to households by "informal" or "unregistered" producers, such as:
    - food and drinks sold on the street by itinerant vendors;
    - services of unregistered taxi drivers;
    - plumbing, electrical, repairing vehicles, and other household maintenance services;
    - house-cleaning and child-minding;
    - private teaching lessons; and
    - personal services such as hair-cutting and shoe-cleaning;
- goods that have been smuggled into the country from abroad without payment of customs duties and without being recorded in the international trade statistics;
- all government expenditures, including expenditures on the military forces, expenditures by municipal and local authorities, and expenditures by the head of state;
- dwellings that people build for themselves; these may be constructed with traditional materials such as sun-baked rather than fired bricks and with palm fronds and similar thatching materials but they nevertheless constitute gross fixed capital formation and they also provide dwelling services to the owner-occupiers, which are included in household final consumption expenditure;
- illegal activities that contribute significantly to production, such as prostitution and drugs.

For the developing countries, not all the above mentioned areas would be important. Some of which could be specific to some countries. Therefore, it is important for countries to identify the key problem areas in achieving GDP exhaustiveness. The most common problem area for all developing countries in this regard is the *informal sector,* and its under-coverage in GDP estimates. This is also the major contributor to GDP non-exhaustiveness, as large part of economic activities are undertaken in the informal sector and the sector provides employment to large number of people. In several developing African nations, informal sector accounts for almost 55 per cent of GDP and 80 per cent of the labour force. Therefore, while attempting to achieve GDP exhaustiveness, bulk of the attention should be focused on informal sector by the national accounts compilers.

For achieving GDP exhaustiveness, the two documents "*Measuring the non-observed economy: A handbook"* (OECD, et al, 2002), and the "*Eurostat's Tabular Approach to Exhaustiveness: Guidelines*" (Eurostat, 2005) provide guidance in a structured manner to account for the likely missing areas in national accounts compilation.

The Handbook on Non-Observed Economy defines the non-observed economy (NOE)[4] as that part which is missing from the basic data used to compile the national accounts because they are underground, illegal, informal, household production for own final use, or due to deficiencies in the basic data collection and categorises them as *NOE problem areas*.

The Eurostat "tabular approach to exhaustiveness (TAE)"[5] identifies and classifies the *non-exhaustiveness types* in GDP estimation, so that steps can be taken to account for these types in a systematic manner.

The different types of *non-exhaustiveness* described in the tabular approach and the *NOE problem areas*, normally overlap each other and it is difficult to estimate their various components separately, especially in the developing countries. Also, the NOE problem areas and the non-exhaustiveness types largely refer to the same components of GDP measurement, but classified differently. The two types can also be roughly mapped to each other as mentioned in Chapter 3. Therefore, the end objective should be to identify and include all the activities that are likely to be missed in the GDP estimates on account of non-comprehensiveness of source data used in national accounts.

Another aspect of these two documents is that some of the methods suggested to address the problem areas (for example, estimating underground production) are mostly applicable to European countries and developed nations, which have well established business registers and comprehensive data sources for compiling national accounts resulting in the non-observed part of the economy being not really significant in general. This is unlike in the developing countries where the source data for compiling national accounts is limited and the non-observed economy is very large. Many countries do not have business registers or regular establishment or enterprise surveys. Therefore, the first option for these countries should be to fill up the major data gaps in respect of all economic activities undertaken in different institutional sectors. Among these data gaps, informal sector (which is one of the NOE problem areas and also under N-types of TAE), which accounts for large share in output and employment in the developing countries, is generally under-covered in GDP estimates

[4] NOE problem areas have been discussed in detail in Chapter 3.
[5] This framework has been dealt in more detail in Chapter 4.

and should be the key focus area for improving GDP estimates. One of the methods suggested in the NOE handbook to estimate informal sector, namely the *labour input method*, has applications to estimate several of the NOE problem areas, besides the informal sector.

Non-observed activities or non-exhaustiveness types, do not mean that in practice, the national accountants in the developing countries are not accounting for them. Rather, some of these NOE/non-exhaustive activities, like owner occupied dwelling services, paid domestic services, subsistence agriculture, are regularly estimated and included in the official estimates of GDP. Similarly, informal sector is estimated either directly or indirectly and included in some manner, though not fully, in the national accounts. Also, some NOE activities or non-exhaustiveness types may not be significant in some countries. Therefore, it is important for countries to identify the NOE areas that are significant and target the available resources on them. Nevertheless, informal sector is a key area of focus while measuring GDP exhaustively, in all the developing countries. Chapters 3 and 4 discuss the NOE problem areas and the non-exhaustiveness types of Eurostat's TAE, respectively. These chapters also provide recommended sources and methods to estimate the problem areas and non-exhaustiveness types.

1.2. Production boundary

By exhaustiveness, we mean that the GDP measure takes into account all economic activities undertaken in the economy that are included within the production boundary of the 2008 System of National Accounts (2008 SNA), whether they are legal or not. The production boundary as defined in 2008 SNA is presented in a summary form in Box 1.2.

Box 1.2: Production boundary

Production boundary includes the following:

(a) Goods

(i) Production of goods for supply to units other than their producers; and

(ii) Own-account production that is retained by their producers for own final consumption or gross fixed capital formation; and

(b) Services

(i) Individual and collective services intended to be supplied to units other than their producers,

(ii) The own-account production of knowledge-capturing products[6] that are retained by their producers for their own final consumption or gross capital formation but excluding (by convention) such products produced by households for their own use;

(iii) Own-account production of housing services by owner-occupiers, and

(iv) Domestic and personal services provided by employing paid domestic staff.

The production boundary makes it clear that illegal production (such as prostitution, production of narcotics, illicit liquor, etc.) is not excluded from the production covered in GDP estimates. Similarly, non-market production of goods, and bribes, tips, etc. which are made in return for services are within the production boundary.

[6]Some service-producing industries may produce products that have many of the characteristics of goods. For convenience, the products of these industries are described in the SNA as knowledge-capturing products (2008 SNA: para 6.13), examples are specialized information, news, consultancy reports, computer programs, movies, music, etc.

The following are some additional points to note on production boundary:

- Own account production of goods mentioned under (a)(ii) has further been clarified in SNA to include:

    - production of agricultural products and their subsequent storage; the gathering of berries or other uncultivated crops; forestry; wood-cutting and the collection of firewood; hunting and fishing;
    - production of other primary products such as mining salt, cutting peat, the supply of water, etc.;
    - processing of agricultural products; the production of grain by threshing; the production of flour by milling; the curing of skins and the production of leather; the production and preservation of meat and fish products; the reservation of fruit by drying, bottling, etc.; the production of dairy products such as butter or cheese; the production of beer, wine, or spirits; the production of baskets or mats; etc.; and
    - other kinds of processing such as weaving cloth; dress making and tailoring; the production of footwear; the production of pottery, utensils or durables; making furniture or furnishings, etc.
    - own-account construction of dwellings
    - own account production for gross fixed capital formation includes the production of fixed assets such as construction, the development of software and mineral exploration for own gross fixed capital formation.

- All such activities are included even if they are illegal or not-registered at tax, social security, statistical and other public authorities.
- Production excludes the production of domestic and personal services that are produced and consumed within the same household (with the exception of employing paid domestic staff and the services of owner-occupied dwellings).
- Volunteer activities that result in goods, e.g. the construction of a dwelling or other building are to be recorded as production. Volunteer activities that do not result in goods, e.g. caretaking and cleaning without payment, are excluded.
- "Do-it-yourself" repairs and maintenance to consumer durables and dwellings[7] carried out by members of the household constitute the own-account production of services and are excluded from the production boundary of the SNA. In the case of dwellings, purchases of materials for repairs become intermediate expenditures incurred in the production of housing services. Output of such repairs and maintenance is not separately recorded. Major renovations or extensions to dwellings are fixed capital formation and recorded separately as output.

Not all items included in the production boundary are important to a country. Therefore, while estimating own account production for own final consumption, efforts should be made to record the output only when the amount of a good produced within households is believed to be quantitatively important in relation to the total supply of that good in a country. Otherwise, it may not be worthwhile trying to estimate it in practice.

Generally, most national accountants consider only the subsistence agriculture (including livestock, forestry and fishing) production and leave out other goods produced for own consumption and own account capital formation. Some countries do account for own account

[7] For dwellings, these constitute decoration, maintenance and small repairs, including repairs to fittings, of types that are commonly carried out by tenants as well as by owners.

construction indirectly or implicitly when they adopt commodity flow approaches (based on materials used in construction) with due adjustments for primary inputs, which provide estimates of output of construction for the total economy. Otherwise, in practice, production of manufactured goods by the households for own consumption are not included in GDP estimates. They are mostly considered to be insignificant or difficult to estimate.

For the African developing countries, the major component of under-estimation in GDP is the *informal sector*. This sector cuts across several types of NOE problem areas and the N-types of non-exhaustiveness of Eurostat's TAE. Several African countries have in the past made efforts to collect data on informal sector through the establishment surveys, household surveys, and the mixed household-establishment surveys, in order to improve the coverage of informal sector in national accounts. These surveys aim to collect information on the characteristics, employment, output and other economic data of informal sector units, so as to facilitate informal sector accounting in national accounts, adopting either direct or indirect methods.

Although, *direct methods* based on informal sector establishment surveys provide estimates of informal sector, they may not be exhaustive, since most informal sector units are tiny, invisible, home based, unregulated, do not maintain accounts, etc. On the other hand, the *labour input methods* (which use direct estimates of employment in informal sector and productivity ratios from establishment surveys) are seen to provide better and practical methods to achieving GDP exhaustiveness. Among the NOE problem areas, the labour input methods have application in estimating not only the informal sector, but also for few other NOE activities, such as illegal production (as persons engaged in illegal activities may report as employed and classified against an ISIC activity), non-response by the formal sector enterprises and under-coverage in surveys. With regard to non-exhaustiveness types of the Eurostat tabular framework, the *labour input methods* have application in more than one of these non-exhaustiveness types.

Summing up, it should be seen that informal sector should be the key focus area in developing countries to improve GDP exhaustiveness. Further, the labour input method is seen to have wider application in estimating the missing areas, including the informal sector, in GDP compilations.

1.3 Informal sector

Among the NOE problem areas, informal sector is the major problem area in the developing countries, since this sector accounts for a large share of output and employment in these countries. Due to its characteristics of not being registered, tiny, invisible, etc., production of informal sector does not get fully accounted for in the GDP estimates. As and when countries make special efforts to estimate informal sector either through direct methods (such as conducting informal sector establishment surveys) or indirect methods (labour input method, for example), they are likely to result in significant revisions in the levels of GDP estimates. Such large revisions have been witnessed in the case of some African countries when they improved the coverage of informal sector in their national accounts.

The most common methods to estimate informal sector are the direct approaches based household/establishment surveys or censuses, surveys on income, labour surveys, opinion surveys, and time-use surveys; and indirect approaches, such as labour input method, or those based on material inputs ratios, expenditures of goods and services, commodity balance

studies, etc. Chapter 2 discusses the concepts and definitions of informal economy (a broader concept than informal sector) and the sources and methods to account for informal sector in GDP estimates.

There are several African country experiences and best practices on informal sector accounting that could be relevant for other countries. It is possible to replicate these best practices in those countries where informal sector is poorly covered in national accounts at present. These country practices are presented in Annexes.

1.4. Purpose, structure and target users of the guidebook

The *informal sector* plays a significant role in Africa as a major source of employment, income, and production of goods and services, and thus is a significant contributor to GDP. However, proper measurement of the size and contribution of the informal sector and informal employment has been a challenging task in terms of data collection and compilation in official statistics. The 2008 System of National Accounts (SNA) has a separate chapter on the informal sector highlighting the importance of incorporating its measurement as part of GDP to attain a comprehensive GDP measurement.

Measuring informal sector and its accounting in GDP has still been a major problem area for several African countries, although few countries have recently taken innovative steps to improve the coverage of informal sector in the national accounts. Therefore, this *Operational Guidebook on Accounting for Informal Sector in National Accounts* has been compiled with the objective to serve as a reference material for the national statistics offices of African countries to build capacity, and to improve their methodologies to measure *informal sector*, thereby facilitating international comparisons and decision making within the countries. The guidebook also contains case studies and best practices from African countries on data collection on informal sector and its use in the national accounts, so that they are available at one place for the benefit of all African countries.

The first four chapters of the guidebook are based on the documents of international agencies available in public domain on informal sector and GDP exhaustiveness supplemented with illustrative examples and suggested methods to achieve GDP exhaustiveness. Following this chapter on introduction, the second chapter discusses the concepts and definitions of informal economy and the sources and methods used to measure informal sector production and employment. The third chapter summarises the definitions of non-observed economy and the suggested methods to account for NOE problem areas that have been dealt in detail in the Handbook on non-observed economy. The fourth chapter presents the Eurostat Tabular Framework approach to GDP exhaustiveness that was developed to assess the comprehensiveness of GDP estimates of new European Union member countries. African country case studies and best practices on data collection in respect of informal sector and informal employment and how these are used for compiling national accounts, are included in Annexes.

The guidebook is targeted mainly for use by the national accountants and the staff engaged in data collection in the statistical offices of African countries.

Chapter 2. Accounting for informal economy in national accounts

This chapter deals with the data sources and methods, both direct and indirect, to account for informal sector and informal employment in national accounts. The text for this Chapter has been sourced mainly from the documents mentioned under References at the end.

Contents

2.1. Informal economy, informal sector and informal employment

Informal economy refers to informality in enterprises and employment, thus encompasses the informal sector enterprises and informal employment in the countries. Alternatively, informal economy can also be seen as a set of economic activities, enterprises, jobs, and workers that operate informally and in unregulated manner. The International Labour Conference (ILC) in 2002 used the term 'informal economy' as referring to "all economic activities by workers and economic units that are – in law or in practice – not covered or insufficiently covered by formal arrangements". Further, the term "*informal economy*" is used by the International Labour Organisation (ILO) as including the *informal sector* as well as *informal employment*. The discussion on informal economy in this chapter, therefore, focuses on its two key components: informal sector and informal employment.

The concepts of informal sector and informal employment are relatively new in the field of statistics. The 1993 International Conference of Labour Statisticians (15th ICLS) (ILO, 1993[8]) adopted an international statistical definition of the "informal sector" based on characteristics of production units or enterprises, referring to employment and production that takes place in unincorporated small or unregistered enterprises (e.g., less than five employees). Characteristics of the units was adopted as a basis for defining informal sector, so that this sector (group of units) fits into the framework of the SNA and provides for a separate accounting of gross domestic product (GDP) for the informal sector. Subsequently, the informal sector definition was included in the System of National Accounts (SNA) 1993 (Commission of the European Communities et al 1993[9]), recognising it as a group of production units falling under the household sector of SNA.

Ten years later, in 2003, following from the 2002 International Labour Conference Resolution on "Decent Work and the Informal Economy", the 17th ICLS (ILO, 2003[10]) broadened the concept to "informal employment". Informal employment refers to all

[8]International Labour Organisation (January 1993): Resolution concerning statistics of employment in the informal sector, adopted by the 15th International Conference of Labour Statisticians
[9]European Commission, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations, World Bank: System of National Accounts 1993
[10]International Labour Organisation (2003): Guidelines concerning a statistical definition of informal employment, adopted by the 17th International Conference of Labour Statisticians

employment arrangements that leave individuals without social protection through their work, whether or not the economic units they operate or work for are formal enterprises, informal enterprises or households. (ILO 2013a[11]).

Drawing upon these broad guidelines, *Informal sector* refers to the production and employment that takes place in unincorporated small or unregistered enterprises (15th ICLS), while *informal employment* refers to employment without legal and social protection—both inside and outside the informal sector (17th ICLS). The *informal economy* refers to all units, activities, and workers so defined and the output from them. Together, they form the broad base of the workforce and economy, both nationally and globally. (WIEGO, 2012[12]).

In most developing economies, especially in the African countries, informal sector and informal employment account for a significant share in the employment and GDP. In the Sub-Saharan Africa, informal sector contributes about 55 per cent of GDP and 80 per cent of the labour force. Nine in 10 rural and urban workers have informal jobs in Africa and most employees are women and youth. The prominence of the informal sector in most African economies stems from the opportunities it offers to the most vulnerable populations such as the poorest, women and youth (AfDB, March 2013[13]). The informal employment accounts for 66 per cent of non-agricultural employment (74 per cent in the case of women and 61 per cent in the case of men) in this region. Most of this informal employment is in the informal sector, but a sizable share of 14 per cent is also in the formal sector. In terms of distribution of informal employment among economic activities, 17 per cent are in manufacturing, 7 per cent in construction, 43 per cent in trade, 6 per cent in transportation and 27 per cent in other services. (ILO 2013a).

The importance of improving the coverage of informal sector in national accounts is further highlighted in the UNECA/AUC document, "Report to the First Joint Session of the Committee of Directors General of the National Statistics Offices and the Statistical Commission for Africa on informal sector methodology in Africa"[14], from which the following two paragraphs are quoted.

The informal sector forms a significant part of most African economies. Not only does the informal employment provide a source of income for millions of Africans, but it also plays a major role in production and commerce. Informal activities range from food processing, street vending, cleaning and similar activities, involving little or no skills and capital, to those requiring more investment in both skills and capital, such as manufacturing, tailoring or transporting services. People are drawn to engaging in informal sector activities for several reasons. Among them are individual preference for independence and flexible working hours, the prospect of profitable income-earning possibilities, and, most importantly, insufficient job opportunities in the formal sector. In the vast majority of cases in Africa, informal activities are not necessarily intended to evade tax or social security contributions, but rather to cut costs and make enough income for subsistence.

[11]ILO 2013: Women and Men in the Informal Economy: A Statistical Picture. Second edition

[12]Martha Alter Chen: The Informal Economy: Definitions, Theories and Policies, WIEGO[12] Working Paper No 1 August 2012)

[13]http://www.afdb.org/en/blogs/afdb-championing-inclusive-growth-across-africa/post/recognizing-africas-informal-sector-11645/

[14] Presented at the First Joint Session of the Committee of Directors General of National Statistics Offices and the Statistical Commission for Africa, Tunisia, Tunis, 8-12 December 2014

According to recent estimates (Table 2.1), the informal sector in a broad sense (including agriculture) accounted for 63.3 per cent of the gross domestic product (GDP) in sub-Saharan Africa in the 2000s, and 31.3 per cent of GDP in its restrictive sense (without agriculture).[15] Those indicators have been on an upward trend since the 1980s. Furthermore, depending on the definition in the different countries, the informal sector employs from 10 per cent (United Republic of Tanzania) up to 92 per cent (Chad) of the total active and employed population across Africa.[16,17]

Table 2.1: Contribution of informal sector to the gross domestic product by region and in selected African countries, years

Countries (years)	Informal sector gross value added (including agriculture) in % of total GDP	Informal sector gross value added (excluding agriculture) in % of non-agricultural GVA	Informal sector gross value added (excluding agriculture) in % of total GDP
Sub-Saharan Africa, in particular:	63.6	50.2	31.3
Benin (2000)	71.6	61.8	33.6
Burkina Faso (2000)	55.8	36.2	21.7
Cameroon (2003)	57.6	46.3	36.0
Niger (2009)	72.6	51.5	29.0
Senegal (2000)	51.5	48.8	35.1
Togo (2000)	72.5	56.4	32.2
Middle East and North Africa, in particular:	36.2	29.2	26.2
Algeria (2003)	37.9	30.4	27.1
Egypt (2008)	27.8	16.9	14.7
Tunisia (2004)	41.8	34.1	29.8
India	54.2	46.3	38.4
Latin America	29.2	25.2	24.0
Transition countries	19.5	13.9	10.7

Source: Jacques Charmes, "The informal economy worldwide: trends and characteristics", *Margin: the Journal of Applied Economic Research*, vol. 6, Issue 2, May 2012.

Thus, informal sector plays a very important role in Africa, as one of the major sources of employment and income; as well as one of the major producers of goods and services and thereby contributors to the GDP of the economy. Due to inadequate information about the informal sector and employment, the GDP of many African countries is underestimated.

Statistics on informal sector are essential for a range of policy formulation and analysis such as poverty reduction, labor force and employment, and economic and social development, besides helping in measuring the GDP exhaustively and in balancing the supply-use table of goods and services produced and used in the economy during a given accounting period. Given its informality, however, to measure properly the size and contribution of informal sector and informal employment has been challenging for data collection and compilation in official statistics.

[15] Jacques Charmes, "The informal economy worldwide: trends and characteristics", *Margin: the Journal of Applied Economic Research*, vol. 6, Issue 2, May 2012, pp.103-132.
[16] United Republic of Tanzania, National Bureau of Statistics, *Integrated Labor Force Survey 2006*, generated on 12 Sept 2011. Available from file///D:/My%20Documents/Downloads/ddi-documentation-english-4.pdf.
[17] Chad, Institut National de la Statistique des Etudes Economiques et Démographiques, "L'emploi au Chad en 2011, Rapport final", p 3. Available from www.inseedtchad.com/?L-Emploi-au-Tchad-en-2011-Rapport.

On the development of statistics on informal sector, the 15th ICLS Resolution states "Countries where the informal sector plays a significant role in employment and income generation and economic and social development should aim where practicable, at developing a comprehensive system of statistics on employment in the informal sector to provide an adequate statistical base for the various users of the statistics, with account being taken of specific national needs and circumstances. The system to be developed should contribute to the improvement of labour statistics and national accounts as an information base for macroeconomic analysis, planning, policy formulation and evaluation to the integration of the informal sector into the development process and to its institutionalization."

Though most countries conduct establishment/enterprise surveys regularly, informal sector is often missed in these surveys or other data collection mechanisms due to various reasons. One of the reasons is that these surveys are normally based on list frames derived from business registers or registers maintained by the regulatory authorities, which either do not include or miss out the informal sector units. In this context, the Eurostat hand book *Essential SNA: Building the basics*, states, "The economic impact of the informal sector is hard to measure because of the difficulty in defining and analyzing the phenomenon owing to the limited available information. This is often due to the financial restrictions faced by statistical offices and the characteristics of the informal sector in a country". (Eurostat, 2013[18]).

To meet the challenges in measuring informal economy and its inclusion in the GDP estimates, several initiatives have been undertaken at the international and regional forums keeping in view the 15th ICLS Resolution on informal sector, and the 17th ICLS Guidelines on informal employment. Several of these initiatives led to publication of handbooks, manuals and country practices that provide rich information on the subject and offer guidance on measuring informal economy and its accounting in the national accounts. Some of these are:

1) Resolution concerning statistics of employment in the informal sector, adopted by the 15th ICLS (ILO 1993);
2) Guidelines concerning a statistical definition of informal employment, adopted by the 17th ICLS (ILO 2003);
3) System of National Accounts 1993 (European Commission, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations, World Bank);
4) System of National Accounts 2008 (European Commission, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations, World Bank);
5) Measuring the Non-Observed Economy - A Handbook (OECD, IMF, ILO, CIS STAT 2002);
6) Essential SNA: Building the basics (Eurostat, 2013);
7) Eurostat's Tabular Approach to Exhaustiveness – Guidelines (Eurostat 2005);
8) Non-Observed Economy in National Accounts : Survey of Country Practices (UNECE 2008);
9) Delhi Group on Informal Sector Statistics deliberations, papers presenting country experiences in measuring informal economy, proceedings and recommendations.

[18]Eurostat: Essential SNA: Building the basics, 2013, Luxembourg

These documents can be accessed from the link http://www.mospi.nic.in/mospi_informal_sector.htm.;

10) Women and Men in the Informal Economy: A Statistical Picture. Second edition (ILO 2013);
11) Measuring Informality: a Statistical Manual on the informal sector and informal employment (ILO 2013). This is the latest manual on measuring informal economy and has been prepared with two primary objectives. The first objective is to assist countries planning a programme to produce statistics on the informal sector and informal employment, in undertaking a review and analysis of their options. The second objective is to provide practical guidance on the technical issues involved with the development and administration of the surveys used to collect relevant information, as well as on the compilation, tabulation and dissemination of the resulting statistics.**;**
12) Economic and Social Commissions for Asia and the Pacific (ESCAP). 2007. A unified data collection strategy for measuring the informal sector and informal employment; HUEMs (Bangkok, Statistics Division, ESCAP).
13) Measuring the informal sector and informal employment: the experience drawn from 1-2-3 surveys in African countries (Mireille Razafindrakoto, François Roubaud, and Constance Torelli, Le Journal statistique african, numéro 9, novembre 2009)

Discussions on statistics of employment in informal sector and informal employment in this chapter are based on the recommendations of 15th and 17th ICLS. However, the 19th ICLS made some changes in the concepts of employment and work[19]. Currently, ILO is conducting pilot tests in some countries on the new standards and the results of which will be known later. Therefore, there is a possibility of implications of new concepts based on 19th ICLS on the statistics of employment in informal sector and informal employment. However, the changes in definitions of employment and work are not expected to impact the methods suggested to account for informal sector in GDP estimates in this chapter.

Purpose and Outline of the chapter

The chapter has mainly been drawn from the handbooks and manuals mentioned above with the purpose of providing guidance to African countries in measuring informal economy and its inclusion in the GDP estimates. It is mainly aimed for use as reference document by the statistical offices and compilers of national accounts in the African countries.

The Chapter is organized under four sections. Section 2 presents the operational definitions and guidelines provided in 2008 SNA and ILO manuals and documents, for identifying informal sector and informal employment. Section 3 discusses in brief the direct surveys for measuring informal sector and informal employment that have been suggested in the ILO Manual *Measuring Informality: a Statistical Manual on the informal sector and informal employment*. Lastly, section 4 describes the methods that can be used to account for informal sector and informal employment in national accounts. Concluding remarks are made in Section 5.

[19]Persons in employment are those engaged in producing goods and services for pay or profit. On the other hand, work comprises any activity performed by persons to produce goods or to provide services for use by others or for own use. Besides employment, work includes (a) production of goods and services for own final use; (b) unpaid trainee work; (c) volunteer work without pay; (d) other work activities such as unpaid community service and unpaid work by prisoners, etc.

2.2. Operational definitions and guidelines for identifying informal sector and informal employment

(i) Informal sector

The term ”informal sector” is used to denote tiny units, engaged in the production of goods and services but whose activities were not recognized, recorded, protected or regulated by the public authorities and includes a wide range of activities from street vending, shoe-shining, food processing and other petty activities requiring little or no capital and skills to activities involving some amount of skill and capital such as tailoring, repair of electrical and electronic goods, and operation of transport equipment.

The concepts, definitions and guidelines for identifying informal sector units in the economy have been provided in several documents and manuals, important among them being the 15th ICLS, 1993 SNA, 2008 SNA, ILO Manual on *Measuring Informality: a Statistical Manual on the informal sector and informal employment* and the Delhi Group recommendations.

(a) 15th ICLS

Taking cognizance of the importance of informal sector and informal employment to countries, especially the developing economies, in providing opportunities to engage in the production of goods and services and income generation for large part of population and its measurement for policy inputs and analysis, the issues concerning measurement of employment in informal sector were taken up in the 15th ICLS of the ILO, held in 1993. The ICLS considered two different but interrelated ways of viewing the informal sector while defining informal sector.

- *Non-registration*: One approach views enterprises in relation to the legal and administrative framework in force and defines the informal sector as being made up of enterprises that do not conform to this framework in some way. It assumes an intrinsic relation between non-registration and informality.
- *Employment size*: The second approach views the informal sector as constituting a particular form of production, in terms of the way the enterprises are organized and carry out their activities.

The definition in the 15th ICLS Resolution incorporated both approaches by allowing *non-registration* and/or *employment size* to be used as a criterion in distinguishing informal sector enterprises from other household unincorporated enterprises.

The Resolution provides the following concepts and operational definitions for the informal sector:

Concept

- The informal sector may be broadly characterized as consisting of units engaged in the production of goods or services with the primary objective of generating employment and incomes to the persons concerned. These units typically operate at a low level of organization, with little or no division between labour and capital as factors of production and on a small scale. Labour relations – where they exist - are

based mostly on casual employment, kinship or personal and social relations rather than contractual arrangements with formal guarantees.

- Production units of the informal sector have the characteristic features of household enterprises. The fixed and other assets used do not belong to the production units as such but to their owners. The units as such cannot engage in transactions or enter into contracts with other units, nor incur liabilities, on their own behalf. The owners have to raise the necessary finance at their own risk and are personally liable, without limit, for any debts or obligations incurred in the production process. Expenditure for production is often indistinguishable from household expenditure. Similarly, capital goods such as buildings or vehicles may be used indistinguishably for business and household purposes.
- Activities performed by production units of the informal sector are not necessarily performed with the deliberate intention of evading the payment of taxes or social security contributions, or infringing labour or other legislations or administrative provisions. Accordingly, the concept of informal sector activities should be distinguished from the concept of activities of the hidden or underground economy.

Operational definitions

- For statistical purposes, the informal sector is regarded as a group of production units which, according to the definitions and classifications provided in the United Nations System of National Accounts, forms part of the household sector as household enterprises[20] or, equivalently, unincorporated enterprises owned by households.
- Within the household sector, the informal sector comprises (i) "*informal own-account enterprises*"; and (ii) "*enterprises of informal employers*".
- The informal sector is defined irrespective of the kind of workplace where the productive activities are carried out, the extent of fixed capital assets used, the duration of the operation of the enterprise (perennial, seasonal or casual), and its operation as a main or secondary activity of the owner.

Informal own-account enterprises

- Informal own-account enterprises are household enterprises (in the sense of the System of National Accounts) owned and operated by own-account workers, either alone or in partnership with members of the same or other households, which may employ contributing family workers and employees on an occasional basis, but do not employ employees on a continuous basis and which have the characteristics described in concepts above.
- For operational purposes, informal own-account enterprises may comprise, depending on national circumstances, either all own-account enterprises or only those which are not registered under specific forms of national legislation.

[20]Household enterprises are units engaged in the production of goods or services which are not constituted as separate legal entities independently of the households or household members that own them and for which no complete sets of accounts (including balance sheets of assets and liabilities) are available which would permit a clear distinction of the production activities of the enterprises from the other activities of their owners and the identification of any flows of income and capital between the enterprises and the owners. Household enterprises include unincorporated enterprises owned and operated by individual household members or by two or more members of the same household as well as unincorporated partnerships formed by members of different households.

- Registration may refer to registration under factories or commercial acts, tax or social security laws, professional groups' regulatory acts, or similar acts, laws, or regulations established by national legislative bodies.
- Own-account workers, contributing family workers, employees and the employment of employees on a continuous basis are defined in accordance with the most recently adopted version of the International Classification of Status in Employment (ICSE).

Enterprises of informal employers

- Enterprises of informal employers are household enterprises (in the sense of the System of National Accounts) owned and operated by employers, either alone or in partnership with members of the same or other households, which employ one or more employees on a continuous basis and which have the characteristics of informal sector.
- For operational purposes, enterprises of informal employers may be defined, depending on national circumstances, in terms of one or more of the following criteria:
    (i) Size of the unit below a specified level of employment;
    (ii) Non-registration of the enterprise or its employees.
- While the size criterion should preferably refer to the number of employees employed on a continuous basis, in practice, it may also be specified in terms of the total number of employees or the number of persons engaged during the reference period.
- The upper size limit in the definition of enterprises of informal employers may vary between countries and branches of economic activity. It may be determined on the basis of minimum size requirements as embodied in relevant national legislations, where they exist, or in terms of empirically determined norms. The choice of the upper size limit should take account of the coverage of statistical inquiries of larger units in the corresponding branches of economic activity, where they exist, in order to avoid an overlap.
- In the case of enterprises which carry out their activities in more than one establishment, the size criterion should, in principle, refer to each of the establishments separately rather than to the enterprise as a whole. Accordingly, an enterprise should be considered to satisfy the size criterion if none of its establishments exceeds the specified upper size limit.
- Registration of the enterprise may refer to registration under specific forms of national legislation. Employees may be considered registered if they are employed on the basis of an employment or apprenticeship contract which commits the employer to pay relevant taxes and social security contributions on behalf of the employee or which makes the employment relationship subject to standard labour legislation.

The Resolution was intended to provide the first internationally approved conceptual framework and other technical guidelines for the collection and development of statistics on the informal sector.

(b) 1993 SNA

The informal sector definition adopted by the 15th ICLS forms part of the 1993 SNA. The 1993 SNA characterised the informal sector as consisting of units engaged in the production of goods or services with the primary objective of generating employment and income to the persons concerned. The broad characteristics of the informal sector outlined in 1993 SNA, which otherwise conform to the 15th ICLS resolution, are that these are:

- Private unincorporated enterprises owned by households (enterprises owned by individuals or households that are not constituted as separate legal entities independent of their owners), as part of the household sector in SNA, with further bifurcation as *(i)* Own-account enterprises (that do not employ employees on a continuous basis) and *(ii)* Enterprises of employers (that employ one or more employees on a continuous basis);
- Units for which no complete accounts are available that would permit a financial separation of the production activities of the enterprise from other activities of its owners;
- Produce *at least some* of their goods or services for market (sale or barter);
- Produce goods and services using labour as input. The ICLS recognized that depending on national circumstances, certain production units of the households sector may fall outside the distinction between formal and informal sectors, such as the units exclusively engaged in *(i)* agricultural activities, *(ii)* production of goods for own final use, and *(iii)* production of services for own final consumption by employing paid domestic workers;
- Refers to a group of production units based on their characteristics, irrespective *(i)* kind of workplace where the productive activities are carried out, *(ii)* extent of fixed capital assets used, *(iii)* duration of the operation of the enterprise (perennial, seasonal or casual), *(iv)* operation as a main or secondary activity of the owner;
- The employment size of the enterprise is below a certain threshold (to be determined according to national circumstances);
- And/or not registered under specific form of national legislation.

The 1993 SNA endorses the 15th ICLS view that informal sector is a subset of household enterprises and consequently places the informal sector as a sub-sector of SNA institutional sector, the *household sector*[21]. It suggests that in countries where informal sector activities are significant, the informal sector should be shown separately as a sub-sector of households. Such a distinction makes it possible for the national accountants to quantify the contribution of the informal sector to the national economy, and show it separately in the national accounts. The SNA also recognises that accounting of informal sector ensures GDP exhaustiveness to a large extent.

(c) 2008 SNA

The 2008 SNA deals with informal economy more elaborately in Chapter 25 on "*Informal aspects of the economy*". This chapter summarises the definitional and measurement issues dealt by the ICLS on both informal sector and informal employment and the *Handbook on Non-Observed Economy* (OECD et al. 2002) and supplements these with the identification of informal sector units and approaches for collecting data from them. The chapter also recommends preparation of two supplementary tables in national accounts for presenting data on the informal sector and informal employment, one on production and income generation and the other on employment.

[21]SNA household institutional sector units comprise (i) household unincorporated enterprises consisting of (a) informal sector enterprises, (b) household unincorporated enterprises producing exclusively for own final use, (c) other household unincorporated enterprises, (ii) households with no unincorporated enterprises, and (iii) institutional households

The chapter examines the characteristics of production units and tries to identify those significant for the non-observed economy, the informal sector or both. The chapter also discusses the differences in terminology and concepts between the SNA and the ICLS, especially on 'sector'[22], 'enterprise[23]', and 'sub-sectoring production'[24].

The 2008 SNA notes that ICLS always regarded informal sector as a subset of household unincorporated enterprises operating within the production boundary of the SNA. Thus, for identification of informal sector, SNA household sector is divided into:

- households containing an unincorporated enterprise that is registered or has more than a given number of employees;
- institutional households such as prisons, retirement homes, etc.;
- households with no unincorporated enterprises;
- households only undertaking production for own final use (services of owner occupied dwellings, subsistence farming, and services of paid domestic staff);
- *Informal sector enterprises* (Households containing unincorporated enterprises that are not registered and/or have less than given number of employees)
    - *without employees "informal own-account enterprises"*
    - *with employees "enterprises of informal employers"*

The operational guidelines to identify activities undertaken by informal enterprises within the national accounts are in the following manner:

- exclude the following from SNA households sector[25]
    - Institutional households such as prisons, and retirement homes
    - Households with no production activity
    - Produce exclusively for own final use
    - Households whose only activity is the production of services from owner-occupied dwellings, the production of services by employing domestic staff
    - NPISH, if included in household sector
    - Agricultural production
    - Households with enterprise that is registered or has more than a given number of employees
- to consider national practices in establishing the households sector to see if any adjustment to the first step is necessary.
- to provide a breakdown by type of activity so that common exclusions according to type of activity can be made.

[22]ICLS refers informal sector to a group of production units, whereas the SNA refers a sector to an institutional unit.

[23] The use of unincorporated enterprise in the ILO description of the informal sector does not correspond to the totality of unincorporated activity of a household but to each activity separately. In SNA terms, the unincorporated enterprise is broken down into a number of unincorporated establishments, some of which may be included in the informal sector and some excluded, even for the same household. Further, the ILO identifies individual members of a household as owning each establishment/enterprise and capable of employing workers. In the SNA, it is the household collectively that is responsible for all activity and for employing workers. (Para 25.50, SNA, 2008)

[24] Producers for own final use need to be sub-divided into those where some of the production is for sale or barter and those where the production is exclusively for own final use for the ILO concept. In the case of unincorporated enterprises where only some of the production is sold or bartered, all of the production of the unit of those goods and services is still included in production by the informal sector. (Para 25.51, SNA, 2008)

[25] Figure 25.2 and paragraph 25.46 of 2008 SNA give guidance on exclusion of units in household sector to identify the informal sector production units.

Box 2.1: Criteria to identify the informal sector in the SNA framework

- General essential criteria:
  - legal organization of the enterprise: unincorporated enterprise;
  - ownership of enterprise: belong to a household;
  - type of accounts: absence of separate complete accounts;
  - production destination: at least some production is destined for sale or barter, being excluded household enterprises with no market production (own-account agriculture or construction), services of paid domestic workers, services from owner-occupied dwellings.
- Additional operational criteria:
  - size limit of the enterprise: the number of employees engaged in the production is left to the country's discretion (for international reporting, countries should provide figures separately for enterprises with less than five employees);
  - non-registration of enterprise and/or of employees in an enterprise within some arm of government;
  - economic activity: non-agricultural activity including units mainly involved in agricultural sector and performing secondary non-agricultural activities;
  - location of units: urban and rural areas.

(Source: Essential SNA: Building the basics, Eurostat, 2013).

(d) ILO Manual Measuring Informality: a Statistical Manual on the informal sector and informal employment

The ILO Manual on Measuring Informality (ILO 2013b) (henceforth referred to as ILO Manual) is the most comprehensive document to provide guidance to countries in measuring informal sector units' characteristics, output and employment, and informal employment. Chapter 2 of the manual presents the concepts and definitions of informal sector and informal employment that have been stated in the 15th and 17th ICLS resolutions. Table 2.2 of the chapter summarizes the criteria for defining informal sector enterprises, which is reproduced below.

Table 2.2: Criteria for defining informal sector enterprises (15th ICLS resolution)

Criterion	Purpose
1. Legal organization: enterprise not constituted as a legal entity separate from its owner(s)	Identification of unincorporated enterprises
2. Ownership: enterprise owned and controlled by member(s) of household(s)	Identification of household unincorporated enterprises
3. Type of accounts: no complete set of accounts, including balance sheets	Exclusion of quasi-corporations from household unincorporated enterprises
4. Product destination: at least some market output	Identification of household unincorporated enterprises with at least some market production; exclusion of household unincorporated enterprises producing goods exclusively for own final use by the household
5. Kind of economic activity	Exclusion of households employing paid domestic workers; possible exclusion of enterprises engaged in agricultural and related activities
6.1 Number of persons engaged/employed on a continuous basis: fewer than 'n'. and/or 6.2 Non-registration of the enterprise, and/or 6.3 Non-registration of the employees of the enterprise	Identification of informal sector enterprises as a subset of household unincorporated enterprises with at least some market production

Source: ILO Manual on *Measuring informality, Table 2.2.*

The Chapter also gives guidance for identifying informal own-account enterprises and enterprises of informal employers, as follows:

- Depending on national circumstances, either all own-account enterprises or else only those that are not registered[26] under specific forms of national legislation should be considered informal.
- Enterprises of informal employers should be defined in terms of one or more of the following three criteria:
    - Small size of the enterprise in terms of employment;
    - Non-registration of the enterprise;
    - Non-registration of its employees.
- In the case of enterprises comprising more than one establishment, the 15th ICLS resolution recommended using the establishment rather than the enterprise as the unit to which the size criterion refers. It specified that an enterprise composed of more than one establishment should be considered informal if none of its establishments exceeds the size limit.

On the scope of informal sector surveys and treatment of special cases, the following aspects are highlighted in the manual:

- The scope of the informal sector is restricted to activities within the production boundary[27] as defined in the 2008 SNA. The production boundary was presented in detail in Chapter 1.

(e) Expert Group on Informal Sector Statistics (Delhi Group)

The "Expert Group on Informal Sector Statistics" commonly known as the "Delhi Group" was set up in 1997 as one of the City Groups of United Nations Statistical Commission (UNSC) to address various methodological issues involved in the treatment of the informal sector. One of the objectives of the Group was to try to *identify internationally comparable data for the informal sector* or, at least, a common subset of informal sector.

On the comparability of data on informal sector internationally, Delhi Group noted that the informal sector manifests itself in different ways in different countries, different regions within the same country, and even different parts of the same city. It encompasses different kinds of activities, different types of enterprise, and different reasons for participating. Informal activities range from street vending, shoe shining, food processing and other minor activities requiring little or no capital and skills and with marginal output, to those involving a certain amount of investment in skills and capital and with higher productivity, such as manufacturing, tailoring, car repair and mechanized transport. While some informal sector activities resemble traditional activities in handicrafts, food processing or personal services, others such as car repair, recycling of waste materials or transport, are new and arise from modernization. Reasons for participating in the informal sector range from pure survival

[26]Size criterion in the definition of informal own-account enterprises was considered unnecessary, as by their very nature virtually all own-account enterprises are small.

[27] SNA production boundary also includes illegal and underground production activities. In principle, such activities fall within the scope of the informal sector if they are undertaken by units meeting the criteria of the informal sector definition. In practice, however, many such activities are likely to go unreported in statistical surveys of the informal sector.

strategies undertaken by individuals facing a lack of (adequate) jobs, unemployment insurance or other forms of income maintenance, to the desire for independence and flexible work arrangements and, in some cases, the prospect of quite profitable income-earning opportunities, or the continuation of traditional activities.

The Delhi Group held several meetings[28] since its inception and came to the conclusion that the informal sector manifests itself in different ways in different countries. Therefore, national definitions of the informal sector cannot be fully harmonised. It recommended that international agencies should disseminate informal sector data according to the national definitions used. In order to enhance the international comparability of informal sector statistics, the Delhi Group adopted several recommendations in its third meeting in 1999 by proposing a subset of the informal sector that could be defined uniformly across countries, as follows:

a) All countries should use the criteria of legal organization (unincorporated enterprises), of type of accounts (no complete set of accounts) and of product destination (at least some market output).
b) Specification of the employment size limit of the enterprise in the national definition of the informal sector is left to the country's discretion. For international reporting, however, countries should provide figures separately for enterprises with less than five employees. In the case of multiple-establishment enterprises, the size limit should apply to the largest establishment.
c) Countries using the employment size criterion should provide disaggregated figures for enterprises that are not registered, as well as for enterprises that are registered.
d) Countries using the criterion of non-registration should provide disaggregated figures for enterprises with less than five employees as well as for enterprises with five and more employees.
e) Countries that include agricultural activities should provide figures separately for agricultural and non-agricultural activities.
f) Countries should include persons engaged in professional or technical activities if they meet the criteria of the informal sector definition.
g) Countries should include paid domestic services unless these are provided by employees of the household where the services are rendered.
h) Countries should follow paragraph 18 of the Resolution adopted by the 15th ICLS regarding the treatment of outworkers/home-workers. Countries should provide figures separately for outworkers/home-workers included in the informal sector.
i) Countries covering urban as well as rural areas should provide figures separately for both urban and rural areas.
j) Countries using household surveys or mixed surveys should make an effort to cover not only persons whose main job is in the informal sector, but also those whose main job is in another sector and who have a secondary activity in the informal sector.

Box 2.2: Definition of informal sector adopted in some African countries

There is no single definition for informal sector or informal employment across Africa. Common features of the definitions are the lack of formal accounting, the lack of registration with local authorities or tax identification number, the lack of contributions to social security schemes and the lack of entitlement to annual paid and sick leave by workers. The main differences are whether

[28] Please see the link http://mospi.nic.in/Mospi_New/site/DelhiGroup.aspx, for discussion papers and recommendations of the Delhi Group

agriculture, domestic workers and subsistence farming are included; whether the maximum number of employees in the informal production unit is 5 or 10; and whether the enterprise must be in a defined location, usually in or around the household. The examples below present definitions in some African countries cited from the most recent reports covering informal activities or employment.

In **Botswana**, *informal sector* businesses are defined by a number of attributes, such as: (a) non registration with a registrar of companies or legal professionals; (b) informal accounts or no accounts at all; (c) five or less paid employees; (d) expenditure not easily distinguishable from household expenditure; and (e) often being temporary or mobile or located in the owner's home. Paid domestic workers and subsistence farming are excluded from the informal sector definition.

In **Burundi** the *informal sector* includes all production units that do not have a fiscal or statistical identification number, , or those who do not keep formal accounts. The sector includes microenterprises with less than five employees.

Cameroon, Chad, the Democratic Republic of the Congo, Madagascar and Malawi define the *informal sector* as including all production units that do not have a registration or identification number, and/or those that do not keep formal accounts.

In **Ethiopia** the *informal sector* is considered as a group of production units that form part of the household sector as household enterprises or unincorporated enterprises owned by households. The following criteria needs to be fulfilled: (a) at least one member of the household must be engaged in a productive activity; (b) employment status of the owner of the activity must be either an employer or a self-operated activity; (c) not registered; (d) no full written book of accounts; (e) less than 10 persons engaged in the activity; and (f) no license.

In **Morocco** the *informal sector* includes all production units without accounting. Agricultural activities are excluded, with the exception of commercial and artisanal activities carried out by those working in agriculture.

In **Nigeria,** *informal jobs* are those generated by individuals or businesses employing less than 10 persons or those businesses that operate with little or no structures.

Rwanda distinguishes *informal sector* enterprises by the non-existence of formal accounting. The informal sector excludes agricultural activities, and includes the production and merchandising of goods and services in the mining, manufacturing and non-manufacturing sectors.

In **Zimbabwe,** a production unit is considered to be in the *informal sector* if the establishment is neither registered with the Registrar of Companies nor licensed. Households employing paid domestic workers and those involved in communal farming are excluded from the informal sector enterprises.

Looking at the recommendations made in various documents on defining informal sector (mostly based on 15th ICLS Resolution) and the country practices, the informal sector has the following four essential characteristics:

- Household unincorporated enterprise that is not registered;
- Does not have complete set of accounts
- Have at least some market production
- Size limit left to country's discretion

Illustration of classification of units when a country adopts these four characteristics. Size limit is 5 or less workers.

Characteristics of the unit	Classified under
Example 1: Unit A owned by a household member is not registered with government authorities, has employment of 6 persons and produces goods to sell them in the market to earn profits. The unit maintains full set of accounts including balance sheet	Quasi corporation
Example 2: Unit B owned by a household member is not registered with government authorities, has employment of 6 persons, produces goods to sell them in the market to earn profits and does not maintain accounts.	Household unincorporated unit
Example 3: Unit C is registered as a company and has employment of 4 persons.	Non-financial corporation
Example 4: Unit D owned by a household member is not registered with government authorities, has employment of 3 persons, produces goods to sell them in the market to earn profits and does not maintain accounts.	Informal sector
Example 5: A household produces goods exclusively for own consumption	Household sector
Example 6: A household hires 3 persons for domestic work to produce services for own consumption	Household sector
Example 7: Three members of a household receive raw materials and components from a formal establishment, produce finished goods and give them back to the establishment and receive payment on piece rate basis.	Informal sector
Example 8: A household member, not registered with government, is hired by a company on contract basis and is paid a lump sum amount for his/her services.	Informal sector

(ii) Informal Employment

As a consequence of rapid economic development and specialization of services and the increase in demand for labour resources in the recent past, the business community has moved towards outsourcing of services. This phenomenon has contributed to the development of more casual arrangements between owners of enterprises and those contributing labour services in the form of informal employment.

The two components of employment in the informal economy, namely, (a) employment in the informal sector, and (b) informal employment outside the informal sector are concepts which refer to different aspects of the 'informalization' of employment. Informality of employment is characterized by absence of contracts, social protection, entitlement to certain employment benefits and not being subject to labour legislation or taxation.

Box 2.3: Informal enterprises and informal employment relations

Informal enterprises
Consist of micro-enterprises (with an employer plus some employees), family businesses (with an owner operator and, sometimes, unpaid family workers) and own-account operations (with an individual owner operator).

Informal employment relations
Consist of informal enterprise employees as well as domestic workers without a regular contract, casual day labourers without a fixed employer, temporary workers obtaining work through an agency, part-time workers for a fixed employer, industrial outworkers for formal or informal firms (and their intermediaries) and unregistered or undeclared workers.

The 17th ICLS (ILO, 2003) provides guidelines concerning a statistical definition of informal employment. These guidelines are based on the recommendation made by the Delhi Group, during its fifth meeting that the definition and measurement of employment in the informal sector need to be complemented with a definition and measurement of informal employment.

The conceptual framework of the informal employment endorsed by the 17th ICLS relates the *enterprise-based* concept of employment in the informal sector in a coherent and consistent manner with a broader, *job-based* concept of informal employment. Broadly, the informal employment comprises informal jobs both in formal and informal enterprises and in households. A person can simultaneously have two or more formal and/or informal jobs. Due to the existence of such multiple job holding, jobs rather than employed persons are taken as the observation units for employment.

The following five categories of jobs were considered by the ILO for identifying the informal employment.

- own-account workers (the self-employed in SNA terms);
- heads of unincorporated enterprises with employees, treated as employers;
- unpaid family workers contributing labour to the unincorporated enterprise;
- employees; and
- members of producers' cooperatives.

Informal employment can be identified from the above five categories of jobs. Formal enterprises provide informal jobs only as employees or contributing family workers. Informal enterprises may offer any of the five types of informal jobs and also formal jobs. Households provide informal jobs as own-account workers, employees and family workers. Some domestic staff may have formal jobs.

Box 2.4: Extracts from 17th ICLS guidelines on informal employment

- The concept of informal sector refers to production units as observation units, while the concept of informal employment refers to jobs as observation units.
- Employees are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits (advance notice of dismissal, severance pay, paid annual or sick leave, etc.). The reasons may be the following: non-declaration of the jobs or the employees; casual jobs or jobs of a limited short duration; jobs with hours of work or wages below a specified threshold (e.g. for social security contributions); employment by unincorporated enterprises or by persons in households; jobs where the employee's place of work is outside the premises of the employer's enterprise (e.g. outworkers without employment contract); or jobs for which labour regulations are not applied, not enforced, or not complied with for any other reason. The operational criteria for defining informal jobs of employees are to be determined in accordance with national circumstances and data availability.
- Where they exist, employees holding formal jobs in informal sector enterprises should be excluded from informal employment.

The conceptual framework shown below presents the activity status of jobs in a cross-classification of institutional sectors, and provides guidance as to what constitutes informal employment, employment in the informal sector and informal employment outside the informal sector.

Conceptual Framework: Informal Employment

	Jobs by status in employment

Production units by type	Own-account workers		Employers		Contributing family workers	Employees		Members of producers' cooperatives	
	Informal	Formal	Informal	Formal	Informal	Informal	Formal	Informal	Formal
Formal sector enterprises					1	2			
Informal sector enterprises [(a)]	3		4		5	6	7	8	
Households[(b)]	9					10			

(a) As defined by the Fifteenth International Conference of Labour Statisticians (excluding households employing paid domestic workers).
(b) Households producing goods exclusively for their own final use and households employing paid domestic workers.

Note: Cells shaded in dark grey refer to jobs, which, by definition, do not exist in the type of production unit in question. Cells shaded in light grey refer to formal jobs. Un-shaded cells represent the various types of informal jobs.

Informal employment : Cells 1 to 6 and 8 to 10.
Employment in the informal sector : Cells 3 to 8.
Informal employment outside the informal sector : Cells 1, 2, 9 and 10.

2.3. Measuring informal economy through direct surveys

The text for this section has mainly been drawn from the Handbook on Non Observed Economy (OECD, et al, 2002), Chapter 25 of 2008 SNA and the ILO Manual Measuring informality: A statistical manual on the informal sector and informal employment (ILO 2013b).

The direct approaches to measure the informal sector and informal employment are mainly through the household or establishment or mixed household-establishment surveys. The data on employment, output, intermediate consumption, investment and other economic parameters collected through these surveys facilitate in accounting for informal economy in national accounts (these include value added from production approach, value added components and production and generation of income accounts for the informal sector).

The direct surveys for measuring informal economy are:

a) Household surveys (HS), mainly the labour force surveys (LFS);
b) Establishment surveys and censuses;
c) Mixed household-enterprise surveys[29].

Countries can choose either one or a combination of these surveys depending upon the objectives, the capability and organization of the national statistical system; the existing survey programmes and their sampling frames; and the financial, technical and human resources available. In this context, ILO manual suggests the following:

- When the main objective is to measure total employment in the informal sector and/or total informal employment, the best approach is to use the *household survey or mixed survey approach*. It is generally observed that establishment censuses and surveys

[29]In these surveys, also known as 1-2 surveys, an enterprise module is attached to the labour force or other household surveys, and information on the activities of the enterprises is collected from the entrepreneurs identified in the household surveys. In another variant of these mixed surveys, informal sector enterprises are identified through household survey and information is collected from these identified units.

tend to give lower estimates of employment for various reasons, such as incomplete statistical frames, under-coverage of units especially the informal sector units, and mis-reporting on employment to avoid government regulations.

- If the objective also includes estimating the number of informal sector units and their characteristics, besides the employment from a single survey, the most suitable data collection method would be a *mixed survey approach*.
- Irrespective of the types of surveys used for measuring informal economy, it should be ensured that statistics on informal sector and informal employment are consistent with other economic, labour and social statistics, in terms of concepts, definitions and coverage, wherever applicable.

The three types of surveys adopt different statistical units, as indicated below:

Table 2.3: Survey methods and statistical units

Unit	Household surveys	Establishment surveys	Mixed surveys
Sample unit	Household	Establishment	Households (first phase);informal sector entrepreneurs (second phase)
Observation unit	Jobs, persons and owners of informal sector units	Establishments, jobs	Jobs, workers, and owners of informal sector unit (first phase); informal sector units (second phase)
Reporting unit	One or more members of the household	Owner or manager of establishment	One or more members of the household (first phase); owner of the informal sector unit (second phase)
Analytical unit for employment	Jobs and persons, owners of informal sector units	Jobs	Household component: jobs, persons and owners of informal sector units Informal sector survey: jobs, owners
Analytical unit for informal sector units		Establishments	Informal sector units, establishments

Source: Table 3.1 of ILO Manual on measuring informality.

Data to be collected on informal sector and informal employment

The type of information recommended for collection of data on informal sector and informal employment in the 15th and 17th ICLS and the ILO manual includes a minimum set and a recommended set of data, as indicated in the following table.

Table 2.4: Minimum and recommended data sets for collecting data on informal sector and informal employment

	Minimum set	Recommended set
Informal sector	a) the number of persons engaged in informal sector units by status in employment and kind of economic activity; and, if possible b) the number of informal sector enterprises by kind of economic activity and by type (informal own-account	a) total employment in informal sector units, classified by socio-demographic and other characteristics (sex, age group, level of educational attainment, etc.) and by the characteristics of their employment and working conditions (kind of economic activity, occupation, status in employment, size of the unit, type of workplace, hours of work, duration of employment, type of contract, income related to employment);

	enterprises, enterprises of informal employers).	b) the total number of informal sector units, classified by various structural characteristics so as to provide information on the composition of the informal sector and to identify particular segments; c) production and incomes generated through informal sector activities, derived where possible from data on output, inputs and related transactions.
Informal employment	a) the total number of persons employed in informal jobs by sex, status in employment and type of production unit (formal sector enterprises, informal sector enterprises, households); and, if possible b) the total number of informal jobs, similarly classified by kind of economic activity, occupation, status in employment and type of production unit.	a) the total number of persons in informal employment, classified by personal socio-demographic and other characteristics (sex, age group, urban/rural location, educational attainment, type of training received, etc.) and by characteristics and working conditions associated with their main job (kind of economic activity, occupation, status in employment, institutional sector, main/secondary job status, type of workplace, hours of work, duration of employment, employment-related income); and b) the total number of informal jobs held by persons during the reference period, classified by various job characteristics (main or secondary job, kind of economic activity, occupation, status in employment, institutional sector).

From the national accounts perspective,

- The minimum set facilitates in preparing a *labour-input matrix*[30] that can be used (together with productivity coefficients (output per worker or value added per worker (VAPW)), which are estimated from other sources, such as the establishment censuses or surveys or the 2nd phase of 1-2 surveys or other *ad hoc* sources), to compile value added estimates for the informal sector. Procedures to compile labour input matrices and productivity coefficients, are discussed in the next section.

- The recommended set facilitates in constructing *labour-input matrix* and estimating productivity coefficients, both of which can be used together to compile estimates of value added. The recommended data set also facilitates in estimating value added directly, since this data set includes data on output and intermediate consumption of informal sector enterprises. However, direct estimates of value added for the informal sector compiled from establishment surveys generally give lower estimates as compared to those compiled using *labour-input matrices*, since labour force surveys are expected to cover labour market more exhaustively than the establishment surveys[31]. The recommended set also includes data required for compiling production and general of income accounts recommended in 2008 SNA.

[30]Labour-input matrix presents employment data in terms of jobs in a cross classification of institutional sectors and branches (industries/activities) and by the characteristics of the units (for example, informal sector, size classification of units, etc.), as well as on the conditions of employment (formal/informal employment).

[31]According to the NOE Handbook (OECD, et al 2002), there are two reasons for this, (a) Household based surveys pick up labour inputs to enterprises that are not included in enterprise surveys, for example because these

Box 2.5: Illustrative list of items of data collection

The ILO manual provides an illustrative list of possible data items for the informal sector and informal employment. The list includes statistics prepared from national labour force surveys, mixed surveys and establishment surveys that cover the informal sector. Not all data items can be collected from all of these sources

1. Persons employed in the informal sector and/or in informal jobs

(a) Characteristics of persons

- Sex
- Age
- Marital status and household composition (e.g., with small children)
- Relationship to the reference person
- Migration status
- School attendance
- Educational attainment
- Kind of vocational training received
- Geographical location (e.g., urban/rural), etc.

(b) Characteristics of their jobs

- Occupation
- Status in employment
- Hours (actually or usually) worked
- Whether main or secondary job
- Nature of employment (continuous, casual)
- Type of work contract (written, oral)
- Type of workplace (fixed visible premise, within dwelling, mobile)
- Duration of employment (as agreed, from starting date)
- Entitlement to paid annual leave or sick leave and actual leave taken
- Entitlement to maternity or paternity leave and actual leave taken
- Entitlement to severance pay
- Contribution to social security schemes
- Payment of income tax

(c) Remuneration received

- Wages and salaries in kind or in cash
- Bonuses, allowances
- Employers' and workers' social contributions
- Mixed income

2. Informal sector units

(a) Characteristics of economic units

- Geographical location (urban/rural, region)
- Kind of economic activity
- Legal organization (unincorporated/corporation/household)
- Type of economic organization (single or multi-establishment unit)

enterprises are too small to be registered in the files from which the survey frames are constructed or because they are too small to be included within the survey; and (b) Individuals may report their labour inputs to household surveys whereas enterprises may conceal those same inputs in order to evade taxes or administrative regulations.

- Type of ownership (individual ownership, household ownership, business partnership with members of other households)
- Number of business partners from other households, if any;
- Type of premises (within the home, attached to dwelling, fixed visible location, independent of the dwelling, home or workplace of client, market/bazaar/trade fair stall, street, pavement or highway, no fixed visible premises, etc.)
- Registration: type of registration or licensing of units
- Size (number of persons/employees engaged in the production unit)

(b) Characteristics of conditions of business operation

- Year of creation and evolution of unit
- Frequency of operation (perennial, seasonal, casual)
- Duration of operation during the reference period
- Bookkeeping and accounting practices (whether the unit keeps accounts and whether these are written and formal or are informal)
- Use and access to mobile phone and Internet
- Access to credit and finance (source of loans or financing: bank, cooperative, friends, family, etc., whether the owner has applied for a loan, whether a loan has been granted, sources of information for obtaining a loan, reasons for not applying for a loan, reasons for notbeing granted a loan, impact of loan on production)
- Type and number of customers, or proportion of output sold to different types of customer
- Extent and terms of work performed for other enterprises under subcontracting arrangements
- Sources of capital for the acquisition of fixed assets
- Origin of the main goods used for further processing or resale (importation, informal sector, other)
- Availability of public utilities at the place of work
- Participation in informal sector support programmes and kind of assistance received, if any
- Membership in associations or cooperatives of informal sector producers
- Problems faced in creating enterprises and constraints on their operation or expansion

(c) Expenditure

(c1) Compensation of employees

- Wages and salaries paid in cash during the reference period
- Value and form (piece rate, hourly rate, etc.) of payments in kind during the reference period
- Other payments to employees during the reference period
- Contributions by the employer to social security schemes on behalf of workers during the reference period

(c2) Purchase of goods and services

- Cost of raw materials and supplies, by product (quantity and total value)
- Purchase of services, by product (quantity and total value)
- Purchase of goods for resale, by product (quantity and total value);
- Other expenditure: fuel, gasoline, water, electricity, rental space,
- transport services, communication (telephone, Internet), interest paid on loans, repair and maintenance, taxes and insurance

(d) Value of sales during reference period

- Goods sold after transformation, by type of good
- Goods sold without transformation (i.e., trade), by type of good
- Services offered (such as rentals)

(e) Inventories (number and value by product, at the beginning and at the end of reference period)

- Inventories of raw materials and supplies
- Inventories of work in progress
- Inventories of finished goods for sale after transformation
- Inventories of finished goods for resale without transformation (i.e., trade)

(f) Estimated value of production for own consumption, by type of good

(g) Taxes paid and subsidies received, if relevant

(h) Fixed capital formation

- Value of fixed assets used for the business activity (at acquisition cost) at the beginning of the reference period, by asset
- Expenditure on new and used assets during the periods, by asset
- Assets sold or disposed of during the period, by asset
- Depreciation, by asset.

It is important to specify if the asset is owned, rented or leased, borrowed free of charge or shared; the value items under this heading can be land, buildings and other structures, transport equipment, machinery and equipment, furniture, tools, animals, etc.

3. Informal sector entrepreneurs

(a) Characteristics of entrepreneur

- Sex
- Age
- Marital status and household composition
- Place or country of origin
- Period of residence in the present area
- Previous place of residence, if any
- Educational attainment
- Acquisition of skills needed to conduct the business (formal or informal training)

(b) Characteristics of employment conditions

- Present occupation
- Time spent at work in the business during the reference period
- Engagement in other economic activities
- Characteristics of other economic activities, if any
- Main source of income
- Reasons for working in the informal sector
- Bank account (whether the owner has a bank account)
- Characteristics of previous employment in or outside the informal sector, if any
- Plans for future business development or alternative employment

4. Members of households with informal sector entrepreneurs

- Sex
- Age
- Marital status and household composition

- Relationship to the reference person
- Activity status (e.g., employed, unemployed, not in the labour force)
- Employment characteristics (e.g., occupation, kind of economic activity, status in employment, etc.)
- Inside or outside the informal sector
- Inside or outside informal employment
- Amount and sources of income

(a) Household surveys on informal sector employment and other types of informal employment

Household-based surveys, mainly the labour force surveys or those that include a labour force component (such as the household budget or income expenditure survey) are generally used to collect statistics on employment in the informal sector and informal employment, besides other information on the labour market situation in the country.

Data collected through these surveys help in estimating employment in informal sector and informal employment outside informal sector, provided relevant items are included in the survey questionnaires (see box below). These data items also help in constructing labour input matrices that can be used to estimate value added of informal sector.

Box 2.6: Relevant information needed for measuring informal sector employment and informal employment through LFS

a) Core information needed in any LFS: (a) activity status, i.e., if the person is in the labour force and, if so, whether the person is employed or unemployed; (b) basic employment characteristics, such as occupation, status in employment, kind of activity, etc.

b) Contextual/circumstantial information to assist in the decision process at the data processing stage: (a) type of workplace or operational conditions under which the activity is conducted (for information that facilitate the identification of home-based workers, street vendors, persons providing services at the client's dwelling, etc.); (b) a recognizable trade name; (c) type of informal employment contract (written or oral).

c) Key information to identify the informal sector: (a) registration; (b) legal organization and ownership of the enterprise; (c) type of accounts; (d) product destination; (e) size of the economic unit, i.e. the number of persons employed by type of worker (contributing family workers, employees, employer), if this is considered as a criterion to define the informal sector; otherwise, this information can be considered as contextual/circumstantial. Information to identify informal employment: (a) contribution by employer to pension funds/retirement scheme; (b) de facto employment-based coverage of social security, health care or any other private or public protection scheme.

d) Descriptive and analytical information: for example, information connected with concepts relating (a) to self-employed workers (e.g., if they are suppliers to other entrepreneurs, to detect if there is any kind of outsourcing relationship; if they operate either more than one type of business or more than one economic unit within one business – with the self-employed worker/entrepreneur being the head of a network consisting of many outlets – or if they operate in a stand-alone manner; when the business started and if it operates all year); or (b) to any type of worker in paid employment or in self-employment (e.g., if the worker is trying to shift to another activity or remain in the current one; if the worker's former job or activity was similar to or quite different from what he/she is doing now).

Source: Box 4.1 of ILO Manual.

The ILO manual further provides guidance on collecting information on employment in informal sector and outside informal sector in respect of the above data items, as follows:

Questions on activity status

The measurement of persons employed in the informal sector and informal employment depends in the first place on their correct identification as '*employed'*. Care should be taken for activities or jobs constituting 'employment' that may otherwise go unreported, such as unpaid work performed by contributing family workers in small family enterprises, market activities carried out by women on their own account at or from home, casual or atypical work and activities geared towards the production of goods for own final use by households (if this is considered as employment at the national level). Once identified as employed, the activity status should be recorded for the person concerned.

Questions to identify informal sector employment

To ensure the complete measurement of informal sector employment, key questions to identify informal sector units should be asked of persons in all status-in-employment categories[32]. These questions should be asked of both their main and their secondary jobs. They relate to the information about the institutional sector[33], about registration and about bookkeeping.

However, answers to questions that call for detailed knowledge of the economic unit, such as registration and type of accounts, may not be known to some types of respondents (e.g., contributing family workers or paid employees) if they are not the owners of the units. In such cases, surveys should be designed to collect the information on the characteristics of the units through different set of questions for different types of respondents or by formulating question-and-answer categories so that they can be understood and answered by most respondents, regardless of their status in employment and whether they are self-respondents or proxy respondents.

Questions to identify outworkers (homeworkers)

Outworkers comprise self-employed persons and paid employees. The 15th ICLS resolution recommended that outworkers be included among informal sector enterprises if they constitute enterprises on their own as self-employed persons and if they meet the criteria of the informal sector definition. Employment relationships involving outsourcing are often complex, and so outworkers tend to be on the borderline between self-employment and paid employment. A labour force survey must therefore be designed to cover cases that are on the borderline of status-in-employment categories within the conceptual framework.

Questions to identify informal employment outside the informal sector

Informal employment outside the informal sector includes employees working for formal sector enterprises, informal paid domestic workers and persons engaged in unpaid production of goods exclusively for own final use and volunteer workers, if included in employment[34].

[32]Employers, own-account workers, employees, contributing family workers and, where relevant, members of producers' cooperatives

[33]Government, corporations, households, non-profit institutions serving households

[34]Volunteer activities that result in goods are included, and those that do not result in goods, are excluded

In other words, informal employment outside the informal sector includes the phenomenon of informalization of labour relationships. Here, the focus is on the flexibility and unprotected nature of the employment contract rather than on the type of activity or economic unit.

Treatment of agriculture

If the object is to measure informal employment inside and outside the informal sector and a national household survey exists with coverage of both urban and rural areas, the survey should also cover agriculture. However, subsistence units that are exclusively engaged in production for own final use are excluded from the informal sector. Subsistence activities can be identified by the following key operational characteristics: (a) the activity does not coexist with other activities that are commercial in nature; (b) most of the production is consumed by the household, even if some might be sold; (c) only household members are involved and no paid workers is engaged even irregularly.

Secondary jobs

Questions about the informal sector and informal employment should cover all jobs held by workers; and therefore should be designed to cover all types of jobs comprehensively, whether the jobs are permanent, temporary or casual, principal or secondary, home-based or street-based, with or without fixed business premises, paid or unpaid, etc.

It is important to collect data on all economic activities, for both main and secondary jobs, because jobs rather than persons are the unit of reference in the SNA and because many labour studies focus on labour inputs and productivity.

However, care should be taken not to mix up the secondary activities with extension of main activities. In this regard, the following aspects need to be kept in view

- Among the self-employed, it may be possible that the reported secondary activity is an extension of the main activity. In service activities, for instance, each client may be taken as a different job, in which case they should not be treated as secondary activities. Similar would be the case in respect of a self-employed person who owns many businesses offering the same kind of goods or services.
- A good guideline for establishing if a self-employed person has a secondary job is whether the activities in the coding process are classified as belonging to different kinds of economic activity in the ISIC.
- For salaried workers attention should be given to the kind of employment or economic unit in which they are engaged. If the employment is linked to a different economic unit from the one declared as the main activity, then it is a secondary job.

Other considerations for survey design

When a household survey is conducted with a shorter reference period (such as daily or weekly or monthly) and only in a short survey period (for example, one month), the data collected may present an incomplete picture of total employment situation for a year, due to the existence of seasonality factors. Therefore, it is necessary to consider either longer term reference periods or shorter reference periods with longer survey period (one year with part of total samples canvassed in each month) that ensures accounting for seasonality variations in labour market. Further, since the requirement of labour force data is with the cross classification of institutional sectors and industries and type of jobs (and sometimes with

activity status of persons and also by regions), the sample size for the survey should be sufficiently large. Regarding estimation of number of enterprises from the household surveys, it may be difficult to estimate the same since there are many partnership companies.

(b) Establishment censuses and surveys

Establishment censuses and surveys are the most common data collection instruments for statistics that describe the activities of economic units. Some countries are able to conduct only enterprise surveys, because the sampling frame is available only for enterprises. An enterprise may have several establishments and undertake same activity in different establishments or different activities in different establishments. Ideally, statistical offices are expected to collect data from kind of activity units (KAUs), which typically produce single products, but in practice it is difficult to identify such units or for establishments to provide data for such units located within the establishments. Similarly, it may be difficult for enterprises to report data separately for each of its establishments. In such cases, the enterprise, rather than the establishment, becomes the statistical unit.

For establishment/enterprise censuses and surveys to be useful for informal sector statistics, they need to cover all economic units, including small units employing only one person, and not only those that have fixed premises but those that are carried out within dwellings or with no fixed location as well; and should include items in their questionnaires that concern the keeping of accounts, registration with government authorities and the registration of workers with social security schemes.

Establishment-based censuses produce basic economic statistics for detailed industries and geographical areas, while establishment surveys based on samples provide more frequent statistics on a broader range of topics for more aggregated levels of the industrial classification. Economic statistics generated from establishment surveys are used in national accounts compilations, whereas benchmark and key ratios used in national accounts are provided by the statistics obtained from economic censuses.

(i) Establishment censuses

An establishment census (also known as economic or business censuses) is the process of collecting data on each establishment in a country during a specific reference period. If these censuses include all units including those in the informal sector, the resource requirements become huge and this restricts them to one or two per decade. In such cases, the set of data items included are normally limited to such items as the name of the economic unit, the address, the kind of economic activity and the legal and ownership status. Some censuses may also include limited information on the number of workers engaged, the volume of sales or production, and the value of expenditures, for all or for a sample of the economic units.

A by-product of the establishment census is a list of economic units with information regarding their name, address, kind of economic activity and number of workers engaged. This list can be used to prepare a sampling frame, which can be used to conduct subsequent establishment surveys, especially, for the small and micro enterprises including the informal sector.

In order to reduce costs while guaranteeing full coverage of economic activities, an establishment census can be conducted concurrently with the house-listing operation for a population and housing census. Pairing the two census listing operations can help improve

the coverage of informal sector units without fixed or recognizable premises provided that special probes for their identification are included in the house-listing schedule.

(ii) Establishment surveys

Through establishment surveys, information on production, intermediate consumption, employment, investment and other economic parameters is collected. When these surveys cover informal sector units, it is possible to directly estimate the value added and employment in the informal sector.

Establishment surveys require a sampling frame. The majority of establishment surveys (such as annual manufacturing survey, quarterly/annual economic survey) use list-based sample frames constructed on the basis of administrative registers or a business register or a previous establishment census. Typically, they cover only the establishments meeting certain criteria of registration or employees more than a certain number (for example, 10 or more workers). A list-based frame generally excludes smaller units and most likely the informal sector units.

For the establishment surveys that include informal sector, usually such list frame is not available. If an informal sector survey is conducted immediately after an economic/ establishment census, the *census lists* can provide the frame for sample selection of informal sector establishments. If the survey is conducted later, data from the most recent census can be used to construct an *area sampling frame* that takes into account the density of informal sector units of various types in the census enumeration areas, for the selection of sample areas (primary sampling units).

In this context, the Fully Integrated Rational Survey Technique (FIRST) that combines *list* and *area* sampling (UN, 1994[35]) provides a methodology to produce statistics on all economic units operating within a country.

Box 2.7: Features of FIRST

The FIRST methodology divides the statistical universe of establishments into two frames: a list frame of large and medium registered units included in a business register, which is clearly defined, and an area frame including all other units including small-scale units that are not registered. By definition, the informal sector units are found within the second frame.

A sample of registered units can follow a typical list-based sample design, i.e., it can include all large economic units and a random sample of medium units. A sample from an area frame can follow a two-stage design, typical of area-based sampling. The final sample can therefore include a census of large economic units, a sample of medium economic units selected from a list-based sample frame, and a sample of small economic units selected from an area-based sample frame. This approach maximizes the efficiency of the list-based survey for units that it can cover with confidence, and allows for smaller units to be included as well. It also reduces costs, as the larger economic units can be given a questionnaire for self-completion while smaller units are interviewed directly.

The FIRST methodology enables classification of the contribution of the informal sector to gross domestic product for each aggregated kind of economic activity, provided the informal and formal production units are appropriately defined and used in the sampling and estimation procedures.

[35]United Nations. 1994. Strategies for measuring industrial structure and growth, Studies inMethods, Series F, No. 65 (New York, UN Statistical Office).

The 15th ICLS resolution considered establishment surveys as one source for collecting data on informal sector units and also mentions that it is generally preferable to cover all relevant kinds of economic activity in a single informal sector enterprise survey.

(iii) Planning and designing establishment surveys and censuses

A variety of designs and arrangements are possible in establishment surveys and censuses. The basic elements of survey design are the statistical units, the data collection strategy, the sample frame available, the reference period used and the data collection instrument.

Statistical units

According to the 2008 SNA the most suitable statistical unit for which production statistics are to be compiled is the establishment. In most countries, vast majority of units (and even more so in the case of informal sector establishments) consist of just one establishment. However, in the case of multi-establishment enterprises, sometimes it is difficult to obtain data separately for each establishment, since the accounts may have been at enterprise level. In such cases, the statistical unit for these multi establishment enterprises may have to be the enterprise[36].

Sample design

The basis for selecting a sample is the sample frame. A sample frame is a list that includes every unit in the population from which a sample is to be selected. For establishment surveys there are essentially two types of sample frames, *list-frames* and *area frames*. The list-frame is a directory of economic units available from the administrative records or business registers. The area frame is a list or map of geographical areas of the country with identifiable boundaries[37]. For covering informal sector, generally *area frames* are used, since, *list frames* mostly include only the large and medium size establishments.

Area-based establishment surveys involve the following steps:

a) Selection of areas of establishments (EAs[38]) as primary sampling units (PSUs);
b) Listing of all buildings, including dwellings, to obtain information on economic activities carried out within;
c) Identification of relevant economic units, i.e., units that have the characteristics of the informal sector (small enterprises, household unincorporated enterprises with at least some market production, etc.);
d) Construction of a list of relevant economic units for each PSU (sample frame for the selection of economic units);
e) Selection of sample of economic units as ultimate sampling units (USUs); and

[36]In the 15th ICLS Resolution, an enterprise is included in the informal sector if none of its establishments exceeds the size limit set at the country level. The Resolution also states that all the businesses owned by the same person are considered as belonging to the same enterprise.

[37]Area-based frames of households are commonly used in household-based surveys to draw samples of households. Using a similar approach, an area-based frame of establishments can be used to draw samples of economic units.

[38]An enumeration area (EA) is a small area in a country used by national statistical offices to assign workloads to census enumerators and distribute census questionnaires to observation units (either households or business premises). Typically, an enumeration area is canvassed by one census enumerator or interviewer

f) Submission of a questionnaire to the sample of economic units to obtain relevant information.

The advantage of area-based frames for covering the informal sector is that they do not need to be updated fully to select a representative sample of units, and they are the only means of guaranteeing that the sample is representative of all economic units in a country. The two main sources used to construct an area-based frame for establishment surveys are (i) the last establishment census, because it can provide information on the economic units in each area, their industry, size and whether they keep written accounts and are part of a larger economic unit; and (ii) the last population census, if there was no recent establishment census.
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Reference period

The reference period in establishment surveys will depend on the survey frequency: monthly surveys can use a short reference period of a month, quarterly surveys may use a reference periods of three months or less, and annual surveys will tend to use the year as the reference period. Generally, for an establishment census or survey that covers the informal sector, the reference period should be short, for example, one month or a week regardless of the survey frequency.

A flexible reference period during which respondents are allowed to provide information for any period they can (a day, a week, a month) could be envisaged. This is quite demanding from the data-processing standpoint, but it ensures the reliability of the information collected. In all cases, additional information needs to be collected about activity during the whole year in order to take into account the very seasonal nature of informal sector units. It is also possible to distribute the sample over the reference period for which one wants to estimate statistics. For example, in a quarterly survey, the samples may be allocated equally in each month.

Data items

In the establishment censuses or surveys covering the informal sector, it is essential that information is collected on whether the economic unit is registered, whether it keeps written accounts, the status in employment of workers (for example, contributing family workers, employees), and whether the workers engaged have social security coverage, an entitlement to holidays and similar matters. This information will allow the identification of informal sector units and of informal employment from among all establishments covered in the survey. Data on production facilitates estimation of gross output, value added and mixed income.

Questionnaire design

The census/survey can include either (a) a standard questionnaire, or (b) industry-specific questionnaires. Each of these questionnaires has its own advantages and the choice depends on the level of detail required and resources available. An industry-specific questionnaire tends to be shorter, but allows incorporating characteristic features of certain industries, like trade and financial services, which are special cases in measuring output.

(c) Mixed surveys

Mixed surveys measuring the informal sector refer to surveys that are carried out in two phases.

During the first phase, information is obtained from households about the activity of individuals in order to identify informal sector entrepreneurs. Each informal sector entrepreneur is part of the sample frame for the second phase, from which a sample is selected. In the second phase, the sample of informal sector entrepreneurs is canvassed to collect economic data in respect of the unit. The principle underlying mixed surveys is that informal economic units are identified more easily through the jobs of the owners of informal sector units than through the premises where the informal sector activity is carried out, which is the approach used in establishment surveys. These surveys can cover all informal sector entrepreneurs (except homeless persons) and their activities, irrespective of the size of the enterprises, the kind of activity and the type of workplace used, and irrespective of whether the activities are undertaken as main or secondary jobs. In particular, they can also cover activities undertaken inside the owner's home or without fixed location.

Two types of mixed surveys are distinguished: *mixed modular surveys* and *mixed independent surveys*. The main difference between the two is the way in which informal sector entrepreneurs are identified in the first phase: mixed modular surveys use an existing household survey (called 'base' survey) while mixed independent surveys carry out a detailed independent listing operation of all households in selected areas.

(i) Mixed modular informal sector surveys

In a mixed modular survey, the first phase consists of an existing household survey that has a labour force component (e.g., a labour force survey). By incorporating relevant questions aimed at identifying *own-account workers and employers* who satisfy the criteria for classification in the informal sector, the 'base' survey can be used as a filter to identify potential informal sector entrepreneurs. All or a random sample of them can be selected for the informal sector survey[39], known as the 'second phase'. The first phase of a mixed modular survey has the characteristics of a conventional household survey with an employment component, and the second phase has many of the characteristics of an establishment survey covering the informal sector.

Mixed modular informal sector surveys involve the following steps:

a) selection of areas of households (EAs) as primary sampling units (PSUs);
b) simple listing of all households in the sample areas;
c) selection of a random sample of households within each PSU;
d) submission of a questionnaire to each household member to obtain information on its demographic and work characteristics;
e) identification of *owners of potential informal sector units*;
f) construction of a list of owners of potential informal sector units for each PSU (sample frame for the second phase of the mixed survey);
g) selection of a sample of owners of informal sector enterprises; and
h) submission of a questionnaire to each owner of an informal sector enterprise to obtain information about their economic unit, the workers engaged in their unit and/or their families.

[39]This implies that informal sector survey sample is obtained as a sub-sample of the base survey.

From the first phase of the survey, the recommended option is to identify all *owners of informal sector units* to be used as a sampling frame for the second phase. Another option is to select for the second phase all workers in the informal sector, whether employees, contributing family workers or entrepreneurs. This option is *not recommended*[40] in the ILO manual, mainly because of the following reasons:

- it violates the assumption of a one-to-one relationship between entrepreneurs and their units since, when the economic unit employs more than one person, holders of different jobs can lead to the same economic unit and the chances of such units getting selected for the second phase is very high.
- estimations are more complicated than for the first option.
- employees may have some difficulty in providing reliable information about the informal status of their enterprise

A labour force survey is most suitable for the first phase of a mixed modular survey, as it uses regular, internationally standardized concepts and methods covering the labour market in general and the population's working conditions in particular, and can easily be adapted to the objective of measuring the informal sector. Labour force surveys can also provide good estimates of informal employment. Other household surveys, such as the income and expenditure surveys can also provide a sample frame of entrepreneurs for the informal sector survey phase or by attaching a specific module.

(ii) Mixed independent informal sector surveys

Mixed independent informal sector surveys are based on a multi-stage design involving the following steps:

a) selection of areas of households (e.g., EAs) as primary sampling units (PSUs);
b) detailed listing of all households and household members in the sample areas, to obtain information on their demographic and work characteristics;
c) identification of households with owners of potential informal sector units;
d) construction of a list of owners of potential informal sector units, or of households with owners of potential informal sector units, for each PSU (sample frame for the second phase of the mixed survey);
e) selection of a sample of households with owners of informal sector enterprises (or small enterprises, household unincorporated enterprises with at least some market production, etc.) as ultimate sampling units; and
f) submitting a questionnaire to the sample of owners to obtain information on their economic units.

A mixed independent survey uses PSUs that are independently selected or PSUs that have been used in an existing 'base' survey and incorporate the density of informal activity (or specific kinds of economic activities) in the survey design.

For the first phase, an area sampling frame of households is used which consists of EAs of appropriate size, stratified according to an estimate of the density of households with informal sector entrepreneurs in these areas and, if possible, by different kinds of economic

[40]However, informal sector units may be identified on the basis of information provided by employees ifthe number of entrepreneurs identified in the household sample is small.

activity and other criteria such as size, type of workplace, etc. Sometimes, the household listing may not provide a complete coverage of informal sector units outside the homes of the informal sector units' owners. In such cases, it is useful to undertake a dual, mutually exclusive listing of i) households and household-based (including mobile) entrepreneurs and ii) establishments in the sample areas. Some countries even use different area sampling frames for i) and ii) because they tend to be clustered in different areas. The listed households and establishments are then grouped in strata by industry, sex of the entrepreneur, type of workplace, etc., for second stage allocation and selection. The aim is to make the allocation of the final sample to the various strata as homogeneous as possible and to ensure that an adequate number of ultimate sampling units from each stratum is selected.

(iii) Integrated surveys

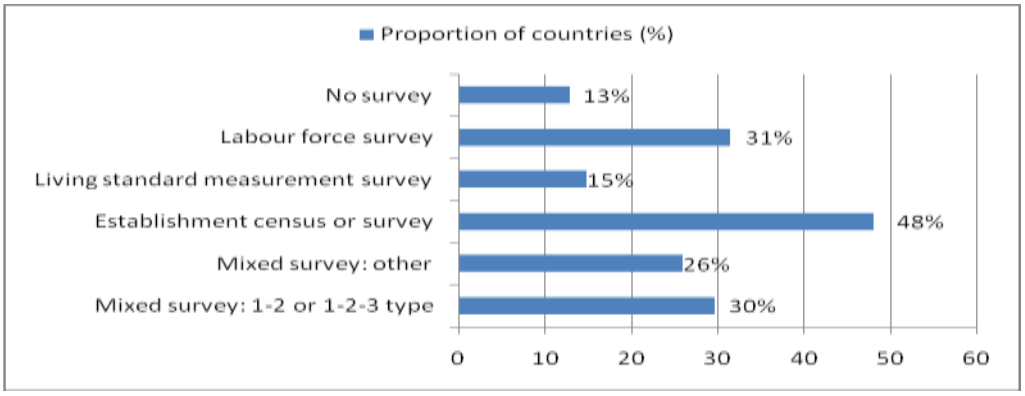
Integrated surveys can be seen as special types of modular surveys. Integrated surveys are designed to meet several objectives at the same time, i.e., the collection of data about the informal sector and other topics, e.g. labour force, household income and expenditure. Such surveys are especially useful for countries that do not have a household survey to which an informal sector module can be attached, and that need to collect data on a range of topics without having the resources that are necessary for separate surveys. Examples of integrated surveys are the 1-2-3 surveys that have been conducted in some African countries. In these surveys, the first phase is a labour force survey, the second phase an informal sector survey based on a sub-sample of the labour force survey, and the third phase a household income and expenditure survey conducted on the original labour force survey sample.

(d) Surveys on the informal sector in some African countries

Since the early 1970s, African countries have been estimating the size of the informal sector in national accounts. Since 1990s, an increasing number of countries have been undertaking more systematic data collection through mixed household-enterprise surveys. Based on desktop research of the African national statistics offices and the results of studies conducted by the Economic Commission for Africa (ECA)[41], 47 of the 54 African countries were found to have already undertaken some form of data collection on the informal sector. The different types of surveys used in Africa are: (a) household surveys (labour force or living standard measurement surveys); (b) establishment censuses and surveys; and (c) different types of mixed household-establishment surveys, such as stand-alone informal sector surveys, modular surveys, integrated surveys and 1-2-3 type surveys. The proportion of countries that have undertaken different types of surveys at least one time is shown below.

[41]UNECA (2014): Report to the First Joint Session of the Committee of Directors General of the National Statistics Offices and the Statistical Commission for Africa on informal sector methodology in Africa

Proportion of countries by type of surveys in Africa



Source: ECA based on desktop research and literature review.
Note: One country might have conducted more than one type of survey, but only one survey by type is taken into account (no repetition).

Below are surveys that allow the drawing of three major types of data collection approaches for the informal sector and informal employment in Africa:

- *Household surveys*: African countries that lack the resources to regularly conduct mixed surveys often measure informality as part of their household surveys. There are two major types of household surveys: *labour force surveys* and *living standard measurement surveys* (also known as household income and expenditure surveys). In the absence of data about production in the informal sector, precise knowledge about labour force components can be a useful source for national accountants in creating labour input matrices. National accountants can distinguish the various forms of employment in the different production sectors of the economy, and with the help of labour input matrices, they are able to make assumptions to balance supply and use tables.

  A few African countries limit data collection to their usual household surveys, while most of them conduct other surveys in parallel. For example, Gabon, Seychelles, Zambia and Zimbabwe collect data about the informal sector only through labour force surveys, while the Sudan gathers data only through household income and expenditure surveys. Furthermore, countries often apply different approaches. The labour force survey conducted in Egypt, for example, is focused on the analysis of labour market and labour policy formulation rather than on national accounts, while in Ethiopia, data collection on the informal sector is restricted to urban areas, which, however, is not sufficient for the purpose of compiling national accounts.

- *Enterprise or establishment censuses and surveys* may be used to monitor the number and characteristics of informal sector production units. Those surveys can entail the collection of reliable information about such features as production activities, intermediate consumption, generated value added, compensation of employees, gross and net income, and consumption of fixed capital. Almost half of the African countries have conducted at least one establishment census or survey.

  Djibouti, the Gambia and South Sudan have thus far only used the establishment approach to collect information about the informal sector, while other countries use it as a complementary method. Tunisia, for example, conducts a survey on a regular basis in line with its updates of the country's business register every five years.

Rwanda organizes an establishment census followed by a sample survey of the informal sector every five years and Ghana conducted its first integrated business enterprise survey (IBES) in two phases in 2014 and 2015. While the first phase was an economic census in which basic but detailed information was collected on all establishments in the country, the second phase was an integrated sample survey covering formal and informal non-household establishments.

- *Mixed household-enterprise surveys* are the most frequently used tools to account for production and employment in the informal sector simultaneously. There are several types of mixed surveys. Botswana, Mozambique, Namibia, the Niger, Nigeria and the United Republic of Tanzania have been conducting stand-alone informal surveys. Benin, Chad, Ghana, Mali, South Africa and Uganda have been conducting modular surveys that include an informal sector module to their existing labour force or household surveys. Ghana, Kenya, Lesotho, Malawi, Nigeria, Rwanda, Sierra Leone, Swaziland and the United Republic of Tanzania have been conducting integrated surveys that integrated informal sector surveys as part of a survey system with several objectives.

  The 1-2 or 1-2-3 survey is clearly the most popular mixed-type survey. It is a combination of labour force or living standard surveys with a follow-up survey on informal production units. A total of 16 countries in Africa conducted such surveys: Burkina Faso, Burundi, Cabo Verde, Cameroon, the Comoros, the Congo, Côte d'Ivoire, the Democratic Republic of the Congo, Guinea-Bissau, Madagascar, Mali, Mauritania, Morocco, the Niger, Senegal and Togo. It is important to note that out of the 16 countries that use 1-2-3 surveys, all are Francophone except Cabo Verde and Guinea-Bissau, and 13 of them are members of the Economic and Statistical Observatory of sub-Saharan Africa (AFRISTAT).

Table below is a summary of different survey types used in Africa by sub-regions.

Table 2.5: Number of surveys conducted to measure the informal sector in Africa, by type and sub-regions

	Northern Africa	Western Africa	Central Africa	Eastern Africa	Southern Africa	Total
Household survey	5	5	1	4	10	25
Labour force survey	4	3	1	2	7	17
Household income and expenditure survey (or living standard measurement survey)	1	2	0	2	3	8
Establishment survey	5	9	2	4	6	26
Mixed survey	1	15	3	5	11	37
Informal sector survey	0	2	0	0	4	6
Modular survey	0	3	1	1	1	6
Integrated survey	0	3	0	2	4	9
1-2 or 1-2-3 survey	1	9	2	2	2	14
Total	11	31	6	13	27	88

Source: ECA based on desktop research and literature review.
Note: One country might have conducted more than one type of survey, but only one survey by type is taken into account (no repetition).

2.4. Accounting for informal economy in national accounts

In the national accounts, the data that can be compiled for informal sector are (i) value added and its components, (ii) production and generation of income accounts; and (iii) employment in informal sector and informal employment. For the reasons that the informal sector (a) comprises a group of production units (rather than as a sector in SNA concept), (b) do not maintain complete accounts and (c) its activities cannot be separated from other activities of the owners[42], it is not possible present full sequence of accounts for this sector[43]. Informal sector is not an institutional sector according to the SNA definitions of a sector, rather it comprises a group of production units, falling under the household sector.

The 2008 SNA recommends compiling the following two supplementary tables for informal sector, one covering production and the generation of income and one covering employment.

1) **Production and generation of income**
    - Production
        - *of which* for own use
    - Intermediate consumption
    - Value added
    - Compensation of employees
    - Gross mixed income
    - Consumption of fixed capital
    - Net mixed income.

2) **Employment**
    - ***Employment in the informal sector***
        - formal jobs
        - informal jobs
    - ***Informal employment outside the informal sector***
        - in the formal sector
        - in other household unincorporated enterprises.

Given the availability of required data through one or a combination of the types of surveys described in the previous section (or from indirect approaches) for measuring informal economy in a country, the 2008 SNA suggests direct or indirect methods to account for the informal economy in the national accounts.

(a) Direct approach

The activities undertaken in the informal sector can be accounted for in the national accounts through direct approaches if data on output (further break up of output by products, if possible, for use in the compilation of supply and use tables), intermediate consumption (again, if possible by products), changes in inventories, compensation of employees/mixed income, consumption of fixed capital and other taxes on production are collected from the informal sector enterprises, through the establishment surveys or mixed household-enterprise surveys that have been discussed in the previous section. These surveys could be stand-alone surveys on informal sector or augmented existing establishment or labour force surveys in which information on informal sector is separately collected. Generally, the production

[42]Other income flows, consumption and capital formation cannot be segregated between the activities and households to which the owners belong

[43]Full set of sequence of accounts are only possible for institutional sectors while for industries/braches/economic activities, only the production and generation of income accounts can be compiled.

approach[44] is considered to be the best approach to estimate value added for the informal sector.

The main problems in direct surveys are the costs involved; incomplete frame of informal sector units in the surveys[45]; and the quality of data that is collected, as these surveys are generally not based on records, and revenues and expenditures of informal sector enterprises are mixed up with household expenditures and cannot be separated. Therefore, it is generally preferable to adopt indirect approaches (mainly the labour input method) for including informal sector contribution in national accounts.

However, data collected from direct establishment surveys on informal sector could have several uses, such as in the preparation of (i) benchmark estimates of labour productivity ratios, namely, output or value added per enterprise or per worker, (ii) ratios for intermediate consumption or value added ratios, (iii) capital-output ratios, and also to some extent in the preparation of (iv) labour input matrices.

[44]Expenditure approach GDP compilation is meaningful for the economy as a whole and not for particular segments of the economy, such as informal sector.

[45]Many small units, illegal units and those operating without fixed premises tend to get missed in the direct establishment surveys

Box 2.8: Use of direct surveys for estimating informal sector in national accounts in Africa

A direct survey approach involves conducting surveys/censuses at the national level on employment and production of informal sector. These include the mixed (household/establishment) or combined (household and establishment) surveys, which provide national accountants with the requested data.

Eighteen among the 23 countries that responded to the UNECA survey, or 78 per cent of them, have conducted multi-stage surveys. The actual percentage may be higher because pure establishment of multi-stage surveys also exists (for instance, when an establishment census is followed by a sample survey of small establishments); not all mixed surveys are 1-2 or 1-2-3 surveys and not all multi-stage surveys have been conducted at the national level.

(b) Indirect approaches

Indirect approaches are based on commodity flow methods where discrepancies between income, expenditure and production GDP estimates are attributed partly to informal sector, or based on labour and material inputs, or monetary methods based on currency circulation. Sometimes, indirect approaches provide an estimate for the total economy of a particular activity (for example, estimates based on consumption expenditure of households of certain items) and informal sector contribution is derived residually.

Among the indirect approaches, the most preferred method for estimating the value added of informal sector is the *labour input method*. In fact, this method is preferred even when data on informal sector is available from establishment surveys, for the reasons of under coverage of informal sector units in the establishment surveys. This is because the establishment surveys will not be able to exhaustively cover all informal sector units in the economy as they are tiny or invisible or undertaken within the households or mobile, or engaged in illegal activities, etc. On the other hand, employment data collected through household surveys is considered to more exhaustively represent total employment in the economy. The labour input methods based on employment data collected through household surveys are, therefore, expected to cover informal sector more exhaustively than the direct methods based on establishment surveys. The labour input method is also widely used for the assessment of hidden employment activities. This method involves comparing the supply of labour as obtained from a household Labour Force Survey with estimates of demand obtained from business surveys and other administrative sources. The labour input method is an effective way of accounting for unregistered and otherwise hidden employment.

Labour input method

One approach to estimate the output of informal sector in particular and the non-observed economy in general, is the labour input method suggested in the Handbook on Non-Observed Economy (OECD, et al 2002). The method is considered most feasible, though it requires detailed data on labour input in various activities and institutional sectors by size of employment, registration and employment characteristics.

Countries which conduct establishment surveys on informal sector (either independently or through 1-2 surveys) can derive direct estimates of employment (labour input) and value added in the informal sector enterprises. But it is generally observed that establishment surveys under-report employment numbers, as informal sector units may conceal employment in order to evade taxes or avoid administrative regulations. Therefore, direct

estimation of informal sector through establishment surveys could result in under-estimation of GDP.

On the other hand, the labour input estimated from labour force surveys/population censuses takes care of this under-estimation. Persons engaged in illegal activities and underground production may report as workers in the household labour force surveys, whereas the units where such persons are working may be invisible in the establishment surveys. These household labour force surveys are, therefore, expected to give a more complete coverage of labour input to GDP than the enterprise surveys, and provide a firmer basis for GDP exhaustiveness, besides maintaining consistency between employment and production data. Another advantage of the labour input approach to estimate value added is that it covers more NOE activities[46] in national accounts in addition to the informal sector.

The labour input method involves three basic steps:

(i) obtaining estimates of labour input in the informal sector by economic activity from a household survey (generally the labour force survey);
(ii) deriving estimates of output and value added per unit of labour input with the same economic activity breakdown for enterprises belonging to the informal sector; and
(iii) multiplying the labour input estimates by the per unit productivity norm to obtain the output and value added of the informal sector by economic activity.

Though labour input in informal sector by economic activities can be estimated by different approaches (e.g. residual methods[47]), preferably this should be derived by compiling a labour input matrix for the total economy using the information available on employment from different surveys/administrative sources in the country, in a consistent and exhaustive manner and in coherence with production statistics.

Labour input matrix

The labour-input matrix presents employment data in terms of jobs in a cross-classification of institutional sectors and economic activities (industries/branches) and by the characteristics of the units (for example, registration, size classification of units, etc., which help in identifying informal sector units) and conditions of employment (formal/informal employment).

Labour input matrices facilitate the measurement of various components of *employment* that contribute to the *production* of institutional sectors, in a consistent and exhaustive manner. The objective behind developing a labour input matrix (conforming to the concepts of production in SNA) is to design as detailed a table of industries and institutional sectors (showing the informal sector as a sub-sector of household sector) and further cross-classified by formal/informal employment, as possible. The labour input matrix, thus, aims to present employment data in a three-way classification of industries/branches, institutional sectors (separately showing informal sector under household sector) and the conditions of employment (formal/informal). The employment data recorded in the labour input matrix can further be used in estimating output and value added indirectly, for those components

[46]Such as under-coverage of formal sector units in establishment surveys, non-response, etc.

[47]The informal sector employment is estimated as the difference between labour force statistics produced through a population census or a labour force survey which is considered as the 'exhaustive source', and statistics on 'formal' employment from establishment censuses or surveys, social insurance registrations or fiscal records.

(industries and institutional sectors including informal sector) for which production data is not available from direct sources. For example, these components can be informal sector units in different industries or informal employment in formal sector or non-response units in the formal sector or under-coverage of employment in the formal sector, etc.

Table 2.6: Broad outline of labour input matrix

ISIC / Institutional sectors	General Government			Corporations			Households excluding informal sector			Informal sector			Total economy		
	FE	IE	TE	FE	IE	TE	FE	IE	TE	FE	IE	TE	FE	IE	TE
Agriculture															
….															
Mining															
Manufacturing															
…															
Construction															
…..															
Trade															
…..															
Services															
…..															
Total economy															

- Further disaggregation of the table to include employment status (own account workers, employers, contributing family workers, employees and members of producers' cooperatives) can be considered;
- Informal sector can be further disaggregated to include informal own-account enterprises and enterprises of informal employers
- FE: formal employment; IE: informal employment; TE: total employment

Compiling the labour input matrix

As discussed earlier, there are three principal sources for the data on labour market, namely, (i) population census or labour force or household surveys that provide information from the labour supply perspective; (ii) establishment surveys that provide information from the labour demand perspective and (iii) administrative records (such as social security, payroll tax, etc.). For the compilation of labour input matrices, these sources can be used either singly or in combination, depending upon their coverage, concepts, definitions and data items included or collected in these sources.

(i) Compiling labour input matrix from a single source of labour supply

The main sources of labour supply data are the population censuses and/or labour force surveys, or other household surveys that collect information on labour market in the country, or the base survey of 1-2 mixed household-enterprise surveys (*henceforth in this chapter all such surveys which collect information on labour market will be referred to as labour force surveys for the sake of brevity*).

If the questionnaire of labour force survey includes specific data items on the characteristics of the unit where the person is employed (institutional sector, economic activity, registration, employment size of the unit, maintenance of accounts, secondary jobs and conditions of employment), then the labour input matrix can be compiled from this single source for the entire economy by processing the micro-data of the survey.

The main advantage of using a single source for constructing a labour input matrix is the internal consistency of concepts, coverage and the derived estimates of labour input between the detailed levels and the national total. On the other hand, the main drawback in this case is that the quality of labour input matrix depends on the ability of the responding workers to provide correct information on the characteristics of the unit (size, registration, institutional sector, maintenance of accounts, etc.), where he/she is working.

(ii) Compiling labour input matrix from multiple sources of labour supply and demand

In most countries, labour force surveys do not provide complete information on the labour market that is required to compile a labour input matrix (for example, they may only cover employment by economic activities and sectors, but not the characteristics of units where persons are employed; or on the conditions of employment, such as formal/informal employment). In such cases, labour input matrices can only be compiled using data available from different sources in the country (e.g. establishment censuses or surveys, government/business accounts and other administrative sources), in addition to the labour force survey.

When different sources are used for constructing a labour input matrix, it should be ensured that employment (in terms of jobs) and production statistics are consistent in terms of definitions, SNA concepts of production boundary and residence criteria. A practical way to achieve this is to reconcile production statistics with the corresponding employment statistics in a manner that avoids double-counting and at the same time includes all jobs.

(I) Components of labour input matrix that can be compiled from a labour force survey

From the labour force survey, the main table that can be compiled is employment cross-classified by '*kind of economic activity*' (agriculture, mining, manufacturing, trade, services, etc., by ISIC), and '*status in employment*' (employers, own-account workers, contributing family workers, employees, etc.); and further by sex and/or by urban and rural area, if feasible. This table fills up the cells of employment in a cross-classification of economic activities and jobs by status in employment *only for the total economy* in the labour input matrix (Table 2.6). The missing elements in this Table would be the breakdown of employment by *institutional sectors* and *formal/informal employment*.

If the questionnaires of labour force survey also include data items of institutional sectors, size and registration particulars of establishment where the person is working and the condition of employment (formal/informal), then the table can be expanded to include employment cross-classified by institutional sectors (with informal sector included under SNA household sector), economic activities, and formal/informal employment with further disaggregation to the extent feasibly by status in employment, sex, rural and urban areas, and size of establishments.

If the questionnaires of labour force survey do not include these items, we need to assume that in each economic activity,

- own-account workers and contributing family workers belong to the informal sector component called 'self-employed'.
- employers may be considered to be in the informal sector if the units they own or operate satisfy the criteria for inclusion in the informal sector in terms of size and

registration. If information on size or registration is not available, then the employers' category will need to be compared with sources on the labour demand side in which the number of employers in units that are registered or have five or more employees is known.

- However, the above two assumptions will only give information on employment in informal sector covering own accounts workers, contributing family workers and employers. This would still miss out all other workers in informal sector in the labour input matrix.

(II) Components of labour input matrix that can be compiled from establishment/ enterprise surveys and other administrative sources

The main data sources for some components of labour input matrix are the establishment/enterprise censuses and surveys, and administrative sources such as social security, employment associated with payroll tax, accounts of government and corporations (if these accounts contain data on employment), etc.

If the accounts of government and corporations (or any other sources that contain statistics on employment in general government and/or corporations) provide information on employment, then it is possible to estimate employment in these two institutional sectors by economic activities. Also, the entire employment in government and corporations could be classified as formal employment. This information in combination with the data obtained from labour force survey (which gives total employment in the country by economic activities) mentioned under (a) above, can give estimates of residual employment by economic activities that can be attributed to both (i) total employment in household sector (but not separately for informal sector); and (ii) informal employment in government and corporations. The missing elements in the labour input matrix, after using these data sources, will still be the informal sector employment and formal/informal employment break-up in all the institutional sectors.

If the country has conducted an economic census in the recent years covering all establishments in the country, then the census would have possibly included the data items of employment in the unit (possibly also the employment status), economic activity, and legal status. With this information, it is possible to construct labour input matrix without separate break-up of formal and informal employment. However, as we know, the economic census would not be able to cover all units in the country, especially the mobile, invisible, illegal units and those producing goods for own consumption. Therefore, the employment data from economic census for the total economy will have under-coverage as compared to that available from labour force survey for the total economy. Thus, if economic census data is used, reconciliation with labour force data has to be done carefully considering the aspects of coverage in these two sources, while preparing labour input matrix.

Most countries have regular economic/enterprise/establishment surveys that generally adopt the criteria of legal status and size to determine the coverage of the survey. These surveys will include the data items of employment in the unit (possibly also the employment status), economic activity and legal status. The employment in these units can be classified in the formal sector if the coverage of units in these surveys is limited to the legal status of registered units. This source together with the employment data from labour force survey, can provide information on total employment (without break up of formal/informal

employment) in both (i) household sector (with size of units as defined in the survey design) and (ii) corporations.

While using several sources for constructing labour input matrix, it must be remembered that usually, the number of employees obtained from the labour force survey is systematically higher than the number of employees derived from sources on the demand side, especially establishment or enterprise censuses/surveys. The statistics therefore need to be checked to see whether the number of employees in the formal sector has been underestimated by the establishment/enterprise census/surveys, for example by looking at its coverage and, where possible, by a simple comparison with other sources (social security registrations, employment associated with payroll tax, etc.). Note, however, that social security registers may systematically overestimate the number of currently active employers and employees because the de-registration procedures are not a reliable source for statistics on employment at a particular date or during a particular period. The exercise thus consists of determining which employees and employers should be considered as formal, by comparing the categories of employees and employers in the labour force survey with those among them who are registered, as determined through establishment/enterprise based information.

If the distribution by economic activity, status in employment and sex is available on the labour supply side, assumptions can be made on the labour demand side to obtain the corresponding estimates. The objective is to design as detailed a table of industries as possible by formal/informal employment and informal/formal sectors as in SNA.

(III) Estimating informal employment

For estimating informal employment in different institutional sectors, certain assumption as shown below may have to be made.

- Employment in the formal sector coincides with formal employment if it can be assumed that formal enterprises employ only paid employees with social protection;
- No worker in the informal sector has social protection and that all employees in households producing exclusively for own final use do not have social protection.

Informal employment outside the informal sector may be estimated from the figures for total employment (obtained from labour force surveys) by subtracting employment in the formal sector (obtained from establishment/enterprise censuses) and employment in the informal sector (obtained from mixed surveys or informal sector surveys). The result may then be used as an estimate of informal employment in the formal sector, with the usual weaknesses attached to such ‘residual’ estimates.

Summing up on using different sources for constructing a labour input matrix that have been described above, we still see some elements of labour input matrix missing or based on assumptions, especially, with regard to the informal employment in different institutional sectors and identification of informal sector units within the household sector. These missing components can be filled up by including suitable data items on conditions of employment, registration and size of units where the persons are working, in the surveys, especially in the labour forces surveys or in the 1-2 mixed household-establishment surveys.

The preferred reference year for constructing a labour input matrix is the year for which both the results of a labour force survey and an establishment/enterprise census or surveys, if any,

are available. However, it is rare for both sources to be available for the same reference year, and it then becomes necessary to make some assumptions and adjustments. The choice of the reference year is therefore dependent on national circumstances.

Table below presents the sources used for establishing the labour input matrix. This should ideally be prepared as precisely as the sources permit from the most detailed classification of economic activities and of employment status and in full-time equivalent jobs.

Table 2.7: Sources used for building a labour input matrix

Sources	Items by economic activity
Population census (A) or Labour force survey (B) or Other household survey (C)	Total employment by economic activity and by employment status (self-employed/paid employees), in full-time equivalent (1) Employment in unincorporated enterprises engaged exclusively in production for own final use by economic activity, in full-time equivalent (6)
Establishment/enterprise Census or Economic census	Total employment (self-employed and paid employees) in unincorporated enterprises with fewer than a given number of employees (say, fewer than five employees) (2) Total employment in incorporated enterprises and in unincorporated enterprises with more than the specified number of employees (say, five and more employees) (3)
Mixed household/ establishment survey (D)	Total employment by kind of economic activity (industry) and by employment status (1) Informal employment in formal sector (household survey) (4) Employment in informal sector (enterprise survey) (5)
Informal employment	(1) – (3)
Informal employment by component	(1) - (3) or (4) + (5) + (6) Informal employment = informal employment in the formal sector + employment in informal sector enterprises + employment in unincorporated enterprises engaged exclusively in production for own final use

Source: Table 8.4 of ILO Manual.

Box 2.9: Steps to prepare the labour input matrix

A. Labour supply side

a) Identify most recent data sources for statistics on labour force and employment (labour supply side) in the country (population censuses, labour force surveys).
b) Obtain the results of the most recent source for economic activities, especially detailed tables, through publications or edited (but possibly unpublished) tables or by processing the micro-data.
c) Identify the basic table cross-classifying economic activities (preferably) or occupation by status in employment, by sex and by urban/rural area.
d) Identify the corresponding table in other sources for an earlier date.

B. Labour demand side

a) Identify data sources for statistics on employment in establishments (labour demand side) in the country (enterprise/establishment censuses or surveys, administrative sources such as social security register, employment associated with payroll tax, etc.).
b) Select sources for the years for which labour supply sources are available, or at least a year close to them.
c) Assess the coverage of the sources identified and complete with activities missing in the source – for instance, civil service employment (including military, defence and police forces), public sector enterprises, etc.
d) Prepare a table of employment for each of these sources by legal status and size of enterprise. Use the size cut-off used by the country to distinguish the informal enterprises (say, fewer than five employees).

C. Reconciliation process

a) If the units of employment on the demand and supply sides of labour are different, convert the enterprise-based (demand side) and household-based (supply side) estimates of labour input to the same units of labour input, such as hours worked or full time equivalent employment units.
b) Compare the number of paid employees from the labour supply source and from the labour demand source; determine the extent to which the difference can be interpreted as the number of paid employees working in informal employment (and/or the number of paid employees not declared by their employers) and any adjustments that are needed for this to be reasonable.
c) In the last steps a disaggregation by sex can be done. If data by sex are not available in the labour demand sources, which is frequently the case, one may apply the sex-ratio for paid employees in the labour supply source or those available for an identified segment of the formal sector.
d) Informal employment comprises: (a) self-employed – specifically, own-account and family workers – and (b) paid employees with informal employment obtained as a residual. These results should be presented by economic activity (in as much detail as possible but, usually, for manufacturing, construction, trade and services), by status and by sex. If there is access to results by detailed occupation, the identification of professionals will be of statistical interest.
e) Use the results of the national informal sector survey, if any, to reduce the size and heterogeneity of the residual (paid employees in the labour force survey minus paid employees in the labour demand survey minus paid employees in the informal sector).

Source: Box 8.1 of ILO Manual.

Summing up on the preparation of labour input matrix using different available sources on employment, it is essential that the matrix includes all the components of formal and informal jobs, by activity and by institutional sectors with further disaggregation within household sector by formal and informal units. Such detailed data are generally available in the labour

force or other demographic surveys, provided these surveys include all the relevant questions. Alternatively, employment by activity in the formal sector available from regular enterprise/establishment surveys or administrative sources could be subtracted from the overall estimates of jobs obtained from the labour force surveys, to derive the data on informal jobs/jobs in informal or household sector, in various institutional sectors and informal sector units, as a residual. It is important to go through the reconciliation process when more number of sources are used, to prepare the labour input matrix.

In some African developing countries, the information collected through the labour force surveys on sectors where the person is employed may not correspond to the SNA sectors. There may, however, be questions in the LFS that can provide information on employment in informal sector. In such cases, it is only possible to compile a labour input matrix just for the broad sectors of government and private and within private, separately for informal sector. The labour input matrix compiled from the LFS in this case will have the broad sectors of (a) general government, (b) private excluding informal sector and (c) informal sector. For the employment data in corporations, alternative sources such as the enterprise surveys need to be looked into as business accounts of corporations generally do not contain information on employment. However, the enterprise surveys conducted in these countries may use size of units as a criterion for selection of samples and the resultant estimates obtained from the enterprise survey may not give the estimates of employment in the corporations. In such cases, when the data from LFS and enterprise survey are used to compile the labour input matrix, it will have only the sectors of (i) general government, (ii) private sector covered under enterprise survey, (iii) informal sector, and (iv) private sector excluding informal sector and not covered in the enterprise survey. This break-up of employment data is also useful for achieving GDP exhaustiveness in compiling industry-wise estimates for (i) from government accounts, (ii) from enterprise survey results, and (iii) and (iv) by applying productivity coefficients.

Productivity coefficients

Labour input matrices are a valuable tool for measuring the informal sector and informal employment and their inclusion in national accounts. The disaggregation of total employment according to the most detailed classification of economic activities and institutional sectors (including informal sector), can provide a basis for estimating the value added of informal sector (by imputing productivity coefficients for each labour input, in different economic activities); accounting for missing employment in the formal sector surveys and informal employment in formal sector in the GDP estimates; and in improving the GDP exhaustiveness by ensuring that production is accounted for each labour input in the economy in different economic activities and institutional sectors.

The two components of the indirect labour input method to estimate value added of informal sector are (i) labour input in informal sector by economic activity; and (ii) output/value added per unit of labour (labour productivity coefficient) in the same set of economic activities as in the estimates of labour input. Data on (i) is obtained from the labour input matrices that have been described earlier in this chapter. Data on (ii) can be estimated from sources such as the second phase of mixed 1-2 household-establishment surveys; or dedicated informal sector establishment surveys; or research/case studies covering few informal sector units in each economic activity to obtain productivity coefficients; or through assumptions based on corresponding productivity coefficients in the formal sector; or expert judgements.

The ideal source for data on labour productivity coefficients is the informal sector establishment survey or the 1-2 mixed household-establishment survey covering all economic activities in the informal sector or the regular establishment survey that also covers informal sector. If the country has any of these sources, then the labour productivity coefficients can be derived directly as the ratio of output or value added to the total employment[48] of all informal sector units, in each of the economic activities.

However, if the country has not conducted any informal sector survey and only has enterprise/establishment surveys that cover formal units, then labour productivity coefficients of informal sector units (by economic activity) can be assumed to be equivalent to the labour productivity coefficient of lowest employed formal units or a percentage of that. Another alternative could be to impute the labour productivity coefficient of informal sector employee to that of per household consumption expenditure (assuming that the informal sector employee's earnings are at least meeting the household expenditures). However, the choices for estimating labour productivity coefficients could vary among the countries, depending on the data sources, working conditions and characteristics of informal sector.

(c) Estimating national accounts aggregates for informal sector

Gross value added

Direct method: Statistics obtained from mixed surveys or establishment surveys that cover the informal sector can be used for compiling the estimates of value added for the informal sector for each of the economic activities. To serve this purpose, these surveys must collect data that are consistent with the conceptual framework of the SNA. Value added at basic prices is estimated as the difference between output at basic prices and intermediate consumption at purchasers' prices. Output is generally measured by the value of sales or output, adjusted for changes in inventories of finished and semi-finished products. If information on the intermediate consumption of various products and services, the wage bill and various items of expenditure is not collected, then it is necessary to make suitable assumptions to estimate these items. Surveys that collect only information about the income of entrepreneurs in the informal sector are less useful, since national accountants generally prefer to make assumptions in order to derive the value added and mixed income from production, rather than the reverse.

Indirect method: A more practical approach to estimate value added of informal sector in different economic activities is through indirect methods, since the direct method described above has inherent weaknesses of under-coverage due to omission of many tiny, invisible, mobile and home based units in the establishment surveys. The value added of the informal sector of a particular activity can be estimated as the product of value added per worker (labour productivity ratios, their suggested methods of estimation have been described above) and the labour input in that activity (available from labour input matrix) in the same year. Since, data on primary activities of agriculture and mining are generally available from administrative sources in countries, the labour input method is adopted mainly for estimating the value added of informal sector in manufacturing and services activities.

[48] If the labour input matrices are adjusted to full time equivalents, the same principles should be applied for employment recorded in establishment surveys while estimating productivity coefficients as output or value added per unit of employment.

Production account

The production account is designed to present value added as one of the main balancing items in the SNA. Consequently, it does not cover all transactions linked with the production process but only the result of production (output) and the use of goods and services (intermediate consumption) in generating this output. Intermediate consumption does not cover the depreciation of fixed capital[49], which is recorded as a separate transaction (consumption of fixed capital) reflecting the difference between gross and net value added.

The production account in the SNA shows the values of the output of production and of the various inputs required to produce it. The production account for informal sector units contains only three items: the output from production is recorded under resources on the right-hand side of the account; intermediate consumption is recorded on the left-hand side; the balancing item in the production account is value added, which can be measured either gross or net, i.e., before or after deducting consumption of fixed capital.

For the informal sector units, output can be estimated using the same sources as described above for estimating value added. Intermediate consumption can be estimated either through the direct surveys or by applying on the output, the benchmark intermediate consumption to output ratios that are estimated from economic census or surveys or studies.

The generation of income accounts

Primary incomes accruing to government units and to the units participating in the process of production are presented in the 'generation of income account'. The resources, listed on the right-hand side of the generation of income accounts consist of just a single item, value added, the balancing item being carried forward from the production account. As stated earlier, value added may be measured before the deduction of consumption of fixed capital (gross) or after (net).

The left-hand side of the generation of income account records the uses of value added. There are only two main financial charges that producers have to meet out of value added: compensation of employees to the workers employed in the production process, and any taxes less subsidies on production. Compensation of employees is defined as the total remuneration, in cash and/or in kind, payable by an enterprise to an employee in return for work done by the latter for the production of goods and services during the accounting period. Taxes less subsidies on production consist of taxes payable or subsidies receivable in respect of goods or services produced as outputs and other taxes or subsidies on production, such as those payable or receivable in respect of the labour, machinery, buildings or other assets used in the process. Other taxes on production do not include any income tax payable by the recipients of incomes accruing from production, whether as employers or as employees.

To compile the generation of income accounts for informal sector enterprises, mixed surveys and establishment surveys that cover the informal sector should collect data on the compensation of employees paid by informal sector enterprises and also on the production taxes[50] payable by the informal sector production units.

[49] It is payable out of gross value added

[50] Production taxes include product taxes and other taxes on production, both payable on production. While product taxes are deducted from sales while estimating output from the data on sales; other production taxes are payable out of value added.

Treatment of informal employment in formal sector in national accounts

One major issue in measuring the value added of informal sector is the recording of informal employment and payments made to informal employment in the books of accounts of formal enterprises. This issue is similar to the issues related to treatment of outworkers in the informal sector that was discussed in the earlier sections of this chapter.

Formal enterprises show in their books of accounts only the formal employment, though they may have paid jobs not covered by labour legislations, which fall under the category of informal employment in formal enterprises and are of the nature of '*service providers*' for such enterprises. These are essentially of the type of contract workers or outsourced workers. Data on such informal employment in the formal sector, therefore, may not be available in the formal enterprises' accounts, but may be available from the labour force survey or from the first phase of 1-2 surveys. These surveys may provide statistics on informal employment in the formal sector. Therefore, while using different sources for constructing labour input matrices, it is important to include formal and informal employment categories within each of the institutional sectors, further disaggregated by branches/industries, so that estimates of informal 'service providers' in the formal sector are separately shown and they can be accounted for appropriately in the national accounts according to the concepts of SNA.

The second issue that arises on account of informal employment in formal sectors is the way payments are made by formal enterprises for the services provided by informal employees, which impacts the estimates of value added of formal sector as well as that of total economy. The books of accounts of formal enterprises show *compensation of employees* being paid to formal employment and *purchase of services* payments made to informal employment for their services, which is an expense item for the enterprises and is part of *intermediate consumption*, although both formal and informal employees are in employment in formal enterprises. Due to this accounting practice of treating payments made to informal employment by the formal enterprises, the values of intermediate consumption of formal enterprises get over stated, resulting in lower value added of formal enterprises and further resulting in inconsistency between labour input and output. Also, since there is no corresponding output (equivalent to this value of intermediate consumption expenses paid to informal employees) estimated for the informal employment (if these informal employees are treated as service providers), there is inconsistency between the supplies and uses of services. This problem is similar to that of *outworkers*, whether to treat them as employees or as informal sector entrepreneurs that was discussed earlier in this chapter.

There are two ways to deal with this problem of inconsistency that arises due to the treatment of informal employment by formal sector enterprises. One approach is to treat them as employees and thus, estimate[51] the payments made for purchase of services towards informal employment in the formal sector and shift this estimated amount from *intermediate consumption* to *compensation of employees* of formal enterprises, resulting in higher and correct estimates of value added of formal sector. This treatment will ensure consistency between labour input and production of formal enterprises and provide correct estimates of labour productivity coefficients for the formal sector.

[51]Since, formal sector units' accounts show the payments made to informal employees and subcontractors together under the category of purchase of services, it is not possible to separate out the actual payments made to informal employees. Therefore, this component can only be estimated.

The second approach assumes that informal employees in formal enterprises are essentially own account workers providing services (the same way as formal enterprises treat them in their books of accounts) and belong to the household sector enterprises. Accordingly, the informal employment in formal enterprises is shifted to appropriate economic activities (e.g. administrative support services or professional and technical services, etc.) in the informal sector and their output is estimated as equivalent to the value of purchase of their services shown in the formal sector units' accounts. If it is not possible to obtain this data, then estimates of wages per worker of corresponding formal/informal sector enterprises (depending on the country practices of payments of wages towards informal employment in the formal sector) may be used to estimate the output of informal workers as service providers in the formal sector and show these values under informal sector in the appropriate economic activity.

Choice of adopting either of the above two approaches depends on the country practices. Mostly, the tax liabilities of formal employees are incurred (or deducted from salaries and deposited with government) by the enterprises, but those of informal employees are incurred by themselves. This is one of the reasons for some formal sector units opting for informal employment in the form of service providers.

The above two alternatives are illustrated by considering the following example of a formal sector enterprise account:

Table 2.8: Value added of a formal sector enterprise that has informal employment

Item	Values
1. Total output	100
2. Intermediate consumption towards services provided by informal employment	20
3. Intermediate consumption in respect of sub-contracting of work	10
4. Other intermediate consumption expenditures	15
5. Total intermediate consumption (2+3+4)	45
6. Value added (1-5)	55
7. Compensation of employees paid to formal employment	30
8. Gross operating surplus (6-7)	25

Issue in this case:

- Since payments made to informal employment are treated as intermediate consumption, the value added is estimated to be lower. Also, since there is no corresponding output measured against this intermediate consumption as the labour input matrix shows the informal employment as employees in the formal sector enterprise, the GDP of total economy is also under-estimated.
- This problem of under estimation in value added can be overcome if either of the following two options are exercised. In both these cases, value added remains same, though there is an increase in the value of output in the second case.
    - Treating the payments made to informal employment as compensation of employees instead of intermediate consumption (Scenario 1); or
    - Treating the informal employment as service providers belonging to informal sector and correspondingly estimating their output (Scenario 2), equivalent to the payments received by them from the formal sector.

Table 2.9: Scenario 1: Value added of a formal sector enterprise that has informal employment (showing payments to informal employment as compensation of employees)

Item	Values
1. Total output	100
2. Compensation of employees paid to informal employment	20
3. Intermediate consumption in respect of sub-contracting of work	10
4. Other intermediate consumption expenditures	15
5. Total intermediate consumption (3+4)	25
6. Value added (1-5)	75
7. Compensation of employees paid to formal employment	30
8. Total compensation of employees (2+7)	50
9. Gross operating surplus (6-8)	25

Note that output and gross operating surplus remain same in Table 1 and Table 2, but the values of intermediate consumption, value added and compensation of employees change, thus presenting a realistic estimate of value added.

Table 2.10: Scenario 2: Value added of formal sector and informal sector

(treating the informal employees in formal sector as service providers belonging to informal sector)

Item	Formal sector enterprise	Informal sector Enterprises*	Total economy
	Values	Values	Values
1. Total output	100	20	120
2. Intermediate consumption towards services provided by informal employment	20		20
3. Intermediate consumption in respect of sub-contracting of work	10		10
4. Other intermediate consumption expenditures	15		15
5. Total intermediate consumption (2+3+4)	45		45
6. Value added (1-5)	55	20	75
7. Compensation of employees paid to formal employment/mixed income	30	20	50
8. Gross operating surplus (6-7)	25		25

* providing services to formal sector (treated as informal employment in formal sector)

- Compared to Tables 2.8 and 2.9, output of the economy increases by the same amount as purchase of services from informal employees by the formal sector in Table 2.10;
- Compared to Table 2.8, output, value added and mixed income increase, but there is no change in the intermediate consumption or the gross operating surplus in Table 2.10;
- Compared to Table 2.9, output and intermediate consumption increase, but value added and gross operating surplus remain same in Table 2.10.

Table 2.11: Comparison of estimates obtained by treating informal employment in formal enterprises differently

Item	Current accounting practice	Alternative approaches	
		Scenario 1	Scenario 2
1. Total output	100	100	120
2. Intermediate consumption	45	25	45
3. Value added (1-5)	55	75	75
4. Compensation of employees /mixed income	30	50	50
5. Gross operating surplus (6-7)	25	25	25

Summing up from the above discussions, it is clear that a combination of direct and indirect approaches is more practical and provides a firmer basis for accounting the informal economy in the national accounts. The estimates of labour input by constructing a labour input matrix and value added per job from either household enterprise surveys or other ad hoc sources can be combined to produce estimates of value added in informal sector and informal employment in the economy. The labour input method can also be used to account for non-response, underground, illegal, defective sampling frames and under-reporting by establishments/enterprises even in the formal sector.

Generally, the GVA estimates of informal sector are prepared for a benchmark year using the labour input methods or benchmark surveys; and for other years, the benchmark GVA estimates are extrapolated with appropriate proxy indicators relevant to the economic activity (these vary from activity to activity and could be formal sector growth rates, growth in production indices, consumption expenditure or employment, price index, etc.).

2.5. Concluding remarks

Informal economy comprises informal sector enterprises and informal employment in the economy. This chapter presents the concepts and operational definitions of informal sector and informal employment from the 15th ICLS Resolution and 17th ICLS Guidelines. The chapter also discusses in brief the various surveys used for measuring employment and production in informal sector and informal employment in the countries that are described in the ILO Manual *Measuring Informality: a Statistical Manual on the informal sector and informal employment*.

The practical approach to measuring informal sector in national accounts is through the labour input method, which requires countries to prepare a labour input matrix showing formal and informal jobs, by activity and by institutional sectors (household sector further divided into formal and informal units), from the labour force or demographic surveys or population censuses or establishment surveys and administrative records.

Once the labour input matrix has been prepared and employment in informal sector estimated, the labour productivity coefficients by economic activities can be estimated either from the data collected through the informal sector establishment surveys or the second phase of 1-2 surveys or other sources (such as lowest employing formal sector unit), small case studies, minimum wage rates, and expert judgements.

Accounting for informal sector in GDP estimates through the labour input method takes care of some of the other NOE activities like the illegal and underground production, as persons engaged in these activities may report as employed in labour force surveys. Labour input methods can also provide a basis for accounting for missing units in the formal sector surveys, especially for the non-response and statistical underground.

Conducting annual surveys on a regular basis for measuring informal sector or for constructing labour input matrices, is both resource intensive and time consuming. The benchmark labour input matrices and the per unit value added estimates can be re-used for later periods after making appropriate adjustments to estimate informal sector in subsequent years until new surveys have been conducted.

Generally, the value added estimates of informal sector are prepared for a benchmark year using the labour input methods or benchmark surveys; and for other years, the benchmark value added estimates can be extrapolated with appropriate proxy indicators relevant to the economic activity (these may vary from activity to activity and could be formal sector growth rates, growth in consumption expenditure or employment, etc.). Again, the choice of indicators for extrapolating benchmark estimates of informal sector based on labour input methods, vary among the countries and activities. Validation of these indicators in terms of their appropriateness can be assessed when the next set of benchmark estimates are prepared, by looking at how far the extrapolated estimates deviated from the new benchmark estimates.

Chapter 3. Non Observed Economy in GDP Estimates

This chapter presents the non-observed economy in national accounts as defined in the System of National Accounts, 2008 and the Handbook on Non-Observed Economy of OECD/IMF/ILO/CIS Stat. The chapter also discusses the methods suggested in the Handbook to account for the NOE problem areas to ensure exhaustiveness in the measurement of national accounts aggregates.

Contents:

3.1. Introduction

A major part of the GDP non-exhaustiveness is on account of groups of production activities that are likely to be non-observed or what is known as non-observed economy (NOE)[52] in the GDP estimation. Non-observed economy refers to those economic activities which should be included in the GDP but which, for one reason or another, are not covered in the statistical surveys or administrative records from which the national accounts are compiled. The non-observed (or perceived to be non-measured) part of the economy is also understood in general by users as illegal, shadow or hidden or grey or informal economy that is omitted from the official data systems, but these terms from the national accounts perspective usually represent that part of the economy which is likely to be missed in the GDP estimates[53] on account of lack of coverage in regular statistical surveys or administrative data.

The non-observed areas (termed as *NOE problem areas)* are the production activities that are missing from the basic data used to compile the national accounts because they are *underground, illegal, informal, household production for own final use*, or *due to deficiencies in the basic data collection*. The non-observed economy encompasses all these five broad types of NOE problem areas.

Among the developing countries, NOE accounts for a large share in GDP, although it may not be properly quantified in the GDP estimates. Further, non-observed does not mean non-measured. In practice, most countries include some components of NOE in their GDP estimates (for example, services of owner occupied dwellings), but may not be exhaustively (especially the informal sector). Any omission (partly or totally) of NOE in GDP estimates leads to under-estimation of GDP, which is a crucial indicator for monitoring the economy and used extensively in benchmarking other economic datasets. This further leads to non-comparability of macro-economic parameters with those of other countries. Therefore, it is extremely important to ensure that NOE contribution to the economy is appropriately reflected in the GDP estimates. A way forward to improving GDP exhaustiveness is by addressing the *NOE problem areas* and ensuring that they are appropriately measured and included in the GDP estimates.

[52]Term used in the *OECD/IMF/ILO/CIS Stat (2002) Handbook on Measuring the Non-Observed Economy*, for the non-observed part of economy in measuring GDP.
[53] All these activities are included in the production boundary of SNA.

It is possible to measure NOE through direct or indirect or a combination of direct and indirect methods. Estimating NOE through direct surveys (such as those on informal sector units) or special surveys/studies is possible, but it is often found that such surveys are difficult to conduct due to the very nature or characteristics of the NOE. Direct surveys often provide incomplete or inconsistent results. A combination of direct and indirect methods (such as labour input method) has been proved to be more useful in measuring the NOE.

The handbook, "*Measuring the Non-Observed Economy"* (referred to as NOE Handbook in this chapter) is an important document that provides guidance on measuring the non-observed economy and achieving GDP exhaustiveness. The text for this chapter has mainly been drawn from the Handbook.

This chapter is structured under three sections. Section 2 presents the NOE problem areas, and their characteristics. This section also provides a summary of approaches suggested in the NOE Handbook to account for the NOE problem areas in national accounts. Concluding remarks are given in Section 3.

3.2. Non-Observed Economy Problem Areas

The NOE, which arises due to the deficiencies in the source data used in national accounts compilation, has been categorised under the following five *problem areas*:

- Economic Underground

    (1) Underground Production
    (2) Illegal Production
    (3) Informal Production

- (4) Household Production for own final use
- (5) Statistical Underground

The five categories are not necessarily be mutually exclusive and may overlap with each other. For example, part of the underground production can be illegal and informal production may also include underground or illegal production. Therefore, from the national accounts perspective, the primary aim should be to ensure exhaustiveness of national accounts aggregates in totality rather than to estimate each component of NOE separately. However, for policy or analytical purposes, sometimes information may be needed on each of the NOE problem areas. For example, governments would like to control illegal or underground production, but might like to introduce measures to encourage informal sector production or monitor the informal economy for taxation purposes. Separate estimates for each component of NOE may, therefore, facilitate informed decision making on specific areas.

The NOE activities primarily concern the production approach GDP. This implies that the GDP estimates include all productive activities (either measured or imputed) and comply with the production boundary[54] concepts of 2008 SNA.

[54] Please see Chapter 1 for the activities covered under production boundary in national accounts.

In order to assess the coverage of NOE activities in national accounts among the member countries, the Eurostat developed a *Tabular Approach to Exhaustiveness* (please see Chapter 4). This approach categorises the NOE under 7 types of non-exhaustiveness termed as N1-N7. OECD (2014) provides a broad mapping (admittedly with some margin of error and assumptions) between the NOE problem areas and the N1-N7 categories of the Tabular Approach. The OECD document states, "*N2 in itself can be regarded as illegal production, N1 and N6 (and for certain policy perspectives parts of N7 – tips, wages in kind) as underground production, whereas the informal sector and own account production is comprised of N3, N4 and N5. Finally, other NOE elements in the statistical system are accounted for in N7*".

The NOE problem areas along with the suggested methods to account for them in national accounts are presented below:

(1) Underground production (N1+N6 in the Tabular approach)

The 2008 SNA (para 6.40) defines the underground economy as legal production activities that fall within the production boundary of the SNA but deliberately concealed from public authorities for the following kinds of reasons:

a) to avoid the payment of income, value added or other taxes;
b) to avoid the payment of social security contributions;
c) to avoid having to meet certain legal standards such as minimum wages, maximum hours, safety or health standards, etc.; and
d) to avoid complying with certain administrative procedures, such as completing statistical questionnaires or other administrative forms.

Most countries in practice include estimates (though not exhaustively) for the activities carried out by the producers defined in underground production, either through direct or indirect methods. For example, in the case of agriculture, production is estimated as area under crops multiplied by yield rates and further multiplied by farm-gate prices to arrive at value of output of crops. In this method, data source agencies also ensure that total sown area (gross area that includes multiple crops sown in the same land in the particular reporting period, such as a season or a year) is accounted for in the crop production statistics. This statistical practice ensures that production in agricultural activities (including illegal or underground production) that is carried out in the total gross sown area is estimated (with margins of errors in area and yield estimates), without separately identifying which part of the output is from the formal or informal economy or underground or illegal. Similarly, some countries estimate total output of construction in the economy on the basis of materials available for construction and primary inputs used, through the commodity flow methods. In such cases when global estimates for the whole economy are compiled initially, output for the non-observed part (if such an estimate is needed separately) can be estimated as difference between the total output and the output of the observed part[55] of the activity. However, global methods for agriculture, though provide exhaustive information for crop production, can still miss out the secondary activities of farmers.

The NOE Handbook suggests three types of surveys/studies to estimate *underground production*:

[55] Such as output government and corporations

- *Special surveys of underground production, labour, expenditure, income, etc.*

    - Surveys of expenditures on goods and services: These surveys seek information on expenditures on goods and services made by the purchasers as to whether receipt for the purchase was given by the seller; whether the purchases have an underground character; whether the purchases were from those types most likely to be operating underground (street-traders, plumbers, gardeners, electricians, farm shops, etc.**)**;

    - Surveys of labour input and income associated with underground production: These surveys focus on collecting information on labour input to underground production. The survey is carried out on employed persons to assess the labour input engaged in underground production and the corresponding income earned.

    - Surveys of time use: Time use surveys can provide information for allocating the productive time working as an employee in an enterprise, and time spent as own account worker. It should also be possible to identify the kind of work carried out on own account in order to impute the amount of income likely to have been earned.

- *Business and household opinion surveys*

    - The opinion surveys can be addressed directly to senior managers who are likely to be well informed about underground activities in their own sector of activity. These surveys are only indicative and do not provide quantitative information that can be used to make adjustments to GDP, but nevertheless give an indication on the extent of underground production in a particular activity.

- *Audit data and special studies carried out by the taxation authorities*

    - Tax audits may provide information, but they may not provide an estimate of the extent of underground production. This is because, tax audits are carried out infrequently, establishments are subjectively chosen and generally restricted to few industry classes, where tax evasion is believed to be the largest.

An evaluation of these surveys from their characteristics and types indicates that they are of limited use in developing countries in estimating the underground production. A more useful approach is to consider the underground production as falling into the following two possible categories and make corresponding adjustments in the national accounts:

a) *activities that are underground because the enterprises conducting them are not registered*

    - These are usually small enterprises in size (in terms of employment and/or income), but large in numbers (in terms of number of units) in developing countries. Such units can be covered through a household or mixed

household-enterprise survey approach and adjustments to GDP estimates can be made through direct or indirect methods (labour input method for example), as discussed in Chapter 2 on informal sector.

The first option is to obtain an estimate of the total labour input in the industry group (let us represent this as A) through the regular household labour force. From this total (i.e. A), the labour input reported by enterprises in response to an enterprise-based employment survey (let us represent this as B) is deducted to arrive at an estimate of the labour associated with unregistered enterprises (derived as A-B). Here, it is presumed that the enterprise-based survey gives full coverage of all registered enterprises, and that the labour force survey gives full coverage of total labour input. This approach leads to compilation of labour input matrices (employment by type, in a cross-classification of sectors and activities). By applying labour productivity ratios (which can be derived from different sources as described in Chapter 2), output and value added can be estimated for these units and corresponding adjustments can be made to GDP estimates.

The second alternative in such cases is to conduct a mixed household-enterprise survey, in which the first step is to locate a sample of unregistered enterprises (through a household survey such as a labour force survey) and the second step is to sample them (please see Chapter 2 for a detailed discussion). This approach gives direct estimates of production and income for these units, to facilitate adjustment to be made to the GDP estimates.

Among the above two alternatives, the choice for a country depends upon country practices of data collection (whether they have a survey that covers all registered units) and availability of resources (to conduct 1-2 surveys). From the above two alternatives, a combination of direct data sources, such as the labour force survey (to prepare a labour input matrix) and mixed household-enterprise survey (to prepare labour productivity ratios, such as value added or output per worker) and the adoption of labour input methods (which use labour input matrix and productivity ratios), seem to provide the best results for estimating underground production. Sometimes, labour input matrices can be compiled directly from the labour force surveys, provided the questions on employment include the characteristics of the unit where the person is employed, such as sector, industry, type of registration and size of unit.

b) *activities that are underground because the enterprises conducting them (although registered) under-report*

- It seems fairly likely that enterprises answer survey questionnaires using the same set of accounts as they prepare for tax purposes. Thus, underreporting of production and/or receipts to the taxation authorities in order to avoid taxes is likely to be reflected in the survey data submitted to the statistical office. Some overall idea of the magnitude of underreporting in specific industries may be obtained through commodity balances or by applying technical coefficients or by applying structural ratios. For example, crop production may be estimated from seed consumption or milk yield from estimates of forage consumed or output of some manufactured products from electricity

consumed. The underground component of output can be estimated as residual from the total output estimated on the basis of inputs or commodity balances and reported output in the surveys.

This is one area, which is difficult to estimate. When registered units under-report their production or over-state expenses, it is difficult for national accountants to make adjustments. One option is to carefully scrutiny the data reported at the establishment level in the background of established structural ratios, such as input-output ratios or electricity consumption to output ratios, etc. This requires considerable effort and resources. The generally available option is to rely on tax audits, which of course cannot be comprehensive or representative. Tax audits are carried out selectively and usually confined to few activities. Another option is to make adjustments on the supply side while confronting the supply side data with use side information in the supply-use framework (for example, estimates of production of firewood, non-timber forest products, production of goods for own final use can be estimated using the information on expenditures made by households for consumption purpose, available in the household budget survey).

(2) Illegal production (N2 in the Tabular approach)

The *illegal production* is defined as "all illegal actions that fit the characteristics of transactions – notably that there is mutual consent – are treated in the same way as legal actions". The 2008 SNA (para 6.43) states that there are two kinds of illegal production:

a. The production of goods or services whose sale, distribution or possession is forbidden by law (for example, manufacture and distribution of narcotics, illegal transportation in the form of smuggling of goods and of people, and services such as prostitution);

b. Production activities that are usually legal but become illegal when carried out by unauthorized producers; for example, unlicensed medical practitioners.

Both kinds of illegal production are included within the production boundary of the SNA provided they are genuine production processes whose outputs consist of goods or services for which there is an effective market demand.

Based on Blades (1983), the NOE Handbook identifies the following general types of illegal production:

- production and distribution of illegal goods, such as banned drugs or pornographic material;
- production of illegal services, such as prostitution (in countries where this is illegal);
- production activities which are usually legal but which become illegal when carried out by unauthorised producers, such as unlicensed medical practices, unlicensed gambling activities, unlicensed production of alcohol;
- poaching, e.g. illegal fishing, hunting, tree cutting;

- production and sale of counterfeited products, such as watches and other products with false trade-marks and unauthorised copies of artistic originals, e.g. software, CDs and videos;
- smuggling, in particular of tobacco, weapons, alcohol, food, people, both wholesale and retail;
- fencing (resale) of stolen goods;
- bribery; and
- money laundering.

It is difficult to collect data on illegal activities through direct surveys, because the units engaged in these activities are difficult to trace and even if traced, they may not respond to official surveys. The NOE Handbook suggests that the most useful approach for estimating production from illegal activities and including them in GDP estimates is to use the basic national accounting identity "*supplies of goods and services equals use of goods and services"*. This means if data is collected on one or more of the three angles of incidence, namely supply, use and income generation, it should be possible to estimate the production of illegal activities by applying the identity.

The possible methods of estimating production for two specific illegal activities that have been described in the Handbook are presented below. Few country practices of estimating illegal production are included in Chapter 4.

Drugs

On the production side, output or quantities of drugs production can be estimated from the special studies carried out by universities and research institutes or based on police data on seizures and estimates of the relevant seizure rates. On the consumption side, estimates of the number of addicts and average quantities used seem to provide the most reliable data. With regard to exports of drugs, this can be estimated as a residual item, i.e., as domestic output plus imports minus consumption minus seizures. Alternatively, production can be estimated if it has been possible to estimate consumption, exports and imports of drugs. For valuing the quantities, reasonably good data on street prices are usually available from police sources or research studies. To arrive at an estimate of value added, assumptions have to be made on the value of intermediate consumption, such as using the input-output ratio of legal activities that are most similar to the illegal activities.

Prostitution

Information on domestic output of prostitution services can be collected from health care organisations, police or prostitutes' associations. Furthermore, as prostitution is a popular theme for special studies by universities and research institutes, valuable information may be available from such sources. Reasonable estimates of the number of prostitutes are usually available from these sources. Multiplication of the number by estimates of the average number of clients and the average price may provide a good first approximation of total domestic supply of prostitution services. Here, a breakdown into different kinds of prostitutes (call girls, prostitutes in nightclubs, "window" prostitutes, prostitutes in massage parlours, escort services, heroin prostitutes, etc.) may be needed, as the prices between these categories differ substantially. The resulting estimate of prostitution services concerns the total of these services, i.e., including procurement, rents of rooms, etc. A breakdown may be possible on

the basis of information on the average percentage a prostitute has to pay to the procurer, the average rent, etc.

It may be difficult to obtain estimates of other components of supply and use of prostitution services, and they may be estimated using the supply and use identity (for example, output on the supply side may be shown under household consumption on the use side).

Problems of double counting

The methods suggested above provide explicit estimates for two illegal activities. Before including these estimates in the national accounts, it needs to be ensured that there is no double counting, as part of the output of illegal activities might already have been included implicitly in the national accounts. Firstly, it is possible that part of the output of illegal activities is declared to the tax authorities or covered under statistical surveys under the guise of a legal activity, so that part of the earnings become legitimate. For example, prostitution services may be shown under activities of massage salons, renting of rooms, cafés, film studios, etc. Secondly, persons engaged in illegal activities may report as employed in the labour force surveys under legal activities. For example, persons engaged in drugs may report as employed in a trading activity. By the residual methods that are generally adopted to estimate total labour input in informal sector, employees in illegal activities get included in the informal sector employment and consequently in the production estimates when labour input methods are adopted. Thirdly, on the expenditure side, payments for 'bribes' or 'prostitution services' may be shown under other costs or personal services by the businesses or households. When commodity balance methods are adopted, output of such illegal activities will get included on the production side.

One way to avoid double counting the output on account of illegal activities is careful research into the contents of the basic data used for the regular compilation of the national accounts, consistent recording of adjustments for illegal activities in all three approaches to GDP and the application of supply-use framework.

(3) Informal sector (N3+N4+N5 in the Tabular approach)

The *informal sector*[56], as defined by the 15th International Conference of Labour Statisticians, covers "units engaged in production of goods/services with primary objective of generating employment and incomes to the persons concerned". These units typically operate at low level of organization, with little/no division between labour and capital and on a small scale. Labour relations, where they exist, are based mostly on casual employment, kinship or personal and social relations rather than contractual arrangements. A vast majority of informal sector activities provide goods and services whose production and distribution are perfectly legal.

Informal sector is the most important among the NOE problem areas and accounts for major share of GDP estimates in developing countries. Also, when residual methods are used to estimate informal sector employment (derived as total employment from a labour force survey *minus* employment in formal sector as reported in business surveys or administrate data sources), employment in all other NOE categories (operating formal units not included in the survey frame or units that have not responded to the survey and underground and

[56]The informal sector accounting has been covered in more detail in Chapter 4.

illegal activities) implicitly gets included under informal sector. Further, when labour input methods are used to estimate production of informal sector, it implicitly includes the production of all units falling under other NOE categories.

Chapter 2 deals exclusively on accounting for informal sector in GDP estimates and is not further discussed in this chapter.

(4) Household production for own final use

The *household production for own final use* includes production of crops, livestock, other goods, construction of own houses, imputed rentals of owner occupied dwellings, and services produced by domestic servants for own final consumption. However, in practice, certain goods produced for own final use (such as storage of grains, threshing of grains, fetching water, etc.) are ignored from GDP compilations, if their contribution is insignificant.

Normally, production for own final use is valued at their equivalent market prices, if available. Otherwise, it is valued on costs, i.e., as sum of intermediate consumption, compensation of employees, consumption of fixed capital and other taxes on production. There will be no subsidies on such production.

Agricultural production for own consumption

The production for subsistence purpose is generally included in the production estimates in developing countries due to the global methods used for estimating overall agricultural production in the economy. Normally, production of crops and livestock products are estimated for the total economy, irrespective of whether part of the produce is marketed or totally consumed within the farmer households. These production estimates are based on total gross area sown in the country under different crops and average yield rates during the reference period, which is usually the agriculture year or an agriculture season. By applying farm-gate prices (or producer prices during the peak harvesting season), value of output for total crops and livestock products is estimated for GDP estimation. This procedure does not give separate estimates of subsistence production, which may not be the real issue in the context of achieving GDP exhaustiveness. However, if the intention is to also obtain separate estimates of subsistence production, household surveys or special studies are the options.

Apart from the production carried out in farmlands, subsistence production of crops can also take place outside the farm area, such as crops grown in backyard. Estimates for such backyard (kitchen garden) production can be made on the basis of area of homestead (house with a building and surrounding land) land, data on which may be available with local authorities or can be estimated using small surveys or conducting studies. For example, India (CSO, 2007) collected data on area under homestead land that has kitchen garden, in one of the agricultural surveys. Based on the results of this survey, it was estimated that 0.21% of net sown area in the country was under kitchen garden in the survey year. This benchmark ratio is being used to estimate area under kitchen garden for all the years. Value of output of kitchen garden crops (fruits and vegetables) is estimated on the basis of yield rates and prices used for valuing similar crops grown in farmlands.

Subsistence fishing can also be significant in some countries. Data on production of fish for own final consumption can be collected through household surveys or through special studies carried out by fisheries development boards. Sometimes, it is possible to estimate the total

production of fisheries in the country from the consumption side (data on which may be available from the household budget survey) with suitable adjustments for other intermediate and final uses, including exports, using the identity of *supplies equal uses.*

For the forestry, production of goods for own consumption mainly comprise the gathering of forest produce, such as firewood, berries, honey and other non-timber forest products. Data on production of forestry products for own final consumption can be collected through household surveys or through special studies carried out by forestry departments. Some countries estimate the total production of firewood and other non-timber products in the country from the consumption side (data on which may be available from the household budget survey) with suitable adjustments for other intermediate and final uses, using the identity of *supplies equal uses*.

For example, if firewood consumption in a year is estimated to be 100 (from the household budget survey) and inter-industry consumption of firewood (by bakeries, brick makers, small restaurants, funeral services, etc.) is estimated to be 20 per cent of total production (from the previous supply use table or studies), then the total production of firewood can be estimated to be 125 (household consumption 100 and inter industry consumption is 20% of 125, which is 25).

Crop storage

In some countries, storage of subsistence crops can be an important activity, but in general it may not be very significant now. The gross output of storage activities could be defined as the difference in the value (at producer prices) of subsistence crops on removal from the store for consumption from their value on entering the store at harvest time. This gross output consists of intermediate consumption (pesticides, repair and maintenance costs, etc.) and value-added (mainly labour costs and depreciation of storage buildings).

In practice, storage activities are either excluded completely from the national accounts, or are covered only by accident through the valuation of crops at prices that implicitly include storage costs. Some countries include storage costs in the intermediate consumption and value the production of subsistence crops using the peak marketing wholesale prices. In such cases, it may not be necessary to impute separate values for crop storage activity.

Food processing

These involve basic processing of staple food crops (husking and polishing rice, drying and pounding cassava, or milling maize and wheat) for most developing countries and usually of very small value. These activities are also slowly disappearing with the modernization and easy access to milling facilities. One way of imputing values for such goods is to compare producer or retail market prices for crops before and after processing; or the prices that millers charge for processing of grains.

Own account construction of dwellings

Estimating output for this activity is difficult in practice. Some countries compile estimates of own account construction using (i) estimated growth rates in stock of houses, and (ii) estimated replacement rates in the stock of houses in a base year.

The growth of the stock of dwellings can be assumed to be some function of the growth of population. For the rate of replacement, three per cent is about the highest credible rate for the growth of the housing stock, but this can vary depending upon several factors, such as climatic and weather conductions (floods and droughts in a particular year), good harvest years, etc. Some information about short-term changes of this sort may be obtained from imports of metal roofing sheets, sales of window frames, production of building poles, and cement consumption. Output of own account construction is normally estimated as the sum of its costs of production.

In many countries rural households build their own houses and farm buildings – often using a mixture of purchased inputs such as glass sheets, doorframes, and corrugated roofing sheets and locally collected materials such as sun-dried bricks, mud, thatch, and palm leaves. The value of these buildings is the cost of purchased materials plus the labour input to collect and process the other inputs and erect the buildings. Purchased inputs are valued at their purchasers' prices and the labour input equals the time taken multiplied by a wage rate. The minimum rural wage could be used as the wage rate.

As stated, the number of dwellings constructed each year has two components (i) new dwellings needed to house the increase in the population and (ii) dwellings needed to replace those that are demolished each year. Suppose that on average an own-constructed dwelling lasts for 19 years and the population is growing at 1.8% each year. Suppose also that there were 46,000 dwellings at the beginning of the year. With these assumptions there will have to be 0.018 x 46,000 = 828 new dwellings and 46,000/19 = 2,421 replacement dwellings constructed in the course of the year, i.e. 828 + 2,421 = 3,249 dwellings.

Similar calculations can be made for the values and numbers of the different kinds of farm buildings such as food stores and animal pens.

Paid domestic services

By convention, the output of domestic staff is equal to the compensation of employees paid to them. This should include wages in kind, such as free accommodation, meals, shoes, and clothing provided to the domestic staff, which are important part of the total wages paid to the domestic staff. Income in kind is valued at the costs to the employer on providing the goods and services they receive as part of their wages.

It is possible to cover these activities through population censuses and household labour force surveys, which often include data on the total number of persons employed in domestic services. Labour force surveys also include questions on wages received in kind and cash by activities. Average income per employee can also be estimated from small-scale ad-hoc surveys, if such data is not collected in the labour force surveys. It may also be possible to use household expenditure surveys to calculate average incomes of domestic employees or total expenses incurred by households towards paid domestic staff.

Owner-occupied dwelling services

Owner occupied dwelling services refers to the imputed housing services produced by the owner occupiers for their own consumption. Households that own the dwellings they occupy are formally treated as owners of unincorporated enterprises that produce housing services consumed by those same households. Estimates for owner-occupied dwelling services have

always been included in the national accounts, and these account for as high as 10 per cent of GDP in some countries. The same value of output of own account housing services that is estimated on the supply side is recorded under household final consumption expenditure on the use side.

A general SNA rule is that own-account output should be valued at the basic prices at which they could be sold on the market. Cost approach is followed when there are no equivalent market prices for goods produced for own use. The valuation of own-account housing services follows this general rule, i.e. they are valued at the market rentals for similar dwellings. However, sometimes there are no market rentals for certain types of houses or in certain areas (such as rural areas). In such cases, the cost approach should be followed. Thus, there are two main approaches for valuing the services of owner occupied dwellings.

(i) Equivalent market rental approach

When well-organized markets for rented housing exist, the output of own-account housing services can be valued at the estimated rental that a tenant would pay for the same accommodation, taking into account factors such as location, neighborhood amenities, etc. as well as the size and quality of the dwelling itself.

Estimates of number of owner-occupied dwellings are generally available from housing or population censuses and information on market rentals from real estate agents or from CPI surveys. Generally, estimates are prepared for the base year for several categories of dwellings with rural-urban break-up and if possible by regions. For subsequent years, the base year estimates of stock of dwellings (with break-up of rural/urban and types of structures and regions) are extrapolated with estimated growth[57] in the corresponding structures, to obtain the estimates of number of dwellings in different categories in the current year. Information on market rentals in the current year is obtained from CPI surveys or by extrapolating the base year market rental value with the growth in the CPI for rentals for each type of structure in rural/urban areas.

The document *2008 SNA - compilation in brief* (World Bank, 2014) suggests, "In the absence of comparable market rents, the most plausible approach is to calculate the cost of building a house of the same type and estimating how long it is before repairs mean that in effect the whole house has been rebuilt. For houses built using regular construction materials, the life length of the house may be considerable, maybe in excess of twenty years or even longer. For traditional and slum dwellings this period might be quite short, maybe only a few years. Taking the cost of the house and dividing by this period will give an acceptable (if still very imperfect) measure of the rental equivalent".

(ii) User cost method

This is an alternative to valuing own output, when the above SNA standard rule for valuing own output cannot be applied. This is in respect of cases where so few dwellings are rented that rents actually paid cannot be regarded as typical or representative. For example, in some countries, most of the dwellings available for rent are occupied by foreigners or by employees of government or large public enterprises at rents which cannot be regarded as

[57] The growth rate can be estimated using inter-censal growth rates of dwellings or the population growth.

representative, while in other countries, dwellings may only be available for rent in the capital city or other principal urban areas.

In such cases, valuing owner occupied dwelling rentals on the basis of equivalent market rentals may not be the appropriate method. An alternative method suggested when most houses are owner occupied (more than 25% of total dwellings) is to impute rents on the basis of the opportunity costs.

The user cost method consists of estimating each of the costs that owners of dwellings would need to take into account in fixing a market rent if they decided to rent their dwellings to other people rather than living in them themselves. These costs are:

- Intermediate consumption;
    - Repairs and maintenance;
    - FISIM;
    - Insurance service charges;
- Land and property taxes;
- Consumption of fixed capital; and
- Net operating surplus

Output =	intermediate consumption + net other taxes on production + consumption of fixed capital + net operating surplus (NOS)
CFC =	d*S, where d = rate of depreciation and S = value of stock of dwellings at current price
NOS =	r*S, where r = real interest rate

Information on repairs and maintenance and on insurance could come from a household budget survey. FISIM on dwelling loans (to be allocated on the basis of loans taken for dwellings), and insurance service charges (to be allocated on the basis of premiums paid may be available from national accounts compilations. In practice, most dwellings will not be insured at all so this item will be zero in many countries. Land and property taxes – if any – should be available from the tax authorities. The main problems are caused by the last two items since they are both calculated as percentages of the current market value of stock of dwellings.

Estimates of value of stock of dwellings need to be prepared through perpetual inventory method based on long-term estimates of gross fixed capital formation in respect of dwellings. However, for most developing countries, this data may not exist. An alternative is to estimate capital stock of dwellings using simpler methods suggested in the OECD Manual on measuring capital stock (OECD, 2009), based on current year's GFCF and some assumptions on growth in GFCF in the past years and life of dwellings. Another short-cut method suggested in the ICP 2011 operational material (World Bank, 2011) is to assume half the price of a new building in the current year as the average value of dwellings in the country. The value of stock of dwellings will be derived as half the current year price of a particular dwelling type multiplied by the number of dwellings of the same type in the country in the current year. These calculations need to be done by type of dwellings and with rural-urban break-up.

In the calculations for estimating CFC, the *depreciation rate* used for geometric depreciation is usually written as *D/L*, where *D* is the "declining balance rate" and *L* is the average service life of the assets. *D* is usually assumed to lie between 1 and 2 and it has been found that for dwellings in Europe and North America, a value of 1.6 produces estimates of consumption of

fixed capital that are similar to those that are obtained using straight-line depreciation with a bell-shaped mortality function. The ICP 2011 manual recommends that *D* be set at 1.6, if no other information is available. For example, if the average life of dwellings is 70 years, the depreciation rate will be: Stock times 1.6/70 or Stock times 0.023. If the mid-year net value of the stock of a particular type of owner-occupied dwelling is 4000, and if the average service life for that type of dwelling is 70 years, CFC is obtained as 4000*(1.6/70) = 91.

For estimating net operating surplus, an estimate of real interest is required. This is the value that people expect to earn at least on their investments. Real interest rate is estimated as long-term average of nominal interest rates minus long-term inflation rates. Nominal interest rates could be based on the rate of return on ten-year government bonds, which is considered to be a safe investment. An alternative approach is to assume that home owners aim to recover the interest they have to pay on any housing loans they may have taken out. In this case the rate on housing loans could be used as the nominal rate of return. The ICP manual suggested assuming a real interest rate of 2.5% per annum, if no other information is available.

Following is the worksheet for estimating output of owner occupied dwellings:

Item No.	Description of the item	Value
Intermediate consumption		
UC 01	Expenditure on maintenance and repair of owner-occupied dwellings *	
UC 02	Gross insurance premiums paid on owner-occupied dwellings	
UC 03	Insurance claims paid to owners (minus)	
UC 04	Net insurance premiums paid by owners. (UC 02) – (UC 03)	
UC 05	Total intermediate consumption. (UC 01) + (UC 04)	
Other taxes on production		
UC 06	Taxes paid by owners on dwelling services	
UC 07	Taxes paid by owners on the value of owner-occupied dwellings and their associated land	
UC 08	Total taxes paid by owners. (UC 06) + (UC 08)	
Consumption of fixed capital		
UC 09	Consumption of fixed capital on owner-occupied dwellings at current prices (excluding land)	
Net operating surplus		
UC 10	Current market value of the stock of owner occupied dwellings at the beginning of the year (including land)	
UC 11	Current market value of the stock of owner occupied dwellings at the end of the year (including land)	
UC 12	Current market value of the stock of owner occupied dwellings at mid-year (including land) ((UC 10) + (UC 11))/2 or (K6 + K8)	
UC 13	Real rate of return on owner-occupied dwellings (including land) in percent per annum.	
UC 14	Real net operating surplus. (UC13) * (UC12)/ 100	
Expenditures on owner-occupied dwelling services		
UC 15	Expenditure on owner-occupied dwelling services. (UC05) + (UC 08) + (UC09) + (UC14)	

- include FISIM on housing loans taken by households

(Source: ICP 2011 operational material)

(iii) Other methods

In addition to the above two methods, there are other minor methods such as self-assessment and fiscal assessment, for estimating owner occupied dwelling services. Some countries use the household budget survey or the housing surveys to collect information on estimated rental

value of the dwellings in which the owners live. This information, which in fact is based on self-assessment of owner occupiers, can be used to directly estimate the value of services produced by owner occupied dwellings. Yet another option is to use the data on value of each dwelling that is assessed by tax authorities for the purpose of levying building tax or property tax. This type of information is typically maintained by local authorities such as the municipalities, which collect these types of taxes.

Estimates of owner-occupied dwelling services are usually prepared for current years using the benchmark estimates for a year for which detailed data are available with an urban/rural or some other regional breakdown, supplemented by other indicators such as price indices (e.g. rent index within the consumer price index) for later years. Construction statistics and statistics of building permits are often used to update the estimated stock of housing, particularly in the case of urban areas where building construction is regulated (for example, building permits and construction starts).

(5) Statistical underground (N7 in the Tabular approach)

The *statistical underground* refers to production missed due to deficiencies in data collection programme, under-coverage of enterprises in the business register and survey frames, non-response, under reporting and conceptual issues (such as incorrect treatment of tips, wages and salaries in kind). There is a huge variety of these types of errors in the compilation of national accounts. These errors can be divided into two parts: data that are incomplete or cannot be directly collected from surveys, or data that are incorrectly compiled during survey processing, as shown below:

- Data are obtained from enterprises, but are misreported by the respondent in such a way as to underreport value added, or
- Correct data are received but are inappropriately edited or weighted by national accountants.

The items that should be considered in determining the adjustments to be made include how non-response was taken into account, the extent to which wages and salaries were paid in kind, production for own final use by market producers, tips, valuation techniques and adjustments for accruals. In certain cases, incorrect adjustments made for statistical underground could result in over-estimation of GDP as well, therefore, care should be taken to avoid either over or under estimation of output in national accounts.

Generally, countries adopt a variety of procedures to improve the quality of surveys and include data items in the surveys that would provide information for making adjustments and imputations. Chapter 4 discusses the methods to make adjustment for statistical underground in national accounts under non-exhaustive type N7.

3.3. Concluding remarks

A brief account of NOE problem areas, their relation with the Eurostat's non-exhaustiveness types, and the possible methods to make estimates or adjustments in national accounts, have been presented in Section 3.2 of this chapter. Besides, the surveys conducted by UNECE in 2005-2006, and the OECD in 2011-12 provide country practices to achieving GDP exhaustiveness that could provide some learning points for other countries. However, these

country practices are generally relevant for European countries and OECD member countries, and most of these practices are difficult to implement in developing countries, where resources are scarce even for regular business surveys.

Generally, efforts to achieving GDP exhaustiveness should start with the data collection process, which include planning the surveys, questions to be included in the surveys, scrutiny of administrative data, and steps needed to collect information from missing areas. Sometimes, proxy information, such as employment data is also used as one of the data sources in national accounts to estimate production in respect of missing elements, such as for non-response, informal sector, underground production and illegal activities, so as to ensure that all productive activities undertaken in the economy are accounted for. This is on the presumption that employment data estimated from the labour force surveys is generally exhaustive. Studies carried out by universities, research institutions and administrative ministries or special studies conducted for national accounts purpose by statistical agencies, also sometimes provide useful information for estimating specific areas of NOE.

Once, all available source data for national accounts purpose is gathered (these should mainly include, the government accounts, tax records, accounts of companies, economy-wide enterprise/establishment survey, household establishment surveys, economic/agricultural/population censuses, administrative data on agriculture, manufacturing and services, employment, household budget survey, foreign trade statistics, government finance statistics, balance of payments statistics and studies carried out by researchers, universities and government agencies), adjustments need to be made in the source data, in order to comply with national accounts concepts, especially, the production and asset boundaries defined in SNA.

Adjustments for conceptual compliance in source data and missing areas can be made in several ways, such as based on tax audits; using established input-output or structural ratios; confronting supplies with uses of goods and services and also simultaneously looking at incomes (if data is available on all the three sides) or using information from any one or two of these three parameters for an informed best estimate for production as discussed in Section 2.2 above and in chapters 2 and 4.

Once the initial set of production, income and expenditure estimates are compiled, the data should be placed in the supply-use framework to finally balance supplies of goods and services with their correspond uses. This is an elaborate and iterative process, in which the national accountants needs to go through the basic source data and the adjustments made to the source data several times to see that the balancing has been done in the best possible way[58] and the GDP thus measured is exhaustive. While undertaking the balancing process, statisticians should resort to automatic RAS balancing only as the last alternative and also only when the discrepancies between supplies and uses for each product is reduced (through manual balancing) to less than 5 per cent.

The publication, *Essential SNA - Building the basics* (Eurostat, 2013) summarises the methods for NOE estimation under two main types:

[58] It may be noted that there are infinite ways in which balancing between supplies and uses can be achieved.

1) Statistical methods, such as direct estimations based on direct surveys (surveys on expenditure, income, labour, time use or opinion, for instance) or indirect estimation based on available data sources.

   Indirect statistical compilation methods can be classified by type into:

   - supply-based approach (including the labour input approach): it relies on data on the supply of inputs (number of primary raw materials, just one major raw material, labour, land, fixed capital stock, etc.) that are used for producing goods and services. Input/output and input/value added ratios are needed to calculate output and value added estimates from the input data.
   - demand-based approach: it aims to assess production by using indicator data on specific uses of goods and services that sufficiently describe their production: household final consumption expenditures of a certain commodity such as health and personal services; uses of raw materials such as the processing of agricultural products; major export commodities; administrative data indicating demand for a product, such as motor vehicle registrations and building permits, etc.
   - income-based approach: it is based on available data from administrative sources in some categories of income, which can be used to obtain an indication of production covered by the administrative system (income taxes, social security contributions paid by self-employed persons or private entrepreneurs, etc.).
   - commodity flow approach: it involves balancing total supplies and uses of individual products, using accounting equations. One specific application of a commodity flow method is to calculate the output of the retail trade from supply of commodities.

2) Methods based on modelling techniques. Macro-economic models (such as monetary models, global indicator method) provide some estimation of the NOE but should be avoided. The use of available basic data is preferred. Where model based assumptions are unavoidable, they should be applied at the most detailed available level because it has been shown that the results are sensitive to data transformations, units of measurement and the sample used.

It should be noted that there is no unique standard method applied internationally; several methods or combinations of methods are usually applied, depending on the data sources and compilation practices followed in each country.

The Eurostat background article "*Building the System of National Accounts - non-observed sector*" (http://ec.europa.eu/eurostat/statistics-explained/index.php/Building_the_System_of_National_Accounts_-_non-observed_sector), summarises the process of incorporating non-observed production into GDP estimates as involving **complex procedures**, such as:

- Some procedures yield estimates of total production for a specific activity without separately identifying various types of non-observed activities;
- Ad hoc supplementary data are often required to make efficient use of existing sources (value added estimates can be derived from output estimates obtained from a commodity flow method using a value added/output ratio calculated from an ad hoc study);
- Compilation should be based on detailed and specific adjustments using specific sources and known linkages and relationships;

- Where possible, alternative estimates should be derived, compared, and assessed for plausibility of results. Data relating to similar topics but from different sources should be compared and analysed to identify errors or remaining gaps;
- Assumptions underlying estimation procedures should be made explicit in calculations and reviewed regularly for their plausibility.

This chapter presents the NOE problem areas, definitions, approaches and adjustment methods to account for NOE and ensure GDP exhaustiveness. The chapter also provides an evaluation of different approaches and clarification on adjustment methods, wherever possible. It is not possible to recommend a certain approach, a data source and a particular adjustment method to account for NOE problem areas or the non-exhaustiveness types. Few country practices included in Chapter 4 show that different countries adopted different data sources and adjustment methods to account for non-exhaustiveness types, suitable to their statistical systems. Therefore, the choices for African developing countries on the approaches, data sources and adjustment methods to account for NOE problem areas to achieve GDP exhaustiveness depend on their country practices, statistical system and resources available.

Chapter 4. Eurostat tabular approach for GDP exhaustiveness

This chapter presents the tabular approach of the Eurostat for achieving GDP exhaustiveness. The tabular approach defines all types of non-exhaustiveness (including the informal sector) in GDP measurement and presents them in a tabular framework. The text for this chapter has been drawn mainly from the documents of Eurostat, Economic Commission for Europe and the Organisation for the Economic Cooperation and Development on the topic available in public domain.

1. Introduction
2. Types of non-exhaustiveness
3. Identification and adjustment methods for types of non-exhaustiveness
4. Few country experiences
5. Concluding remarks

4.1. Introduction

The Eurostat developed a methodology while working with the European Union Candidate Countries (CCs) towards improving the consistency, reliability and exhaustiveness of their national accounts, that has come to be known as the "Tabular Approach".

The tabular approach to exhaustiveness (TAE) helps in identifying systematically, the potential sources of underestimation of GDP estimates due to omissions from the source data used in compiling national accounts. TAE provides a consistent and complete conceptual framework for achieving GDP exhaustiveness by classifying adjustments into seven types of "non-exhaustiveness" (listed under N1 to N7 in Table 1), based on two principal questions,

(i) producer is not surveyed, and
(ii) producer is surveyed, but data is not adequate.

The TAE also attempts to link the non-exhaustiveness types (N1 to N7) with the methods normally followed by countries to improve GDP exhaustiveness (such as the labour input method, fiscal audits, VAT comparisons, etc.). It is important to note that some categories of non-exhaustiveness in the national accounts could be classified under different N-types. For example, an informal sector unit could be classified under either of N3, N4 or N5. Therefore, the key aspect in the TAE is to ensure that all potential sources of omission from the national accounts are identified and included in one or other N-type categories and that there is no duplication across categories.

This chapter is presented under 5 sections. Section 2 describes the Non-Exhaustiveness Types (N1 to N7), while Section 3 presents the identification and adjustment methods for these types of non-exhaustiveness. Section 4 summarises few country case studies carried out by Eurostat and OECD on GDP exhaustiveness using the TAE. Concluding remarks are made in Section 5.

4.2. Types of non-exhaustiveness

The different types of non-exhaustiveness (labelled as N1 to N7) in the TAE have been defined by making use of (i) *producers' characteristics* and (ii) *data sources used* for the production approach of GDP estimation. This has been done by classifying and sub-dividing

all producers according to the potential for non-exhaustiveness and a standard set of non-exhaustiveness type.

In order to ensure that the non-exhaustiveness types are also mutually exclusive, the TAE divides producers into categories (see the boxes in Figure 1), using the following characteristics, and the different forms of data collected from producers:

- Is the producer administratively registered or not?
- Is the producer included in the statistical business register or not?
- What is the basic data source: a producer survey/administrative collection/another source?
- Is the producer a legal person/entrepreneurship/or a non-market household producer?
- Does the producer respond to surveys or not?
- Does the producer report correctly or misreport?
- Are all the data required for national accounts collected or not?

Looking at the left-hand side of Figure 1, a *producer* may not be covered by statistical surveys (or by an administrative source) because:

- it fails to register as it is involved in underground (N1) or illegal (N2) activities;
- it does not need to register (non-market household producers) (N3);
- it is a legal person but it is not surveyed (N4);
- it is a registered entrepreneurship but it is not surveyed (N5).

The right-hand side of Figure 1 deals with producers that are in scope and are covered by a statistical survey or by administrative data collection, but the *resulting data* may not be adequate because:

- the producer intentionally misreports (N6); or
- there are statistical deficiencies in the data (N7) - due to the fact that some data are simply not collected (N7a), or because some data are not correctly processed (N7b).

Figure 1

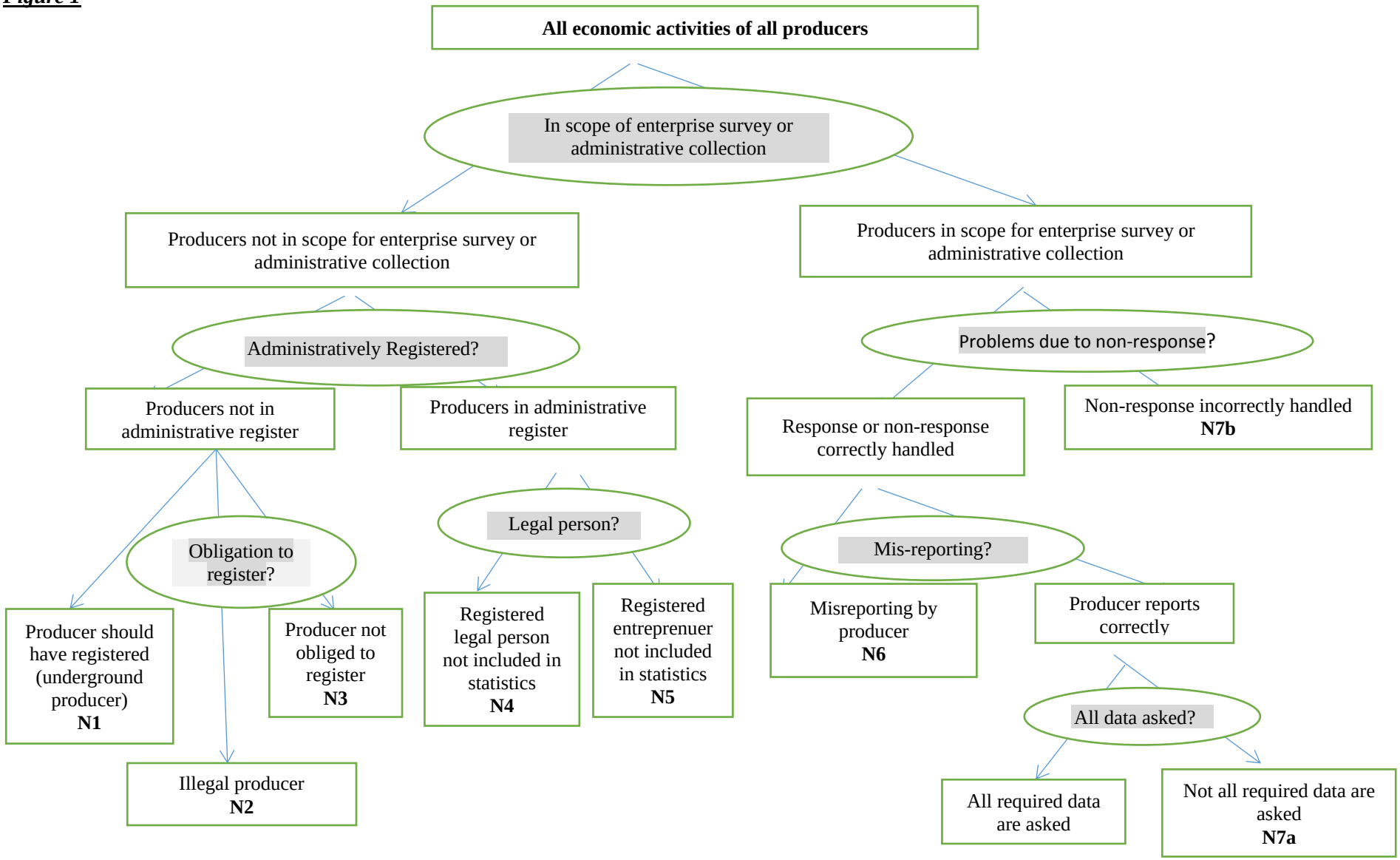

All economic activities of all producers
In scope of enterprise survey or administrative collection
Producers not in scope for enterprise survey or administrative collection
Producers in scope for enterprise survey or administrative collection
Administratively Registered?
Problems due to non-response?
Producers not in administrative register
Producers in administrative register
Response or non-response correctly handled
Non-response incorrectly handled
N7b
Obligation to register?
Legal person?
Mis-reporting?
Producer should have registered (underground producer)
N1
Producer not obliged to register
N3
Registered legal person not included in statistics
N4
Registered entreprenuer not included in statistics
N5
Misreporting by producer
N6
Producer reports correctly
All data asked?
Illegal producer
N2
All required data are asked
Not all required data are asked
N7a

Table 4.1: Descriptions of the non-exhaustiveness types (N1 to N7)

Not registered	N1	Producer should have registered (underground producer)	• Producer fails to register in order to avoid *tax & social security obligations*. These are typically the small producers with turnovers exceeding the threshold limits for registration. • Type N1 does not include producers that fail to register because they are engaged in illegal activities (covered in N2). • Type N1 does not include all underground activities, some of which (mis-reporting) are associated with type N6.
	N2	Illegal producer that fails to register	• N2 covers activities of producers that avoid registration entirely. These producers come under the ambit of registration in terms of threshold limits, but do not register because they are engaged in illegal activities such as prostitution, sale of stolen goods, sale of drugs, smuggling, gambling, etc. • N2 excludes illegal activities by registered legal entities or entrepreneurs that report (or misreport) their activities under legal activity codes (such producers are already covered in national accounts)
	N3	Producer is not obliged to register	• Producer is not required to register because it has no market output. Typically, these are non-market household producers involved in: (a) production of goods for own consumption or for own fixed capital formation, (b) construction of and repairs to dwellings, (c) paid domestic services, and (d) owner occupied dwelling services (household production that falls under SNA production boundary for own final use) • Producer has some market output but it is below the level at which the producer is expected to register as an entrepreneur. (Typically, these are informal sector units as defined in 15th ICLS, but also would include agricultural producers)
Not surveyed	N4	Registered legal person is not included in statistics	• The legal person may not be included in the statistics for a variety of reasons, e.g., the business register is out of date or updating procedures are inadequate; the classification data (activity, size or geographic codes) are incorrect; the legal person is excluded from the survey frame because its size is below a certain threshold laid down for surveys; etc.
	N5	Registered entrepreneur is not included in statistics	• A registered entrepreneur may not be included in the statistics for many reasons, e.g., the administrative source with lists of registered entrepreneurs may not always pass on complete or up to date lists to the statistical office. • Even if there is a regular flow of accurate and comprehensive information from the administrative source to the statistical office, the registered entrepreneur may not be included in the business register for several reasons (see those given under N4).
Mis-reporting	N6	Mis-reporting by the producer	• Mis-reporting invariably means that gross output is under-reported and intermediate consumption is over-reported in order to evade (or reduce) income tax, value added tax or social security contributions. • Mis-reporting often involves: the maintenance of two sets of books; payments of envelope salaries which are recorded as intermediate consumption; payments in cash without receipts; and VAT fraud (generally the production that is not included in the data reported)
Others	N7	Statistical deficiencies in the data	• In Figure I above, type N7 is sub-divided between N7a - data that is incomplete, not collected or not directly collectable, and N7b - data that is incorrectly handled, processed or compiled by statisticians. This distinction is useful because it helps one to better understand the huge variety of possible statistical deficiencies. However, in practice, N7a and N7b cannot always be easily separated.

			• Statistical deficiencies: the following list is not comprehensive but these topics should be investigated for non-exhaustiveness:- o Handling of non-response; o Production for own final use by market producers; o Tips; o Wages & salaries in kind; o Secondary activities.

4.3. Identification and adjustment methods for types of non-exhaustiveness

While undertaking the exercises for improving GDP exhaustiveness using the Eurostat TAE, the starting point should be the detailed examination of data sources and compilation methods that are used to measure GDP from the production approach. This approach involves in estimating the output of goods and services and subtracting from this, the intermediate consumption of goods and services used to produce this output, at the disaggregated levels of institutional sectors and industries in a cross-classification of sectors and industries. The advantage of starting with the production approach using TAE is that the income approach GDP estimates are mostly derived from the same set of data sources that are used for production approach GDP calculations. At the establishment level and within each institutional sectors, all the information that is needed for compiling estimates of value added from both production and income approaches is available[59]. Also, the net operating surplus is usually derived as a residual with the production approach GDP being treated as the firmer estimate.

Table 4.2: Derivation of net operating surplus as a residual

Item	Value
1. Output of goods and services	100
2. Intermediate consumption of goods and services	40
3. Gross value added (1-2)	60
4. Compensation of employees	25
5. Consumption of fixed capital	5
6. Other taxes less subsidies on production	3
7. Net operating surplus (3-4-5-6)	27

Therefore, income-based and production-based estimates of GDP are normally consistent, which allows linking of adjustments for exhaustiveness that have been made in the production GDP estimates automatically into the income GDP estimates. In the above example, all adjustments for exhaustiveness made in output and intermediate consumption will automatically get reflected in the net operating surplus. Suppose, output of goods and services (100) is adjusted for underground production (20) and the resultant value of output is 120 in the above example, the gross value added will be 80 and net operating surplus will be 47 (derived as residual), assuming that there are no adjustments to other items.

Since establishments/enterprises within each institutional sector will have employment, incur expenditures on capital goods[60] (gross fixed capital formation or GFCF) and hold inventories, it is possible to compile data on these three items as well, while assembling the required data for preparing production and income approach value added estimates at the industry/sector level. The data on GFCF and change in inventories when summed over all

[59] With few exceptions, such as allocation of FISIM and consumption of fixed capital, both of which are estimated at industry/sector level.
[60] Including own account capital formation

establishments/sectors, supplemented with household expenditures on dwellings, will provide corresponding estimates for the overall economy on the expenditure approach GDP.

The expenditure approach GDP is based on data that generally comes from sources other than those used for the production and income approach data sets. However, the conceptual consistency between the three different approaches to measuring GDP provides a framework (supply-use tables and commodity flow approaches) for checking the accuracy of data obtained from different sources. For example, domestic production plus imports (less exports) of equipment should be equal to gross fixed capital expenditure on that type of equipment (excluding any adjustments for second-hand purchases and sales)[61]. Improved estimates of output of owner occupied dwelling services on the production side will reflect on household consumption expenditure on the expenditure side. Therefore, adjustments made on the production side using the TAE framework for improving exhaustiveness facilitates in making adjustments on the corresponding expenditure components (and products) on expenditure side.

Table 4.3: A rough set of links between production and expenditure sides

Information available in the Production approach	Links with Expenditure Approach
Output of general government = Intermediate consumption + own account capital formation + Compensation of employees + Consumption of fixed capital + Taxes on products, net of subsidies, paid by government to itself	Government final consumption expenditure (GFCE) = Output – Sales and fees + Expenditure on social benefits in kind
Output of construction	GFCF (construction) = Output of construction – minor repairs and maintenance + acquisition costs
Output of dwelling services	Household final consumption expenditure on rentals of dwellings
Output of paid domestic services	Household final consumption expenditure on paid domestic services
Additional data that can be compiled while analysing the source data for preparing production GDP	
Change in inventories with all producers	Change in inventories
Expenditures made by all producers (and households on dwellings of capital nature) on acquisition less disposal of fixed assets plus output of own account production of capital items (construction, machinery and equipment, mineral exploration, R&D expenditures, software, databases, etc.).	GFCF
Domestic production plus imports of machinery and equipment	GFCF, with suitable adjustments for taxes on products, trade and transport margins and acquisition and installation costs.

Table 1 provides a detailed explanation of TAE types, N1 to N7. The most common of the adjustment methods include the labour input method, commodity flow method, special surveys and the use of fiscal and other audit data. The TAE types and adjustment methods are discussed below:

N1. Producers Deliberately Not Registering –Underground

N1 refers to the production of those producers who are not registered because they are involved in underground activities. Type N1 does not include producers engaged in illegal activities (they are recorded under N2) or all underground activities, some of which are

[61]Global Office, ICP 2011: National Accounts Framework in the ICP: Operational Material. Further adjustment for acquisition costs, installation charges, taxes on products and trade and transport margins should be made.

associated with type N6. Typically type N1 involves small producers that have turnovers exceeding the thresholds above which they should register (with tax authorities or other registering authorities that are the sources for business register), but have not registered in order to avoid tax & social security obligations.

The identification and adjustment methods are:

- Labour input method[62] (from household surveys such as the labor force surveys or the population census);

- Other supply-based methods[63]: it relies on data on the supply of inputs (number of primary raw materials, just one major raw material, labour, land, fixed capital stock, etc.) that are used for producing goods and services. Standard input/output and input/value added ratios are used to calculate output and value added estimates from the input data;

- Demand-based methods, e.g. using the data from household budget survey. In this method, production of a particular item is estimated based on household expenditures on that item, with suitable adjustments for inter-industry consumption and other final uses. It aims to assess production by using indicator data on specific uses of goods and services that sufficiently describe their production (household final consumption expenditures of a certain commodity such as health and personal services; uses of raw materials such as the processing of agricultural products; major export commodities; administrative data indicating demand for a product, such as motor vehicle registrations and building permits, etc.).

- Income-based approach: it is based on available data from administrative sources in some categories of income, which can be used to obtain an indication of production covered by the administrative system (income taxes, social security contributions paid by self-employed persons or private entrepreneurs, etc.).

- Commodity flow methods and supply-use tables. In the commodity flow method, available information on either supply side or use side of a particular product is used to prepare the missing components on the supply or use side, so that total supplies of the product equals total uses of the same product. The supply and use tables present the product balances of all the goods and services of the economy, in an integrated manner so that balancing is not only achieved at individual product level, but also simultaneously for all the products. While the commodity flow approaches or product balances are applied at the individual product level, the SUTs amalgamate the product balances of all individual products (or group of products) in a matrix framework to present a coherent picture of supply and uses of both the individual products and the economy as a whole.

N2. Producers Deliberately Not Registering – Illegal

N2 refers to the activities of producers engaged in illegal activities[64] that avoid registration entirely. However, N2 excludes activities of producers who report data (or underreport) under

[62] Labour input methods are discussed in detail in Chapter 2
[63] Supply based methods have been discussed in detail in Chapter 3
[64] Specifically, illegal activities may be undertaken by:

legal activity codes, because reported output is already included in the GDP estimates. Therefore, N2 accounts for only that part of illegal production which is otherwise not reported by producers under the guise of legal production.

The methods that can be used to estimate the adjustments are the quantity-price method, unit per input or use, and expert judgment, as mentioned in Chapter 3. The methods suggested under N1 can also be applied to account for this type of producers, although not separately, since persons engaged in illegal activities are likely to report as employed under a related economic activity in labour force surveys, for example, a person engaged in smuggling may report as being employed in a trading unit in the labour force survey..

The general approach suggested for estimating N2 is that each type of illegal activity (such as prostitution, sale of stolen goods, sale of drugs, smuggling, gambling, etc.) be treated separately and its total output estimated first. From this, the part that is reported as a legal activity be subtracted to obtain an estimate for N2, as shown below:

- Compile the estimate of all illegal activities of that particular type[65];
- Compile an estimate of the illegal activities of that type that are likely to have reported under the guise of legal activities;
- Subtract the second estimate from the first and record the result under type N2.

However, it may not be easy in practice to detect the output of illegal activities that has been reported under legal activities. If no adjustments are made on account of this, there could be duplication of output. Therefore, a careful scrutiny of reported data is required with some inputs from special studies undertaken in the past and experts' opinions.

N3. Producers Not Required to Register – income or employment (based on registration criteria) below threshold limit and non-market producers

N3 includes (a) non-market household producers which are involved in (i) production of goods for own final consumption (including the production associated with paid domestic services) and for own fixed capital formation; (ii) construction of dwellings, extensions to dwellings, and capital repairs of dwellings; and (b) unincorporated household enterprises that have very small-scale market output.

In the case of agricultural production where total output is obtained by multiplying the quantities produced[66] and price (which is usually the case in developing countries) as discussed in detail in Chapter 3, there is no need to include an N3 adjustment for the agricultural output of households if such output is already included in the total. On the other

a) producers that are unregistered because they perform illegal activities – type N2;
b) producers that are not required to register, typically those producing goods and services for own consumption – type N3;
c) producers that are registered and who do not report the activities – type N6; and
d) producers that are registered and report the activities under the guise of legal activities - such activities do not contribute to any of the non-exhaustiveness types as they are reported and hence included in GDP estimates, even though they may be misclassified by industry.

[65] such as prostitution, for which a method can be to estimate of total productive activity involving prostitution based on data from police/health authorities regarding numbers of prostitutes and clients and average payments for services

[66] Quantities produced is estimated as total area under a crop multiplied by the average yield rate

hand, non-agricultural productive activities of households (including secondary activities) should be included in types N3 or N7, as appropriate:

- in N3 for household producers that are not registered;
- in N7 for household producers that are registered and included within a producer survey or administrative collection, but for which data on secondary activities are not obtained.

The methods that can be used to estimate adjustments for type N3 (especially for those producers with no market output) are household expenditure surveys, building permits, commodity-flow methods, administrative data and time use surveys. For example, output of paid domestic services can be estimated from the item on wages paid to domestic staff in the household budget survey.

Informal sector surveys, household surveys, mixed household and establishment surveys and labour input methods described in Chapter 2 are useful in estimating output of producers whose market output is below the threshold level. The previous two chapters include the methods in detail for dealing with this type of non-exhaustiveness.

N4. Legal Persons Not Surveyed

A producer can be a legal person and thus registered with an administrative source accessible by the statistical office and yet, for some reason, not included in the business register maintained by the statistical office because

- it was too recently registered to be included; or
- there was a deficiency in the register-updating procedures.

Or due to incorrect classification of producers:

- the classification data were incorrectly registered
- changes in classification data have not been registered or otherwise detected;
- the classification data have been too recently changed to be included; or
- there is some other deficiency in the register recording or updating procedures.

All such producers should be covered by means of a survey or administrative collection conducted without use of the register. Otherwise, adjustments should be made. The Identification and adjustment methods used for type N4 are:

- Register data quality surveys and investigations, that is:
    - measurements of the birth rates of new producers and estimates of the time interval before producers are placed on the register;
    - measurement of register misclassification rates for activity and size codes;
    - comparison of the register population with other statistical and administrative sources.
- Adjustments based on other sources or expert estimates for producers excluded from surveys as a result of size thresholds.

- Those registered units which are excluded from the surveys due to the size criteria (employment, mainly) or other criteria (omission of specific activities from the surveys), can be covered through benchmark (say, once in 5 years) surveys for compiling a set of benchmark estimates. Also, household surveys, mixed household and establishment surveys and labour input methods described in Chapter 2 can provide estimates through direct or indirect methods, if the item "size of establishments' is included in these surveys.

N5. Registered Entrepreneurs Not Surveyed

An entrepreneur may be registered with an administrative source, but may not be included in the statistical business register or in the business frame used for enterprise surveys because:

- entrepreneurs of that particular type are systematically excluded:
- the entrepreneur was too recently registered to be included; or
- there was a deficiency in the register-updating procedures.

Also, the entrepreneur classification data may be incorrect because:

- the classification data were incorrectly registered
- changes in classification data have not been registered or otherwise detected;
- the classification data have been too recently changed to be included;
- other deficiency in register recording or updating procedures.

Identification and adjustment methods used for type N5

- Data quality surveys and investigations of registered entrepreneurs, that is:
  - measurements of the birth rates of new entrepreneurs and estimates of the time interval before entrepreneurs are placed on the list;
  - measurement of misclassification rates for activity and size codes;
  - comparison of the registered population with other statistical & administrative sources.
- Adjustments based on other sources or expert estimates for entrepreneurs excluded from surveys.
- Other adjustment methods suggested under N4 could also be useful for N5.

N6. Producers Deliberately Misreporting

The nature of mis-reporting here is to understate gross output and/or overstate intermediate expenditure. While exhaustiveness adjustments for gross output are positive, those for intermediate consumption are negative so the relative impact on gross value added is much larger than the adjustments for other N-types.

The adjustments for mis-reporting have by far been the largest going by country experiences, often accounting for 50% of all exhaustiveness adjustments and adding upto 6% to GDP.

Mechanisms associated with mis-reporting include:

- maintenance of two sets of books;
- payments of *envelope salaries,* which are recorded as intermediate consumption;
- skimming;
- without bill settlements; and
- non-payment of VAT

Identification and adjustment methods used for N6

- Comparison of wages & salaries per capita with norms by sector, public and private, industry and size groups.
- Comparison of intermediate consumption/gross output ratios or output/employment ratios with norms by sector, public and private, industry and size groups.
- Comparison of theoretical VAT with actual VAT for appropriate groups of producers.
- Comparison of theoretical income tax with actual tax for appropriate groups of producers.
- Use of tax audit data – from the fiscal authorities.
- Conducting and using the results of special surveys – providing the basis for norms.
- Expert judgement/Delphi method, opinions of accountants, auditors, etc.

N7. Other Statistical Deficiencies

Under N7, data sources and compilation methods in the following areas should be investigated for possible non-exhaustiveness:

- handling of non-response;
- production for own final use by market producers;
- tips;
- wages and salaries in kind;
- secondary activities.

There is a huge variety of other possible types of error in data collection and compilation (from poor questionnaire design through to the compilation methods themselves) that could result in non-exhaustiveness, but could equally easily result in the over-estimation of GDP. Examples are:

- valuation of exhaustiveness adjustments;
- estimates of taxes and subsidies on products;
- reliability of quantity-price methods and product balances.

Handling of non-response

The activities that should be covered here are those for which appropriate non-response adjustments have not been made by the survey statisticians and thus need to be made by national accountants. This should be done on a case by case basis, based on actual or most probable reason for the non-response (e.g., refusal, out of business, cannot locate, etc.). Imputation may be based on data for the previous year, data from similar units (industries, size groups), or industry by size group averages or based on employment.

Production for own final use by market producers

This includes

- production of agricultural or other products in the household sector for own final use (this concerns farmers and entrepreneurs);
- dwellings, extensions to dwellings, capital repairs of dwellings produced by households;
- own account construction including capital repairs in agriculture;
- own account construction including capital repairs in other industries;
- machinery and equipment produced for own capital formation, own account capital repairs.

A detailed investigation of business accounts, careful designing of survey questionnaires (both for businesses and households), commodity flow methods and expert judgements are the possible means to account for production for own final use by market producers.

Tips

The basic data required to include tips are often not available. Thus, all activities where tips usually appear should be identified, e.g., in relation to hotels and restaurants, repair services, personal services, hospitals and other health services, banks, insurance companies. Possible data sources and estimation methods are:-

- the use of household budget survey data;
- special surveys and expert estimates;
- comparison of wages and salaries / mixed income ratios in these industry groups with the same ratios in other industry groups;
- rules for the taxation of tips, if any.

Wages and salaries in kind

There are two distinct types of income in kind:-

- Goods and services produced by the employer, for example:
    - main production, e.g. coal or free train or railway tickets;
    - secondary production including the provision of sports, recreation or holiday facilities for employees and their families, free or cheap crèches for the children of employees.
- Goods and services purchased or financed by the employer, including:
    - meals and drinks, including those when travelling on business;
    - housing or accommodation services;
    - uniforms or other forms of special clothing which employees choose to wear frequently outside the workplace as well as at work;
    - the private use of business cars;
    - the provision of sports, recreation or holiday facilities for employees and their families;
    - free or cheap crèches for the children of employees.

Several data sources are used for calculating income in kind, including:

- Tax data (the fiscal authorities sometimes publish data on income in kind or fringe benefits)
- The Community Labour Cost Survey (LCS), if it exists
- Household Income and Expenditure Surveys
- Financial statements of companies/businesses/government
- Special surveys and expert estimates.

Secondary activities

The coverage of all kinds of secondary activities (sales of secondary products and of goods for resale, production for own GFCF and own final consumption) should be considered while designing questionnaires for businesses or estimating output from financial statements of companies/businesses. This is important, as most businesses have secondary activities and non-inclusion of output from secondary activities results in under-estimation of value added,

as intermediate consumption reported by the businesses refers to both main and secondary products.

Valuation of exhaustiveness adjustments

For VAT fraud without purchaser's agreement, a market price including VAT is assumed, whereas for other non-exhaustiveness types, different prices from those associated with observed transactions may appear. Nevertheless, it can be expected that the prices include an element, which can be at least be partly related to the size of VAT and other taxes on products. This means, for example, that adjustments valued at basic prices would result in underestimates of GDP. Thus, it is essential to consider and document the valuation principles used for the GDP adjustments.

Taxes and subsidies on products

Another valuation problem with possible impact on the level of GDP may appear when using data on gross output from producers valued at basic prices and data on taxes and subsidies on products from the budget. Thus, a reconciliation between the two sets of data and transition from basic prices to purchasers' prices is required.

Reliability of quantity-price methods and product balances

Industries for which additional completeness and reliability problems can be expected should be examined using product balances. Where quantity-price methods are applied (for example, in agriculture and construction, and sometimes in electricity, gas and water supply), the coverage of quantities and prices should be checked.

4.4. Few country experiences

Country experiences on the implementation of TAE are presented here based on the two studies of Eurostat and OECD.

I. Eurostat Study[67]

The Eurostat study provides an overview of the Tabular Approach results obtained from nine countries[68]. The following table presents the methods used to identify and estimate exhaustive adjustments in the national accounts.

Table 4.4: Methods employed to identify and estimate exhaustive adjustments

Method used	N1	N2	N3	N4	N5	N6	N7
Labour input method	X		X	X	X	X	
Commodity flow method	X		X				
Supply-use method	X					X	
Expert judgement		X	X	X	X	X	X
Quantity price method		X	X				X
Margin approach		X	X				X
Administrative data			X				
Fiscal and other audit data					X	X	X
Theoretical vs actual VAT						X	

[67] Results presented here are from Eurostat (2005): *Eurostat Tabular Approach to Exhaustiveness: Guidelines*
[68]Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic & Slovenia

Special or existing survey	X		X	X		X	X
Demand based method	X						

The table below provides an analysis of the adjustments made by the 9 countries, by institutional sectors and activity classifications.

Table 4.5: Analysis of adjustments made by 9 countries

Institutional sectors and NACE classification	N1	N2	N3	N4	N5	N6	N7
Non-financial corporations		**X**		**X**	**X**	**X**	**X**
Financial corporations					**X**	**X**	**X**
General government					**X**	**X**	**X**
Households	**X**	**X**	**X**	**X**	**X**	**X**	**X**
NPISH				**X**	**X**		**X**
NACE A: Agriculture, hunting and forestry	X		X		X	X	X
NACE B: Fishing	X			X	X	X	X
NACE C: Mining and quarrying	X				X	X	X
NACE D: Manufacturing	X	X			X	X	X
NACE E: Electricity, gas and water supply					X	X	X
NACE F: Construction	X		X		X	X	X
NACE G: Wholesale and retail trade, etc.	X	X	X	X	X	X	X
NACE H: Hotels and restaurants	X		X		X	X	X
NACE I: Transport, storage and commn.	X	X		X	X	X	X
NACE J: Financial intermediation	X				X	X	X
NACE K: Real estate, and business activities	X	X	X	X	X	X	X
NACE L: Public administration and defence;					X	X	X
NACE M: Education	X			X	X	X	X
NACE N: Health and social work	X			X	X	X	X
NACE O: Other community, social services	X	X	X	X	X	X	X
NACE P: Households with employed persons	X	X	X		X		

The following four tables show the extent of adjustment made to GDP as an outcome of the TAE study. This was presented by country, by type of non-exhaustiveness, by sectors and by activity classification.

Table 4.6: Total exhaustiveness adjustments to GDP in each of the countries, 2000

(%)

Czech Republic	Estonia	Latvia	Lithuania	Malta	Hungary	Poland	Sovak Republic	Slovenia	Average (%)
9.4	11.2	15.1	18.9	5.8	11.9	14.7	14.8	6.2	12.0

Table 4.7: Exhaustiveness adjustments to GDP: relative importance of types N1 to N7

(%)

Non-exhaustiveness type	N1	N2	N3	N4	N5	N6	N7	Total
Overall 9 countries (%)	15.5	6.4	7.9	7.5	5.8	48.6	8.2	100

Table 4.8: Exhaustiveness adjustments: relative importance of the various institutional sectors (%)

Institutional Sector	Non-financial corporations	financial corporations	General government	Households	NPISH	Total
Seven countries (%)	42.4	0.1	0.5	56.6	0.4	100.0

Table 4.9: Exhaustiveness adjustments: relative importance of different economic activities (%)

NACE Section:	G	D	F	K	H	O	I	Other	Total
Averages over 9 countries (%)	26.3	12.6	12.8	13.0	7.3	8.4	7.8	11.7	100%

The Eurostat study also presents the different sources and methods used by the Czech Statistical Office (CZSO) in calculating exhaustiveness adjustments for the types N1 to N7. These are summarised below:

N1: Producers deliberately not registering – underground activity

The estimate in 2000 was based on an estimate of the number of producers deliberately not registering (comparing Labour Force Survey data with other sources), together with estimates of intermediate consumption and value added per worker. In 2000, the non-exhaustiveness type N1 accounted for approximately 0.5% of GDP.

N2: Producers deliberately not registering – illegal activities

CZSO made estimates for 4 types of illegal activities: (i) prostitution, (ii) sales of stolen goods, (iii) production & consumption of drugs and (iv) smuggling. The first two of these illegal activities accounted for about 0.2% of GDP.

For prostitution, estimates were based on 3 sources: (a) Ministry of Interior analyses; (b) telephone inquiries for home-based prostitution; (c) published data on "facts, estimates and prostitution trends in the CZ". The intermediate consumption (IC) was taken to be 20% of gross earnings.

In respect of sales of stolen goods, the act of theft itself is not a productive activity, but the middleman's margin on resale is counted. Using crime statistics for thefts of passenger cars, the middleman's margin was estimated to be roughly 10% of the value of stolen cars. Sales of other goods were not calculated.

For drug consumption, estimates were made from demand (as product of number of consumers, average quantity consumed and street prices) and supply sides (as product of imports destined for the country and street prices adjusted for import purity and street purity). The main data sources were estimates of prevalence of problem of drug users, Environmental Health Office and police and customs statistics.

Sales of smuggled goods were not estimated explicitly.

N3: Producers not required to register

Under type N3, the CZSO made exhaustiveness adjustments for the informal sector, individual housing construction and output of agricultural products for own final use, accounting for about 1.25 % of GDP.

In respect of informal sector, CZSO identified non-registered business activities under N1 and part of secondary gainful employment and contracts of services were identified under N5. So, for the informal sector, this left only: (a) occasional and below-threshold production activities in agriculture (i.e. legal activities which households do not report in tax returns because the income provided by the activities does not reach the specified level), and (b) household personal services. With regard to (a), CZSO estimated small non-reported revenues from sales of agricultural products to be at the same level as reported sales. Intermediate consumption was estimated with reference to similar reported activities. With regard to (b), the estimate of production of household services was based on the number of persons from Labour Force Survey data, (expressed in full time equivalents) multiplied by the approximate average net monthly wage in CZ for 12 months a year.

For the individual housing construction, estimates were made as difference between the total investment cost for building a family house by natural persons and the costs of work done by specialised companies (estimated at 50-55% of their total work). The household budget survey was used to evaluate the intermediate consumption for individual housing construction.

Output of agricultural products for own final use is derived from Household Budget Survey (HBS) data, Farm Accountancy Data Network (FADN) statistics, and forestry statistics data and from expert guesses. One section of the HBS deals with items related to the output of agricultural products for own final use. The forest products gathered by households for own consumption was based on total production (from forest authorities) and experts' estimates of proportions of household output retained for own consumption.

N4: Legal units not surveyed

A special updating of the business register using the income tax payers' database was carried out. Because the business register serves as the basis for grossing up to the population of units, a new grossing-up exercise was carried out for 2000. The resulting adjustment for non-exhaustiveness type N4 was roughly 1.5% of GDP. Over 95% of this exhaustiveness adjustment was allocated to non-financial corporations.

N5: Registered entrepreneurs not surveyed

For N5, the CZSO makes an exhaustiveness adjustment for certain categories of natural persons (sculptors, painters, writers, journalists, professional sportsmen and a few other categories) who are not registered in the BR. For these categories of persons, CZSO make use of incomes reported in tax returns, in particular, author's royalties, incomes of artists and sportsmen, rental incomes, income from gardens and from a number of other activities. Intermediate consumption is estimated using reported expenditure for similar activities. The exhaustiveness adjustment for N5 was 1% of GDP.

N6: Producers which deliberately misreport

The CZSO undertook a special survey in 1999, the results of which were used in the national accounts. Because mis-reporting by businesses is a serious offence, the investigative work was organised in a way that ensured the anonymity of the respondents. The CZSO approached experts who were asked to provide estimates of mis-reporting, based on their experience with clients. The respondents mostly included accountants, tax and financial advisors and auditors. Answers were provided using questionnaires which requested that the cases described should be classified by NACE and size categories (numbers of employees). The reasons for and degree of mis-reporting were requested. Estimates of mis-reporting were requested for the following book items (and sub-items): concealed sales/revenues; overstated material costs; overstated costs of services; concealed wages & salaries. The exhaustiveness adjustment in 2000 for type N6 was 4.4 % of GDP.

N7: Other statistical deficiencies

In total, the exhaustiveness adjustment in 2000 for type N7 was 0.5 % of GDP. This covered: (i) wages & salaries in kind, and (ii) tips & gratuities.

For the wages and salaries in kind, the CZSO distinguished and quantified 11 types of income in kind:

(a) Wages & salaries in kind (taxable)
(b) Meal vouchers
(c) Contributions from social funds
(d) Per diem for business trips
(e) Expenditures on clothing of regular members of the armed forces
(f) Other social expenditure (covered from costs)
(g) Housing contribution
(h) Goods at a reduction and provided free of charge
(i) Remitted interest
(j) Company cars used for personal needs
(k) Board and lodging provided free of charge or at reduced prices

For the quantification of the individual types of wages and salaries in kind, the CZSO used three main data sources: (1) financial and statistical questionnaires of costs and revenues linked with the economic activity of institutional units of all residential sectors; (2) the statistical survey of total labour costs; (3) estimates by experts for some items. The first two sources provide reasonably robust initial estimates for most items of income in kind. The third source provides estimates for company cars for private use (j) and for board and lodging provided free of charge or at reduced prices (k). These two experts' estimates are effectively exhaustiveness adjustments.

For tips and gratuities, the CZSO estimates assume these are concentrated in the following areas:

(a) Restaurants and bars
(b) Hairdressing and other beauty treatment
(c) Physical well-being activities
(d) Taxi services.

CZSO obtained a final estimate of the aggregate amount of tips after comparing two methods of calculation. The first method is based on the final consumption expenditures of households and foreign visitors structured according to COICOP. The share of expenditure accounted for by tips in different areas correspond to local practices and depends on the quality of service. Based on expert opinions, the share varies from 3% to 10%. The second method is based on the numbers of persons carrying out the activities listed above, the amount of tips per day and the average number of working days per year. CZSO used two sources for working persons – data from Labour Force Survey and the average numbers of working persons according to the main data sources used for compiling national accounts (data at the level of NACE three-digit activity). CZSO assume tips are found only in non-financial corporations and households. The total amount of tips was split between production and incomes using numbers of employees in these two institutional sectors.

II OECD Study

Based on the OECD study[69] on the NOE in the Western Balkan Countries[70] (WBC), it was observed that many WBC countries relied mainly on (i) "expert method" which involves consulting tax inspectors, accountants and other persons with relevant knowledge, (ii) labour input methods based on labour force surveys or derivatives, (iii) *Ad hoc* surveys, and (iv) supply-use methods for improving GDP exhaustiveness. Broadly, the study observed that NOE is mostly in the household sector (among the institutional sectors) and further in trade activity (among the activities).

The study[71] also observed that improvements are needed in the method of estimation of dwelling services, goods for own consumption, illegal activities and government consumption of fixed capital. Country-wise experiences are indicated below:

II.1 Albania

Underground Production (N1 and N6)
For each industry grouping, the approach takes the average value-added per employee seen in the small enterprise 'formal' sector and imputes these values to each job identified in the labour force survey.

Producer not obliged to register (N3)
The main exhaustiveness adjustments made here reflect agricultural products for own-use, based on the expert judgement.

Other Statistical Adjustments (N7)
Although no estimates are made for Type N7 in Albania it is recognised that two areas at least should be measured: tips (taking total turnover in the restaurant sector and multiplying this figure with the average tip-rate) and other income in kind. Current estimates of government consumption of fixed capital are compiled using simplistic assumptions and methods. Straight

[69] Text for this part is from the paper, Ahmad, Nadim : Measuring the non-observed economy in Western Balkan Countries : Practical lessons for Transition economies : presented in the International conference, "Experiences and Challenges in Measuring National Income and Wealth in Transition Economies," organized by the International Association for Research in Income and Wealth (IARIW) and the National Bureau of Statistics (NBS) of China, Beijing, China September 18-21, 2007.

[70] Albania, Bosnia and Herzegovina, Croatia, Kosovo, FYR of Macedonia, and Serbia and Montenegro

[71] The estimates and findings are still experimental in nature.

line depreciation is used applied to historical costs, and current estimates of this activity amount to just under 10% of total GVA of this sector.

II.2 Croatia

Underground production (N1 and N6)
Croatia estimates underground production (N1 and N6) using the labour-input method (taking the average value-added per person employed in enterprises in the 2-9 size class by sector).

Producer not obliged to register (N3)
Croatia uses a macro approach to estimate agricultural output, but an adjustment is made to reflect the fact that own-account production and production sold by households is calculated using wholesale prices. The only activity recorded in N3 is own-account construction, which is estimated at 10% of declared values of households on construction activities.

Registered enterprises not included on the business register (N4, N5)
No estimate is considered necessary for N4 as the business register is comprehensive in this regard. An adjustment is made for N5 however for income from renting, dwellings rooms and spaces, based on data for this activity that are reported to the tax authorities but are not included in register.

Other Statistical Adjustments (N7)
Statistical adjustments are made to reflect agricultural prices, (see N3 above); secondary activities, using information from household surveys, and tips, which are calculated using average tip rates as a proportion of turnover in restaurant/bar establishments that typically receive tips. Currently, general government consumption of fixed capital is valued on the basis of 4% of compensation of employees.

II.3 FYR of Macedonia (FYROM)

Underground production (N1 and N6)
FYROM uses a labour-input method to estimate underground production. The approach is a staged one that first corrects estimates of value-added per employee declared by registered enterprises by making adjustments for (i) underreported wages and salaries (using information from the Labour Ministry); (ii) over-reported intermediate consumption (investigating trends and comparing across businesses and sectors); and (iii) for the trade sector, underreported turnover, so that production and value-added are corrected using supply-use tables and trade margins. The final stage is then to adopt the labour-input method using adjusted labour productivity figures in small enterprises as proxies.

Producer not obliged to register (N3)

Construction of dwellings, extensions to dwellings, capital repairs; using information from the Department of Construction which shows the value of work on dwellings, extensions to dwellings, capital repairs of dwellings produced by households.

Tourism: catering and accommodation services; using information from the Tourist Bureau on the total number of registered tourists and nights spent in private rooms, including estimates of any additional catering services provided. Gross output is taken as the product of the total numbers of nights and the average costs per night. Intermediate consumption is

estimated on the basis of information from the normal statistical surveys of corporations and unincorporated enterprises and other national accounts information.

Unincorporated household enterprises that have very small-scale market output; obtained from the Tax Office, reflecting producers with very small-scale output but who are still obliged to pay a fixed tax. Additionally, using data from the LFS and the labour input method, adjustments are made for individuals that perform services (such as child-minding, cleaning) for friends/neighbours and take remunerations in cash or in kind.

Estimates of agricultural output for own final consumption are not estimated separately but they are included in the value of total agriculture output, which is estimated using a macro based method (total area under a crop multiplied by an average yield rate).

Registered enterprises not included on the business register (N4, N5)
In FYROM, the sole entry here reflects author's fees, using tax information provided by the Ministry of Finance to calculate turnover, with adjustments of 20% and 10% to reflect intermediate consumption and consumption of fixed capital respectively.

Other Statistical Adjustments (N7)
FYROM include an adjustment under N7 for the consumption of general government fixed assets, based on the following (straight line) CFC (depreciation) rates:

- Machinery and equipment 20%;
- Cultivated assets 20%;
- Livestock for breeding, dairy, draught etc 10%;
- Other fixed assets 20%;
- Buildings, road and other structures 1% except Road Fund 3%.

II.4 Montenegro

Underground production (N1 and N6)
Estimates of Type N1 and N6 are made using the expert approach. For Type N1 an adjustment is made explicitly to reflect tourism services provided by hotels and restaurants. This adjustment, adding 0.3% to GDP and bringing total value-added in this sector up to 2.5% of GDP, is recognised as very conservative (For example research by the World Travel & Tourism Council in co-operation with the Ministry of Tourism concluded that the share of hotels and restaurants in GDP was 14% in 2004). Comparing this adjustment to equivalent adjustments in other countries it is interesting to note that in Croatia this adjustment is included in N5 and in FYROM it is included in N3. All other adjustments for underground production are allocated to Type N6.

Producer not obliged to register (N3)
MONSTAT makes adjustments for the following activities: own-account agricultural production; own-account construction and real estate, renting and business activities. In all these three cases, expert methods are used (with coefficients of 18% for agriculture, 5% for construction and 5% for real estate renting and business activities).

Registered enterprises not included on the business register (N4, N5)
The self-employed are not included in MONSTAT's statistical register but they are registered on an administrative register (Central Register of the Commercial Court and reported by the

Municipal Secretaries (Departments) for Economy). There were however plans to include them in the Administrative Register during 2006. At present the only adjustments made reflect the self-employed working in the agriculture sector.

II.5 Serbia

Underground production (N1 and N6)
The starting approach is to estimate underground production of Type N6, using supplementary information provided by the survey on entrepreneurship which provided the basis for an analysis of value-added, and intermediate consumption to output ratios. This analysis provided the benchmark labour productivity estimates used in calculating Type N1 on the basis of the labour-input approach.

Producer not obliged to register (N3)
No adjustments are included under Type N3. Own production of agricultural outputs, which usually features here, is estimated, as in other countries, using a macro-based approach. Own-account construction is not thought to be a problem, as the procedure for obtaining building permits has been simplified in recent years, and penalties for illegal construction are now stipulated in law, and, so, no adjustments were deemed necessary for this activity.

Registered enterprises not included on the business register (N4, N5)
Adjustments here reflect the fact that companies and legal persons are required to submit returns to the tax authorities at the end of a financial year. Businesses that become inactive before that reporting period therefore do not submit such returns (in Serbia this amounts to about 10% of enterprises). For VAT paying businesses, Serbia estimate this activity using VAT data, since VAT will still have been paid even by failed business. For businesses below the VAT threshold the assumption is that each failed businesses was, on average, active for four months.

Other Statistical Adjustments (N7)
Serbia undertook an ad hoc statistical survey, piggy-backing onto the regular household budget survey, to measure the following activities: health services, in particular payments to public sector workers for access to free services, broken down by type of service (operation); private teaching (teaching hours); and tips in, the more general sense, to taxi drivers, waiters, hairdressers, etc. Currently, general government consumption of fixed capital is valued on the basis of 4% of output.

II.6 Illegal Activities (N2)

Narcotics
For narcotics, Croatia adopts a supply based approach (based on seizure rates). The starting point in Croatia is drug seizures (quantities) to which are applied seizure rates (25% effective), prices (by drug type) and intermediate consumption estimates. FYROM uses a demand approach and Serbia adopts a supply-demand approach. The approach has been to attempt to estimate the number of drugs users (by drug type) in each country multiplied by the street price (with adjustments made to reflect intermediate consumption in the case of value-added and imports in the case of GDP). In both Croatia and Serbia narcotics contribute 0.3% of gross value-added.

Prostitution
Both Serbia and Croatia have adopted supply side approaches to estimate prostitution based on official government estimates of prostitutes in Croatia and unofficial research sources in Serbia, namely, the estimated number of services provided and the average prices for these services. The coverage is estimated at 0.7% of GDP and in Croatia 0.19%.

People Smuggling
Estimates of smuggling of people through FYROM have been made using statistics provided by the Ministry of Interior Affairs, based on extrapolations of the number of foreigners discovered illegally crossing national borders and estimates of the prices these individuals paid for transportation through the country. At present, it is assumed that the revenue paid to domestic operatives for facilitating transit through the country are equal to value added; although future estimates may embody some adjustment based, for example on the margins that might be found in the transportation sector. The approach used in Croatia is similar, based on foreigners caught crossing the border illegally and a 50% capture/detection rate, and an average price paid by these illegal immigrants for the part of the journey through Croatia. This activity is estimated to contribute 0.04% to Croatia's GDP.

Copyright Infringement
Croatia has also begun to develop estimates of counterfeit production of media goods (CDs/DVDs/videos/Audio-cassettes), using quantities detected, seizure rates and market prices.

Corruption
Typically bribes should not be included in GDP as they merely reflect transfers, like extortion, but in some cases it is difficult to differentiate a bribe from a payment for a service. For example, throughout the WBC, it is common practice for individuals to pay doctors and teachers a 'tip' for services provided. In some cases the tip may be just that, in the sense that it is paid after services have been provided but in other cases the 'tip' is made in the knowledge that without it the services that will be eventually provided may not be of the same quality (for example the payment might involve jumping a queue). Using information on criminal offences related to this activity, contribution of this activity is estimated at 0.5% of GDP.

II.7 Owner Occupied Dwellings

Correct estimates of rents for dwellings (especially imputed rents for owner-occupied dwellings) are important to ensure that GDP estimates are exhaustive. The user cost approach is recommended for use by countries where the rental market for dwellings is small and rented dwellings are not typical of the total stock of dwellings. The user cost method was discussed in detail in the previous chapter.

For European countries, expenditure on dwelling services as a share of GDP is usually between 8% and 12% and it tends to increase as GDP per capita rises. The estimates of dwelling services as a per cent of GDP is 4.5% for Albania, 10.9% for Bosnia and Herzegovina, 8.7% for Croatia, 9.5% for FYR of Macedonia and 11.3% for Serbia.

4.5. Concluding remarks

The tabular framework for achieving GDP exhaustiveness is largely based on the European country practices of compiling national accounts and the underlying data sources. The key

source data for estimating production in the private sector basically comes from surveys based on a business register, tax records and VAT data including financial accounts of companies. The recommended methods for dealing with non-exhaustiveness types, therefore, take into account these normal data sources and compilation practices. Further, the exhaustive adjustments are not really significant in comparison with the levels of GDP in most European countries. Even in the select candidate countries, the adjustments account for about 12 per cent on an average.

On the other hand, the situation in African developing countries is different. The data sources for compiling national accounts are limited. Most countries may not have a business register or even an updated business frame as a basis for carrying out sample surveys. Establishment surveys and censuses are infrequent, which can only provide benchmarks. And finally, there is large informal sector, which has a very high share in output and employment. Therefore, countries may need to examine the applicability of the TAE and some of the suggested methods for their countries (for example, the tax audits, surveys for estimating underground production, and mis-reporting), before starting to work on TAE.

Despite the contrasts in the availability of source data between European countries and the African developing nations for compiling national accounts, some of the methods adopted by European candidate countries in improving exhaustiveness have applications for the developing countries. The candidate countries generally used *ad hoc* surveys, labour input methods, commodity flow methods, and expert estimates to make adjustments for non-exhaustiveness, all of which can be applied in developing countries. For example, labour input methods can be used extensively to estimate informal sector, underground production and some of the other types of non-exhaustiveness.

The two frameworks discussed in chapters 3 and 4 for achieving exhaustiveness aim at improving the national accounts by addressing the problem areas in the source data and estimation methods. The advantages of using these frameworks is to quantify the individual types of problem areas or non-exhaustiveness types, which could be used for improving source data used in national accounts and may also be useful in their own right for policy purposes. For the African developing countries, however, the first priority should be accorded to improving the coverage of informal sector, which is large in size and may be poorly covered at present. Once this is achieved, resources could be devoted to address other areas of NOE or non-exhaustiveness types.

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Chapter 5. Country Experiences

5.1 Burkina Faso: Accounting for the non-agricultural informal economy

5.1.1 Introduction

5.1.1.1 Context

The informal economy plays an important role in the economic debates in Africa. Available statistics have shown that it is a source of income for a significant proportion of the population. Therefore, it is necessary to have reliable statistics that enable guiding the decision makers on the policies to be implemented to improve the living conditions of employed persons.

Accounting for informal economy poses particular challenges which may differ from one country to another. These main difficulties are: the identification of units, and absence of written accounts. Some of the informal entrepreneurs may hide their activities for several reasons.

The level of production and the labor used in these informal sector units are assessed by collecting information from production units within the households.

5.1.1.2 Problematic issues

Due to lack of financial and human resources, most African countries are not able to conduct annual surveys necessary to estimate the informal sector; hence, there is a need for indirect methods of accounting the informal economy. The problematic issues in this context are related to the identification of appropriate methods, indicators to be used for the estimation, the hypotheses to apply and resultant biases in the estimates.

5.1.1.3 Goal

The paper aims to providing a method of accounting of the informal sector according to indirect approaches using the data on workforce. The study focuses on Burkina Faso's non-agricultural informal economy in 2009.

5.1.2. Methodology

The methodology that is used comprises three steps. It consists of:

- Developing an employment matrix;
- Estimating output per capita and wage per capita;
- Estimating the value added and employment in the informal sector by branches of activity in the formal and informal sectors.

5.1.2.1 Development of the employment matrix

The objective is to estimate the working population of Burkina Faso in 2009, classified according to sector, industries and employment status. Three approaches are possible for this, depending on the context of each country:

The first approach is to estimate the employed population by processing the survey data on production units. The types of surveys on production units are (a) Industrial and Commercial Census (RIC) and (b) National Survey of Employment and the Informal Sector (ENESI). In the current context of Burkina Faso, this approach cannot be used because the last ENESI was

carried out in 2001 and the RIC coverage is not sufficient. However, the RIC could provide indicators to validate the results obtained by the other estimation methods.

The second approach is to project the employment matrix obtained from the national accounts for the year 2008, by the employed population growth rate of each industry. This implies that assumptions need to be made about the labor structure, if such information is not available in the survey data. In Burkina Faso, it is this latter method that is generally used to estimate employment in the informal sector. One drawback of such a method is that it presents the same structure from year to year.

The third approach is to use data from the General Census of Population and Housing (RGPH) and household surveys for which the module on employment has been well developed. As part of this paper, we will use this approach for the following reasons:

- The last RGPH was in 2006 and the size of the population by age was projected by National Statistics Institute (INSD) until 2020. It will be noted (1): P_n^t the size of the population over n year to the time t. So, P_{15}^{2009} will be the size of the population aged over 15 years in 2009.

- There is a household survey that provides the structure on employment needed to develop the employment matrix. It is the ultimate survey on household living conditions (EICVM) that was conducted by INSD in 2009. This survey contains a jobs module, which allows calculation of labor market indicators. This is the percentage of the employed population in the total population and its employer structure classified according to industries and employment status.

The following notations are adopted:
The percentage of the employed labor force at time t is denoted by (1) : $\alpha_{Emp}^t$and the size of the working population at that date was noted (2) : E_{Emp}^t.

The structure of the employed population by the employer (Public, para-public, private formal, private informal) are summarized in the following Table 5.1.1;

Table 5.1.1: Notations concerning the structure of the working population by employer

Employer	Public	Para-public	Private formal	Private informal
Percentage of the employed population	(II) : β_{pub}^t	(III) : β_{para}^t	(IV) : β_{priv}^t	(V) : β_{info}^t
Size of the employed population	(3) : E_{pub}^t	(4) : E_{para}^t	(5) : E_{priv}^t	(6) : E_{info}^t

The size of the working population according to the employer is estimated through the equations eq1 to eq6.

$E_{Emp}^{2009} = \alpha_{Emp}^{2009} * P_{15}^{2009}$: (eq1). The size of the working population is equal to the proportion of that population multiplied by the size of the population aged 15 years and older.

Limiting the population to persons aged 15 and over is due to two main reasons: The first reason is retain the definition of the working population according to the ILO. The second reason is that the work of children under 15 years takes the particularities for this group to be treated separately, based on a specific survey.

$E_{pub}^{2009} = \beta_{pub}^{2009} * E_{Emp}^{2009}$: (eq2). The number of employed people in the public sector is equal to the proportion of that population multiplied by the number of the employed population.

$E_{para}^{2009} = \beta_{para}^{2009} * E_{Emp}^{2009}$: (eq3). The size of the working population of the para - public sector is equal to the proportion of that population multiplied by the number of the employed population.

$E_{priv}^{2009} = \beta_{priv}^{2009} * E_{Emp}^{2009}$: (eq4). The size of the working population in the formal private sector (formal private companies having a written accounting) is equal to the proportion of that population multiplied by the number of the employed population.

$E_{info}^{2009} = \beta_{info}^{2009} * E_{Emp}^{2009}$: (eq5). The number of employed people in the informal sector (E_{info}^{2009}) is equal to the proportion of the working population in the informal sector (β_{info}^{2009}) multiplied by the total employed population.

Employed people in the informal sector can be classified according branches of activity and the occupation status. The industry classification by activities adopted is the international standard industrial classification of all economic activities. We denote by δ_i^{2009} the proportion of the working population in the informal sector of industry in 2009 and Pop_i^{2009} its workforce.

$Pop_i^{2009} = \delta_i^{2009} * E_{info}^{2009}$ (eq6). The size of the working population of the branch i 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 (employees of informal sector, independent, employers, familials helpers, apprentices, trainees and volunteers). The familials aids, apprentices, trainees and volunteers can be grouped in a category other employed. In the following we adopt the following notations:

Table 5.1.2: Notations concerning the structure of the employed population of each industry according to the status of employment

	Employees	Indépendant	Employer	other assets
Proportion in 2009	γ_{sal}^i	γ_{Ind}^i	γ_{Emp}^i	γ_{Aut}^i
Work force in 2009	Nb_{sal}^i	Nb_{Ind}^i	Nb_{Emp}^i	Nb_{Aut}^i

$Nb_{sal}^i = \gamma_{sal}^i * Pop_i^{2009}$: (eq7). The number of employees in the informal private sector is equal to the proportion of employees in the informal sector multiplied by the number of employed people in the informal sector.

$Nb_{Ind}^i = \gamma_{Ind}^i * Pop_i^{2009}$: (eq8).The number of own-account workers (Independent) is equal to the proportion of self-employed multiplied by the number of employed people in the informal sector.

$Nb_{Emp}^i = \gamma_{Emp}^i * Pop_{info}^{2009}$: (eq9).The number of informal sector employers is equal to the proportion of employers multiplied by the number of employed people in the informal sector.

$Nb_{Aut}^i = \gamma_{Aut}^i * Pop_{info}^{2009}$:(eq9).The number of other employed is equal to the proportion of this sub group of workers multiplied by the number of employed people in the informal sector.

5.1.2.2. Estimated production per unit of employment and per capita wage

The objective is to estimate production and the average wage per worker in the informal production units in 2009. Two sources of information are used to estimate these indicators. These are the ENESI and RIC.

The ENESI is a household survey that takes place in two phases; the first phase takes place in 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 (IPU) identified during the first phase. This survey is the ultimate source of information for calculating a number of indicators, such as production per unit of employment, per capita wage, the trade margin rate, the intermediate consumption ratio to output, etc..

The RIC provides information on the number of production units (formal and informal), the turnover and the number of employees per unit of production. However, information from this source is not exhaustive for two main reasons:

- The geographical coverage of the country is not complete;
- All production units that do not have local labor are not included.

Given its representativeness, this operation provides the data 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 unit of employment.

The RIC used to compile data by industry and by status of the production unit (formal and informal) the numbers of employees, turnover and payroll paid. By denoting Eff_i as the numbers of workers in informal sector units;, CA_i et Sal_i respectively, the turnover and wages paid and T_{marg} the trade margin (gross margin/turnover),

Production of non-commercial informal production units is equal to their turnover; their secondary production trade is considered negligible.
The accumulated production of the non-commercial sector is then $P_i = CA_i$.

The combination of commercial production is $P = T_{marg} * CA$. The commercial sector is regarded as having no secondary production; P is the production of the branch and CA its sales turnover.

Output per worker in industry is estimated by the equation:
$P_i^w = P_i/Eff_i$: (eq10) by denoting P_i^w output per worker in the branch i.

Trade margin rate cannot be calculated using data provided by the RIC; It is usually calculated using data from the ENESI or a specific investigation purpose for having this objective. In this study, we will use the margin of the formal sector.

The salary per worker of the branch i is estimated by the equation:

$Sal_i^w = Sal_i/Eff_i$ (eq10) by noting$Sal_i^w$the per capita wage of the branch i.

5.1.2.3. Estimating the value added and wages in the informal sector by branches of activities.

There are several methods to estimate the added value of informal sector; The method practiced in 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 of products. Intermediate consumption estimated as CI / P is assumed to remain constant between the current year and the previous year. The value added by industry is then obtained as difference between output and intermediate consumption.

In this study, the approach is to estimate the total production of each branch by using the array of employment and output per worker of each branch.

The total informal sector production is estimated using the following equation:

$Pt_i = Pop_i^{2009} * P_i^w$: (eq11), by denoting Pt_i the total production of the informal sector and Pop_i^{2009} its workforce.

The value added of industry i can be estimated by using the technique coefficient of the branch (Ct_i= consommation intermédiaire/Production). This coefficient is calculated using survey production units in case the ENESI.

The value added of the branch i is obtained by multiplying the total output of the industry through its technical coefficient.

$VAt_i = Pt_i * (1 - Ct_i)$: (eq12) where$VAt_i$represents the value of the branch i.

5.1.3. Data source

5.1.3.1. Census data

Two types of surveys were carried out in Burkina Faso. This is the RGPH of 2006 and the RIC of 2009. The INSD projected population by age over the period from 2007 to 2020. This source has been used to calculate the size of the population of 15 years and older. The RIC was held in March 2009 and identified 38,572 companies and institutions (formal and informal). The collection covered 22 communities chosen for their importance in economic activities engaged. Moreover, only the local informal market production units have been included in the survey. Therefore, this source of information has been used only to estimate production and per capita wage.

5.1.3.2. Survey data

The household survey used for this study is the EICVM. This is a sample survey of households and has a peculiarity that data collection took place over a year to account for seasonal effects. The employment module was also well developed and included questions on businesses where persons were employed. These data were used to calculate the structure of the employed population according to the employer, the branch of activity and status.

5.1.3.3. Data from national accounts

The national accounts of 2008 were used to estimate the intermediate consumption ratio for the informal sector by industry and the trade margin. They have been used to estimate output per capita and per capita wage of branches that could not be covered by the RIC because of the mode of organization of the activity in these branches. These branches are mining, construction, transportation and financial services.

5.1.4. Results and discussion

5.1.4.1. Results

Table 5.1.3: Summaries of the results of RIC

Branches	Number of units		Turnover (in thousands)		Employees workforce	
	Informal	Formal	Informal	Formal	Informal	Formal
Mining and quarrying		43		67 376 743		492
Manufacturing	5991	450	52 125 705	174 629 700	24457	16573
Electricity, gas and water supply		3		313 587 690		2339
Construction	185	229	17 315 086	139 395 506		7615
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	16873	1804	256 115 749	590 344 568	47 645	26133
Hotels and restaurants	3939	269	31 338 219	17 760 725	2 028	1282
Transport, storage and communications	1681	263	9 675 710	65 673 730		8618
Financial intermediation	2	75	2 942 216	110 333 100		2842
Real estate, renting and business activities	472	394	14 322 034	80 131 720	3 130	4510
Éducation	57	202	1 410 202	21 072 034	4497	514
Health and social work	57	82	2 555 790	9 036 810	5 823	412
Other community, social and personal service activities	2877	160	6 052 690	74 397 440	5939	1244

Source: Our calculations on the basis of the RIC and national accounts.

Table 5.1.4: Employment 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
Indépendant	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
Othe 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	Éducation	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 employees	11 792		14 278		1 800		15 801	877
Indépendant	1 500		1 832			1850	7 153	
Employer	819		520		257		372	
Othe assets	4 912		2 670				2 407	74 236
Total	36 932	7 753	27 897	26 332	67 266	27572	29 582	75 113

Table 5.1.5: 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
Value added			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	Éducation	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
Value added	22 697		62 437		481	700	17 943	55
Salary	6 396		4 954		253		3 224	53

5.1.4.2. Discussions

The results obtained under this method are mainly used in the preparation of economic accounts. Therefore, two issues, namely, estimation for benchmark year and estimation for current year, need to be addressed.

Integration of the results provided by the method in a base year of national accounts

It is necessary to have a recent survey on employment and the informal sector, in order to calculate the technical coefficients CI/P and the structure of the intermediate consumption by industry according to the products consumed. The integration of the results provided by the method can be taken up in five steps:

Step 1: Input the data on production, total intermediate consumption by branches, wages and employee numbers into the database of the national accounts.

Step 2: Make the necessary adjustments to production through balancing methods. When adjustments were made to the production of a given branch, its intermediate consumption estimate must be recalculated in order to retain the technical coefficient provided by the survey on employment and the informal sector.

Step 3: Calculate intermediate consumption values disaggregated by products using the data provided in 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, then reasons for the deviation should be probed. In such a situation, we must analyze the production branch, the CI/P ratio and the product structure of the intermediate consumption. It is crucial to focus on the branches that are most important and where the divergence is large. Appropriate adjustments based on the investigations can be made to significantly reduce the gap between supply and demand for CI.

Step 5: Determine the level of production by branch, CI / P 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 the results provided by the method during the current year

It is necessary to have a price index (for final consumption, the production of some products, imports and exports) and a volume index (such as the index of industrial production). One hypothesis is: technical coefficients CI / P and the intermediate consumption structure of products by sector do not vary at constant prices from one year to another. The structure of the previous year's accounts may be assumed to be same for the current year. Production, wages and employees by branches are given as recorded in the results; the price or volume indices can be used to 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 have few differences 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.

5.1.4.3. Perspectives

In future, two activities can be taken up to supplement the information available on the informal economy. The first activity is to develop and standardize methods for estimating the underground economy (prostitution, drugs, illegal activities, etc.). This will involve launching of surveys that may provide relevant information on the level of these activities and to develop standardized methods for using the data in the national accounts.

The second activity is to use the survey data to estimate the property income, transfers received and paid, the income taxes paid, and spending on final and durable consumer goods by the households. These compilations will help in developing the sequence of accounts upto capital account and estimate the household financing capacity.

5.1.5. Conclusion

This study proposes a method of estimating the informal sector using data on workforce, and the existing sources of information and indicators that are used to compile national accounts. It also suggests methods and assumptions in the absence of relevant data and discusses issues related to these assumptions. The study also suggests methods for inclusion of the informal economy in national accounts based on these sources of data, including compilation of sequence of accounts for the household sector

5.2 Cameroon: Measuring informal economy through mixed household-enterprise surveys

5.2.1. Introduction: background and justification

The economic crisis that affected the Cameroon between 1985 and 1994 was responsible for the collapse of export earnings, following a fall in the commodity prices (cocoa, coffee, cotton, etc.). As a result, the deterioration of living conditions of people resulted in the phenomenon of rural exodus to the big cities. This created an increase in unemployment, which promoted to the development of informal sector, characterized by numerous survival activities.

In this context, the Government through the National Institute of Statistics (NIS) organized only in Yaoundé in 1993 the first 1-2-3 survey of the employment (phase 1), the informal sector (phase 2) and the consumption (phase 3) to measure the extent of this phenomenon.

The second and third national coverage operations entitled "Survey of Employment and the Informal Sector (EESI)" were conducted in 2005 and 2010 as part of the monitoring/evaluation of the Strategy Document for Growth and Employment (DSCE) and the measurement of the progress towards achieving the Millennium Development Goals (MDGs).

Their implementation at national level aims to provide users with a set of indicators on (i) labor market conditions and labor income and (ii) the informal sector and its contribution to the economy in terms of employment and value added.

This study aims to assess the contribution of the informal economy in creating jobs and wealth in Cameroon through mixed household-enterprise surveys in 2005 and 2010 that were conducted throughout the national territory.

Besides the introduction and conclusion, the document includes six sections: the first section presents the definitions of informal sector and informal employment, the second makes a brief description of the coverage and the methodology of the surveys, the third section presents the tabulation process of data, the fourth dwells on the summary results, the fifth section describes the integration of informal sector and informal employment in national accounts, and the sixth compares the estimates based on surveys' results with those from national accounts.

5.2.2. Definitions of informal sector and informal employment

The Survey of Employment and Informal Sector (EESI) is a two-phase statistical survey. The first step seeks to understand Employment (Employment Survey) and the second to assess the economic activities of non-agricultural informal sector (Informal Sector Survey).

The Employment Survey holds as statistical unit, the regular household and its individual members versus collective households[72]. However, analysis of employment focus on individuals aged 10 and over in the Cameroonian context.

The Informal Sector Survey is a type of survey of "companies" with informal settlements, called "informal production units" (IPU), since many of them do not have their own premises (workshop, shop, etc…), which is an element usually associated with the concept of establishment in national accounts.

[72] Collective households are for example: students in boarding, military barracks, long-term patients admitted to hospitals, religious in communities, etc.

The two phases of EESI 2 in 2010 took place simultaneously whereas at EESI 1 in 2005, they were not held at the same time.

5.2.2.1. Identification of informal production units (IPU)

Within the framework of surveys conducted in Cameroon, the informal sector is defined as all production units without taxpayer identification number and/or not having a formal written accounting system under the OHADA[73] accounting plan.

During the survey, the IPUs are identified from the following three questions:

1. *What is your socio-professional category?*

   Wage earner:
   1. Senior executive, engineer and assimilated
   2. Medium executive/foreman
   3. Skilled employee
   4. Semi-skilled employee
   5. Labourer

   Non-wage earner:
   6. Employer
   7. Own account worker
   8. Family aid
   9. Apprentice
   10. Unclassifiable

2. *Is the enterprise in which you exercise your main employment (or which you manage) registered?*

   A) Taxpayer's number
   1. Yes 2. No 3. Does not know

   B) Business registration Number
   1. Yes 2. No 3. Does not know

   C) National social and Insurance Fund (NSIF/CNPS)
   1. Yes 2. No 3. Does not know

3. *Do you keep accounts?*

   1. No
   2. Statistical and tax statements or formal accounts
   3. Not detailed accounts
   4 Other (Specify)

A unit is classified as Informal Production Unit (IPU) if the socio-professional category=06, 07 and (taxpayer number =2 or accounts =1,3,4).

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

5.2.2.2. Identification of informal employment

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. The survey also captures informal employment in the formal private sector and in public administration.

5.2.3. Coverage and methodology of surveys

The sampling frame used for the first phase of the EESI 1 - 2005 is provided by the mapping of the third General Census of Population and Housing (RGPH) in 2005. It was used to select a random sample of 8540 households stratified by ten regions and area of residence[74] (urban, semi-urban and rural). The cities of Yaoundé and Douala were each regarded as a survey area. This phase also permits the identification of about 6060 non-agricultural informal units (IPU). However, the second phase involved a sample of 5274 units, which resulted in the full survey of 4815 IPU, representing a coverage rate of 91.3%.

In 2010, the sampling frame was updated and allowed to randomly select a sample of 8160 households stratified according to the same stratification as in 2005. The first phase identified 4705 non-agricultural informal production units (IPU) and 4592 were surveyed in the second phase, representing a coverage rate of 97.6%.

The coverage of the two surveys in the second phase includes informal production units (IPU) engaged in industry, trade and services. The primary sector activities are excluded with the exception of forestry and logging.

The table below shows the distribution of the household sample by region and area of residence.

Table 5.2.1: Households surveyed by region and area of residence (%)

		2005			2010	
	Urban	Semi-urban/ Rural	Total	Urban	Semi-urban/ Rural	Total
Douala	28.1	-	16.4	29.8	-	17.2
Yaoundé	24.1	-	14.1	25.5	-	14.7
Adamaoua	3.6	9	5.8	3.2	7.2	4.9
Centre - Yaoundé	3.4	12.3	7.1	2.6	11.3	6.3
East	3.4	9.9	6.1	2.6	6.4	4.2
Far-North	7.6	12.1	9.5	6.2	21.7	12.7
Littoral -Douala	3.8	9	6	3.8	4.9	4.3
North	5.2	9.3	6.9	5.3	11.8	8.1
North-West	5.6	9.6	7.3	4.9	12.7	8.2
West	6.8	10.4	8.3	7.7	11.6	9.3
South	3.4	9	5.7	2.6	4.9	3.6
South-West	5	9.3	6.8	6	7.5	6.6
Total	100	100	100	100	100	100

74 Urban strata consist of 50,000 or more inhabitants agglomerations (cities); semi urban strata agglomerations 10 000-49 999 inhabitants (small towns) and rural strata are the agglomerations of less than 10,000 inhabitants.

Source: NIS, EESI 2005 and EESI 2010.

5.2.4. Tabulation of data

The first phase of the surveys determines (i) the composition of household members, characteristics of housing and household equipments and (ii) at the individual level, the activity status, unemployment indicators, labor income, business conditions, etc.

The processing of these data provides, for the needs of the national accounts, 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).

The second phase of the surveys allows for the compilation of production and the generation of income accounts of the non-agricultural informal activities, to assess its performance and its importance in the national economy.

For the needs of the national accounts, the processing of such data provides detailed tables on (i) the output by industry and product, (ii) trade margin by product, (iii) self-consumption by industry and product, (iv) intermediate consumption by industry and product, (v) compensation of employees by industry, (vi) taxes paid by industry and (vii) gross fixed capital formation by industry and product.

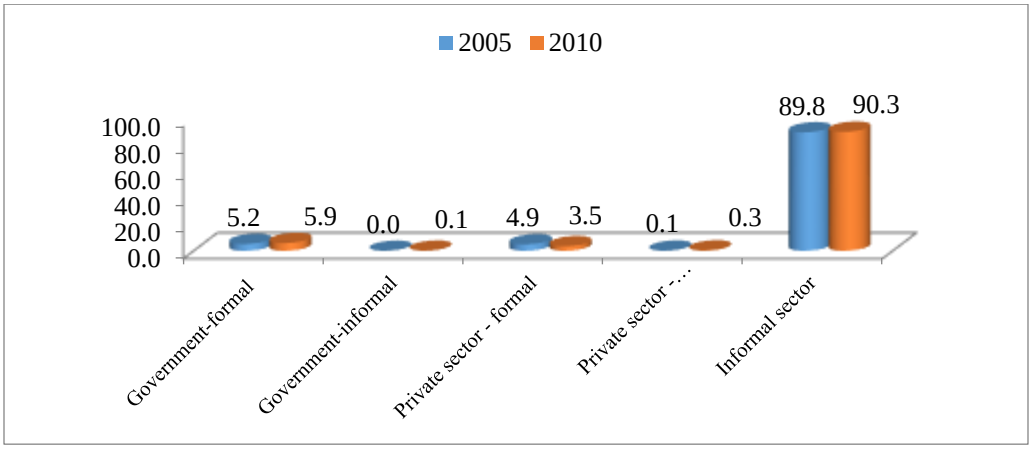
5.2.5. Summary results

This section presents in the first part, employment situation by institutional units, by sector and industry from the phase 1 of the survey and in the second part, the value of output, value added and productivity per worker broken down by industry from the phase 2 of the survey.

5.2.5.1. Employment situation

In Cameroon, the informal sector employs about 90% of the occupied workforce in 2005 and 2010. The formal sector has barely 10% of jobs, divided between the public administration and the private sector.

Otherwise, informal employment is very low in the formal sectors, less than 0.3 percent within both public administration and private sector in 2005 and 2010.



Source: NIS, EESI 2005 and EESI 2010.

By sector and activity, it appears that more than half of workers are engaged in the primary sector, dominated by the agricultural activities. The industry sector employs 14.8% in 2005 and 12.6% in 2010 of the occupied workforce, mainly in the manufacture of food products. The tertiary sector employs over a third of the workers, mainly in the trade activities (*see table 5.2.5*).

5.2.5.2. Situation of the Informal Production Unit (IPU)

IPU by size

In Cameroon, the informal sector is overwhelmingly made up of micro-units. The average size of the units decreased from 1.5 person in 2005 to 1.3 person in 2010.

Throughout the country, more than two thirds of UPI (69.4%) in 2005 and 86.0 % in 2010 have only one employee (self-employment). Only 4.5% in 2005 and 3.6% in 2010 employ more than three persons. *This is a crucial result since the informal sector definition adopted for the surveys did not impose any limit on the size of the units*.

Table 5.2.2: Percentage of IPU by size

	Activities in 2005				Activities in 2010			
	Industry	Trade	Services	Total	Industry	Trade	Services	Total
One person	65.2	75.8	70	69.4	81.2	89.3	87.6	86.0
Two persons	20.9	17.4	17.3	19	8.9	6.6	6.5	7.4
Three persons	8.3	4.4	7.8	7.1	3.8	2.4	2.8	3.0
Four persons or more	5.6	2.4	4.9	4.5	6	1.7	3.1	3.6
Total	100	100	100	100	100	100	100	100
Average size (person)	1.6	1.3	1.5	1.5	1.5	1.2	1.2	1.3

Source: NIS, EESI 2005 and EESI 2010.

Output and value added by industry

Economic performance indicators such as output and value added by industry are generally increasing over the period 2005-2010. Average output per IPU increases from 110,200 CFAF per month in 2005 to 198,300 CFAF per month in 2010,corresponding to an increase of 12.5% on average per year, while the average value added increases from 62,400 CFAF per month in 2005 to 95,900 CFAF per month in 2010, i.e an increase of 9.0% on average per year.

In terms of industries, the IPU of construction, wholesale trade and clothing have most improved their economic performance between 2005 and 2010.

Table 5.2.3: Average monthly output and average monthly value added per IPU (in thousands CFAF)

Sector and industry	Monthly output		Monthly value added	
	2005	2010	2005	2010
Industry sector	*87.6*	*260*	*48.9*	*100.7*
Manufacture of food products	58.7	123.6	21.3	36.5
Clothing	76.8	199.2	44.3	102.5
Construction and civil engineering	152.6	732.3	124.1	267.4
Other industries	157.9	462.6	106.7	202.6
Trade	*86.3*	*133.6*	*68.3*	*96.9*

Wholesale trade	340.7	475.7	276	344.5
Retail trade	70.6	97.0	55.5	70.5
Services	*175.4*	*200.3*	*79.8*	*89.9*
Transportation	207.1	238.4	111.5	137
Restaurant and hotel	201.2	244.6	60.6	70.7
Repair of motor vehicles and motorcycles	96.7	119.4	69.6	74.8
Other services	146.3	166.1	100.1	83.5
Total	110.2	198.3	62.4	95.9

Source: NIS, EESI 2005 and EESI 2010.

Productivity per capita and income by industry

The ratio value added on the number of workers in the informal sector, which represents the "productivity per capita" has a net increase of 32 300 CFAF during the period 2005-2010 (*table 5.2.6*).

The productivity per capita is increased in the industrial sector compared to other sectors. It increased from 30,800 in 2005 to 68,100 CFAF in 2010. It was the industries of wholesale trade and construction that have experienced upward trend in productivity per capita. The trend is less important for the service sector, especially for the repair activity.

The average monthly income of the informal sector increased from 29,600 to 48,400 CFAF over the period (see table 5.2.6). Considering the sector, the average monthly income has increased more for the IPU of the industry (+ 19,700 CFAF) than for the services (+14,700 CFAF). Furthermore, wholesale trade and construction recorded the largest increases, respectively + 42,800 and +27,700 CFAF.

5.2.6. Integration of informal sector and informal employment in national accounts

The main objective of this work is essentially aimed towards comprehensive measurement 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.

5.2.6.1. Treatment of the elements to be included

As part of the survey, the principal activity of the IPU is determined by the product generating the highest turnover instead of value added 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.

Data from the survey of employment (phase 1) provides a detailed table of national employment by industry, 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 arbitrated with the data of the National Social and Insurance Fund

and the Business Register or statistical and tax statements. There is no arbitration on the informal sector data.

Data from the survey of informal production unit (phase 2) allows detailed tables on (i) the output by industry and product, (ii) trade margin by product, (iii) self-consumption by industry and product, (iv) intermediate consumption by industry and product, (v) compensation of employees by industry, (vi) taxes paid by industry and (vii) 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.

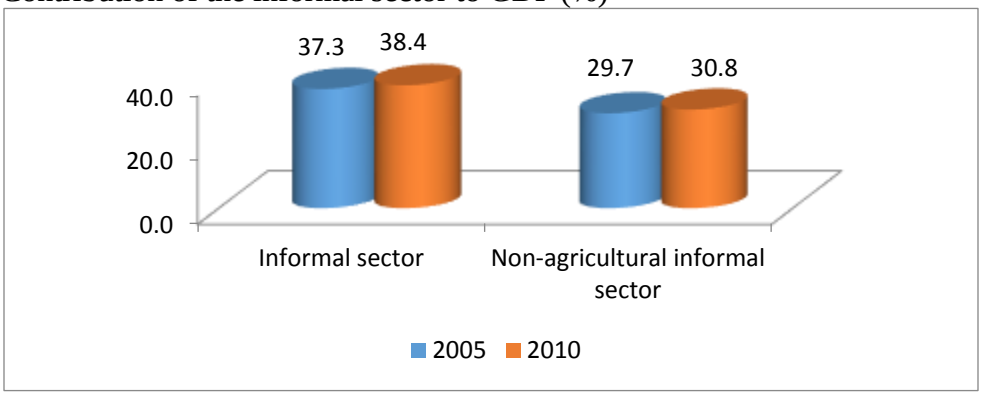
5.2.6.2. Analytical work: supply and use of products and production account

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.

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 and 2010.

Otherwise, the non-agricultural informal sector accounts for almost 60 % of the jobs and about 30 % of GDP in 2005 and in 2010. However, despite this very high proportion of jobs, 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.

Contribution of the informal sector to GDP (%)



Source: NIS, National accounts, 2005-2010.

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 (see table 5.2.7 in the annex). It is followed by wholesale trade (3.4 against 3.9%) and manufacture of foods products (3.4%).

5.2.7. Comparison of the survey results with those from national accounts work

The comparison of the value added obtained from the national accounts analytical work to that of the survey in 2005 and 2010 revealed differences of more than 45%. The largest differences are observed in wholesale and retail trade, manufacture of foods products and construction over the period.

Table 5.2.4: Value added from national accounts and surveys results (in millions of CFAF)

	EESI 2005	National accounts 2005	Gap (%)	EESI 2010	National accounts 2010	Gap (%)
Manufacture of food products	173 868	324 470	86,6	186 060	435 201	133,9
Clothing	67 385	102 278	51,8	155 401	176 663	13,7
Construction	120 564	65 956	-45,3	269 235	76 152	-71,7
Other industries	255 933	384 942	50,4	353 136	546 996	54,9
Trade						
Wholesale trade	119 096	311 426	161,5	203 866	507 235	148,8
Retail trade	405 580	757 506	86,8	663 171	1 187 376	79,0
Services						
Transport	121 295	159 188	31,2	243 166	196 218	-19,3
Restaurant and hotel	244 337	191 906	-21,5	214 535	229 434	6,9
Repair of motor vehicles and motorcycles	37 958	38 054	0,3	50 240	42 529	-15,3
Other services	386 607	471 876	22,1	342 023	584 352	70,9
Total	1 932 623	2 807 602	45,3	2 680 833	3 982 156	48,5

Source: NIS, EESI 2005 and 2010, National accounts 2005 and 2010.

These differences could be mainly explained by:

1. The contract work (purchase of raw materials by the customer) is very common in the context of the informal sector. Indeed, in certain activities such as sewing, carpentry, hairdressing and even the construction, it is the customer who buys inputs. The output is underestimated when input costs are not taken into account.

2. The consumption of part of the output of IPU for household needs (self- consumption) is often underestimated, because it is generally important for activities such as trade, food service activities and manufacture food products.

3. For informal production units operating at home, expenses such as electricity, water, rent must be shared between the household and the production unit (indivisible loads). However, this separation is very difficult to perform in the survey.

4. During the survey, several informal production units have not had a regular activity in the 12 months preceding the survey (seasonality of activities). The impact of the seasonality or irregularity of the activity leads to a bias in the measurement of the IPU indicators.

5. In national accounts, other data sources are also taken into account in its compilation.

5.2.8. Conclusion, remarks and future initiatives

This paper aimed to present the measurement of informal sector in Cameroon through mixed household-enterprise surveys and integration of its results in the national accounts.

The results obtained show that the non-agricultural informal sector contributes 30% to GDP and employs almost two-thirds of workers. However, labor productivity is very low in IPUs compared to the formal sector, because itis characterized by a multitude of survival activities and essentially with low profitability.

Since, mixed household-enterprise surveys are carried out at intervals of five years or more in African countries in general and especially in Cameroon, which poses the problem of data for compiling the national accounts for the intervening years between the two surveys.

For the years after the benchmark estimates of informal sector, 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 supplies (production and imports) are confronted with the uses (consumption, investment, exports and changes in inventories).

Intermediates consumptions by industry data are estimated assuming the constancy of technical coefficients by industry. Estimates for other items (wages, etc,) are obtained by multiplying the various economic ratios with the employed population. However, only the annual implementation of small mixed surveys can help to improve these extrapolations.

Regarding the GDP exhaustiveness in terms of under reporting of output by formal establishments, a mode of production is usually created in the production account by industry to handle this phenomenon. The correction of the output is often carried out if the technical coefficient of the formal establishment is very high in the current year in comparison to the technical coefficient to the previous year. However, the correction of the output of the informal production units is made in the context of supply and use balance.

In terms of illegal activities, such as drugs and prostitution, smuggling, etc., there is no specific method followed for their estimation. However, adjustments can be made on the level of production, consumption, imports or exports of the products identified in the economy to be the subject of smuggling and cross-border trade within the supply and use balance. The international community must handle these issues by defining appropriate methodologies that can help the national statistical offices.

Table 5.2.5: Employment by sector and industry (in %)

Primary sector	53,8	53,3
Agriculture	51,4	50,7
Farming, hunting and fishing	2,1	2,6
Forestry and logging	0,3	0,1
Secondary sector	14,8	12,6
Manufacture of food products	6,9	4,6
Clothing	2,6	2,6
Construction and civil engineering	2,2	2,4

Other industries	3,1	3,1
Tertiary sector	31,4	34,1
Trade	10,7	12,3
Transport	3,1	1,1
Restaurant and hotel	3,7	4,0
Repair	1,8	3,5
Administration, education and health	6,2	8,6
Other services	5,7	4,6
Total	100,0	100,0

Source: NIS, EESI 2005 and EESI 2010 (phase 1).

Table 5.2.6: Average productivity per worker and average monthly income per IPU (in thousands of CFAF)

Sector and industry	Productivity per worker		Monthly income	
	2005	2010	2005	2010
Industry sector	30.8	68.1	22.1	41.8
Manufacture of food products	13.9	29.4	12.0	22.0
Clothing	31.7	55.8	27.6	29.7
Construction and civil engineering	56.6	146.1	50.1	77.8
Other industries	65.7	120.1	32.8	80.2
Trade	50.7	82.3	34.9	52.1
Wholesale trade	196.3	287.9	66.9	109.7
Retail trade	41.3	59.9	32.8	45.8
Services	53.0	73.1	38.4	53.1
Transport	85.8	122.5	63.8	68.8
Restaurant and hotel	38.0	56.1	31.8	48.0
Repair	44.2	47.3	32.5	41.2
Other services	69.5	70.7	41.4	53.1
Total	41.6	73.9	29.6	48.4

Source: NIS, EESI 2005 and EESI 2010 (phase 2).

Table 5.2.7: Share of industries in the informal sector's contribution to GDP (in %)

Agriculture	6,4	6,3
Farming, hunting and fishing	1,2	1,3
Forestry and logging	1,6	1,4
Manufacture sector		
Manufacture of food products	3,4	3,4
Clothing	1,1	1,4
Construction and civil engineering	0,7	0,6
Other manufacture	2,5	2,8
Trade		

Wholesale trade	3,3	3,9
Retail trade	8,0	9,2
Services		
Transport	1,7	1,5
Restaurant and hotel	2,0	1,8
Repair of motor vehicles and motorcycles	0,4	0,3
Other services	5,0	4,5
Informal sector	37,3	38,4
Non-agricultural informal sector	29,7	30,8

Source: NIS, National accounts 2005 and 2010.

5.3 Egypt: Informal sector measurement in Egyptian economy

5.3.2.1. Components of Egyptian economy

While compiling national accounts, it is important to know the characteristics of producers in the economy. This step is very important to determine the informal sector and its characteristics in the economy.

The Egyptian economy has the following main categories of producers/sectors:

1. Government sector includes the central administration, governorates or local administration, and service authorities.

2. Economic Authorities include the owners of public and business public sector and also produce some goods and service like Suez Canal and Petroleum Authority which provides the petroleum products in the market.

3. Public sector and Business Public sector which produces goods and services especially in the manufacturing sector and the government has the ownership of this sector, but this sector takes independent decisions and policies.

4. Investment Private sector which constitutes the largest part in the private sector and there is no difference between this sector and formal private sector except for the size of establishments. This sector produces goods and services for profit purposes.

5. Formal Private sector which constitutes part of the private sector and there is no difference between this sector and investment sector except for the size of the establishments. This sector produces goods and services for profit purposes.

6. Other private sector which includes the private establishments not included in the investment and formal private sector, most of this sector is the informal sector.

7. Household sector which produces products but the labor and capital are mixed in the production process. This is considered to be the informal sector.

8. Non-Profit Institutions Serving Households.

9. The rest of the world sector.

5.3.2.2. Informal sector in the Egyptian economy

From the components mentioned above we can determine the informal sector. The informal sector is located in other private sector and household sector. The activities like agriculture, manufacturing, construction, retail trade, and personal activities are the main activities in informal sector.

5.3.3. Definition criteria of informal sector

CAPMAS follows some criteria to define informal sector according to legal organization of the enterprise, ownership of enterprise belong to a household, absence of separate complete accounts, non-registration of enterprise, and size limit of the enterprise determined by the number of employees engaged in the production process.

5.3.4. Methods used in estimating the informal sector

5.3.4.1. Aerial survey in agriculture activities

National Accounts consider all the agriculture activities are informal sector except firms and government authorities working in this activity. The most part of agriculture is owned by households and we can't distinguish between ownership and labor. The agriculture share in Gross value added is 11.2% in 2010/ 2011 according to Supply and Use table.

The ministry of agriculture conducts agriculture census every ten years. Agriculture census provides a huge data on production, intermediate consumption, fixed capital formation, and other data in detail. Also the ministry of agriculture in cooperation with military forces, conducts aerial survey for the cultivated area which provide annually and seasonally the agriculture production from cereals, vegetables, fruits, etc, and the intermediate consumption. The ministry of agriculture estimates the animal and fishery production and costs.

5.3.4.2. Labor force survey and business statistics

Manufacturing Activities:
The industrial production bulletins provide data about production, intermediate consumption, compensation of employee, capital formation, and other data in high level of detail and categorized to groups according to the number of workers in each activities. National accounts are compiled from these data. The data is also used for estimating productivity for each activity and category and shares of intermediate consumption, compensation of employee, and capital formation in production.

Labor force survey provides the employment data (in establishments and out establishments) according to ISIC.4. The difference between the number of workers from labor force survey and manufacturing surveys is considered to be the employment in informal sector in manufacturing activities. Estimates of informal sector are compiled using the data on productivity and other indicators compiled from the industrial production bulletins and the number of workers (workers as in labor force survey excluding those not included in industrial production bulletins). The final results show that the estimated production share of informal sector in manufacturing is 23%.

Wholesale and retail trade Activities:
The informal sector units are mostly visible in these activities, especially in the retail trade. The business statistics bulletins which are based on enterprise survey, provide data on the production, intermediate consumption, compensation of employee, capital formation, and other indicators. These data are used to estimate productivity for each activity and share of intermediate consumption, compensation of employee, and capital formation in production.

Labor force survey provides the employment data (in establishments and out establishments) according to ISIC.4. The difference between the number of workers from labor force survey and

enterprise surveys is considered to be the employment in informal sector in these activities. Estimates of informal sector are compiled using the data on productivity and other indicators compiled from the business statistics bulletins and the number of workers. The final results show that the estimated production share of informal sector in wholesale and retail trade is 56%.

Weaknesses in this approach to estimate informal sector:

- Misclassification in labor force survey leads to wrong estimation
- The productivity indicator is not accurate enough in this estimation method
- The number of workers not included in the construction bulletins is not informal sector only but may be formal sector because the coverage of the formal sector is not 100%.
- The business statistic bulletins depend on balance sheets of enterprises, not those of establishments and this lead us to biased estimation.
- The economic model supposes fixed relationship between Iron and cement with construction.

Advantages of this approach:

- Easy method in estimation which uses both the enterprise and household surveys.
- The data is available annually and quarterly.
- Provides full coverage of all economic activities carried out in both formal and informal units.

Construction Activities

The construction statistics bulletins are prepared using the results of enterprise survey. These bulletins provide data on production, intermediate consumption, compensation of employee, capital formation, and other indicators. These data are used to prepare, productivity and share of intermediate consumption, compensation of employee, and capital formation.

Labor force survey provides the employment data according to ISIC.4. The difference between the number of workers from labor force survey and enterprise surveys is considered to be the employment in informal sector in manufacturing activities. Estimates of informal sector are compiled using the data on productivity and other indicators compiled from the construction statistics bulletins and the number of workers (workers as in labor force survey excluding those not included in construction statistics bulletins). The final results show that the estimated production share in construction is 48% in terms of production.

Commodity flow approach is also used to estimate output of construction, since fixed capital formation matrix is prepared for all products and activities. Construction is estimated to constitute 50% in the total fixed capital formation (FCF) in the use table. Therefore, when the balancing is done, the differences are redistributed on the production side.

The commodity flow method uses a simple economic model with two variables of Iron and Cement production as in equation (1)

$$Y = \alpha X1 + \beta X2 \qquad \ldots (1)$$

Y= Construction Production
X1= the Iron production
X2= Cement Production
α, β is Coefficients estimated from SUTs

Telecommunication Activities and Business Services Activities
The same methodology as in wholesale and retail trade is used to estimate informal sector in telecommunication and business services activities.

5.3.4.3. Tourism satellite account

Transportation Activities: most of private road transportation, especially the Taxi and Microbus services, is in the informal sector, The tourism satellite account compiled by the Ministry of Tourism and national accounts experts, estimates the transportation output.

National accounts also depends on business statistics bulletins to estimate productivity and other indicators. The bulletins on transportation equipment provide the number of taxis, microbuses and freight cars. By multiplying the productivity indicator and number of vehicles according to type of vehicles, production is estimated. The estimates obtained from this method were very close to those estimated in tourism satellite account.

Weaknesses:
- The productivity indicator is not accurate enough in this estimation method.
- This method didn't depend on the worked hours.

Advantages:
- Easy method of estimation.
- The data is available annually.

5.3.4.4. Household income expenditure survey

National accounts use household income expenditure survey to estimate informal sector in real estate activities, personal service activities, and home services activities.

Method:
Household income expenditure survey is conducted every two years. The survey provides data on dwellings, rented and owner-occupied. National accounts use this data to estimate real estate production according to commodity flow approach. CAPMAS conducted a survey on rents in 2011.

Weaknesses:
- The household income expenditure survey suffers from response problems.
- The household income expenditure survey is not annual survey.
- The data from the survey doesn't represent the real household final consumption expenditure.

Advantages:
- Easy method in estimation.

- The data is available according to COICOP classification in detail.

5.3.4.5. Economic census 2012/ 2013 and other economic surveys

Egypt conducts economic Census every five years. Economic Census 2012/ 2013 came after ten years from the last one. After Economic census, CAPMAS conducted out-establishments survey for the private economy not covered in economic census especially in construction, retail trade, and personal services activities**.**

5.3.4.7. Commodity flow approach

Supply and use table is a strong tool in consistency process. This tables shows the weaknesses in data source especially at balancing process**.**

Total Supply = Total Demand
Domestic production + Imports= Intermediate consumption + Final Consumption expenditure + Gross capital formation + Exports

It is often found that for some products especially services, uses are more than supplies. This shows that informal sector production in services is not appropriately estimated. The use side data can be used to make adjustments on the supply side in domestic production.

Table 5.3.1 and 5.3.2 show the data compiled using the results of labor force survey

Table 5.3.1: Total workers paid and unpaid (from labor force survey) - the number by hundred

Activities	In establishment			Out-establishment			Total Employment		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Agriculture, forestry and fishing	1647	165	1812	44679	17354	62033	46326	17519	63845
Mining and quarrying	305	5	310	92	0	92	397	5	402
Manufacturing	22714	1704	24418	1473	294	1767	24187	1998	26185
Electricity, gas, steam and air conditioning supply	2312	216	2528	4	0	4	2316	216	2532
Water supply; sewerage, waste management and remediation activities	1323	136	1459	102	26	128	1425	162	1587
Construction	2942	160	3102	24825	23	24848	27767	183	27950
Wholesale and retail trade; repair of motor vehicles and motorcycles	17860	2380	20240	4762	841	5603	22622	3221	25843
Transportation and storage	3210	342	3552	12916	12	12928	16126	354	16480
Accommodation and food service activities	4860	148	5008	185	8	193	5045	156	5201
Information and communication	1615	383	1998	17	4	21	1632	387	2019

Financial and insurance activities	1358	570	1928	23	0	23	1381	570	1951
Real estate activities	98	15	113	54	0	54	152	15	167
Professional, scientific and technical activities	2928	549	3477	280	28	308	3208	577	3785
Administrative and support service activities	1167	140	1307	172	4	176	1339	144	1483
Public administration and defence; compulsory social security	14103	4748	18851	30	2	32	14133	4750	18883
Education	11201	11090	22291	51	23	74	11252	11113	22365
Human health and social work activities	2817	3820	6637	18	14	32	2835	3834	6669
Arts, entertainment and recreation	817	227	1044	156	0	156	973	227	1200
Other service activities	4694	184	4878	605	16	621	5299	200	5499
Activities of households as	147	19	166	702	968	1670	849	987	1836

Table 5.3.2: Share of in establishment and out-establishment in terms of value added (2012/2013)

Activities	Share of in-establishment (Economic census)	Share of out-establishment
Agriculture, forestry and fishing	3%	97%
Construction	13%	87%
Wholesale and retail trade, repair of motor vehicles and motorcycles	96%	4%
Transportation and storage	38%	62%
Accommodation and food service activities	78%	22%
Information and communication	67%	33%
Real estate activities	47%	53%
Professional, scientific and technical activities	83%	17%
Administrative and support service activities	72%	28%
Education	55%	45%
Human health and social work activities	37%	63%
Arts, entertainment and recreation	17%	83%
Other service activities	34%	66%
Activities of households	0%	100%
TOTAL	50%	50%

5.3.4.9. Issues

Extrapolation method: national accounts use extrapolation methods using indicators in SUTs and sometimes use pro-rata distributions. SUTs are compiled at current prices only.

Under reporting of production: for certain activities, value of production doesn't reflect the real value. In such cases, it is necessary to probe the business surveys data to check for the errors.

Sometimes, data is obtained directly from the administrative sources like crude oil extraction instead of using the survey data.

Illegal Activities: until now national accounts didn't include the illegal activities like drugs, prostitution, smuggling, bribe and other illegal activities. CAPMAS coordinates with some concerned Ministries like Ministry of Interior to get some data on these activities.

5.3.5. Conclusion

National accounts use several methods to estimate informal sector because every activity has special features and data sources are different. There is no single optimum method that can be applicable for estimating informal sector for all activities, due to constraints in the data availability. National accountants should also look at other data sources like tax data, construction licenses and electricity consumed to estimate informal sector.

5.4 Ghana: Estimating informal sector non-agricultural activities using the Ghana living standards survey data

5.4.1. Introduction

The direct contribution of households to the output of goods and services can be recognized through household enterprises. The output of this mode of production is difficult to measure statistically. Because of the informal nature of most economic activities in the developing world, huge gaps are therefore created when accounting for their contribution to GDP. This tends to underestimate the GDP of many African countries and consequently, the quality of all indicators using GDP estimates as a denominator are affected. Because of the agrarian nature of most sub-Saharan African economies, estimation of the output of the informal sector is concentrated on agriculture to the detriment of the other sectors. Designing questionnaires in household surveys or censuses to capture non-farm household enterprises is a sure way of getting data to properly estimate informal sector economic activities.

The agriculture sector in Ghana had been the largest contributor to the country's GDP in the past, overshadowing household non-farm economic activities which also contribute a lot to GDP but not properly accounted for. Charmes (2000) commented that, Ghana and Kenya made no assumptions in taking into account the informal sector in their GDP estimates, meaning, apart from subsistence agriculture the informal sector is not assumed to contribute to the national economy. With the heightened interest in the informal sector by the ILO, the output of household production and the productivity per worker and/or per unit of capital of household enterprises has been under intense scrutiny. Improvements in accounting for the contribution of non-farm household enterprises in the national accounts of Ghana revealed that the value-added share of these enterprises to the total value added of the informal sector (including informal agriculture) was 62.7%, and contributed 36.4% to the rebased GDP in 2006[75]. Employment in informal non-farm activities grew by 6.1%[76] between 2000 and 2010, re-enforcing the importance of these activities in the economy.

This report is an opportunity to share Ghana's experience and identify problems in producing the required estimates and make recommendations on methods to improve the identification of these enterprises and the relevant information needed to be included in national data collection systems.

5.4.2. Survey/census through which informal sector is measured

The size of the informal sector can be estimated differently depending on how the concept of informality is operationalized and what empirical information is relevant and available for the particular purpose. The characteristics of informal sector activities make it difficult to measure statistically. These characteristics are: (i) it covers a variety of activities with different modes of operation, (ii) large number of units to be surveyed especially in developing countries, and (iii) the units are often characterized by features which make their statistical measurement difficult. These features include their small size, high mobility, seasonal variations in business activity, clustering in specific areas, lack of recognizable features for identification/location, not keeping

[75] From the 2004 SUT for Ghana
[76] 2000 and 2010 Population and Housing Census of Ghana

proper records etc. This makes household surveys such as the Ghana Living Standards Survey (GLSS), the customized Ghanaian version of LSMS, very appropriate in this regard for collecting data for national accounts purposes. 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.

The objective of the survey or census is very important 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 labour 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, with70.6% of these enterprises operated by women.

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.) is very important. The principal idea is that labour is the only crucial input into production. If there is no labour, there is no output (at the extreme, at least someone needs to press the start-button of a completely automated process). Employment data as described above, therefore, are needed to raise the output per worker or value-added per worker in the household survey data to total size of each activity nationally.

5.4.3. Definition and measurement framework of the informal sector

The Ghana Statistical Service adopts the international standard definitions, data collection guidelines and estimation procedures in the conduct of all its surveys. The definition of informal sector economic activity used in the Ghana Living Standards Survey (GLSS) is as defined by the ILO in the resolution of the 15thInternational Conference of Labour Statisticians (ICLS). Below are extracts from the resolution which guides the selection of the non-farm household enterprises the GLSS includes in data collection:

(a) Informal sector enterprises are private unincorporated enterprises (excluding quasi-corporations), i.e. enterprises owned by individuals or households that are not constituted as separate legal entities independently of their owners, for which no complete accounts are available...Included in private unincorporated enterprises are unincorporated partnerships and co-operatives formed by members of different households, if they lack complete sets of accounts;

(b) All or at least some of the goods or services produced are meant for sale or barter (SNA2008, 25.46);

(c) Their size in terms of employment is below a certain threshold to be determined according to national circumstances and/or;

(d) They are not registered under specific forms of national legislation as distinct from local regulations for issuing trade licenses or business services;

(e) They are engaged in non-agricultural activities including secondary non- agricultural activities of enterprise in the agricultural activities such as retailing of farm produce, fish mongering, and activities of butchers.

Care must be taken when applying (c) in the delineation of formal from informal activities. Some household enterprises may have employee sizes larger than the threshold use by the national statistics office in its classification of formal and informal. The aim of data collection for national accounting purposes is to, as much as possible, have exhaustive coverage. In order not to miss out some of the enterprises who, in order to avoid taxes, do not register with the appropriate authorities, the other characteristics should be used instead of the number of persons engaged.

5.4.4. Survey design

The major focus of the GLSS survey is to provide estimates with acceptable precision for a variety of indicators on various aspects of living conditions, including household consumption and expenditure, health, education, employment, migration, tourism, housing conditions, the operation of non-farm household enterprises, agricultural activities, remittances, savings, credit and assets.

5.4.4.1. Sample Design

The GLSS is a household probability sample survey designed to cater for a variety of analyses at the various domains of interest. The major domains of interest are:

- Ghana as a whole
- Each of the ten Administrative regions, with a minimum sample size of 400 households
- Urban and Rural localities of Residence (each as a separate domain)
- Each of the three ecological zones, as well as Accra (GAMA)

5.4.4.2. Sampling Frame and Units

As in all probability sample surveys, it is important that each sampling unit in the surveyed population has a known, non-zero probability of selection. To achieve this, there has to be an appropriate list, or sampling frame of the primary sampling units (PSUs). The universe defined for the GLSS is the population living within private households in Ghana. The institutional population (such as schools, hospitals etc), which represents a very small percentage in Population and Housing Censuses (PHC), is excluded from the frame for the GLSS.

The Ghana Statistical Service (GSS) maintains a complete list of census enumeration areas (EAs), together with their respective population and number of households as well as maps, with well-defined boundaries, of the EAs. This information is used as the sampling frame for the GLSS. Specifically, the EAs are defined as the primary sampling units (PSUs), while the households within each EA constituted the secondary sampling units (SSUs).

Apart from the main topics information is collected on in each round of the GLSS, each round has a specific focus. The focus of the 6th round was on labour force. The sample was therefore designed to be nationally representative on a quarterly basis to allow the release of quarterly

labour force statistics. To achieve this and the survey objectives, 18,000 households were selected in 1,200 EAs (i.e. 15 households from each selected EA), consisting of 655 (54.6%) rural EAs and 545 (45.4%) urban EAs.

5.4.4.3. Stratification

In order to take advantage of possible gains in precision and reliability of the survey estimates from stratification, the EAs are first stratified into the ten administrative regions. Within each region, the EAs are further sub-divided according to their rural and urban areas of location. The EAs are also classified according to ecological zones and inclusion of Accra (GAMA) so that the survey results could be presented according to the three ecological zones, namely 1) Coastal, 2) Forest, and 3) Northern Savannah, and for Accra.

5.4.5. Questionnaire design

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 6thround of the GLSS (conducted in 2012/3), collected information on all the topics in the 5th round, but had labour force as its special focus.

The first three of the specific objectives of the survey in both 5th and 6th rounds are as follows:

- To provide information on patterns of households' consumption and expenditure at a lower level of disaggregation.
- To serve as the basis for the construction of a new basket for the next re-basing of the Consumer Price Index.
- To provide information for up-dating national accounts.

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 includes 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 follow-up question is the template below with instructions that helps the field officer to identify all household members to be transferred unto the non-farm household enterprise questionnaire.

10. COPY FROM SECTION 4A AND/OR 4B THE IDs OF ALL MEMBERS WHO ANSWERED Q.20 AND/OR Q.8
(SECTION 4E Q.14 OR SECTION 4FQ9) = 2 OR 3
IN ADDITION COPY THE ACTIVITY NAME AND THE CORRESPONDING ISIC CODE

A	B	C	D	E				F	G
ID OF MEMBER	NAME OF MEMBER	ENTERPRISE/BUSINESS (CHECK SECTION 4E Q.7 AND/OR 4FQ3 AND COPY ACTIVITY NAME) FOR NON-WORKING PROPRIETOR, USE CODE BOOK	ISIC CODE	How many persons assist in this business/enterprise				Where is the business/enterprise located?	Does (NAME) keep any form of accounting record on the business /enterprise? Yes, audited.....1 Yes, unaudited.....2 No account.....3
				(i) Regular paid employee?	(ii) Casual worker?	(iii) Contributing family worker?	(iv) Apprentice ?		

IF E (i) + E(ii) IS GREATER THAN 9 **DO NOT TRANSFER** THAT ACTIVITY TO THE NON-FARM ENTERPRISE SECTION.
TRANSFER EACH MEMBER'S ENTERPRISE TO A SEPARATE NON-FARM ENTERPRISE QUESTIONNAIRE i.e. SECTION 10\

CODE FOR COLUMN F

Within the same house as the household 1
In another house.....2
Within the same vicinity/locality as the household.....3
In another locality.....4
At the market place.....5
On the streets.....6
Have no fixed location.....7
Other (specify).....8

Further operationalization and clear attribution of producing units to their respective sectors (ISIC) is necessary in order to avoid data gaps or double counting. Different templates or questions are designed for different activities but with the end result of getting enough information to compute output, intermediate consumption and value added. That is, template for data collection in the non-farm enterprise questionnaire for manufacturing is different from that of retail trade, preparation of food for sale (restaurant) and other purely service activity.

In addition to questions for the inclusion or exclusion of production activities performed in households, there is the question of how that production should be valued. Production destined for the market finds its valuation in the market, but no such valuation is available in the case of production that does not reach the market. Therefore it is necessary to use stand-in prices, prices of similar products sold on the market, or, if this procedure is not desirable or possible, to base the valuation on costs. These are especially identified with producers whose raw materials are harvested free of charge such as sea water for small scale salt-wining, clay for the manufacture of pottery products etc. Field officers are trained very well to handle such cases and at times have to consult the survey office for advice. Data is edited very well before data entry. Data entry activities have been designed in a way that they are done alongside data collection so that identified errors are corrected before the field officer leaves the community.

5.4.6. Data tabulation

The data processing staff cannot generate the data needed for national accounts unless they are aided. The national accountant therefore writes the estimation formula for the set of questions and their responses that yield the output, intermediate consumption and value added for each activity. An extract of estimates of variables generated from the 5th round of the GLSS is shown

in Table 5.4.1. Retail trade recorded the highest number of enterprises as well as the highest number of workers.

Table 5.4.1: Extract of value added ratios by industry from the non-farm household enterprises of the GLSS 5

ISIC 3.1	No. of enterprises	No. of workers	Gross Output	Intermediate Consumption	Output per worker	IC per worker	VA per worker	I/O ratio	VA/output ratio
0200-03	31	56	91,684.20	19,700.85	1,637.22	351.80	1,285.42	0.21	0.79
1512	99	151	303,942.83	202,798.66	2,012.87	1,343.04	669.83	0.67	0.33
1514	182	310	128,505.28	66,585.72	414.53	214.79	199.74	0.52	0.48
1531	41	67	41,115.63	23,686.88	613.67	353.54	260.13	0.58	0.42
1541	76	153	241,535.62	143,219.24	1,578.66	936.07	642.59	0.59	0.41
1549	140	249	223,503.18	115,457.94	897.60	463.69	433.92	0.52	0.48
1551	72	161	137,264.79	72,538.15	852.58	450.55	402.03	0.53	0.47
1553	227	412	105,667.79	53,029.52	256.48	128.71	127.76	0.50	0.50
1599	23	37	24,086.25	9,667.84	650.98	261.29	389.69	0.40	0.60
1711	42	58	42,496.42	20,278.74	732.70	349.63	383.06	0.48	0.52
1810	267	473	184,960.94	26,174.80	391.04	55.34	335.70	0.14	0.86
2022	27	48	47,335.11	17,187.75	986.15	358.08	628.07	0.36	0.64
2029	40	63	70,213.83	17,072.15	1,114.51	270.99	843.52	0.24	0.76
2600	25	47	29,816.99	14,684.80	634.40	312.44	321.96	0.49	0.51
3499	24	56	22,565.79	4,449.14	402.96	79.45	323.51	0.20	0.80
3611	33	79	73,657.91	24,694.75	932.38	312.59	619.79	0.34	0.66
3699	34	46	17,842.97	6,852.30	387.89	148.96	238.93	0.38	0.62
4500	109	274	217,925.17	20,900.70	795.35	76.28	719.07	0.10	0.90
5020	51	170	172,533.51	33,398.85	1,014.90	196.46	818.44	0.19	0.81
5100	71	190	283,465.27	47,203.54	1,491.92	248.44	1,243.48	0.17	0.83
5200	2,002	2,641	2,083,130.78	364,610.99	788.77	138.06	650.71	0.18	0.82
5260	50	99	52,454.43	7,194.26	529.84	72.67	457.17	0.14	0.86
5520	664	1,015	2,670,340.79	1,722,873.89	2,630.88	1,697.41	933.46	0.65	0.35
6022-01	27	52	184,998.07	87,100.47	3,557.66	1,675.01	1,882.65	0.47	0.53
7100	33	57	137,469.19	15,438.20	2,411.74	270.85	2,140.89	0.11	0.89
8500	25	60	84,592.64	8,103.70	1,409.88	135.06	1,274.82	0.10	0.90
9302	149	286	104,220.80	17,038.42	364.41	59.57	304.83	0.16	0.84
9309	28	47	25,541.81	2,650.68	543.44	56.40	487.05	0.10	0.90
Other-Prod	183	417	496,606.03	162,186.14	2,713.69	886.26	1,827.43	0.33	0.67
Other-Serv	110	331	999,256.47	159,484.28	9,084.15	1,449.86	7,634.29	0.16	0.84

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[77] from the 2010 PHC is shown as an example in Table 5.4.2.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).

Table 5.4.2: Employed persons 15 years and older by industry and employment status, 2010

[7777] Taken from Table 51 of the 2010 Population and Housing Census – Demographic, Social, Economic & Housing Characteristics, June 2013

Industry	Employment sector					
	Public	Private formal	Private informal	Semi-public/ parastatal	NGO	International org.
Agriculture, forestry and fishing	23,891	43,584	4,223,308	1,088	9,965	195
Mining and quarrying	2,217	28,629	80,338	1,031	262	174
Manufacturing	9,526	96,157	988,814	968	1,992	170
Electricity	10,549	2,207	1,603	1,328	29	16
Water supply	6,409	13,013	3,786	1,044	147	17
Construction	5,769	43,231	260,753	346	702	264
Wholesale and retail trade	10,891	84,302	1,819,858	672	3,111	166
Transportation and storage	19,680	42,874	295,109	1,235	671	208
Accommodation and food services	3,452	35,377	513,109	191	915	46
Information and communication	4,482	24,241	11,770	821	153	143
Financial and insurance activities	15,516	46,289	7,177	659	375	175
Real estate activities	201	2,219	2,004	6	10	1
Professional, scientific & tech. services	17,115	19,380	55,831	754	638	144
Administrative & support services	9,652	33,781	21,320	442	420	109
Public administration	149,520	153	1,541	14	17	1
Education	264,511	108,378	24,153	983	1,257	274
Human health and social work	71,463	25,761	19,436	1,110	3,971	256
Arts, entertainment & recreation	6,517	16,166	33,314	276	251	44
Other service activities	4,317	28,551	403,151	479	26,454	483
Activities of households as employers	2,982	4,968	68,168	122	320	64
Activities of extraterritorial org.	202	481	96	12	362	1,676
All industries	**638,862**	**699,746**	**8,834,639**	**13,581**	**52,022**	**4,626**

Source: Ghana Statistical Service

The PHC also has information on industry by employment status (employee, self-employed with or without employees, contributing family worker etc.), but difficult to use in this exercise.

The national estimates of the size of the informal sector in 2006 is shown in Table 5.4.3. The total number of workers in Table 3vare projected figures from the 2000 PHC. The total number of enterprises was arrived at by multiplying "enterprise/worker" ratio by the total number of workers.

Table 5.4.3: The size of the informal sector estimated from the GLSS 5

ISIC-SUT	Number of Enterprises	Number of Workers	Input-Output ratio	Value Added ratio	Output per worker	VA per worker	Raised values in Million Ghana cedis		
							Total Output	Total Intermediate consumption	Total Value Added
	a	**b**	**c**	**d**	**e**	**f**	**g = (b*e)**	**h = (g*c)**	**I = (g*d)**
A0200-03	24,285	43,787	0.21	0.79	18.2	14.4	79.9	16.8	63.1
A1512	67,270	100,906	0.67	0.33	20.6	6.9	207.8	138.5	69.3
A1514	131,564	225,111	0.50	0.50	4.7	2.3	105.2	53.0	52.2
A1520	4,235	4,235	0.42	0.58	5.7	3.3	2.4	1.0	1.4
A1531	26,019	44,904	0.54	0.46	5.2	2.4	23.5	12.8	10.7
A1541	49,559	109,246	0.60	0.40	15.6	6.3	169.9	101.5	68.4
A1543	1,647	1,647	0.70	0.30	10.3	3.2	1.7	1.2	0.5
A1549	97,625	173,293	0.50	0.50	10.5	5.2	181.6	90.9	90.7
A1551	45,646	96,980	0.57	0.43	8.8	3.8	85.5	48.8	36.6
A1553	100,281	172,552	0.48	0.52	2.9	1.5	49.5	23.9	25.6
A1554	5,678	5,678	0.51	0.49	6.1	3.0	3.5	1.8	1.7
A1599	16,714	26,478	0.41	0.59	6.6	3.9	17.4	7.0	10.3
A1711	31,977	44,117	0.47	0.53	7.8	4.1	34.5	16.3	18.2
A1712	2,413	2,413	0.41	0.59	3.2	1.9	0.8	0.3	0.5
A1810	194,343	350,603	0.14	0.86	4.1	3.6	145.3	20.2	125.1
A1899	8,925	20,139	0.63	0.37	8.9	3.3	17.8	11.2	6.6
A1920	7,848	25,256	0.34	0.66	28.8	18.9	72.8	25.0	47.8
A2010	3,650	9,547	0.48	0.52	4.0	2.1	3.9	1.8	2.0
A2021	959	2,500	0.20	0.80	3.1	2.5	0.8	0.2	0.6
A2022	20,565	36,516	0.37	0.63	8.9	5.6	32.5	12.0	20.6
A2029	22,670	39,506	0.23	0.77	15.9	12.2	62.8	14.6	48.2
A2221	2,753	6,839	0.71	0.29	12.1	3.5	8.3	5.9	2.4
A2299	3,939	9,655	0.13	0.87	10.6	9.2	10.2	1.3	8.9
A2423	5,126	5,126	0.33	0.67	5.5	3.7	2.8	0.9	1.9
A2424	9,356	18,407	0.55	0.45	5.8	2.6	10.7	5.9	4.9
A2519	1,371	1,884	0.53	0.47	19.9	9.3	3.7	2.0	1.8
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
A9500	1,443	1,443	0.22	0.78	4.9	3.9	0.7	0.2	0.6
AZ	3,364	9,566	0.63	0.37	2.5	0.9	2.4	1.5	0.9
TOTAL	**3,475,279**	**5,784,465**	**0.37**	**0.63**	**0.0**	**0.0**	**6,861.6**	**2,538.9**	**4,322.7**

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.

Some activities are also difficult to cover directly because of moral and legal issues. Examples are prostitution, smuggling and drug trade which are illegal in Ghana. Indirect method is used to estimate output of some of these activities. For example, estimates of output of prostitution was derived from the household expenditure roster, but were found not to be reliable because the few who gave some expenditure estimates were all unmarried, presupposing that married men don't patronize the services of prostitutes. The estimate was insignificant so it was not included. 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 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

Labour force surveys are not conducted at short intervals to make the use of labour input matrix relevant in GDP extrapolation. And since the GLSS is not conducted every year, 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:

a) *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.
b) *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.
c) *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.
d) *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.

e) *Restaurants:* This is another problematic area. Like manufacturing the growth in the formal component is applied to the informal component.
f) *Construction:* Commodity flow approach is used.

5.4.7. Conclusions and recommendations

Data collection on informal sector activities is difficult and costly. However, because of the large size of the sector in developing countries, efforts have to be made to capture information on the sector. Continuous underestimation of GDP due to non-inclusion or under-coverage of the informal sector is not good for users of GDP data. The experience gathered in using the GLSS 5 non-farm household enterprise data in rebasing the national accounts of Ghana gingered the interest in repeating that section in the GLSS 6 for use in updating the national accounts.

To be successful in using data from the non-farm household enterprise questionnaire, data collectors should be well trained by using different activities across the country as hands-on practices during training. The code books for ISCO and ISIC should be customized to make easy reference for field officers. In the case of Ghana, all occupations and activities with easily identifiable localized names were coded and the names (not the codes) arranged in the alphabetical order for easy reference. Valuation techniques are also key to good data.

While a household survey of the GLSS type is expensive, countries can design special sampling in order to take into account the geographic clustering of informal sector production units.

5.5 Lesotho: Measuring informal economy through household surveys (labour force survey & household budget survey) or censuses (population census)

5.5.1. Introduction

Measuring informal economy is an important challenge for developing countries of which Lesotho is no exclusion. Information about size and characteristics of the informal economy must be obtained in order to help decision makers take pertinent measures aimed at improving a country's welfare and reinforcing the important role of national accounts within the statistical system. Population Census and Household Budget Survey (HBS) are the best data collection tools that Lesotho uses to monitor the evaluation of 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 labour force which contributes to economic production.

According to the report of Delhi group (2000), most regular and frequent production of informal sector is in Africa. The balance between uses and supplies of major products is generally the most common method used for the estimation of informal sector in manufacturing activities. This method requires the availability of data on household consumption and it is true that until now and until the recent development of informal sector surveys, the household budget-consumption surveys or the household living standard surveys were the most required (Palestinian Central Bureau of Statistics 2008).

5.5.2. Background

Lesotho through Bureau of Statistics (BOS), undertook six Household Budget Surveys from 1972 to 2011 but this paper is based 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.

Based on the previous Household Budget Surveys conducted in Lesotho, it was learned that the production units of the informal sector have the characteristic features of the household enterprises. The fixed and other assets used do not belong to the production units as such but to their owners. Expenditure for production is often indistinguishable from the household

expenditure and capital goods such as buildings or vehicles may be used indecisively for enterprise and household purpose.

5.5.3. Methodology

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.

Due to the non-proportional allocation of the sample to the different domains (districts) and to their urban/rural areas, sampling weights are crucial for any analysis, using 2010/2011 HBS data to ensure the actual representativeness of the survey results both at national and regional levels, weights were used. Since the sample was a two-stage stratified cluster sample, sampling weights were calculated based on sampling probabilities separately for each sampling stage and for each cluster. A spreadsheet containing all sampling parameters and selection probabilities was prepared to facilitate the calculation of sampling weights. Sampling weights were adjusted for household non-response. The final weights were normalized in order to make the total number of un-weighted cases equal to the total number of weighted cases at national level.

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.

Lesotho is in the process of rebasing and it will be completed in October 2015 and hence a benchmark for 2012 has been estimated on the basis of the 2010 / 2011 HBS using two components: sales and own consumption of the informal sector. The current prices are moved with the population projections to estimate other years while constant prices were deflated by CPI while estimating the contribution of informal sector in the Gross Domestic Product.

It is very difficult to measure Gross Value Added (GVA) for each industry as a result of the difficulty in measuring Intermediate Consumption due to the indistinguishable use of capital goods. Thus, the capital goods are used for both enterprise and household purposes. As a result, different shares for intermediate consumption are assumed for different industries as expenditure for production is different across the different industries. For example, the intermediate consumption per output for Wholesale and Retail Trade is assumed to be 20 percent for urban businesses and 15 percent for rural ones while for Manufacturing is assumed to be 31 and 24 percent for urban and rural businesses respectively. The own-consumption (component of output) also has a significant concern.

Ignoring own consumption in accounting for the total output of the informal sector may result in underestimation and/or negative values of the computed GVA. This is especially crucial in agricultural production since the agriculture sector is expected to have a large amount of own consumption. Moreover, particularly in Lesotho, it is a normal practice in rural agricultural households to consume farm harvests or produce and/or share these with extended families. So, as a result, own consumption is assumed to be constant throughout an accounting period, specifically for agriculture and food- related production in the non-agriculture sector since the role of seasonality may be reasonably discounted. The food consumption and needs of the households are assumed independent with respect to the size of informal sector’s output and are not expected to vary significantly.

However, this assumption is not applied to nonfood-related activities in the non-agriculture sector. Production in these types of commodities and activities is expected to follow the business trend; thus, in times of minimum production, informal businesses would lessen own

consumption, whereas at times of maximum production they would tend to increase own consumption. This assumption is based on the notion that own-consumption of nonfood items is very elastic and would be the first to be adjusted depending on the production performance of the informal establishment.

5.5.4. Result

The informal economy manifests itself in different ways in different regions within the same country and even in different parts of the same city. It encompasses different kinds of activities, different types of enterprise and different reasons for participating. Informal activities range from street vending, street hawking and other minor activities requiring little or no capital and skills and with marginal output, to those involving a certain amount of investment in skills and capital and with higher productivity such as manufacturing, car repair and etc. The economic impact of the informal sector is hard to measure because of the difficulty in defining and analyzing the phenomenon owing to the limited available information.

Based on the data captured in the Lesotho HBS shown in Table 5.5.1 up to Table 5.5.6, the Wholesale and Retail Trade category dominated both Urban and Rural areas by 63.1 and 54.6 percent respectively and it also constituted the highest percentages to the GDP. This implies that, for people entering the informal sector, informal employment in the Wholesale and Trade sector is often the "first stop" due to the low barriers to entry.

The informal sector is disproportionately rural and employs mostly men and youths. The Wholesale and Trade sector dominates both the urban and rural residents by 37.4 and 47.3 respectively and which are followed by the Agriculture, Hunting and Forestry sector with 13.6 percent (urban) and 32.2 percent (rural). The Employed with Salary category dominates other informal employment statuses and this makes a lot of sense since most people entering the informal employment are absorbed or rather hired in the small retail traded shops and restaurants. Manufacturing also hires a lot of them even though it is not that significant.

On average, the intermediate consumption constituted 22.6 percent per output of all the sectors and it grows with the size and organization of the informal establishment. As for output, Wholesale and Retail Trade constitutes the highest value and the reason might simply be that they lead other sectors or industries in terms of numbers. The informal economy in Lesotho constituted more than 50 percent of output of the country's gross domestic product. Informal sector also involves an important labour force, which contributes to the economic production. However, even though the contributions to the GDP of the informal economy might seem to be significant, it is also believed that the sector is under-estimated since it is very difficult to measure it due to the limited available information.

Table 5.5.1: Percentage distribution of Informal Businesses by Industry and Urban/ Rural Residence - 2010/ 2011

	Urban/Rural	
Industry	Urban	Rural
Agriculture, Hunting and Forestry	13.6	32.2
Manufacturing	4.1	1.7

Construction	3.3	0.7
Wholesale and Retail Trade	37.4	47.3
Hotels and Restaurants	4.7	0.9
Transport, storage and Communications	4.1	2.5
Education	0.2	0.0
Health and social work	0.0	0.9
Other Community, social and personal activities	32.6	13.8
Total (%)	100	100

Table 5.5.2: Percentage distribution of Informal Employment by Employment Status and Urban/ Rural Residence - 2010/ 2011

	Urban/Rural	
Employment Status	Urban	Rural
Employer	0.7	1.2
Employed with salary	65.9	31.7
Self-employed with paid labours	4.3	1.1
Self-employed without paid labours	12.2	4.6
Herding with salary	0.2	1.1
Subsistence farmer	3.5	43.7
Casual worker	10.9	12.2
Homemaker	2.4	4.4
Total (%)	100	100

Table 5.5.3: Percentage distribution of Informal Employment by Sex and Urban/ Rural Residence - 2010/ 2011

	Urban/Rural	
Sex	Urban	Rural
Male	52.4	56.8
Female	47.6	43.2
Total (%)	100	100

Table 5.5.4: Informal Economy Output at current prices by Industry and absolute values of Population Projections

Industry	2011	2012	2013	2014
Agriculture, Hunting and Forestry	1436.6	1441.0	1446.0	1451.5
Manufacturing	826.1	828.7	831.6	834.7
Construction	520.1	521.7	523.6	525.5
Wholesale and Retail Trade	1910.3	1916.2	1922.9	1930.2
Hotels and Restaurants	1220.8	1224.5	1228.8	1233.5
Transport, storage and Communications	919.6	922.4	925.6	929.2
Education	389.1	390.3	391.6	393.1
Health and social work	276.5	277.3	278.3	279.3
Other Community, social and personal activities	1508.1	1512.7	1518.0	1523.8
Total Output (million Maloti)	9007.1	9035.0	9066.4	9100.8
Population projections	1,896,833	1,902,707	1,909,321	1,916,573

Table 5.5.5: Informal Economy Output at current prices as an absolute value and as a percentage of Lesotho's GDP

Years	Percent of GDP	Million Maloti
2011	55.4	9007.1
2012	52.3	9035.0
2013	47.9	9066.4
2014	44.2	9100.8

Table 5.5.6: Informal Economy Output, Intermediate Consumption and Value Added at current prices - 2010/ 2011

Industry	Output	Intermediate Consumption	Value Added
Agriculture, Hunting and Forestry	1436.6	301.7	1134.9
Manufacturing	826.1	231.3	594.8
Construction	520.1	182.0	338.1
Wholesale and Retail Trade	1910.3	343.9	1566.5
Hotels and Restaurants	1220.8	231.9	988.8
Transport, storage and Communications	919.6	294.3	625.3
Education	389.1	144.0	245.1
Health and social work	276.5	77.4	199.1
Other Community, social and personal activities	1508.1	226.2	1281.9
Total (million Maloti)	9007.1	2032.7	6974.4

5.5.5. Discussion

The HBS can help identify informal sector activity through the sources of income data items. However, the standard HBS questionnaire gathers very little information on other characteristics of the informal sector unit. Questions relating to main and secondary jobs, working conditions of family members, and other questions pertaining to the household's informal sector activities can be inserted in the questionnaire to determine the employment rate in the informal sector and number of characteristics of individuals employed in the informal sector. However, expanding the questionnaire is not practical as this will lengthen the interview time.

The reasons for the individuals to participate in the informal sector range from pure survival strategies undertaken by individuals facing a lack of (sufficient) jobs, unemployment insurance, to the desire for independence and flexible work arrangements and in some cases, the prospect of quite profitable income-earning opportunities.

The economic impact of the informal sector is hard to measure because of the difficulty in defining and analyzing the phenomenon owing to the limited available information. This is often due to the financial restrictions faced by the Lesotho Bureau of Statistics and the characteristics of the informal sector in a specific location.

The starting point when identifying the seven types of non-exhaustiveness in Lesotho is the production (output) approach, due to the more uniform data sources that generally underpin these estimates. The adjustments are based on a breakdown of producers. The expenditure approach is

based on data that generally come from different sources than those underlying the production data set.

However, the conceptual consistency between the two approaches to measuring GDP in Lesotho provides a framework for checking the accuracy of data from different sources. For example, domestic production plus imports (less export) of equipment should be equal to gross fixed capital expenditure on that type of equipment (excluding any adjustments for second –hand purchases and sales).

N1 – Producer deliberately does not register (underground activity) - The methods that are used to estimate the adjustments required in Lesotho include labour inputs from HBS, commodity flows and supply-use tables.

N2 – Producer not registered (illegal activity) – So far in Lesotho, the adjustments are only estimated using expert judgment.

N3 – Producer not required to register – No adjustments are necessary in Lesotho because the estimation method for a particular activity (HBS) implicitly takes account of the non-registered activity.

N4 – Legal producers not surveyed – the methods that are used to estimate adjustments are surveys of the business register and cross checking the business register against other administrative sources of businesses.

N5 – Registered Entrepreneurs not surveyed – the methods that are used to estimate adjustments are cross checking the business register against other administrative sources of businesses (e.g. income tax statements).

N6 – Misreporting by producers – the methods used to estimate adjustments are data from tax audits, comparing average salaries and profits with similar businesses, comparing input/ output ratios with those of similar businesses, special surveys and expert judgment.

N7 – Other statistical deficiencies – the expert judgment is used here and in the process adjustments made include how non-response was taken to account, the extent to which wages and salaries were paid in-kind, production for own final use by market producers, tips, valuations techniques and adjustments for accruals.

5.6 Madagascar: Indirect Methods of Accounting for Informal Sector - using labor input methods

5.6.1. Introduction

The informal sector plays several significant roles in the Malagasy economy. It contributes to not only the GDP but also in the creation of jobs. It plays a supportive role to the formal sector by providing goods or services, for example most of the bricks and the sand used in construction is provided by the informal sector. The informal sector also cushions the effects of shocks in the economy which affects large formal companies, through creation of own account informal enterprises for sustenance in the absence of unemployment social security support. Thus, measurement of the informal sector facilitates in understanding the sector better and assess the effects of shocks which the economy might undergo in the future.

For measuring informal sector, Madagascar carried out several surveys of type 1-2-3. The last one conducted in 2012, covered the 22 areas of Madagascar and it was representative at the national level. The preceding surveys were carried out only in the agglomeration of the Capital: Antananarivo. The methodology used for all the surveys however remained the same. It is a household survey carried out in three phases, the first two phases relate to the informal sector directly, with the first phase aiming to collect information on employment and the second phase on the informal sector units.

The indirect methods are used to estimate informal sector. It consists in estimating, by branch of activity, the values of macroeconomic aggregates of the informal sector starting from the employment numbers and the productivity of employment. The aggregates of the sector are obtained by multiplying employment numbers with the corresponding productivity ratios. The productivity ratios are estimated from the 1-2 survey and employment in the informal sector is derived from the employment matrix. The sources of data for compiling employment matrix are the data available on employment in public administration, the social security and the demographic data. This approach makes it possible to estimate the informal sector every year, even when there was no1-2 survey.

Thus, the approach is much broader than that of the direct approach to estimate informal sector using the data of the survey, as the direct approach does not take into account the illegal activities. Whereas the indirect approach also includes the activities that are not observed.

5.6.2. Data sources

The first element in the above methodology is the number of total employment (TE). These data are provided by the general census of the population and the projected estimates for subsequent years. The principal component of this data is the occupied working population (OWP). For this, firstly data on working population (PA) for 2012 is needed. For Madagascar, the working population consists of persons of age 5 and more. To estimate the occupied working population, it is necessary to have information on the activity ratio (ar) and the rate of unemployment (ru). The activity ratio and the rate of unemployment are provided in the 1-2-3 survey of 2012. The occupied working population 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 means that one needs to have information on secondary employment as well. Survey 1-2-3 is still the source for these data.

The second element, necessary for the calculation of employment in the informal sector, is the employment in the formal sector. The formal sector can be subdivided into (a) private formal sector and (b) Public administration sector. The Public administration sector is made up of the Central Public Administration and the decentralized Administration at the local level. The administrative sources provide data on employment in the formal private sector and the Central Public Administration, while data on employment in the decentralized Administration are obtained from the surveys carried out at 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 body regulating commercial industries and is placed under the supervision of two Ministries, namely, the Ministry of Work and Social Laws and the Ministry of Finances and Budget. The agency maintains statistics on the workers and employers, who pay social security contributions. The employment data is available by branches of industry. However, the branches of industry in this data source are at more aggregated level than the branches of activity used in the national accounts.

The sources for employment data in the Central Public Administration are (a) Ministry in charge of the budget which manages the wages of the civil servants, (b) Ministry of Education and the Ministry of the Higher Level Education for the statistics of the teachers and (c) Ministry of Health for the statistics of the personnel in the hospitals and basic health centers. For the employment data in decentralized Public administration, the source is a survey carried out in a sample of urban and rural Communes.

5.6.3. Employment matrix

The employment matrix is two-dimensional, where activities are shown in rows and institutional sectors in columns. The matrix initially includes the sectors of public administration, formal private sector, and the total employment by branch of activity. For the development of the employment matrix, it is necessary to note the following relation: Total employment = formal Employment + non formal Employment, where

- Formal employment = Employment in the Public Administration and Employment in the private formal sector. In Madagascar, these data are available from the sources mentioned above.
- Non formal employment = Informal Employment in the formal sector and employment in the informal sector. This component can be obtained residually, as data on total employment is available. It may be noted here that "*the employment in the informal sector* ", is assumed to be the employment in the household sector.

The following paragraphs explain the methods followed to prepare the employment matrix.

5.6.3.1. Total employment at the national level

In Madagascar, all the persons aged 5 and more are considered for estimating working population or population in active employment. The number of unemployed according to last 1-

2 survey are estimated to be 1.3% of the working population. Also, according to the same survey, 9% of formal workers have secondary employment. As already mentioned, formal employment is estimated as the employment declared in CNaPS and the employments in the public administration. The numbers on secondary employment is thus estimated using this ratio of 9% and the number of formal employment. Total employment is obtained by adding secondary employment to the occupied working population.

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

5.6.3.2. Employment in Public administration

The sector of public administration is composed of the following sub-sectors: central public administration, local public administration and the Caisse Nationale de Prévoyance Sociale. In the national accounts, this sector is sub-divided under three principal branches of activities, namely, general administration sector, the education sector and the health sector. In this paper, these branches of activities are together referred to as the public administration sector.

It is assumed that there is no informal employment in the public administration. Thus, the employment in the sector is composed of the employment in its three sub-sectors and the public-owned establishments. The principal source of data is the document on the wages of the civil servants maintained by the Ministry in charge of the budget. The data on number of employees in the Communes comes from the survey of a sample of Communes, while the data on number of employees in the publicly-owned establishments is also obtained from a survey of the publicly-owned establishments. To avoid double counting, the civil servants who work in the local governments and the public-owned establishments whose remuneration is managed by the Ministry in charge of the budget, are excluded. It is to be noted that the employees of the public administration may also have secondary employment in other sectors.

The table below explains the calculation of total employment in the sector Public administration. This comprises employees at the central level, (data maintained by the Ministry of the budget), and the employment only managed by the local governments which for Madagascar are the Communes and the employment in the public owned establishments.

Table 5.6.1: Employment by level of management of remuneration

Employment in 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

5.6.3.3 Formal private sector and decomposition by branch of activity

The formal private sector consists of non-financial institutions, the financial institutions and the non-profit-making institutions serving 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 in the private sector. The data on these workers are available by branch of activity. The weakness of this source is that it does not represent the totality of the employment in the private formal sector, as some companies make under-declaration due to various reasons.

5.6.3.4. Household sector

The employment survey, 2012 reveals that 9 out of 10 persons in employment belong to the household sector. The household sector may also have production units and some of these could be considered neither formal nor informal, for example, households producing services with paid domestic staff. Therefore, for estimating employment in the informal sector, it is necessary to delineate the data on employment in the household sector between employment in the informal sector and other employment that cannot be regarded as employment in the informal sector.

It is assumed that paid domestic staff and rentiers of dwellings are not part of employment in the informal sector. However, rentiers are considered to be insignificant in Madagascar. The number of paid domestic staff has been estimated from the 2012 employment survey. Therefore, it can be stated that the household sector employment excluding paid domestic staff could be regarded as employment in the informal sector. Further, by the residual methods followed, the informal sector employment could be over-estimated due to the inclusion of employment in the formal sector that is non-observed or not included in the formal sector.

The following part explains the approach for breaking-down employment by activity sector.

5.6.3.5. Calculation details

As the total employment, the employment in the administration and the employment in the households are known, it is possible to estimate informal employment in the private formal sector. Through these data sources and estimation methods, the data on informal employment in the private formal sector, which has been used to supplement the under-declared employment in the private formal sector and the employment in the household sector are known. For disaggregation of informal employment in the private formal sector and in the household sector by branches, RAS method is adopted. The results are given in the table below.

The following table gives the details of calculations for the adopted approach. The table represents the structure of the employment matrix. In the columns are the institutional sectors and in the rows, branches of industry. The methods used and the sources of the data for estimating employment are explained in the cells. The yellow lines express the sequence of calculations or operations carried out. The results are presented in the employment matrix below.

Table 5.6.2: Structure of the matrix employment

Numéro de colonne	col1	col2	col3	col4	col5	6col
Activities	Formal sector		Administration	Household sector		Total employment
	Formal employment	Informal employment		Informal employment	Informal non employment	
Operations sequence	1st	6th	1st	6th	1st	4th
Activities sector	To introduce the employment data by activities: CNaPS source	To do the breakdown of the employment data by activities according to the method RAS	To introduce the employment data by activities: Administrative and survey sources	To do the breakdown of the employment data by activities according to the method RAS	To introduce/to estimate the data	To use the employement structure: Survey sources
Operations sequence	1st	2th	1st	5th	1st	3th
TOTAL	To calculate the total of the data per activities	To estimate by survey data	To calculate the total of the data per activities	To calculate by balance with the formula: col6-(col1+col2+col3+col5)	To calculate the total of the data per activities	To calculate the total with the formula: Occuped active population+ secondaries employment

Table 5.6.3: Calculated employment 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

5.6.4. Production and generation of income accounts of informal sector

The estimates for these two accounts have been prepared using the results of the informal sector survey. From this survey, estimates of labour productivity by branch of activity are obtained. The labour productivity is the value added created by employment in a branch of industry. The value added for a particular activity is calculated by multiplying the number of employees in the informal sector with the corresponding estimate of labour productivity. The labour productivities (value added per worker) are presented in the table below.

Table 5.6.4: Of apparent productivity (thousands of Ariary per annum)

Activities	Apparent productivity
Primary	936
Extractive	684
Food	1260
Confection	540
Wood	816
Other Industries	744
Energy	876
Construction	1800
Trade	2184
Transport	2940
Household	612
Education	1776
Health	1776
Other Services	1776

The structure of value added components of compensation of employees, and taxes are available from the same survey. The operating surplus has been derived as residual. The following table gives the two accounts for the informal sector by branch of activity.

Table 5.6.5: Production and generation of income 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

5.6.5. Extrapolation of the informal sector estimates to other years

There are several ways to extrapolate benchmark estimates of informal sector for other years. The principal objective is to identify the indicators in value and volume for each branch of activity of the informal sector.

The traditional approach consists in extrapolating branch by branch according to information available. One can for example identify the branch of the informal sector strongly related to an

indicator of the economy. For example, construction sector output is related to the production of sand. It is possible to establish a link between the increases in production in sand with the output of construction.

It is normally considered that the best approach to estimate informal sector output is by multiplying the employment in an activity with the corresponding labour productivity ratio, for each of the activities, even for non-benchmark years. Assuming that the labour productivity ratios remain unchanged in short term and economic context is similar, what is needed for annual estimates is the updated employment matrix for the current year.

The updated employment matrix is established with the same methodology as explained above for a benchmark year. The same data sources are used and assumption are made on various rates used, namely, the rate of unemployment, rate of working population, etc. that they remain unchanged.

Since formal sector employment data is based on administrative sources and employment in informal sector is derived as residual, the updated employment matrix will still capture the data on transfer of employment among various institutional sectors. If the employment in the formal sector increases faster than that of population, then informal employment will show less growth than the population. The employment matrix can even further be improved, if information on the rate of unemployment is available annually.

Therefore, for estimating the output of informal sector (for each activity) in volume terms, data on employment in informal sector provided by the employment matrix is used as indicator. The output in volume terms will be obtained by multiplying the employment, as provided in the updated employment matrix, and the same labour productivity ratio. For current price estimates, appropriate price index by branch of activity, is used.

5.6.6. Estimate of production of the formal establishments

The formal sector comprises two segments, (a) large formal companies whose sale turnover is higher than 200 million Ariary (coverage by the Malagasy tax authorities); and (b) medium and small formal companies having sales turnovers lower than 200 million Ariary.

The direct methods are used for the large formal companies managed by the Malagasy tax authorities. Indirect methods as used in the case of informal sector (multiplying employment in each of the activities with the corresponding labour productivity ratio), are used for estimating the output of medium and small formal companies.

Employment data in medium and small formal companies, by branch, is obtained residually by subtracting employment in large formal companies (data obtained from the tax authorities) from the total employment in formal companies (data on this is available in the employment matrix).

The source for labour productivity ratio of medium and small formal companies is a survey carried out on the companies in 2010. It is assumed that these productivity ratios remain unchanged in time in real terms. For the productivity ratios at current prices, price indices relevant to a branch are used.

The production of medium and small formal companies at constant or current prices is estimated by multiplying employment in these companies for each activity with the corresponding productivity ratios at constant or current prices, respectively. The total production of formal

companies is obtained by adding the production of the large formal companies with the production of medium and small formal companies.

5.6.7. Conclusion

In brief, the estimated value with the indirect approach is higher than the one of the directly calculated using the informal sector survey results, by 7%. There are many reasons for this difference. First, the informal sector employment is derived residually after adding secondary employment to the main employment. Secondly, due to the residual approach adopted to estimate employment in informal sector, employment in some of the formal units falling under non observed economy get included in the household sector and consequently in the informal sector. Presently, only the paid domestic employees in the household sector are excluded to obtain employment in the informal sector.

5.7 Mozambique: Measuring informal economy through households surveys

5.7.1. Introduction

In Mozambique, lot of economic activities are developed informally. During and after the end of civil war (1977_1992) many citizens left their areas of residences and came to the cities. Also, the fact that Mozambique receives foreign African refugees and migrants contribute to the expansion of informal activities in the country.

National accounts need to be exhaustive in order to provide a real picture of the economy. For that reason, it is necessary and important to measure every economic activity including the activities under the informal sector.

Activities under the informal sector are not necessarily realized with deliberated intention of fiscal evasion, or other administrative acts, but rather with the objective of reduction of poverty, the generation of employment, subsistence, and reduction of job costs among others. For this reason the concepts of activities under informal sector should be differentiated from those ones in underground or illegal economy.

Informal activities are generally characterized by low organization level, with limited or inexistent separation between labor and capital, with occasional job relations, and/or parent relationships including household production for self-consumption.

5.7.2. Background

Every five years, Mozambique conducts the Household Budget Surveys, HBS. In this paper, HBS conducted in 2002/3 is considered. In 2004 and 2005 respectively the National Institute of Statistics conducted the Labor Force Survey (LFS) and Informal Sector Survey (ISS).

Under the ISS it was considered as informal, all non-registered units, units registered just at the municipalities so that they do not have any authorization or link with fiscal authorities for development of it activities, and those units employing less than ten people. 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.

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:

1) The households (with household characteristics)
2) NFMA, questionnaire for principal activity non agricultural
3) NFSA, questionnaire for secondary activity non agricultural
4) AMA, questionnaire for agricultural principal activity
5) ASA, questionnaire for agricultural secondary activity, and
6) EQ, the questionnaire for the end of interview.

One of the outputs of the Population and Housing Census in Mozambique is the compilation of a sample frame for the households. The sample for the ISS was obtained from this frame.

It had provincial representativity and urban and rural areas, as the table below shows.

Table 5.7.1: Sampling

Province	Country		Urban	Rural
	EA	HH	HH	HH
Niassa	80	540	240	300
C. Delgado	96	660	240	420
Nampula	96	642	312	330
Zambezia	96	660	240	420
Tete	96	660	240	420
Manica	80	540	240	300
Sofala	100	642	432	210
Inhambane	88	600	240	360
Gaza	88	600	240	360
Maputo Prv	104	660	480	180
Maputo City	116	696	696	-
Total	1040	6900	3600	3300

EA➔ enumeration areas; HH➔ households

For the design of the sample survey, a multi stage sampling was used, probabilistic: the first stage was done to obtain the enumeration areas, the second to obtain the households. The representativity is at provincial level and by urban and rural areas.

For agricultural activities the unit interviewed was the household, represented by the head. For non-agricultural activities the unit interviewed was the individual with seven years and older due to the characteristics of Mozambican reality which in some cases there are child workers.

5.7.3. Tabulation of data

Tabulation represents both parts of checking the activities and data analysis. For checking activities, tables were produced with frequency distributions; to check quantitative variables frequency distribution and graphical instruments were produced in order to identify outliers. In order to identify the status of data collection, the following table was prepared:

Table 5.7.2: Sample questionnaire

Province	Questionnaires filled in proportion with the number of households surveyed						
	Nr of hh forms	Proportion of empty forms	Proportion of HH forms	Proportion of NFMA forms	Proportion of NFSA forms	Proportion of AMA forms	Proportion of ASA forms
1							
2							
…							
11							
Total							

For the household analysis, tables were designed:

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

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

5.7.4. Summary of some results of the ISS

The table below presents the population by economic activity. This is just a summary table of data by regions, but detailed data is available province-wise, by urban-rural area and by gender.

Table 5.7.3: Population 7 years and more by economic activity (in absolute thousand values)

Geographic region	Type of activity			Total labor force	Non labor force
	Informal	Formal	Unemployment		
North	2572	137.4	559.5	3268.9	1273.3
Center	3495.7	295.8	536.3	4327.8	1602.3
South	1591.5	369.5	634.1	2595.1	1333.6
Total	7659.2	802.6	1730	10191.8	4209.7

In terms of percentage of labor force, 7.8% are in formal sector, 75.2% informal sector and the remaining 17% are unemployed.

Table 5.7.4: Population by group of age and economic activity (informal)
(in absolute thousand values)

Group of age	Industry				
	Agriculture	Manufacturing and construction	Trade and tourism*	Other services	Total
7-14	497.2	0.9	4.6	1.6	504.3
15-24	1715.1	34.6	78.5	38.3	1866.5
25-34	1758.3	51.8	131.6	53.7	1995.4
35-44	1204.4	37.2	89.5	28	1359.2
45-54	795.8	15.9	62.9	16.7	891.4
55-64	534.1	10.5	15.5	4.7	564.8
65 +	461	5.9	8.8	2.0	477.7
Total	6965.9	156.8	391.5	145.0	7659.2

In **agriculture**, 83.6 % live in rural areas; in **manufacturing and construction** 72.7% live in urban areas; in **trade and tourism** 77.9% live in urban areas, and in **other services** 66.9% live in urban areas. Manufacturing and construction comprises carpentry, ceramic, production of traditional beverages, domestic canned manufacture and own construction. By tourism we refer to activities related to restaurant and housing.

People from group age 15-24 and 25-34 are the majority in the informal sector. It may either be a sign of incapacity of the country to generate formal employment or the difficulty to find formal employment due to low levels of education that they attained.

After agriculture, trading is the main informal activity. In Mozambique, the only ISS was conducted by the Directorate of Enterprises Statistics, which is responsible for the collection of basic statistics. Though tourism was associated with trade in the summary tabulation, it is possible to obtain separate data on tourism characteristic industries such as hotels, restaurants, etc. in the micro data.

Table 5.7.5: Number of agricultural enterprises which hold some animal species, total number of workers and average size of enterprise by principal and secondary activity

Area	Main activity			Secondary activity		
	No. of enterprises	Total no. of workers	Medium size of enterprise	No of enterprises	Total no. of workers	Medium size of enterprise
Urban	213.8	441.1	2.06	18.7	30.2	1.61
Rural	1496.5	3426.6	2.29	29.3	55.5	1.89
Total	1710.2	3867.7	2.26	48.0	85.7	1.78

This information is also available by regions and provinces. We can conclude that on an average agricultural enterprises are really small in size.

Table 5.7.6: Output value and intermediate consumption of non-agricultural informal activities by economic activities (values in thousand meticais)

Regions	Economic activity						Total	
	Manufacturing and Construction		Trade and Tourism		Other Services			
	Turnover	Intermediate Consumption	Turnover	Intermediate Consumption	Turnover	Intermediate Consumption	Turnover	Intermediate Consumption
North	231 689.90	120 502.70	502 964.10	198 249.90	20 445.10	10 748.60	755 099.20	329 501.20
Center	118 661.20	37 381.20	416 074.10	168 582.30	36 113.70	10 962.20	570 849.00	216 925.70
South	171 548.20	82 304.50	901 319.30	477 345.50	202 985.50	77 241.20	1 275 853.00	636 891.20
Total	521 899.40	240 188.50	1 820 357.40	844 177.70	259 544.40	98 951.90	2 601 801.20	1 183 318.10

These data are also available by provinces and urban versus rural areas.

The south region in terms of GDP and GDP per capita is the one with high levels; in terms of informal sector activities we can see from these results that, South region has the highest level of output.

5.7.5. Integration of the results of ISS in the national accounts

In order to obtain exhaustive data, national accounts need to use data coming from different sources. Cross-checking is of extreme importance. Results of surveys, Census, Administrative records, and if needed special studies, are valuable inputs for the best results of the national accounts estimates.

The following table summarizes the employment figures obtained by three different surveys:

Table 5.7.7: Total number of workers at informal sector

Household Budget Survey 2002/3	7 753 838
Labor Force Survey 2005	5 739 367
Informal Sector Survey 2004/5	7 659 200

Table 5.7.7 shows us that the results coming from the ISS are very similar to the HBS.

After conducting the HBS, Mozambique can easily compile the household sector account, S14 for at least the first two accounts of the sequence of accounts recommended in the SNA which are: the production account and the generation of income account whose balancing items are respectively Gross Value Added and Mixed Income.

Key steps/observations while using the data in the compilation of national accounts

In this table, we can see that LFS presents a lower number for employment. It can be explained due to the universe used in the LFS. According to the International Labor Organization, occupied people should be 15 years old. To the contrary, in the HBS and ISS, 7 years age was used as a criteria.

The employment by activity is important to measure the capacity of job creation so data on three categories was collected and analyzed: job characteristics, work incorporated and the total amount of revenue generated. The duration of work was expressed in number of hours, days, and week, activity-wise. The measurement of duration of work is of particular importance to understand employment dynamics and economic welfare.

Like with the HBS, the ISS separated the households between agricultural and non-agricultural households. The households whose majority of income comes from the agriculture activity were considered as agricultural households.

Validation checks

The first consistency check was to look for the outliers. Concentration and dispersion measures were compiled, so that values under the second quintile and above the forth quintile were not included. The following other aspects were carefully examined:

- Information related to output for own use: there were some fields in the survey questionnaire, which should have values and represent the total expenses on goods and services for this activity (in order to obtain the intermediate consumption) distinguished from different activities performed by the household.
- Property income: incomes from land (plot) renting, housing renting, etc. should be treated differently from the items on revenues from goods and services.
- Income coming from the principal activity was separated from those coming from the secondary activities; this was done according to category and, economic activity, in order to obtain the data on profits by province, activity and categories.

Sequence of accounts

After the cleaning of survey data and application of validation checks, it was possible to use the results to compile sequence of accounts for the household institutional sector. The results of ISS also made it possible to improve the estimates of production obtained from the traditional

household budget surveys, in terms of separating production data between formal and informal sectors.

Income approach is adopted to estimate value added for the informal sector. For the accounts, firstly, information on wages and salaries, mixed income and property income were identified. It was assumed that non-financial and financial sectors pay taxes to the government and receive subsidies from them, and household sector does not pay taxes on production nor receive subsidies.

With the available data, remunerations were estimated as:

Remunerations = economically active population * average salary (by activity)

As mentioned earlier, due to the specific characteristics of Mozambique, age criteria of 7 years and above was adopted for economically active population.

Few observations

- According to the results of ISS, the households accounted for 75% of labor force.
- Within the household institutional sector, S14, about 80% of workers are in the informal sector. This data is incorporated in the compilation of remunerations which is vital for estimating GDP from the income approach.
- According to the 2003 National Accounts published figures, GVA of household institutional sector, S14 accounts for 56% of GDP.
- Looking at the GDP data from income approach, it was observed that 73% of total income in household sector is coming from wages and salaries plus mixed income in respect of informal sector. Since, the results of ISS provided that 75% of the labor force is from the household sector, it was estimated that the contribution of informal sector (size) in Mozambique amounts to 42% of GDP.
- This 42% extends to all economic activities that are developed in informal way, starting from agriculture, livestock, animal production, trade, manufacturing, transportation, mining, etc. up to the services like tourism and construction.

Using the results of 2004/5 ISS, benchmark ratios have been prepared and these ratios are used on the HBS based data (which is available once in 5 years), to estimate the size of informal sector.

In Mozambique, efforts were made to collect information on NOE problem areas other than the informal sector. Questions related to drug dealers and prostitution were included in the pilot survey. However, both the enumerators and the respondents were not comfortable with such type of questions. It means that GDP still does not include illegal activities. Also, the response rate is low in enterprise surveys. Enumerators and supervisors visit big enterprises in case of non-response to collect the data. Efforts are made to persuade and elicit correct responses from the informal sector units, but since there are no records, it is difficult to assess the accuracy of their responses.

5.7.6. Conclusions and recommendations

Every five years, Mozambique conducts the household budget survey, which is very detailed. It records 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.

For the first time in 2004/5 Mozambique conducted the informal sector survey with national coverage and provincial representativity and by urban and rural areas. The ISS provided the size of the informal sector in Mozambique to be 42%. This information would not have been possible without conducting the ISS. However, conducting nation-wide surveys is very expensive and Mozambique in particular relies on external aid for such operations.

The data collected through HBS together with the ratios developed from ISS results helped in estimating informal sector and including the data in the national accounts. 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 rich data in terms of economically active population by provinces, regions, and by type of economic activities. It also helped to understand distortions in terms of revenue per capita by provinces, and groups of age, and by education levels attained.

However, it is well known that the ISS does not cover the entire informal sector due to the difficulties in identifying units and obtaining responses. Therefore, application of better methods such as using the data on economically active population and productivity ratios to estimate informal sector is suggested. For this, labour input matrices could be compiled using HBS and productivity ratios from the ISS. The NIS of Mozambique would need some technical assistance in order to provide guidance on these next steps, with the purpose of better inclusion of informal sector estimates in National Accounts.

5.8 Nigeria: Measuring Informal Economy through Household Surveys

5.8.1. Introduction

The informal economy is dominant in developing countries of the world, mostly, Africa. Hypothetically, it plays a significant role in the areas of employment, income and wealth generation among the populace leading to poverty reduction, as well as contributing hugely to the nation's Gross Domestic Product. The informal economy is the part of an economy that is either poorly taxed, untaxed or unmonitored by any form of government. It refers to a series of activities that, by occurring outside the arena of the normal, regulated economy, escape official record keeping (Jan L. L. et al; 2002). Madhura Swaminathan (1991), states that what the informal activities appear to have in common is a mode of organization different from the unit of production most familiar in economic theory, the firm or corporation. These activities are also likely to be unregulated by the state and excluded from standard economic accounts of National Income. On a global scale, the crisis of the 1980's has promoted the informal economy dominance particularly in developing economies, leading to a shift in the structure of labour market from widespread manufacturing to services where petty trading, casual employment and income can be generated. Those in informal economy include street vendors; specialized tailors; shoe-menders; petty traders; workshops for repair of cars and motorcycles; barbers; furniture makers; metal benders; electronic repair shops etc. Substantial involvement in this economy is the inability of the formal economy in developing economies to create enough jobs to go round the teaming population.

Prior to now, the informal economy is barely captured in the estimation of Gross Domestic Product mainly because it is unorganized, and unmanageable in terms of data collection from this economy. Thus, the relationship between the informal economy and GDP has continued to be a subject of interest among policymakers bearing in mind its effect on the domestic economy. The debate is essentially about the role of the informal economy in the National Accounts computation of countries.

5.8.2. Review of Related Literature

According to Martha Alter Chen (2012), informal employment tends to expand during economic crises or downturns, suggesting that necessity—in addition to choice—drives informality. Also, informalization of employment relations is a feature of contemporary economic growth and the global economy. Further, in many developing countries, the vast majority of the workforce has never had a formal job and continues to engage in traditional or survival activities. Jan L. Losby e tal (2002) poses that some researchers believe some informal economies of growth such as those represented by central Italy, Cuban Miami and Hong Kong, have created real and strong economic impacts for individuals working in them and that their characteristics might be replicated in other settings. According to African Development Bank Group (AfDB, 2013), the informal economy contributes about 55 percent to Sub-Saharan Africa's GDP and 80 percent of the labour force.

5.8.3. Methodology

Nigeria rebased her GDP covering a period (2010- 2013). For assessing the informal economy Harmonized Nigeria Living Standards Survey (HNLSS) was conducted from which data was obtained and used by the National Bureau of Statistics (NBS). 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 labour 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 behaviour, Education and Skills/Training; Employment and Time-use; Housing and Housing Condition; Social Capital, Agriculture; Household Consumption Expenditure and Income. While it was essentially designed to provide an update on the poverty situation in Nigeria, data was also available for estimating informal sector. For the purposes of the National Accounts, informal economy defined as comprising household enterprises.

By NBS definition, informal enterprises refer to micro enterprises as having less than ten persons with assets of not more than (5 million) operating outside government regulations.

Coverage: 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 objective 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

Sample Design: The HNLSS had Local Government Area (LGA) as reporting domain. However, the sample design for the survey also facilitated the provision of estimates at national and sub-national levels (National, Zone and State). The sampling frame for all the 774 LGAs in the country used the Enumeration Areas (EAs) demarcated by the National Population Commission (NPopC) for the 2006 Housing and Population Census. The frame was constructed into replicates such that each LGA had 3 replicates and in each replicate there are 10 EAs serially numbered 01-10. A complete listing of housing units and households was carried out in each of the EAs just before the start of the main survey.

A two-stage sample design was adopted in the survey of which selection of Enumeration Areas (EAs) constituted the first stage/Primary Sampling Units (PSUs), while selection of Households (HHs) formed the second stage/Secondary or Ultimate Sampling Units (USUs).

A sample size of 10 EAs was selected per LGA for study, while 5 households were systematically selected in each EA where the HNLSS Household Consumption, Expenditure and Income Questionnaires were administered. This produced 50 households per LGA and 38,700 households nationally. The same households selected in HNLSS Part A questionnaire (welfare component) were repeated in Part B questionnaire (Consumption/Expenditure component) of the HNLSS. Therefore, the **38,700** households selected for Part B, are the subset of the **77,400** households selected for Part A, HNLSS. Over 550 staff undertook the fieldwork.

The survey instruments were:

(a) Questionnaire (b) Interviewers' manual (c) Supervisors' manual

The questionnaire was specified for household enterprises (Section 13, Part 13A) from which data were mapped to enterprises in National Accounts computation. Question 9 specifically requested that registered non-farm enterprises be indicated. This helped to cross-check with other sources of data to avoid duplication.

Data Processing Status:

1. Preliminary data processing structures were put in place for the survey as listed below:
   - Data Centres at 6 Geo-political Zones: Nigeria is divided into six political zones, one data centre for one zone was established.
   - Conversion of the Analog questionnaires to digital for ease of information processing and Pre-coding of the Questions in Part A, otherwise known as programming
   - Procurement of the New Cardiff Tele-form Software version 10.2 and Installation of the software both at the Head Quarter and the Zones to be used by the data processing staff.
   - Training of Data Processing Staff both at the Head Quarter and Zones.
   - Purchase and Use of Scanners for capturing was also integrated into the survey.

2. Raw data collected from the field were made to pass through the stages above and excerpt used in the computation of National Accounts.

Table 5.8.1: Summary table of data processing infrastructure

S/N	Zones	No of states	No of Operators	No of Editing staff	No of Computers	No of supervisors	No of Scanners	No of Projectors
1	SE	5	11	7	15	2	6	3
2	SS	6	14	10	15	2	6	3
3	SW	6	16	11	15	2	6	4
4	NC	7	14	9	15	2	8	4
5	NE	6	13	9	15	2	6	3
6	NW	7	22	14	15	2	8	4
TOTAL		37	90	60	90	12	40	21

5.8.4. Summary Results

Table 5.8.2: Informal sector output and intermediate consumption

Sector	Activities	Output (Million Naira)	Intermediate Consumption (Million Naira)
Agriculture	Crop Production	12,991,387.87	3,240,909.90
	Livestock	917,936.62	286,545.34
	Forestry	83,870.86	20,185.66
	Fishing	359,720.57	145,858.20
Manufacturing	Manufacturing of Food, Beverages and Tobacco	249,596.24	150,971.16
	Manufacturing of Textile, Apparel and Footwear	253,952.33	155,454.53
	Manufacturing of Cork, Wood , Wood Products (Except Furniture)	136,475.72	79,738.67
	Manufacturing of Chemicals and Chemical Products	7,726.99	5,113.86
	Manufacturing of Other Non-Metallic Mineral Prods.	3,016.57	2,088.69
	Manufacturing of Basic Metals	49,151.48	34,593.95
	Other Manufacturing	103,228.24	55,695.83
ICT	Publishing (including software)	6,019.75	3,326.79
	Motion Picture and sound recording	13,005.68	5,498.63
Trade	Wholesale and retail trade repair of motors vehicle and cycles	613,603.03	250,241.79
	Wholesale and retail trade except of motors vehicle and cycles	639,407.57	260,765.49
	Retail trade except of motors vehicle and cycles	7,204,890.16	2,938,324.21
Other Services	Business and employees membership organisation	5,065.81	1,679.01
	Other membership organisation	2,648.86	877.94
	Repair of computers and Peripheral Equipment	19,822.97	6,570.13
	Repair of Household appliances	27,289.63	9,044.89
	Hair dressing and other beauty treatments	326.13	108.09
	Other personal service activities	915,649.25	303,483.25
Human Health	Other Human Health	72,126.91	32,529.51
	Other residential care	7,958.19	3,589.18
	Social work activities without accommodation	26,849.78	12,109.35
Construction	Construction of Buildings	362,419.06	244,605.34
	Construction of Other Civil Engineering Projects	34,091.70	23,009.31
	Other Specialized Construction	162,137.83	109,430.72
Professional Services	Legal activities	26,180.51	12,658.25
	Management consultancy activities	1,247.27	603.05
	Architectural and engineering activities and related technical Consultancy	13,575.17	6,563.58
	Research and experimental development on natural sciences and Engineering	1,579.47	763.67
	Advertising	1,289.86	623.65
	Other professional, scientific, technical activities n.e.c	32,960.94	15,936.58
Arts	Creative, arts and entertainment activities	53,030.18	27,791.82
	Sports Amusement & Creation	1,529.58	801.62
	Gambling and betting activities	3,335.38	1,747.99
Transport	Road Transport	304,638.96	183,556.19
	Water Transport	5,664.44	3,170.65
	Transport Services	8,786.87	4,240.41
	Post and Courier Services	535.41	139.88
Education	Other Education (PLS. SPECIFY)	30,630.28	13,361.07
	Mining of Hard Coal	3,127.30	1,426.23

Mining & Quarrying	Metal Ore	3,109.86	1,309.38
	Quarrying and Other Mining	16,029.55	7,215.65
Real Estate	Real Estate	3,151,054.91	481,057.29
Total		28,927,681.73	9,145,316.42

Table 5.8.3: Ratio of non-oil formal and informal economy to GDP

S/N	Economy	Percentage
1.	Formal	57.19
2.	Informal	42.81

Table 5.8.2 could be classified into twenty eight (28) economic activities (of forty six (46); see table 5.8.4) from which income were obtained in the informal economy amounting to N19, 782,365.31 million in value added. Moreover, Nigeria's GDP estimates comprise of Oil and Non-oil components. Table 5.8.3 shows the ratio of formal and informal Non-oil economy to GDP. Informal economy contributes 42.81 percent to GDP.

5.8.5. Integration of Survey Results into National Accounts

The survey instrument (questionnaire) was designed using ISIC; nevertheless, these classifications were done using ISIC Rev 4.0 and Central Product Classification Version 2.0 by the National Accounts compilers. In the National Accounts framework, there are forty six (46) economic activities for the economy restructured from thirty three (33) before the rebasing exercise, moving from 1990 base year to 2010. The GDP of a country, viewed as an aggregate measure of production, is equal to the sum of the gross value added of all resident institutional units engaged in production plus any taxes, and minus any subsidies on products. Where outputs are known as sales of goods or services that are produced and intermediate consumption consists of goods and services that are used up in the course of production within the accounting period.

Furthermore, rebasing is replacing an old base year used to compile volume measures of GDP with a new and more recent base year or price structure by incorporating new economic activity, variety of products and services; and updated frame. Rebasing accounts for the changes in the structure of the economy known as the base year which provides reference point to which future values of the GDP are compared.

Computation for informal economy (activity wise) like the formal economy was done using gross output and intermediate consumption to calculate the value added (using the System of National Accounts, 2008). Based on the industrial classification, gross output of the informal economy was integrated into the GDP by summing up the values with those of the formal economy, and deducting their respective intermediate consumption. Data for the formal economy came mainly from the sectoral surveys and system of administrative data.
Value Added= Gross Output- Intermediate Consumption.

5.8.6. Concluding remarks and recommendations

It is concluded that the informal economy plays a key role in the large economy of Nigeria. However, the survey provided data on consumption and income of informal sector which could

be used to integrate informal sector estimates into National Accounts. The Informal employment component of the survey was not applied as proxy in the compilation of National Accounts. Subsequently, it is hoped that Informal employment would be integrated in national accounts during the next rebasing arising from the fact that NBS started conducting quarterly Job Creation Survey in 2012.

In addition, it is strongly recommended that efforts of government be intensified on strengthening the Statistical Act, 2007 and increasing funding for the National Statistical Office (NBS) to sustain and enhance household surveys. These efforts would help increase the scope, sample frame and sample size of household surveys to further provide more comprehensive results. The contribution of informal economy (Non-Oil) to total GDP in Nigeria would amount to ratio higher than average if well captured using the best available resources. The statistical system would require growing data bank for micro-data at State Government level to widely integrate and estimate official statistics in the informal economy.

Table 5.8.4: Nigeria's economic activity

NIGERIA'S ECONOMIC ACTIVITY
AGRICULTURE
1. Crop Production
2. Livestock
3. Forestry
4. Fishing
MINING AND QUARRYING
5. Crude Petroleum and Natural Gas
6. Coal Mining
7. Metal Ores
8. Quarrying and Other Minerals
MANUFACTURING
9. Oil Refining
10. Cement
11. Food, Beverage and Tobacco
12. Textile, Apparel and Footwear
13. Wood and Wood Products
14. Pulp, Paper and Paper Products
15. Chemical and Pharmaceutical Products
16. Non-Metallic Products
17. Plastic and Rubber products
18. Electrical and Electronics
19. Basic metal , Iron and Steel
20. Motor vehicles & assembly
21. Other Manufacturing
22. ELECTRICITY, GAS ,STEAM AND AIR CONDITIONING SUPPLY
23. WATER SUPPLY,SEWERAGE, WASTE MANAGEMENT AND REMEDIATION
24. CONSTRUCTION
25. TRADE
26. ACCOMMODATION AND FOOD SERVICES
TRANSPORTATION AND STORAGE
27. Road Transport
28. Rail Transport & Pipelines
29. Water Transport
30. Air Transport
31. Transport Services
32. Post and Courier Services
INFORMATION AND COMMUNICATION
33. Telecommunications & Information Services
34. Publishing,
35. Motion Pictures, Sound recording and Music production
36. Broadcasting
37.ARTS, ENTERTAINMENT AND RECREATION
FINANCIAL AND INSURANCE
38. Financial Institutions

39. Insurance
40. REAL ESTATE
41. PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES
42. ADMINISTRATIVE & SUPPORT SERVICES
43. PUBLIC ADMINISTRATION
44. EDUCATION
45. HUMAN HEALTH AND SOCIAL SERVICES
46. OTHER SERVICES

5.9 Senegal: Measuring of informal sector through a *pseudo mixed survey household-informal enterprises*[78]

5.9.1. Introduction

As in other countries in sub-Saharan Africa, the informal sector plays a very important role in terms of job and income creation in the Senegalese economy. As an illustration, the 1-2-3 survey conducted in the capital, Dakar, found that in this region alone, the non-agricultural informal sector created a value added of 356.3 billion CFA francs in 2002, which is equal to 9.6% of Gross Domestic Product (GDP). At national level, the non-agricultural informal sector contribution to the GDP exceeds 30% according to estimates from the national accounts. However, these estimates are mainly based on the National survey of the informal sector conducted in 1996.

To better understand the current dynamics of the sector and have more recent data for the purposes of national accounts, the National Agency of Statistics and Demography (ANSD) conducted a National Survey on Informal Sector in Senegal (NSIS) in 2011. The data collected in this survey was for 2010 financial year.

This paper describes the methodology used to conduct this survey, the main results and how the data collected were used to assess the economic operations of informal sector, as required by the System of National Accounts (SNA). Lessons learnt and recommendations to guide better future collection operations on the informal sector are presented in the paper.

5.9.2. Scope and methodology of the survey (NSIS)

5.9.2.1 Scope of the survey

According to the International Labor Office (ILO), the informal sector is a set of production units whose main objective is to create employment and income for the people concerned. These units are characterized by:

- a low level of organization;
- a little or no division between capital and labor as factors of production;
- a small size in terms of workers.

In practice, *the National Agency of Statistics and Demography (ANSD) of Senegal defines the informal sector as all units which are not registered in NINEA*[79] *or do not keep accounting obeying the standards of the West African Accounting System (SYSCOA)*. The NSIS focused on the informal production units engaged in non-agricultural activities in the broad sense (crops, animal, forestry and fisheries).

5.9.2.2. Sampling method

The sampling method adopted by DIAL is closer to that of mixed surveys (households, enterprises) conducted in two phases, which consists of:

[78]The expression "**pseudo mixed survey**" is proposed by the authors since the approach used draws from the mixed survey but it is not exactly the same (cf. sampling method presented in the paper)
[79]National Identification Number of Enterprises and Associations

- Phase I: Administering a questionnaire on employment to a sample of households; this phase identifies the heads of informal production units (IPU) in the surveyed households.
- Phase II: Selecting all or a sample of Heads of IPUs identified during the first phase and administering a questionnaire on production and the economic performance.

However, given the budgetary constraints and the availability of results from the Poverty and Family Structure Survey (PFSS 2006) conducted in 2006, ANSD wished to skip the phase 1. In this respect, the following approach was adopted to draw the sample of IPU.

I. Using PFSS to identify the Heads of IPUs, by region and activity

The Poverty and Family Structure Survey (2006 PFSS) had as its main objective the collection of data to calculate the level of poverty in Senegal, according to the family structure. However, it collects also data on the conditions of employment of the active population (employment section and domestic work). In this respect, the question about the "professional category" of household member was used to identify "employers in the informal sector" and "Non-agricultural self-employed workers ". These two categories are considered Heads of IPU. Table 1 shows the distribution of IPU by activity.

Table 5.9.1: Distribution of IPU Activity

Activities	Informal Sector Employers	Non-agricultural self-employed workers	Total
Extraction	1340	3258	4598
Manufacturing food products, beverages and tobacco	1898	13789	15687
Other manufacturing industries	1553	45005	46558
Water, electricity and gas	803	4082	4885
Construction and civil engineering	2263	51398	53661
Trade	5983	428888	434871
Restaurants and hotels	2056	10776	12832
Transport and communications	6537	30567	37104
Other services	7017	156690	163707
Total	29450	744453	773903

Source: Calculations from the Poverty and Family Structure Survey in Senegal (2006 PFSS).

II. Allocating quota of samples to regions and activities

Given the long lag between the periods of implementation of the 2006 PFSS and the National Survey on the Informal Sector in Senegal (NSIS2011), it was not appropriate to draw the IPUs directly from the information gathered in the first survey. Further, the informal sector is characterized by instability in employment.

However, the information in the NSIS on the number of heads of IPU (Table 1) was used to determine the quotas to sample by regions and activities. The initial sample was adjusted in order to survey a minimum of five (5) IPUs by region and activity. Ultimately, 8722 IPUs, distributed as shown in Table 5.9.2, were surveyed. The total number of surveyed IPUs takes into account budgetary constraints.

Table 5.9.2: Distribution of the sample by IPU activity

Activities	Number of IPU
Extraction	166
Manufacturing food products, beverages and tobacco	932
Other manufacturing industries	1602
Water, electricity and gas	138
Construction and civil engineering	1139
Trade	2170
Restaurants and hotels	166
Transport and communications	685
Other services	1724
Total	8722

Source: Calculation from the 2006 PFSS structure with some adjustments.

III. Extrapolation of data

With the quota method, the principle of probabilistic inference is replaced by the hypothesis that the sample constituting a photo-reduction of population, the estimates obtained from the sample can be extrapolated to the whole population. Then, the mean estimator is equal to the average over the sample (Pascal ARDILLY, 2006, survey techniques, page 201).

With the notations below:

- B : the number of activities;
- R : the number of regions;
- r ϵ {1, …., R} index of region ;
- b ϵ {1,…. , B} index of activity;
- $\square_{\square\square}$: the number of IPU in the industry "b" in the region "r";
- $\square_{\square\square}$: the number of IPU surveyed in the industry "b" in the region "r";
- $\square\square_{\square\square\square}$ *:* Value added of IPU « i » in region « r » and activity « b ».

The weight of every individual « i » of activity « b » in region « r » is given by :

$$\square_{\square\square} = \frac{\square_{\square\square}}{\square_{\square\square}}$$

Then, value added ofactivity « b » in « r » region is :

$$\square\square_{\square\square} = \square_{\square\square} * \sum_{\square=1}^{\square_{\square\square}} \square\square_{\square\square\square}$$

The total value added[80]of activity « b » is, thus, obtained by summing the estimated value added of the activity to all regions:

$$\square\square_{\square} = \sum_{\square=1}^{\square} \sum_{\square=1}^{\square_{\square\square}} \square_{\square\square} \square\square_{\square\square\square}$$

[80] Other variables are estimated in the same way.

5.9.3. Data processing and main results

The collected data have been double entered in CSPRO to detect and correct some errors. The survey database correction was made by the Technical Committee that was set up within the ANSD for conducting the survey. The Committee also made various tabulations. The participation of national accountants on the committee work helped to ensure that the various economic transactions were processed according to the requirements of the SNA. By way of illustration, certain benefits in kind granted to employees have been restated as wage elements. Furthermore, the results of the NSIS confirmed the important role of the informal sector in creating jobs and added value for the Senegalese economy. Table 5.9.3 below provides some summary results:

Table 5.9.3: Main economic aggregates of non-agricultural informal sector

	Million FCFA				
Activities	Production	Value added	Compensations of employees	Taxes on production	Workers
Extraction	86,303	47,475	15,325	1,800	17,723
Manufacturing food products, beverages and tobacco	768,754	256,400	52,800	2,772	172,752
Other manufacturing industries	333,460	164,716	58,430	1,320	177,304
Water, electricity and gas	13,658	6,111	1,152	66	6,914
Construction and civil engineering	445,397	253,097	126,477	869	213,269
Trade	1, 290,688	994,858	193,630	68.846	641,021
Restaurants and hotels	139,857	68,197	18,123	1,119	39,548
Transport and communications	336,081	177,716	38,107	25,333	77,606
Other services	921,667	686,305	257,029	9,308	714,439
Total	4, 335,866	2, 654,875	761,073	111,433	2, 060,576

Source: ANSD, NSIS 2011.

5.9.4. Data integration in national accounts

The results of NSIS have not yet been incorporated into national accounts produced by ANSD. Nevertheless, their inclusion is planned during the implementation of the new base year of national accounts of Senegal (base 2014).

The use of System of National Accounts (SNA) definitions in order to determine the values of different variables (output, intermediate consumption, compensation of employees etc.) in NSIS will facilitate the integration of these data in the national accounts. In addition, ANSD has established an employment monitoring system (NSES[81]) that will permit to obtain annual data on numbers of employees in the informal sector from 2014.

Also, the results of the NSIS will be used to determine aggregates per worker in informal sector (VA per worker, compensation of employees per worker etc.) and these results will be extrapolated from 2014 using data from the NSES.

[81]National Survey on Employment in Senegal

However, additional work is needed to be established for estimating the production and generation of income accounts of informal sector according to the industrial activities classification used in national accounts. Indeed, NSIS retained the same types of activity as the household survey (PFSS 2006). But it is relatively aggregated compared to the activity classification of national accounts. For example, all food manufacturing activities were consolidated in NSIS while the nomenclature of national accounts disintegrates this into thirteen (13) activities.

In order to do disaggregate data from the National Survey on Informal Sector, it is recommended to use the informal employment from the Labor force survey (National Survey on Employment in Senegal 2015).

5.9.5. Conclusion

Since poverty surveys are usually conducted more regularly than employment surveys, it would be wise to use them to obtain a basis for identifying the informal production units. However, for optimum use of these surveys, it is necessary to take certain precautions in their design. In particular, it is important to introduce questions that permit to:

- Identify all employed people who own an informal production unit (IPU) both in respect of their main job and as a secondary employment.
- Determine the type of activity of the IPU in accordance with the level of detail required for the purposes of national accounts.

5.10 Rwanda: Integration of informal sector in national accounts through integrated business and enterprise survey

5.10.1. Introduction

Rwanda's economic development is dependent mostly on the informal activities of people. The informal sector plays a significant role as a major source of income and is a significant contributor to country's Gross Domestic Product (GDP). This assessment is based on the national accounts publications, even when the large part of informal sector is still under-estimated in the national accounts.

This paper examines that if questions relating to informal sector are included in the Integrated Business and Enterprise Survey (IBES), which is being carried out periodically in the country, it will be useful to capture data on informal sector and integrate the results into national accounts.

5.10.2. Background

IBES is a company and business level survey of a representative sample of private sector businesses. The data items included in the survey refer to income, expenditure, employment, access to finance, capital formation, inventories, balance sheet, etc. from non-agriculture sector in Rwanda. The objective of this periodic survey is to collect data needed by the Government of Rwanda and different business and development stakeholders for sound planning and decision making and estimating the contribution of private businesses in national accounts.

Reference is made to the one conducted in Rwanda in 2014-2015, where there is some amendment being considered on the questionnaires for its improvement in 2015-2016. The integration of informal sector areas into the IBES will allow the identification of its contribution to the national accounts, periodically.

5.10.3. Informal sector unit's identification frame and the mechanism of updating

Informal Sector in Rwanda: Informal sector is a set of enterprises and business which are not registered by either Rwanda Development Board or Rwanda Revenue Authority. Most, if not all these companies, do not maintain standard regular accounts (Balance sheet, Income statement, etc.).

5.10.3.1. The survey units

In the IBES, informal sector is concerned with economic units of special types and other small scale establishments. Exactly what types of units are in the scope of the survey is a substantive issue, dependent on circumstances and data requirements. However, certain common features can be noted. Typically, the survey is confined to non-agricultural units, and covers other activities. The units of interest lack formal or legal separation from the household as an economic entity and are owned and operated by persons alone or in partnership as self-employment activity, without employing regular employees.

In Rwanda, the establishment is typically located in the operator's home, in temporary premises, or without a fixed place of business. In addition, the population of interest may include micro-enterprises which, while employing one or more regular employees, operate on a scale below a certain level.

In so far as the economic units of interest are household-based and have a one-to-one correspondence with households, the informal sector survey design is likely to be similar to that of a household survey. However, there are many features which distinguish such surveys from population-based household surveys. Fundamental differences arise from the fact that we are dealing with a population of units which tend to be very heterogeneous, unevenly distributed in the population, and also less stable than typical households. Furthermore, the precision requirements, and possibly even the measurement objectives, may differ from one category of units (type, size, sector of economic activity) to another.

5.10.6.2. Basic design parameters

The IBES on Informal sector is conducted with diverse objectives and designs in different Rwandan areas. The surveys differ in scope and coverage: for instance in whether it covers only urban or all areas, only selected economic sector or all sectors, all informal sector units, etc.

A major factor affecting the design is whether, and if so how, the informal sector survey is linked to another survey, typically the labour force survey. One option is to conduct the survey simply as a module attached to the IBES usual questionnaire. This can be economical and convenient, but has limitations.

5.10.6.3. Supplementary information for survey design

The essential information for determining the sample design includes information on the number and distribution of survey units in the population, by unit characteristics. It is only on this basis that sampling rates and other aspects of the design can be determined. Normally, good information of this type is available for population-based surveys, but often that is not the case for informal sector and other surveys of small establishments.

The basic information required includes: the number and distribution of informal sector units by type, economic sector, location, etc, for identifying areas of high concentration. With foresight, the Rwandan Fourth Population and Housing Census, 2012 have been used to compile such information. Labour force surveys, provided a couple of suitable questions are included, can yield valuable information on the size and distribution of informal sector activity.

5.10.6.4. Listing

The quality of estimates of aggregates (total number of economic units, employment, output etc.) from the IBES depends on completeness of coverage, which in turn depends on the quality of listing. The requirement of good coverage is particularly important in the case of IBES informal sector. Visible as well as hidden units must be listed to ensure good coverage. In such a survey, the listing also has the important objectives of identifying in-scope units and other information

required for stratification and selection of the units within sample areas. Furthermore, a large number of units have been listed to secure sufficient sample sizes for units of different types.

A 'dual approach' is ensuring the coverage of all types of units. The idea of this approach is to divide the population of units into non-overlapping and exhaustive categories:

(i) units which require special treatment and are appropriately listed using the establishment approach;
(ii) The bulk of smaller units which are best covered through a sector listing operation.

The later can be divided into informal sector activities carried out within the household premises by persons resident in the household; and all other informal sector activities of those persons carried out without a fixed or a definite location. Listing therefore tends to be a heavy and expensive operation compared to that in a normal household survey. It involves the collection of a fair amount of substantive information over a relatively big sample.

5.10.6.5. Last stage of sampling

Important aspects that distinguish an IBES informal sector survey from a typical household survey are with respect to the last stage of sampling:

(i) Special measures are often required to avoid the procedures becoming too complicated. Selecting units in different sectors of activity with different rates should be avoided if at all possible. It is better, as far as possible, to absorb required differences at preceding stages of sampling, which involve much smaller and better controlled operations.
(ii) The complexity has often resulted in the adoption of non-probability selection procedures; this should be avoided.
(iii) Lack of control over sample sizes and workloads is likely to be a serious problem in informal sector surveys; consequently, the control of these variations is typically greater than in other surveys which can more often be designed to be self-weighting.
(iv) The IBES use the results of the listing operation to adjust the overall sampling rate, so as to control the total sample size.
(v) Special treatment is applied in situations when units of observation and analysis lack one-to-one correspondence with the ultimate units of sampling. Examples are the presence of several informal sector units in the same business; several types of activities carried out by the same unit; or unit with partners from different business.

5.10.7. Methodological difficulties faced

- The supervision or counter verification of work done by enumerators are very difficult or even impossible as most of informal business are mobile, so it better to work day to day with enumeration team to ensure the quality of data provided.
- The Stratification is more complicated due to no stable attitude of the informal sector activities;

- It requires spending more time with the respondent or operator if the unit, in order to capture all the information needed, as no accounts are maintained.

5.10.8. IBES Plan of Activities

Table 5.10.1: Plan of activities

N0	Activity	Starting Date	Ending Date
1	Training of Enumerators	4-Nov	23-Nov
2	printing of the final questionnaire and other logistics	24-Nov	30-Nov
3	Formal Sector Data collection	1-Sep	31-Dec
4	Training of Enumerators on listing form	28-Sep	2-Oct
5	Listing of country Selected sectors	19-Sep	24-Oct
6	Training of codifiers for listing	19-Oct	20-Oct
7	Codification for listed enterprises	21-Oct	5-Nov
8	Training of Data entry clerks for listing	23-Oct	23-Oct
9	Data entry for listing	23-Oct	6-Nov
10	Sampling for IBES Informal Sector	1-Nov	8-Nov
11	Codification Training for formal & Informal Sector	6-Nov	7-Nov
12	Codification for formal & Informal Sector	10-Nov	30-Jan
13	IBES Informal Sector Data Collection	15-Nov	24-Dec
14	Training of Data entry clerks for IBES	25-Nov	26-Nov
15	Data entry clerks for IBES formal & Informal Sector	27-Nov	30-Jan
16	Data Cleaning	1-Dec	28-Feb
17	Data Collection wrap up	5-Jan	30-Jan
18	Tabulation	5-Mar	30-Mar
19	Report writing	1-Apr	25-Apr

Annex: XI. Measuring Informal Economy through Household Surveys: Tanzania

XI.I. Introduction

The National Bureau of Statistics collects data on large, medium and small scale registered establishments with ten or more employees and from 5 to 9 employees. The production units with less than five employees with some market output are not included in the establishments list. Therefore, data on the informal sector less than 5 employees is not collected through the routine statistics. The informal sector in Tanzania context which excludes agriculture developed within the urban, township areas without the encouragement of the Government. The bulk of informal products therefore enjoy the advantage of not having sales tax levied and not being price controlled. Informal producers therefore, reap significant profits provided market situations allow. They are mainly involved in vehicle repair, transport services, clothing, shoe making, building dwellings, hair dressing, selling foods, etc, and a large part of population depend on informal sector for employment and income generation. Consequently, the informal sector in Africa, including Tanzania, represent the substantial share of the economy unlike in developed countries.

The development of unincorporated enterprises assumes an important role in the national economy. Based on previous surveys and available information, there is substantial literature on employment informality but research on its value added to the national economy remains relatively scant. The informal sector is important not just as a source of employment but also for the production of goods and services. In many countries, the contribution of informal enterprises to gross value added (GVA) is substantial. The goods and services produced in the informal sector contribute substantially to what is consumed by poor as well as more affluent households. In India, as in many other developing countries, trading enterprises are predominantly small family businesses. Hard data on this informal trade sector are scarce and national accounts compilers have had to devise indirect methods to measure the output and value added of this sector, Kolli, (2011).

This paper also examines the size and structure of informal economy by employment approach using dataset of ILFS (2012) and CIP (2012) which provide a count of all establishments engaged in economic activities, including those in the informal sector. The information allows the estimation of Gross Output and Value Added.

The Problem:
The production of goods and services by informal sector is seldom captured completely by list based surveys as the results show the imbalance between supply and use side measurements, thus complete coverage of goods and services produced by informal sector enterprises is very helpful in balancing the supply and use of goods and services. The production of commodity as measured in survey of formal enterprises has been found to be far less than the consumption of commodity as measured by the expenditure surveys. Due to less coverage of informal sector, many statisticians had to prefer the use of expenditure approach as proxy to production.
The largest part of GDP is generated in the formal economy but, the estimate of GDP is less exhaustive due to poor coverage of informal sector;

Integrated Labour Force Survey (ILFS)

Data and Variable used:

The data and variable used in this paper are from the 2012 ILFS, a nationally representative household's survey conducted on quarterly basis. The 2012 ILFS used the sampling frame derived from the 2012 Population and Housing Census (PHC). The sample selection methodology for the 2012 ILFS was based on a stratified three-stage sample design.
The first stage involved systematic sampling of EAs within each stratum with Probability Proportion to Size (PPS) from the ordered list of EAs in the sampling frame. A total of 480 EAs were selected at the first stage whereby 360 EAs were in urban area and 120 EAs in rural areas. The second stage involved systematic sampling procedure for selecting households from each selected EA. A total of 24 households were selected from each sampled EA. The third stage involved selection of respondents for Time Use Module. During data collection, interviewer developed a household register for persons aged 5 years and above in accordance to their sex and age. One household member was selected from the register using KISH grid approach and the time use questionnaire was therefore administered to the selected member of the household in each selected household. Among these households, 4,800 were in Dar es Salaam, 3,840 in other urban areas and 2,880 in rural areas.

The table below shows the number and percentage of the informally engaged persons aged 15 years and above by economic activity and sex.

Table XI.1 Employment (number) in the informal Sector 15+ years Tanzania Mainland

Economic Activity	Male	Female	Total	% of total
Mining and quarrying	141,125	43,205	184,330	4.2
Manufacturing	227,717	199,046	426,763	9.8
Electricity, gas, steam and air conditioning supply	1,918	0	1,918	0.0
Water supply; sewage, waste management and remediation activity	1,947	924	2,871	0.1
Construction	267,451	2,803	270,255	6.2
Wholesale and retail trade; repair of motor vehicles and mot	967,910	1,111,699	2,079,608	47.9
Transportation and storage	254,950	7,687	262,638	6.0
Accommodation and food service activities	105,162	526,845	632,007	14.5
Information and communication	1,822	846	2,668	0.1
Financial and insurance activities	5,042	6,274	11,316	0.3
Real estate activities	3,148	945	4,094	0.1
Professional, scientific and technical activities	6,380	1,865	8,245	0.2
Administrative and support service activities	21,452	7,431	28,883	0.7
Public administration and defense; compulsory social security.	4,715	185	4,900	0.1
Education	5,355	9,133	14,488	0.3
Human Health and social work activities	15,402	17,905	33,307	0.8
Arts, entertainment and recreation	6,003	4,590	10,594	0.2
Other service activities	60,553	85,999	146,552	3.4
Activities of households as employers; undifferentiated good	28,295	190,848	219,144	5.0
Total	2,126,349	2,218,230	4,344,580	100.0

Source: ILFS 2012

The ILFS 2012 estimates that 4,344,580 persons aged 15 and above were employed in the informal sector, out of which 2,218,230 were women and 2,126,349 were men. The wholesale and retail trade, repair of motor vehicle and motor cycles activities dominated the informal sector

and it accounted for 47.9 percent of the total employment. Accommodation and food services constituted the second largest activity in terms of the share of employment and accounted for 14.5 percent followed by manufacturing with 9.8 percent of the total employment. Other economic activities with significant shares of employment were construction (6.2 percent), activities of households as employers (5.0 percent) mining and quarrying (4.2 percent), other services (3.4 percent). The remaining economic activities had less than one percent of employment each. The share of females informal sector was highest in the activities of households as employers representing 87.1 percent, followed by accommodation and food services 83.4 percent, education 63.0 percent, other services (58.7 percent), financial and insurance activities (55.4 percent), human health and social work activities (53.8 percent) and wholesale and retail trade, repair of motor vehicles and motorcycles (53.5 percent).

Most of the informal employees mentioned self-employment as main activity comprising 84.0 percent of total informal employees, followed by casual employment (7.8 percent), special job contract (4.7 percent) and fixed contract 3.6 percent. Comparing by gender, males were proportionally more in mining and quarrying activity representing 76.6 percent of all employees compared to 23.4 percent for females. Other economic activities with higher proportions of males informal employees include: electricity, water supply, sewage and waste management (100.0 percent), construction (99.0 percent), transport and storage (97.1 percent), social security (96.2 percent).

Persons Employed (000) in the Informal Sector by Employment and Sex, Tanzania Mainland									
	Number (000)							Percent	
Economic Activity	Special job contract	Fixed time contract	Casual	Not applicable -Self employe	Total	Male	Female	Male	Female
Mining and quarrying	0	0	3	182	184	141	43	76.6	23.4
Manufacturing	8	2	8	409	427	228	199	53.4	46.6
Electricity, gas, steam and air conditioning supply	0	0	0	2	2	2	0	100	0.0
Water supply; sewage,waste management and	0	0	1	2	3	2	1	67.8	32.2
Construction	14	14	41	202	270	267	3	99	1.0
Wholesale and retail trade; repair of motor vehicles	37	26	61	1,955	2,080	968	1,112	46.5	53.5
Transportation and storage	39	34	57	132	263	255	8	97.1	2.9
Accommodation and food service activities	10	8	49	565	632	105	527	16.6	83.4
Information and communication	1	0	1	1	3	2	1	68.3	31.7
Financial and insurance activities	1	0	2	8	11	5	6	44.6	55.4
Real estate activities	0	0	0	4	4	3	1	76.9	23.1
Professional, scientific and technical activities	0	0	0	8	8	6	2	77.4	22.6
Administrative and support service activities	3	3	5	18	29	21	7	74.3	25.7
Public administration and defence; compulsory	1	1	4	0	5	5	0	96.2	3.8
Education	1	2	2	9	14	5	9	37	63.0
Human Health and social work activities	0	8	3	22	33	15	18	46.2	53.8
Arts, entertainment and recreation	1	0	1	8	11	6	5	56.7	43.3
Other service activities	9	9	17	111	147	61	86	41.3	58.7
Activities of households as employers;	79	47	82	10	219	28	191	12.9	87.1
Total	**204**	**155**	**338**	**3,647**	**4,345**	**2,126**	**2,218**	48.9	51.1
Percentage	**4.7**	**3.6**	**7.8**	**84.0**	**100.0**	**48.9**	**51.1**		

Source: ILFS 2012

Census of Industrial Production (CIP)

SAMPLE DESIGN

5.1 Sampling Frame

The sampling frame used for the 2013 Census of Industrial Production was based on the establishments which were operating in 2013 as per results of the listing exercise for the 2013 CIP conducted in April 2014 in all the 25 regions of Tanzania Mainland. The sample size for 2013 Census of Industrial Production was 13,867 establishment distributed as shown in the table below.

Table XI.2 Number of Establishments by employment (size class)

ISIC	Employment	1	2	3	4	5	6	7	Total
1061	grain milling	1,257	377	150	63	10	3	2	1,862
1410	tailoring	1,224	539	63	10	1	2	2	1,841
2596	Welding, etc	954	353	59	12	1	1		1,380
3100	furniture	1,188	808	164	39	9	3	1	2,212
112 other ISIC groups		3,902	1,225	632	439	169	170	35	6,572
All industries		8,525	3,302	1,068	563	190	179	40	13,867

Source: CIP 2013.

XI. 2. Measurement of informal sector in National Accounts:

The range of source data used to estimate informal sector is very limited, as during the rebasing and benchmarking many surveys were being conducted including ILFS and CIP which can provide adequate information on employment for registered enterprises of medium and small size based on business registers (that is formal and informal employment). The labour force survey helps to construct the sample frame for the household unincorporated enterprises, which engage at least partially in market production, and provide data for estimating informal employees and the statistical unit used is the household in order to get total employment (formal and informal). The difference between total employment and formal employment is informal employment, it is better to focus only on non agricultural activity since value added of agriculture can be captured by other methods.

To obtain output or value added per employee in the informal sector, special surveys (normally every 5 years) need be conducted to derive the benchmark output and value added ratios for informal sector which can be extrapolated to get a future estimates in the coming years. If information on full time equivalent employees is available, it will result in better estimates of informal sector. Full time equivalent employees equal the number of employees on full time schedules plus the number of employees on part time schedules converted to a full time basis. The number of full time equivalent employees in each industry is the product of the total number of employees and the ratio of average weekly per employee for all employees to average weekly hours per employee on full time schedules, unless it has no part time employees. The average work hours of an employee in Tanzania Mainland distributed as shown the table below:

Average Usual hours of work per Week 15+ (National Definition)						
	2006			2012		
Status	Total	Male	Female	Total	Male	Female
Paid Employment	57	58	55	63	66	59
Self Employed	55	59	49	65	70	60
Unpaid	38	41	36	57	54	58
Own Farm	40	42	38	48	52	45

Source: ILFS 2006 & 2012

Average Usual hours of work per Week 15+ (Standard Definition.)						
	2006			2012		
Status	Total	Male	Female	Total	Male	Female
Paid Employment	57	58	55	63	66	59
Self Employed	55	59	49	65	70	60
Unpaid	38	41	36	57	54	58
Own Farm	40	42	38	48	52	45

Source: ILFS 2006 & 2012

The NBS conducts CIP survey from which the following information is collected

- Employment: (male and female)
- Compensation: (Salaries, benefits, paid families, depreciation, and tax production)
- Sales (Finished goods, resale of goods, value of re sale, fees received, work done for others)
- Inventory (Finished goods (closing and opening), Goods in process (Closing and opening)
- Rental of buildings
- Other receipts
- Purchases (raw materials, supplies, others)
- Inventory (Raw materials (closing and openings), supplies & materials (closing and openings)
- Expenditure: water bill, electricity bill, travel, repair, legal, advert, and bank charges, printings and others

The statistical Calculation by enterprise approach as an example is as follows:

- Sales = finished goods + (resale of goods-purchases value of resale) +others fees received +work done for others +rental of buildings other operation receipts)
- Change of inventory = (closing –opening) finished products +(closing –opening) goods in progress
- GO = Sales + change in inventory
- IC = raw materials +supplies +others rental of building + net insurance + services electricity +water +water +postage+ repair +legal +advert +printing +bank charges +printing +others
- VA= GO-IC

The table below shows how data is being extracted directly from survey and how the estimates of GO and VA are derived.

ISIC Code	No. of enterprises	Gross output			Intermediate consumption (IC)				Gross value added	Compensation of employees	Other taxes less subsidies on production	Consumption of fixed capital	Gross operating surplus	Net operating surplus	GVA/II
		SALES	change in inventories	Total	Purchases	other IC	mat &supp	Total							
315	12	13,205,162	-58,349	13,146,813	5,663,629	2,563,676	534,504	8,761,809	4,385,004	3,654,581	1,225	1,106,607	729,198	-377,409	0.5005
317	5	3,356,644	-84,103	3,272,541	1,125,379	807,563	-83,329	1,849,613	1,422,928	695,204	1,530	52,300	726,194	673,894	0.7693
318	87	58,091,700	958,573	59,050,272	36,754,635	10,500,826	476,008	47,731,469	11,318,804	7,369,322	864	350,075	3,948,618	3,598,543	0.2371
320	5	1,514,876	-35,860	1,479,016	1,055,337	263,624	-44,519	1,274,442	204,574	539,001	2,622	44,041	-337,049	-381,090	0.1605
322	7	15,004,069	-104,534	14,899,535	8,012,821	1,981,384	-121,165	9,873,040	5,026,495	3,876,443	0	687,709	1,150,052	462,343	0.5091
324	1	664,672	120,153	784,825	17,000	300,770	0	317,770	467,055	609,370	666	46,176	-142,981	-189,157	1.4698
326	6	17,331,662	22,203	17,353,865	12,938,352	1,294,487	-168,143	14,064,695	3,289,170	2,222,493	3,313	1,014,371	1,063,364	48,993	0.2339
327	4	2,549,796	-601,045	1,948,751	1,308,555	1,243,110	-3,113	2,548,552	-599,801	106,079	420	137,978	-706,300	-844,278	-0.2353
328	6	4,078,489	13,489	4,091,977	2,206,119	610,167	-42,850	2,773,437	1,318,541	1,257,312	979	218,835	60,249	-158,586	0.4754
331	5	11,766,545	46,315	11,812,860	6,484,291	535,916	-229,584	6,790,623	5,022,237	1,759,187	11,716	826,749	3,251,334	2,424,585	0.7396
336	7	14,992,389	-321,311	14,671,078	10,545,123	810,980	-5,616	11,350,486	3,320,592	2,088,333	1,503	618,198	1,230,756	612,557	0.2926
337	1	1,607,316	0	1,607,316	216,790	319,769	0	536,559	1,070,757	287,100	0	287,891	783,657	495,766	1.9956
Total	146	144,163,319	-44,469	144,118,850	86,328,031	21,232,272	312,193	107,872,496	36,246,354	24,464,425	24,838	5,390,930	11,757,092	6,366,162	0.3360

XI.3. Challenges, Improvements and way forward:

The current or future efforts to estimate under reporting of production for all types of production, formal and informal, should be undertaken during the conduct of major surveys/censuses. In these surveys/censuses, all large corporations should be surveyed and a sample of registered and unregistered medium and small corporations should be surveyed. This helps to obtain benchmark output and intermediate consumption data and other technical ratios, and consequently, the estimates of value added for the whole economy that takes into account all production activities.

For illegal activities such as drugs and prostitution, smuggling etc. if there are regular (yearly at least) estimates by police on these activities, then they should be incorporated in GDP. However, if only irregular reports or unreliable data is available, then it is better not to include them in GDP compilations, as it presents a distorted picture. Many countries including few developed countries do not include these estimates in GDP. However EU countries by mandate have to estimate them.

Annex: XII. Measuring Informal Economy through Household Surveys in Zimbabwe

XII.1 Introduction

In Zimbabwe, informal sector was not significant in the 1980s. However, informal activities increased in the 1990s. Furthermore, the economy started declining around 2000 up to the peak of hyperinflation in 2008 and this battered the formal sector leading to increased mushrooming of informal sector business.

People who lost jobs and those who could not be absorbed by the formal sector all embarked on the informal sector and they continue to earn a living from the informal sector. Many people who are churned out from colleges depend on the informal sector. All this means that the informal sector will continue to grow and hence it is very important to measure the size of the informal sector and account for it in Gross Domestic Product (GDP). *The informal sector covers establishments which are not registered with the authority like the Registrar of Companies.*

XII.2 Sources and methods used to estimate informal sector

The paper examines the period from the 1990s when the informal sector activities started to become increasingly significant in Zimbabwe. It is the period when economic structural adjustment programme (ESAP) was introduced and many retrenchments took place. The paper also covers the decade of hyperinflation from around 2000 to 2008 and the post hyperinflation period from 2009 up to date.

The sources of data for estimating informal sector are the household surveys particularly the Poverty Income Consumption and Expenditure Survey complemented by the Labour Force Survey and the Population Census; and the enterprise based surveys i.e. the Census of Industrial Production (CIP) and the Quarterly Employment Inquiry (QEI).

The size of the Poverty Income Consumption and Expenditure Survey (PICES) is 33000 households. The sample is drawn from the Zimbabwe Master Sample using sampling with Probability Proportional to Size (PPS) sampling. Variables like employment, output, inputs, etc are covered. Employment data on the informal sector collected through questions in the Labour Force Survey questionnaire was another source.

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.

Questionnaires are administered by enumerators. Data is checked by Team leaders and Provincial supervisor and Head Office supervisors. After coding and editing, data is entered in the computer using CSPRO. Analysis is done using SAS Software.

The methods used involved analyzing the data collected on output, inputs,, etc on household enterprises according to the national accounts module so as to estimate value added of the informal sector. This also includes applying the labour input method, which required preparing data on employment in informal sector. This has been done by comparing data

from the household surveys and data from the enterprise based surveys, Census of Industrial Production (CIP) and the Quarterly Employment Inquiry (QEI).

In 2012 an exercise was undertaken to incorporate the informal sector in the GDP estimates. The Value-added of the household sector enterprises was captured through a national accounts questionnaire as a PICES module which captured data on their incomes and expenditures. 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. The informal sector contributed 19.5 % according to PICES 2011/12.

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

XII.3 Results

The most important findings are that the informal sector contribution to GDP became more significant in the 1990s. The size of the informal sector increased tremendously during the period of hyperinflation in the 2000s. After the period of hyperinflation, the informal sector continues to play an important role in the economy.

Agriculture continues to play an important role in the informal sector. The overall change to GDP as a result of revisions was 41%.

Data on the informal sector on financial inclusion and financial exclusion showed that at some point in time more money was circulating outside the banking sector with a significant bearing on GDP measurement.

XII.4 Discussion

The larger implication of the study is that a large percentage of the GDP comes from the informal sector. The Zimbabwe Revenue Authority which used to focus on tax collection on the formal sector started looking at ways of raising money from the informal sector to widen the tax base.

The contribution of the informal sector is so large that without fully accounting for the informal sector in GDP, national accounts of the country would not be exhaustive. Growth in the informal sector is a continuing phenomenon. Therefore, regular measurement of the informal sector and its contribution to national accounts are critical for policy making.
The last PICES Survey was carried out in 2011 / 2012 and the newest one will be conducted in 2016 / 2017. The last Labour Force Survey was carried out in 2011 and in 2014. There are plans for more frequent data collection on the informal sector.

XII.5 Method used to extrapolate benchmark estimate

A constant percentage of 19.5 % is used to extrapolate backwards and forwards. 19.5 % is the percentage of the value added of the formal sector to GDP calculated using PICES 2011/12 data.

XII.6 Current/ future method to estimate under reporting

The Labour input method will be used to make appropriate corrections for underreporting in the formal sector. This will be done by comparing data from household surveys with those from establishment based surveys. The Poverty, Income, Consumption and Expenditure Survey (PICES) data will be used on a regular basis to estimate the size of informal sector and carry out corrections for underreporting in the Household Sector.

Police reports will be used to estimate illegal activities. Use of trade mirror data from trading partners will also be used to check for underreporting in the trade data.

XII.7 Detailed Results

Production and employment in the informal sector

The total value added for the informal non-farm activities in Zimbabwe is US$810.0 million. The value added from households engaged in agricultural activities is US$921.4 million. This gives a total of US$1,731.4 million as the total value added contributed by the informal sector in Zimbabwe. When expressed as a percentage of the Gross Domestic Product (GDP) for 2011 the contribution of the informal sector in Zimbabwe is 19.5 percent of GDP.

XII. 1 Value of Output and Inputs of Informal Sector in Zimbabwe, PICES 2011, US$

Informal sector activities	Value in US$	Percent contribution
Agricultural activities		
Household agriculture output	1,194,192,083	100.00
Total household inputs	272,771,761	22.84
Household agriculture value added	*921,420,322*	*77.16*
Non-agricultural activities		
Household non farm output	2,060,297,806	100.00
Total household inputs	1,250,274,186	60.68
Household non-farm value added	*810,023,619*	*39.32*
Total informal activities		
Output	3,254,489,889	100.00
Total inputs	1,523,045,947	46.80
Total value added	*1,731,443,941*	*53.20*
GDP in 2011	8,865,427,917	
Contribution of informal sector to GDP in 2011		19.5%

The total value of non-farm output of the informal sector is US$2,060.3 million while the costs of production excluding wages and salaries amounts to US$1,250.3 million. This translates into a value added of US$810.0 million as previously pointed out.

XII. 2 Value of Revenue and Cost of Non-Farm Informal Sector, PICES 2011 US$

Receipts	Value in US $
Resale of purchased goods	1,186,031,824
Sale of goods produced or processed	357,549,585
Home consumption of goods produced or processed	1,850,478
Value of products received for services rendered or work done (in kind)	27,232,306
Value of own products used in household enterprises	775,559
Value of products received in exchange or barter not incl. in sale or own consumption	1,185,376
Income received for services rendered or work done (cash)	456,041,598
Other business receipts	29,631,082
Total value of output	2,060,297,806
Operating costs	
Own products used in household enterprise	6,935,521
Material inputs	182,041,989
Goods bought for resale	829,764,692
Rentals	39,777,956
Fuel ,electricity, water etc charges	74,498,166
Hire and repair of equipment, transport charges paid and other related expenses	80,388,824
Repairs of buildings and other maintenance charges	2,564,521
Goods ,exchanged or battered or donated	411,548
Business taxes, licenses	4,023,237
Accountants fees and other service charges	444,683
Interest paid on business loans	93,742
Miscellaneous business supplies	1,183,334
Communication charges	6,121,513
Other operating costs	22,024,460
Total value of inputs	1,250,274,186
Value added (output less inputs)	810,023,619
Less wages and salaries	
Wages and salaries paid in cash	59,936,410
Wages and salaries paid in kind	1,430,239
Total wages and salaries	61,366,649
Mixed income	748,656,971

The majority of the household enterprises (35.3 percent) in Zimbabwe are engaged in wholesale and retail trade including repair of motor vehicles and motorcycles. About 16 percent of the household enterprises are engaged in manufacturing while another 13.0 percent of the households are involved in construction. About 5 percent of the household enterprises are involved in agriculture related activities such as poultry rearing for sale or resale of agricultural produce in markets.

XII. 3 Value Added of Non-Farm Household Enterprises (Informal Sector) by Industry; PICES 2011 US$

Industry	Value added US$	Per cent
Agriculture, forestry, hunting and fishing	38,807,490	4.8
Mining and quarrying	27,668,044	3.4
Manufacturing	128,641,462	15.9
Electricity, gas, steam and air conditioning supply	6,432,858	0.8
Construction	105,175,676	13.0
Wholesale and retail trade, repair of motor vehicles and motorcycles	286,068,255	35.3
Transportation and storage	41,595,355	5.1
Accommodation and food service activities	26,162,795	3.2
Information and communication	1,685,238	0.2
Financial and insurance activities	4,095,183	0.5
Real Estate activities	828,919	0.1
Professional, scientific and technical activities	33,687,992	4.2
Administrative and support activities	8,340,389	1.0
Education	1,790,243	0.2
Arts, entertainment and recreation	2,418,248	0.3
Other activities	96,625,471	11.9
National total	810,023,619	100.0

The PICES 2011/12 survey reveals that about 3.7 million people in Zimbabwe are involved in informal sector activities. The majority of households and people engaged in informal sector activities are in Manicaland province being 18.4 percent and 18.5 percent respectively out of the total in Zimbabwe. In Harare 9.4 percent of the households are engaged in informal sector activities while 5.6 percent of the people of Harare are engaged in informal sector activities.

XII. 4 Number of Households and Persons Employed in the Informal Sector by Province

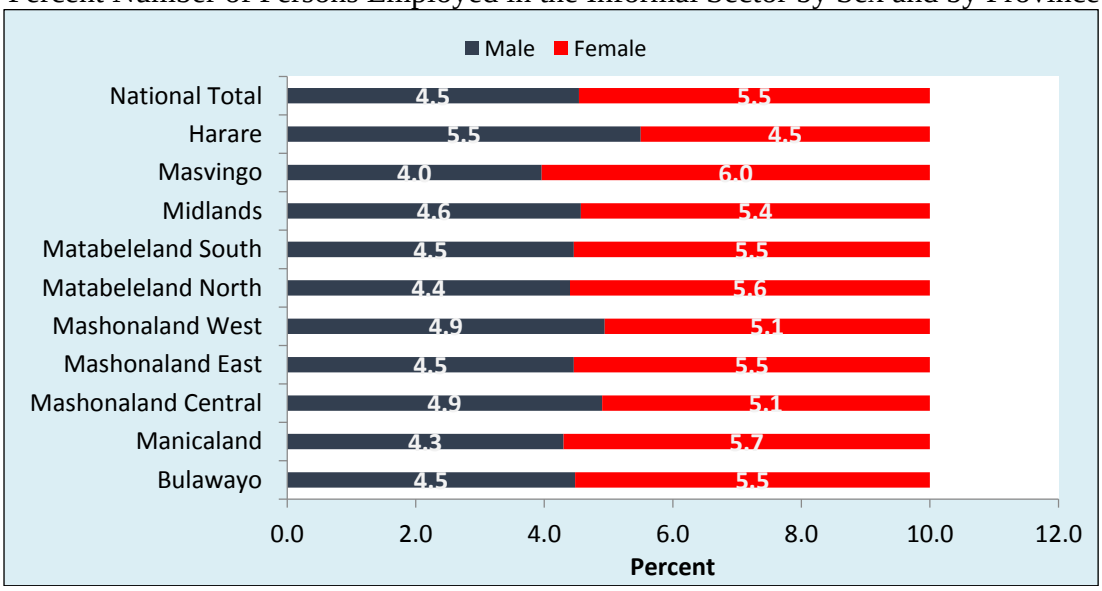
Province	Households	Percent	Persons	Percent
Bulawayo	62,106	3.4	78,496	2.1
Manicaland	334,001	18.4	692,646	18.5
Mashonaland Central	186,358	10.2	427,659	11.4
Mashonaland East	179,366	9.9	360,849	9.7
Mashonaland West	198,197	10.9	422,367	11.3
Matabeleland North	96,513	5.3	228,525	6.1
Matabeleland South	109,228	6.0	263,466	7.0
Midlands	244,563	13.4	555,504	14.9
Masvingo	238,576	13.1	500,187	13.4
Harare	170,843	9.4	208,649	5.6
National total	1,819,750	100.0	3,738,348	100.0

XII. 5 Number of Persons Employed in the Informal Sector by Sex and by Province

Province	Male	Female	Both sexes
	Number of persons	Number of persons	Number of persons
Bulawayo	35,195	43,301	78,496
Manicaland	297,873	394,773	692,646
Mashonaland Central	209,373	218,286	427,659
Mashonaland East	160,923	199,925	360,849
Mashonaland West	208,598	213,769	422,367
Matabeleland North	100,580	127,944	228,525
Matabeleland South	117,487	145,979	263,466
Midlands	253,785	301,719	555,504
Masvingo	198,149	302,038	500,187
Harare	114,731	93,919	208,649
National total	1,696,695	2,041,653	3,738,348

Evidence from the PICES 2011 data shows that more females 54.6 percent than males 45.4 percent are employed in the informal sector, see figure 6.1. The same pattern is observed across provinces in Harare where more males 55.0 percent compared to females 45 percent are employed in the informal sector. Masvingo province has the highest proportion of females employed in the informal sector compared to other provinces.

Percent Number of Persons Employed in the Informal Sector by Sex and by Province



Evidence from the PICES survey shows that 50.5 percent of the people employed in the informal sector in Zimbabwe are aged between 15 to 34 years, see table 6.6. Further, evidence shows that out of the total number of males employed in the informal sector 53.2 percent are in the 15-34 year age group range. In addition, out of the total number of females employed in the informal sector in Zimbabwe 48.3 percent are in the 15-34 year age group range. This evidence depicts the role played by the informal sector in Zimbabwe in

generating employment for the younger generations following the company closures and retrenchments that occurred during the decade of economic difficulties in Zimbabwe.

XII. 6. Number of Persons Employed in the Informal Sector by Age and Sex

Age group	Male	Male	Female	Female	Both sexes	Both sexes
	number	Percent	Number	percent	Number	percent
10-14	65,334	3.9	49,616	2.4	114,949	3.1
15 – 19	237,655	14.0	224,573	11.0	462,228	12.4
20 – 24	244,951	14.4	267,936	13.1	512,887	13.7
25 – 29	230,309	13.6	268,859	13.2	499,169	13.4
30 – 34	190,241	11.2	224,470	11.0	414,711	11.1
35 – 39	170,621	10.1	197,834	9.7	368,455	9.9
40 – 44	109,472	6.5	131,755	6.5	241,227	6.5
45 – 49	75,598	4.5	130,575	6.4	206,173	5.5
50 – 54	74,004	4.4	135,397	6.6	209,401	5.6
55 – 59	71,644	4.2	123,026	6.0	194,670	5.2
60 – 64	65,312	3.8	98,928	4.8	164,240	4.4
65 – 69	54,178	3.2	69,908	3.4	124,086	3.3
70 – 74	43,193	2.5	51,257	2.5	94,449	2.5
75+	63,947	3.8	67,432	3.3	131,379	3.5
Not stated	235	0.0	88	0.0	323	0.0
National total	1,696,695	100.0	2,041,653	100.0	3,738,348	100.0

XII.8 Summary

The total value added for the informal non-farm activities in Zimbabwe is US$810.0 million. The value added from households engaged in agricultural activities is US$921.4 million. This gives a total of US$1,731.4 million as the total value added contributed by the informal sector in Zimbabwe. The contribution of the informal sector in Zimbabwe is 19.5 percent of GDP for the year 2011. The PICES 2011/12 survey revealed that about 3.7 million people in Zimbabwe are involved in informal sector activities. About 54.6 percent of the people employed in the informal sector in Zimbabwe are females.

The overall change to GDP as a result of revisions covering the informal sector and labour input method adjustments was 41%.

5.11 Burundi Evaluation of the informal economy through a household survey

5.11.1 Introduction

Labor specialists agree that most jobs in developing countries (DCs) are in the informal economy, which plays a predominant role in the economy. One might even think that the global economic crisis reinforces the notion that job losses affecting other sectors of economic activity move to informal economy. For better understanding of the economies, therefore, requires a better knowledge of the informal sector.

The fact that many sub-Saharan African countries are preparing estimates of informal sector shows its importance to their economies. Burundi organized a series of surveys, including a national survey on the living conditions of households in Burundi (ECVMB - 2014) with the desire to have a clear picture of informal sector in the national economy. One of the aims of the survey is to meet the national accounts data needs, which include, estimation of informal sector, data needed for changing base year and migrating from the 1993 SNA to the 2008 SNA. The last survey of this kind, with national coverage, took place in 1991.

The ECVMB-2014 used a methodology that combines a 5 shutters QUIBB type survey with a price survey and a 1-2-3 type survey with 3 components, (i) the employment component, which allows to have information on employment, unemployment and business conditions; (ii) the informal sector component which aims to provide additional information to the national accounts by establishing production and distribution accounts; and (iii) the household consumption component. Besides these, there is a component linked to the consumer price.

Overall, the ECVMB-2014 main objective is to determine the profile of poverty and the various indicators of living conditions of households and to build a database that shows the effectiveness of key programs and policies of the government. It also aims to give fresh and comprehensive information especially those related to the informal sector.

The survey on the informal sector was organized so that it can capture informal activities of the Burundian economy in accordance with internationally recognized standards, to provide additional information for national accounts by establishing the production accounts and generation of income account for the informal sector.

5.11.2 Definition of informal sector and informal employment adopted

The definition of informal sector retained for Burundi closely approximates the vision of the 2008 SNA, and it retains that a company is informal when it produces goods and services for market and it does not meet the following conditions: (i) being registered; and (ii) having a written, formal accounting.

For the informal sector component of the survey and considering that Burundi's economy is essentially a subsistence economy, it was necessary to retain certain restrictions for a more operational definition. Thus the definition used for this survey is that the informal sector is "*all non-agricultural and non-registered individual businesses, not taking formal accounting, producing goods and services for the market*." Therefore, agricultural informal production units were excluded from the scope of the definition. Likewise the criterion of number of employees below a certain threshold was not retained. *Informal employment is defined as*

employment without protection (social protection, written contract, salary slips, severance pay, etc.).

Having established these definitions, it was easy to prepare and insert questions in the first phase that enabled to capture the informal sector and informal employment.

5.11.3. Survey design

The informal production units were selected in Phase I of the survey (employment section). The aim was to select all employed persons who are declared "owners" or "own-account worker" (either in their main job or in second job) in an establishment that either do not have tax identification number (TIN) or does not keep proper accounts. In accordance with the definition for the informal sector, these people lead an informal production unit (IPU). Thus the filtered questions addressed during phase 1, to household members of age 10 and more, allowed in identifying and locating the IPUs.

After establishing a base of all these informal production units, a questionnaire was developed and administered to each head of informal production unit identified. The questionnaire was an individual form, including an identification page of the informal unit and 8 modules on features of the unit; demographic characteristics of the workforce; production and sales; expenses and charges; customers, suppliers and competitors; equipment, investment and financing; problems and prospects; and social security.

The ECVM-2014 was carried out according to a stratified random sample design, with two degrees, with proportional allocation in the first degree. The basis of the investigation is the last census of population and housing conducted in 2008 (RGPH-2008). This base is made for the 17 provinces of Burundi. The provinces were divided into 8,109 enumeration areas (EAs), altogether 707 EAs in urban and 7,403 EAs in rural areas.

The ECVMB-2014 was aimed to obtain significant results in the 17 provinces and two residence environments, and to improve the accuracy of the results particularly in Bujumbura city. To do this, and taking into account the financial constraints, the total sample in the second degree was estimated to be 7,092 households: 756 households in the province of Bujumbura Town and 396 households in each of 16 provinces.

5.11.4. Tabulation of data

After the field work all the questionnaires were repatriated to headquarters at ISTEEBU. The data entry was carried out using the CSPro.5.0 software.

After data entering and cleaning, databases for phases I and II were available and could be exported to softwares commonly used in the analysis and processing of statistical data (SAS, SPSS and STATA). It is in these softwares that other necessary variables, such as weighting variables were added. These softwares helped to merge the two databases and produce data on employment, the informal sector, informal employment, etc.

For the treatment and analysis of statistics related to the informal sector, mainly SAS was used, as it facilitates determining Phase II weights calibration margin from the macro Calmar 2, which is a procedure to correct the structure of the final sample of households in the phase I of the projected population data in 2014 by region, age group, gender and environment.

5.11.5. Summary results

The results show a growing propensity of IPUs since 2008. Since the year 2007, the number of IPUs continued to grow, and exceeded 45,000 in 2013. This almost exponential growth seems to be a response to the difficulties faced by the workforce in the labour market and the constraints imposed by a difficult integration into the formal labour market. The dynamics in IPU numbers demonstrates the flexibility and adaptability of units created in relation to local realities.

In terms of employment, the ECVMB reveals that the informal sector is the main provider of employment in Burundi. According to the data from this survey, about eight out of ten Burundians are in the informal sector. These data reflect the important economic role of the informal sector in the national economy.

As for the indicators of the level of activity in the informal sector, estimates using data from the ECVMB show that the annual production of IPUs was around 62.5 billion Burundi francs in 2014. Most of this production comes from the activity of hotels and restaurants (37.2 percent), wholesale trade (16.6 percent), agro-food industries (15.6 percent), retail trade (7.8 percent), mining (3.6 percent) and manufacture of wearing apparel (2.0 percent).

As for the new income created by the informal sector, it is estimated at 44.8 billion Burundi francs and the gross operating surplus (GOS) was estimated at 44.1 billion Burundi francs in 2014.

5.11.6. Integration of data into national accounts

When conducting the ECVMB-2014 survey, it was ensured that concepts and definitions were similar to those recommended by the 2008 SNA. ISTEEBU also used tools to incorporate directly the data from the survey into national accounts, without passing through other tables. Thus, for the activities and products, ISTEEBU used the classifications NAEMA and NOPEMA (ISIC rev4 adapted by Afristat). The questions included in the survey allowed estimating directly the informal sector aggregates. To calculate the production, the following formula was used:

Total production = total value of sales (products sold after processing) + total value of turnover (own consumption) + trade margins on products sold without transformation + total value of turnover for services provided

Besides production, other indicators of activity in the informal sector are value added (VA) and the gross operating surplus (GOS). The last two indicators are estimated according to the formulas below.

Gross value added = total production – intermediate consumption.

Gross operating surplus = gross value added - payroll (compensation of employees and workers) - other taxes on production + other subsidies on production.

The data collected during the survey were used to estimate directly the indicators and the results obtained in the below table.

Table 5.11.1: Burundi - Production, value added and gross operating surplus

Production, Value added and Gross operating surplus (billion FBU)						
	Production		Value added		Gross operating surplus	
	Production	Part	VA	Part	EBE	Part
Agri- food	9,780	15,6	9,682	21,7	9,657	21,9
Manufacture of clothing	1,278	2,0	1,237	2,8	1,203	2,7
mining and quarrying	2,238	3,6	2,228	5,0	2,222	5,0
Btp / Construction	0,015	0,0	0,003	0,0	0,002	0,0
other industries	0,398	0,6	0,261	0,6	0,215	0,5
Commercial vehicles , motorcycles and accessories	9,615	15,4	9,641	21,6	9,626	21,8
Retail trade	4,861	7,8	4,589	10,3	4,380	9,9
Wholesale	10,402	16,6	10,330	23,1	10,246	23,2
Industrial Repair	0,006	0,0	0,006	0,0	0,001	0,0
Other Repair Services	0,041	0,1	0,061	0,1	0,053	0,1
Hotels and restaurants	23,237	37,2	5,998	13,4	5,884	13,4
transport	0,083	0,1	0,051	0,1	0,034	0,1
Computer, information and telecommunications	0,017	0,0	0,043	0,1	0,038	0,1
Household services	0,502	0,8	0,502	1,1	0,483	1,1
Other services	0,070	0,1	0,041	0,1	0,026	0,1
Total	**62,542**	**100,0**	**44,672**	**100,0**	**44,071**	**100,0**

5.11.7. Experiences and way forward

The ECVMB-2014 survey was for Burundi an immense source of information, both from the formal and informal employment side and the informal sector and household consumption side. The fact that this has been organized in the form of phased surveys is very important, especially for the informal sector component. The survey on the informal sector having taken place after the employment survey allowed to identify and locate the informal enterprises. The approach also facilitates the managing and coordinating of the two surveys, guaranteeing the fluidity of the baseline survey operations.

This approach also enabled the team that was responsible for the preparation and execution of the survey to review the list of registered companies, while allowing better control of the identification and sub-sample selection, and giving the opportunity to prepare specialized personnel conducting interviews on the informal sector in the field.

As the preparation and implementation of ECVMB-2014 combined different areas of specialists, it allowed having data satisfying several fields. For national accounts, for example, the fact that the concepts, definitions and classifications used in this survey are consistent with the SNA has greatly facilitated the integration of these data in the national accounts.

Nevertheless, the main source for the frame is a recent population census. It is necessary that the database also include information indicating the size of the informal sector, according to the definitions used. This helps statisticians to make use of other purely statistical techniques to extrapolate the informal sector.

This kind of investigation is long and time-consuming for the interviewed households, which can increase the chances of getting false information or cases of refusal during the investigation. So there is need for raising awareness.

For the future, there are encouraging signs that the authorities realize the need to have reliable statistics on the informal sector. Thus ISTEEBU will plead for a comprehensive listing of informal enterprises, either by integrating questions on the informal sector in the general census of population and housing, or by turning to other sources of information such as administrative registers.

5.12. Estimation of Informal Sector: Central African Republic

5.12.1. Introduction

The Central African Republic organized for the first time in 2008, the Central African Survey for Monitoring and Evaluation of Welfare (ECASEB), which is a household survey, using two questionnaires, one on basic welfare indicators and another on income and expenses. The survey was conducted by the Central African Institute of Statistics and Economic and Social Studies (ICASEES). The survey aimed to: i) provide indicators on the well-being of households and identify their essential needs; ii) collect baseline data on the living conditions of households before the implementation of Poverty Reduction Strategies; iii) identify and locate population groups and regions requiring specific programs; iv) provide guidance on the perception of poverty by the poor households; and v) collect basic socio-economic data.

The CAR's national accounting system lacks a methodology for calculating household accounts. This is largely due to the lack of data on final consumption of households and on production in the household enterprises. Another identified weakness in the national accounts estimates concerns the informal sector. This gap is linked to the absence of a survey on informal sector. The ECASEB 2008, however, provided useful information to compile data on household sector and the informal sector.

Using the data available from General Census of Population and Housing (RGPH) and the ECASEB, it was also possible to compile the employment matrix.

5.12.2. ECASEB Survey design

The survey design adopted two stage stratification. The sampling frame was obtained from the census mapping in 1999-2001, updated to 2003 and consisted of 3,428 EAs. The updated list of households constitutes the frame for the second stage sampling. In all, 13 regions, 6 in rural and urban areas, 7 in Bangui and other cities were selected. At the first stage, 390 EAs were drawn in proportion to their size out of 3,428 EAs; and in the second stage 20 households were drawn systematically from each selected EA. Of the total planned 390 EAs, investigators visited 358 or 91.8 percent of the EAs.

It should be noted that low response rates were achieved in Region 3 and Region 5. This was partly due to the inaccessibility of certain areas and organizational problems. Accessibility in rural areas remains a problem for data collection. Of the 7,800 households to be surveyed, 7,060 agreed to the interviews, resulting in a gross coverage rate of 90.5 percent. Out of the 7,060, 6,897 households responded completely to the questionnaires. This represents a 97.7 percent response rate.

5.12.3. Tabulation of data

During the tabulation process, production of households was estimated by value and quantity, by product type, by region and by area of residence. The estimates were calculated for a year and for all sub-sectors. According to the general definition of production, the production of the household sector has three components: (i) the production of all individual goods and services supplied to other units including the production of housing services apart from those mentioned in (iii); (ii) the production for own account of all agricultural and non-agricultural items; and (iii) the production of housing services by owner-occupiers. The analysis of different questionnaires allowed in the estimation of production for the following:

agricultural products; livestock; hunting, fishing and gathering; land rental services; housing services (rent paid and imputed rent); rental services of any asset; rental services of entertainment, literary, artistic products (copyright and commissions); and services of paid domestic staff.

Noting that the production side does not take into account all the production of goods and services, expenditure data on household final consumption was also estimated, as they determine the poverty line. The estimation of annual food consumption (purchase, consumption and freely received) posed no particular difficulty. The general principle was to identify the information on usual consumption (monthly average) and not the factual information. The number of units consumed (both purchased and free) on an average per month was estimated for each product or group of products, as well as the average price of a unit and the number of months of consumption. The multiplication of these three variables gives the annual consumption.

Like the food, the estimation of the annual consumption of non-durable goods and services did not represent a problem. When these non-food consumption expenditures are reflected in the section on "current expenses", they are treated as food consumption. When they appear in the "less frequent expenses", the annual consumption value is obtained by multiplying the consumption observed by the observation frequency. In all cases, duplication was carefully avoided.

As for durable goods, it was the use value that was considered to be the annual consumption of the product. To calculate the use value, a depreciation rate was first calculated for each product. The depreciation rate was estimated from the stock of goods identified in the households at their value at replacement cost. The depreciation rate is calculated as the median of the rates of all households (this prevents outliers). By multiplying the depreciation rate by the acquisition value of the product and the numbers available to the household, durable consumption was obtained (use value). Productive assets were not taken into account.

Finally, rent was charged to households owning a home, and was considered as free accommodation to those tenants who have failed to declare the rent paid.

5.12.4. Integration of data into national accounts

As part of the development of national accounts with the ERETES software, the integration of the survey data in national accounts did not present major difficulties. The sequence of steps is as follows: (i) processing the questionnaire or survey variables; (ii) translating survey variables in national accounting language; (iii) preparing for loading data tables (data qualification); (iv) loading the data into the ERETES database (v) developing national accounts iteratively until a global coverage is achieved.

Table 5.12.1 Estimates

	Informal sector	Households
Main market production	645777	
Non-market output main	160377	40356
Secondary market output	32	
Non- market secondary output		
Intermediate consumption	277377	
Gross value added	528809	40356
Gross salaries of employees declared		

Gross wages undeclared employees	18619	2046
Effective social contribution paid by employer		
Social contributions under employer		
Other taxes on production		
Subsidies on production		
Operating Income	510190	38310
Reported employees		
Undeclared employees	37635	6820
Individual Entrepreneurs: Patterns	27878	
Individual entrepreneurs for own account	1397324	
caregivers	77751	

5.12.5. Data sources used for compiling labour input matrix

The employment matrix provides a basis for estimating certain economic aggregates such as the production of the formal or informal sector, by using productivity ratios in the absence of a 1-2-3 type of survey or a business directory. This is the case of the Central African Republic that has never carried out a survey of this type. The main sources for compiling the employment matrix include: (i) documents related to the results of the third General Census of Population and Housing (RGPH) in 2003; (ii) tables on employment derived from the Central African Survey and Evaluation of Welfare (ECASEB of QUIBB type) of 2008; (iii) matrix on actual employees in the Statistics and Tax Statements (DSF) of non-financial corporations and financial companies; and (iv) matrix on actual employees in central governments, public administrative bodies, decentralized public authorities (municipalities).

According to the 2003 RGPH, agriculture, fisheries, forestry and logging account for 78.6 percent of all employed population. It goes without saying that the Central African economy is based primarily on traditional agriculture. Only the activities of trade, restaurants and hotels as well as administration and household activities are significant. The overall level of participation in economic activity is 52 percent. This rate reveals the low level of participation in economic activity at the national level.

Table 5.12.2: Central African Republic – Distribution of the employed population by activity

Branch of activity	
Agriculture, Livestock, Hunting, Fishing	78,6
Extraction activities	2,5
Manufacturing	0,5
Electricity, Gas and Water	0,1
Buildings and Public Works	0,4
Commerce/ restaurants and hotels, Business Services	9,8
Transportation and Communication	0,8
Financial activities	0,2
Administration activities	3,5
Household activity	3,5
Activities of extraterritorial organizations	0,1
Total	100,0

The ECASEB survey also allows compiling the employment matrix of the Central African economy. The results of the survey show that in Central Africa, individuals 15 year-old and above, excluding sex workers represent 82.6 percent of the total population. Nationally, 66.8 percent of the population is engaged in the farming industry, hunting, gathering, logging. Other important industries in terms of employment are trade (15.1 percent), other services (6.9 percent), manufacturing (3.5 percent) and health and education (2 percent). Branches that occupy few assets in Central Africa are communication (0.3 percent), construction (1 percent), transport (1.2 percent), administration and fishing (1, 6 percent).

The structure of the employment matrix is better when based on the ECASEB than when calculated from the RGPH data, because it covers both the formal and informal employment and in a cross classification of socio-professional categories and the ten branches of activity. The elements common to both matrices (RGPH, ECASEB) are: socio-professional categories (manager, employee, worker, boss, own-account worker, apprentice, family helper) and activity classification (agriculture - hunting - gathering - logging, farming - fishing, manufacturing, construction, communication, commerce, administration, education, health and other services). The employment matrix database of the 2008 ECASEB survey provides information on informal or formal employment throughout the specific variables (employee administration, employee business, farm worker for own account, own account workers and non-agricultural employer) while the RGPH 2003 does not provide data on the same variables.

Table 5.12.3: Central African Republic – Average number of labour force occupied by line of business and socio-professional category according ECASEB 2008

	Administration employee	**Business employee**	**Other dependent**	**Employer**	**Agricultural own account**	**Nonfarm own account**	Total
Agriculture, Hunting Forest	0	3 527	22 914	4 776	1 325 829	0	1 357 046
Fishing, farming	0	579	3 970	2 462	27 358	0	34 369
Industry	0	8 543	18 321	4 161	0	35 843	66 868
BTP	0	4 238	8 597	170	0	5 840	18 845
Transport	0	1 944	12 852	1 175	0	5 522	21 493
Communications	0	1 417	1 882	79	0	2 161	5 539
Trade	0	2 537	15 770	5 986	0	275 296	299 589
Administration	31 830	1 932	0	0	0	0	33 762
Education, health	7 988	3 859	12 954	342	0	27 888	53 031
Other services	0	2 121	20 984	563	0	176 292	199 960
Total	39 818	30 697	118 244	19 714	1 353 187	528 842	2 090 502

The ECASEB 2008 survey allows assigning employees of the administration and those of the businesses to formal sector variable in the national accounts. The other socio-professional categories include: other dependent, agricultural worker for own account, worker for non-agricultural own account and employers belong to the informal sector. All agricultural workers form the category of own-account workers. The employer category is made up of owners in the ECASEB nomenclature.

The activity structure for the category of "other dependents" that comprises undeclared employees, family workers and family aides, is based on gross structure of the employees, workers, family helpers and apprentices in which employees and workers are unregistered

employees. In the structure that is common to both sources (RGPH and ECASEB), the sum of family helpers and apprentices form the category of family aides.

Table 5.12.4 Central African Republic – Conversion table between ERETES nomenclature and that of ECASEB 2008

Code ERETES	**Label**	**ECASEB Nomenclature 2008**
0E1001001	Declared employee	Public administration employee, private company employee
0E1001002	Undeclared employee	Employees and workers
0E1002001	Boss	Employer
0E1002002	Own-account workers	Agricultural workers to own account, non-agricultural workers to own account
0E1003	Family assistants	Caregivers and apprentices

With the structure of professional categories being pegged to that used in the national accounts, a backward projection was made based on using average growth rate of the CAR's population at 2.6 percent. Projections from RGPH estimate the number of informal workers at 1.7 million, while a similar exercise with ECASEB puts the same to around 1.9 million.

Table 5.12.5: Central African Republic – Employment consistent with national accounts classifications (ERETES)

	Public Administration employee	Private company employee	Undeclared employee	Employer	Agricultural workers to own account	Workers to non-agricultural own account	Family assistants	Total
Agriculture, hunting, forest	0	3 527	5 729	4 776	1 325 829	0	17 186	**1 357 047**
Fishing, farming	0	579	993	2 462	27 358	0	2 978	**34 370**
Industry	0	8 543	4 580	4 161	0	35 843	13 741	**66 868**
BTP	0	4 238	2 149	170	0	5 840	6 448	**18 845**
Transport	0	1 944	3 213	1 175	0	5 522	9 639	**21 493**
Communications	0	1 417	471	79	0	2 161	1 412	**5 540**
Trade	0	2 537	3 943	5 986	0	275 296	11 828	**299 590**
Administration	31 830	1 932	0	0	0	0	0	**33 762**
Education, health	7 988	3 859	3 239	342	0	27 888	9 716	**53 032**
Other services	0	2 121	5 246	563	0	176 292	15 738	**199 960**
Total	**39 818**	**30 697**	**29 561**	**19 714**	**1 353 187**	**528 842**	**88 683**	**2 090 502**

Labour market indicators show a high level of activity, largely dominated by informal sector jobs. Among people 15-year-old and above, eight out of ten are active in the labour market. These individuals almost all have an employment. The low level of unemployment does not mean that the economy really creates decent employment. In fact out of 100 jobs, 64 are in agriculture and 26 in the urban informal sector, as jobs in an individual company. Finally the formal sector (public and private) has barely ten percent of jobs. Employment in the informal sector is often in low-productivity jobs, this is once again a potential factor for poverty.

Table 5.12.6**:** Central African Republic – Workforce by sector

	Public administration	Fiscally declared	Formal (estimated)	ISBL	Informal	Household	TOTAL
Declared employees	29149	10857	13166	347			53519
Non-declared employees		5582		4390	37635	6820	54427
Individual entrepreneurs: bosses		4884		157	27878		32919
Own-account individual entrepreneurs		42561		25172	1397324		1465057
Family helpers		16745			77751		94496

5.12.6. Concluding remarks

For national accounts, the ECASEB 2008 was an additional source of valuable information. The data was used to cross-check the household data, and in compiling sequence of accounts for the household sector. Information from ECASEB also helped in the compilation of employment matrix for the whole economy, and in the estimation of informal economy, household final consumption, imputed rentals, GFCF of housing by the households.

These compilations helped in restructuring the national accounts, making them more consistent. In conclusion, ECASEB 2008 survey helped in estimating workforce employed in the informal sector. Use of this survey data resulted in adjusting the GDP by about 27%.