ADB

A Handbook on Using the Mixed Survey for Measuring Informal Employment and the Informal Sector

Asian Development Bank

ADB

A Handbook on Using the Mixed Survey for Measuring Informal Employment and the Informal Sector

Asian Development Bank

Printed in the Philippines.

ISBN 978-92-9092-267-4
Publication Stock No. TIM102862

Cataloging-In-Publication Data

Asian Development Bank.
A handbook on using the mixed survey for measuring informal employment and the informal sector.
Mandaluyong City, Philippines: Asian Development Bank, 2011.

1. Mixed survey 2. Informal employment 3. Informal sector I. Asian Development Bank.

Note:
In this report, "$" refers to US dollars.

Asian Development Bank
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
Tel +63 2 632 4444
Fax +63 2 636 2444
www.adb.org

For orders, please contact:
Department of External Relations
Fax +63 2 636 2648
adbpub@adb.org

Contents

Tables, Figures, Boxes, and Appendixes

Table

Figures

Boxes

Appendixes

Foreword

Having productive and decent employment for its workforce is central to a government's efforts to reduce poverty and achieve inclusive and sustainable development. Formulating and monitoring an effective set of policies for this purpose require comprehensive and timely data and analysis of the labor market. While many developing countries in Asia conduct Labor Force Survey regularly, very few collect data on the informal sector and informal employment, which is perceived to be a substantial component of the labor market in developing countries. The informal sector offers cushion to workers during economic crisis, but the benefits of informal employment may not be sufficient to have an acceptable standard of living. Informal employment rarely comes with social protection, good working conditions, and adequate wage earnings. Very little is known quantitatively about the scale and reach of informal sector, not to mention about the needs and constraints the working poor face in the informal economy. This is because the informal sector is not usually covered by the regular data collection system of national statistics offices.

Because timely and reliable statistics are needed for informed decisions concerning the welfare of workers and their families and for regulations that govern the informal economy, there have been significant efforts by the development community in filling in the gap in this area. The International Labour Organization (ILO), through the 15th and 17th International Conference of Labour Statisticians (ICLS), came out with a resolution defining the informal sector and informal employment, respectively. The Delhi Group was organized from experts in the development community to tackle issues in the measurement of the informal sector; document the data collection practices, including definitions and survey methodologies as implemented in various countries; and recommend measures for improving the quality and comparability of informal sector statistics. Through the leadership of the Delhi Group, a *Manual of Surveys of Informal Sector and Informal Employment* was drafted. The United Nations Statistics Division also drew from the work of the Delhi Group to include a chapter on the informal sector in the revised 2008 System of National Accounts (SNA).

As a contribution to this global effort, the Asian Development Bank (ADB) implemented the regional technical assistance (RETA) 6430: Measuring the Informal Sector in 2008–2010. Under RETA 6430, a reliable and cost-effective data collection strategy was developed and implemented in three pilot countries—Armenia, Bangladesh, and Indonesia. A version of the mixed survey, which is anchored to an expanded Labor Force Survey, is the cornerstone of this strategy. The Interregional Cooperation on the Measurement of Informal Sector and Informal Employment (ICMISIE), a development account project of the United Nations, with the Economic and Social Commission for Asia and the Pacific (ESCAP) as the lead agency first explored this strategy. Their methodological research was implemented in six countries, including three in Asia—Mongolia, the Philippines, and Sri Lanka—in 2007–2009.

This Handbook clearly describes this data collection strategy, from survey design to operations, data processing, and estimation. It draws heavily from the experiences and collaboration of the RETA 6430 team with ESCAP, National Statistical Service of the Republic of Armenia, Bangladesh Bureau of Statistics, and BPS-Statistics Indonesia. It presents viable methods for generating better statistics and analysis on informal employment and the informal sector that can, in turn, solidify the efforts on these topics, from research to policy making.

This Handbook was prepared under RETA 6430 with the overall guidance of Douglas H. Brooks, Assistant Chief Economist, Development Indicators and Policy Research Division, ADB. Dalisay S. Maligalig led the drafting team composed of Sining C. Cuevas; Arturo M. Martinez, Jr.; and Estrella V. Domingo. It benefited from the valuable inputs from Dr. Margarita F. Guerrero of ESCAP, Mr. Kee Beom Kim of the Regional Economic and Social Analysis Unit of the ILO Regional Office for Asia and the Pacific, and Ms. Joann Vanek of the Women in Informal Employment: Globalizing and Organizing. Corazon R. Buenaventura reviewed chapters 4, 5, and 6 of the Handbook.

Pamela T. Lapitan and Ma. Roselia J. Babalo rendered proofreading services and administrative support. Conceptualization of cover design and typesetting were done by Rhommell S. Rico.

We put forward this Handbook as an instrument for improving the quality and coverage of statistics on informal employment and the informal sector. It is our hope that this Handbook will contribute to informed policy making and monitoring of labor markets and regulations, and in designing future programs on poverty alleviation and social welfare.

Juzhong Zhuang
Deputy Chief Economist

Abbreviations and Acronyms

ADB	Asian Development Bank
BPS	Badan Pusat Statistiks (BPS–Statistics Indonesia)
BTI	Business Trend Index
CV	Coefficient of Variation
eLFS	expanded Labor Force Survey
FISIM	financial intermediation services indirectly measured
GDP	gross domestic product
GFCF	gross fixed capital formation
GVA	gross value added
HIES	Household Income and Expenditure Survey
HUEM	household unincorporated enterprise with at least some market production
ICLS	International Conference of Labour Statisticians
ICMISIE	Interregional Cooperation on the Measurement of Informal Sector and Informal Employment
ILCS	Integrated Living Conditions Survey
ILO	International Labour Organization
IMPS	integrated multi-purpose sampling design
ISIC	International Standard Industrial Classification
ISS	Informal Sector Survey
LFS	Labor Force Survey
LSS	Living Standards Survey
NGO	nongovernment organization
NOE	non-observed economy
NSO	national statistics office
NSSRA	National Statistical Service of the Republic of Armenia
OD	owner-occupied dwelling unit
OECD	Organisation for Economic Co-operation and Development
PNSO	Philippine National Statistics Office
PSU	primary sampling unit
RETA	regional technical assistance
SMA	statistical metropolitan area
SNA	System of National Accounts
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
WIEGO	Women in Informal Employment: Globalizing and Organizing
WRT	wholesale and retail trade

Chapter 1
Introduction

1.1 Importance of Informal Sector and Informal Employment Statistics

Even when there is significant poverty reduction in Asia, the International Labour Organization's (ILO) 2010 Global Employment Trends indirectly estimated, by using modeling techniques and very sparse data from countries, that there are about 744 million[1] workers who are $1.25-a-day poor and 506 million of them live in Asia, as a result of the recent global economic crisis. There are 1.3 billion workers, of which 915 million are in Asia, who now live below the $2-per-day threshold. The report also indicated that 5 out of 10 people in the world are in vulnerable employment either as contributing family workers or own-account workers with a higher risk of being unprotected. In South Asia, this ratio is even higher at 8 out of 10 people in vulnerable employment (ILO 2010).

It is most likely that the working poor are those who work in the informal sector. It was indirectly estimated that the informal sector accounts for more than 50% of non-agricultural employment and about 30% of non-agricultural domestic product in many countries. In Asia, these figures reached 67.5% and 37.3%, respectively (Charmes 2000). In developing countries, informal employment is roughly estimated to comprise one half to three-quarters of non-agricultural employment, with 65% in Asia. If informal employment in agriculture is included, the proportion of informal employment significantly increases: in India, for example, from 83% of non-agricultural employment to 93% of total employment.

While the informal sector offers a cushion to workers during economic crisis, the benefits of informal employment may not be sufficient to achieve an acceptable standard of living because informal employment rarely comes with social protection, good working conditions, and adequate wages. The general perception is that only the employers of informal enterprises can rise above the poverty threshold. It is, therefore, necessary that efforts to alleviate poverty are focused on the needs and constraints faced by the working poor in the informal economy.

Creating and promoting decent work for the working poor can help improve their lives. More and better employment opportunities must be created and efforts must be made to influence the informal enterprises to register and extend benefits to their workers. Such reorientation of economic policies should be guided by solid statistics and analysis. However, very few countries in Asia regularly collect data on the informal sector and informal employment. And those few that collect data generally use national definitions and employ differing methods of data collection thus making comparability across countries and regional aggregation difficult, if not impossible. This lack of information also hinders the understanding of policy makers, key government officials, the private sector, and the public about many social and economic issues related to informal sector activities, such as lack of social protection; limited access to credit, training, and markets; and differentials in wages and working conditions.

For policy makers and other stakeholders to understand the plight of workers in the informal economy, their visibility in the labor force statistics, and other data used in formulating policies, needs to be enhanced. On the other hand, the characteristics

[1] The figures reflect the second scenario of the 2009 working poor projections estimated by the ILO. In view of the impact of the economic crisis on vulnerable employment and labor productivity, working poverty is likely to have increased as well with vulnerable employment. The small decreases in working poverty rates in 2009 that would result from a continuation of historical trends (scenario 1) are, therefore, not likely to have materialized (see Figure 8, and Annex 4 of the *ILO Global Employment Trends 2010* for the methodology underlying the scenarios). Meanwhile, scenario 3 represents the estimates of the share of workers in extreme poverty.

of production units in the informal sector—high mobility and turnover, small employment size, low levels of organization and technology, and an unclear distinction between labor and capital or between household and production operations—make them unlikely to be covered by the regular establishment or enterprise surveys. Hence, statistics on informal employment and the informal sector are not usually included in the country's set of official statistics. Therefore, a cost-effective and reliable data collection strategy should be developed to encourage countries to collect statistics on the informal sector and informal employment. Countries that already gather data on the informal sector and informal employment can use this strategy to improve the quality of the statistics that they collect. Moreover, in order to examine employment poverty, attention needs to be given on linking labor force and income/expenditure surveys in the national data collection, so that additional analyses can be undertaken. The results of these analyses can be integrated into economic planning and policy making.

1.2 Data Collection Strategies

Existing methods for deriving statistics on informal employment and the informal sector can be summarized into two broad methods: direct and indirect. Direct measurement, which requires more data, entails the conduct of a survey, while indirect measurement makes use of other data sources and statistical models. Indirect estimation methods are usually based on the residual balance technique, which entails choosing a specific definition of the informal sector (for instance, registration or employment size) from which the size of the sector can be inferred (Charmes 2006). Hence, with indirect measurement, only the size of the informal sector may be estimated. Other analysis and indicators relevant to program development, such as the extent or lack thereof of social protection; extent of access to credit, training, and markets; differentials in wages and working conditions; and prevalence of poverty, cannot be undertaken.

For the direct method, the collection of data on the informal sector can take many approaches: (i) special surveys on the informal sector; (ii) regular surveys with expanded coverage, such as the labor force or other household surveys; (iii) establishment/enterprise surveys and censuses; and (iv) mixed household–enterprise surveys.

Special Surveys

Special surveys on the informal sector that are designed for this specific purpose would probably be the most appropriate data collection vehicle. However, these are very costly and would entail sizeable resources not only in terms of budget but also in terms of human resources and time that national statistics offices cannot afford to allocate for just one survey. A separate listing operation would have to be conducted to form the sampling frame of the survey since the list or census of establishments does not usually contain informal sector units; these units fall below the number of employee threshold.

Household Surveys

The annual figures on the size and structure of the informal sector in Thailand and in some Latin American countries are taken from labor force surveys (Charmes 2006). However, while labor force surveys have already been proven to be the data source for the informal sector, there are some doubts that these surveys can correctly capture the characteristics of the enterprise. This is because informal enterprises may not be known by the respondents, specifically the employees, who are just workers of the informal establishment. Similarly, a household income and expenditure survey (HIES) can help identify informal sector activity through the sources of income data items. However, the standard HIES questionnaire gathers very little information on the type of enterprise and 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 and characteristics of individuals employed in the informal sector. However, expanding the questionnaire is not practical as this will lengthen the interview time. Since only one household member will be interviewed, the respondent may not be aware of the other members' employment details and the characteristics of the household's informal sector activities.

Establishment/Enterprise Surveys

Establishment/enterprise sample surveys are usually perceived as the more traditional measurement approach. The sampling frame used for this type of survey is usually constructed from business registers, censuses, or lists of establishments. Unless there is tremendous effort on the part of the statistics offices and concerned government agencies, it is quite unlikely, however, that these two processes would include the informal sector. Also, because of the high turnover of production units in the informal sector, even if there are efforts to capture them in the listing operations, units included in the sample may have already closed or may have ceased operations by the time of the survey.

Mixed Survey

In general, a mixed survey has two phases. It is conducted such that the sampling frame of informal sector units (second phase) is constructed from a household survey (first phase). Questions that can identify the informal sector production units are inserted in the household survey questionnaire for this purpose. The second phase is a survey among the informal sector production units to gather information about working conditions and economic performance. The sampling units of the first phase of the survey are individuals, while those of the second phase are the informal sector production units, hence the reference to "mixed" survey. This approach makes it possible to link informal sector activities/business owner characteristics with household characteristics. Mixed surveys have different variations, depending on the type of household survey to which these questions will be included:

(i) Perhaps the most appropriate household survey would be the Labor Force Survey (LFS). The LFS is usually the most frequently conducted household survey. The additional questions to identify the informal sector units are easily adapted in an LFS and would supplement the standard questionnaire in terms of coverage of economic activities.

(ii) HIES (or living standard surveys [LSS]) can also be used as the source of the sampling frame for the informal sector units survey. Research on the informal sector will be enriched by data on household income and consumption. Since the poverty status of households can be identified through an HIES, in-depth analysis of the relationship of poverty and the informal sector can also be conducted.

(iii) In cases when household surveys are not conducted regularly, a listing operation of household members engaged in self-employment can be conducted on the primary sampling units (PSUs) in the household survey sample. This would be similar to the LFS approach. However, this would be more costly because the full costs of the first phase listing operations would be added to that of the succeeding informal sector unit survey.

The 1-2-3 survey (Rakotormanana et al. 2003), which combines the LFS (first phase, 1); an informal sector survey (ISS) (second phase, 2); and a HIES (third phase, 3), is an extension of the mixed survey. This type of survey was undertaken in Madagascar (1995, 1998); Cameroon (1993); Yaounde (1993, 1994); and Antananarivo (1995, 1996). The first two phases of the survey have the same objectives as the mixed survey. The purpose of the third survey is to determine the level and structure of household consumption and, to a certain extent, the living conditions of workers. Employment poverty analysis can be done if the third survey (which can determine the poverty status of workers) is also conducted. This mixed survey approach, including the 1-2-3 survey, a variation of the 1-2 survey which incorporates an expenditure module in phase 3, is comprehensively documented in ILO's *Manual on Surveys of Informal Employment and Informal Sector,*[2] Chapter 7.

[2] With the objective of providing technical guidelines on the resolution concerning statistics of employment in the informal sector that was adopted by the 15th International Conference of Labour Statisticians in January 1993, the ILO, in collaboration with the Delhi Group, is currently preparing a manual to provide technical guidelines on the contents of the resolution, including the measurement of informal employment outside the informal sector.

1.3 Cost-Effective and Reliable Strategy: The Mixed Survey

Using a household survey or a regular establishment/enterprise survey to capture data on the informal sector may be cost-effective but the problem of non-coverage cannot be readily resolved in these two types of surveys. As mentioned earlier, household surveys are not designed to collect data for the computation of the contribution of the informal sector to gross domestic product (GDP), or to do analysis on enterprises. On the other hand, while establishment or enterprise surveys contain data that are needed for such analyses, their sampling frames, which have higher employment size thresholds, rarely include informal sector production units. Hence, the choice of data collection strategy is between a special survey or a mixed survey.

Since the tremendous cost of the resources required to complete the listing operation needed for a special survey will not be incurred in a mixed survey, the mixed survey is deemed the most cost-effective approach. Also because the mixed survey employs a regularly conducted household survey in the first phase, which would most likely be the LFS, informal employment can readily be analyzed and estimated. Analysis will be more in-depth because of the availability of data that are usually collected in the LFS. The sampling frame for the second phase of the survey (ISS) is then constructed from the list of informal sector production units identified in the LFS or phase 1. These informal sector production units can be taken all with probability 1 or can be subsampled, depending on the available budget. The reliability of the mixed survey, however, depends on many factors, such as the completeness of the questionnaires in both phases, the adequacy of the sample size in the first phase, and the soundness of the sampling design of the second-phase survey.

1.4 Initiatives by the Development Community

In addition to the implementation of the mixed survey approach in Africa and South America mentioned earlier, this data collection strategy was also applied by the Interregional Cooperation on the Measurement of Informal Sector and Informal Employment (ICMISIE) project in six countries, three of which are in Asia: Mongolia, the Philippines, and Sri Lanka. ICMISIE is a multiyear and multilateral development account project of the United Nations, with the Economic and Social Commission for Asia and the Pacific (ESCAP) as the lead agency. Its main objectives include increasing the availability of data on the informal sector and informal employment and improving the calculation of the contribution of the informal sector to employment and to GDP.

The ILO, through the 15th and 17th International Conference of Labour Statisticians, drew up a resolution defining the informal sector and informal employment. The ILO has also initiated the formation and supported the work of the Delhi Group, the expert group on measuring the informal sector. The United Nations Statistics Division included a chapter on the Informal Sector, Chapter 25: Informal Aspects of the Economy, which presents mostly the work of the Delhi Group in the revised 2008 System of National Accounts (SNA) on the informal sector. The Organisation for Economic Co-operation and Development published the handbook, *Measuring the Non-Observed Economy.* And Women in Informal Employment: Globalizing and Organizing (WIEGO) has undertaken and published many research studies on informal employment and the informal sector.

1.5 Regional Technical Assistance 6430: Measuring the Informal Sector

On the part of the Asian Development Bank (ADB), a regional technical assistance, which was processed and approved in December 2007, aims to contribute to the measurement of the informal sector by helping national statistics offices (NSOs) find a sound and viable data collection strategy. With more accurate data, the share of this often overlooked sector can be properly reflected in the national accounts, informal employment can be estimated, and the relationship between poverty and the informal sector can be thoroughly examined.

The ADB RETA 6430: Measuring of the Informal Sector, in collaboration with the NSOs of Armenia, Bangladesh, and Indonesia, implemented the mixed survey approach for collecting data on the informal sector and informal employment. The ADB RETA 6430 team, composed of Economics and Research Department staff and consultants, worked closely with the country teams composed of NSO staff from the three countries in undertaking all activities regarding the mixed survey, data analysis, and preparation of the country reports. They reviewed and revised the questionnaires of the LFS of these three countries so that questions related to informal employment, items that could identify informal sector production units, and queries that determine the extent of social protection, are properly incorporated in these forms. They analyzed previous LFS rounds to ensure the appropriateness and completeness of these additional questions.

They evaluated the sampling designs of the LFS to ensure that the design of the informal sector surveys renders reliable results. They prepared and tested survey instruments, including questionnaires, listing forms, and a survey operations manual. They developed data processing and validation guidelines and closely monitored these processes. They worked together in analyzing the survey results and in drafting the country reports.

1.6 Objectives and Layout of the Handbook

This handbook aims to assist NSOs in Asia that are interested in incorporating informal employment and informal sector statistics in their set of official statistics by presenting a comprehensive discussion and systematic implementation of the mixed survey approach for measuring and analyzing informal employment and the informal sector. It draws from the wealth of experience of the RETA 6430 team and the country teams of the National Statistical Service of the Republic of Armenia, the Bangladesh Bureau of Statistics, and BPS–Statistics Indonesia in undertaking the activities discussed.

This handbook covers three major topics:

(i) **The mixed survey**, which discusses the steps that should be undertaken in planning and implementing the mixed survey, including establishing the sampling frames, designing the questionnaires, design and evaluation of sample surveys, and processing and validating data.

(ii) **Measuring and analyzing informal employment**, which discusses how informal employment is classified on the basis of questions in the LFS, and the statistical tables and methods that are used to address key issues on informal employment.

(iii) **Estimating the contribution of the informal sector to GDP,** which outlines the estimation methods that were used for this purpose, describes imputation methods that were implemented, and discusses the use of other sources of data in cases where the informal sector survey fails to render sound estimates for some sectors.

Chapter 2
The Mixed Survey

This chapter describes the steps in the implementation of the mixed survey for capturing data on informal employment and the informal sector: the expansion of the labor force survey (LFS), the sample design of the informal sector survey (ISS) (phase 2 of the mixed survey), the questionnaire of the ISS, field operations, and data processing.

2.1 Overview

On the basis of the definitions of the informal sector that was agreed at the 15th International Conference of Labour Statisticians (ICLS), there are two types of informal sector production unit: informal own-account enterprises and enterprises of informal employers. Both types of informal sector production unit are owned by households and since the operations of these enterprises are not easily distinguishable from those of the households that own them, a household survey has an advantage in identifying these production units. How can this be done? Respondent households have to be screened for these enterprises following the dichotomy presented in Figure 2.1. Those household enterprises that produce at least some goods and services for the market and belong either in the agricultural or non-agricultural informal sectors will be the target sampling units. These are called household unincorporated enterprises with at least some market production (HUEMs).

Figure 2.1 Dichotomy of Household Enterprises

Household Enterprises					
Producing at least some goods and services for market				Producing goods and services for own final use	
Non-agricultural		Agricultural		Goods	Services
Formal sector	Informal sector	Formal sector	Informal sector	Agriculture, forestry, fishing	Paid domestic services
				Other activities	Owner occupied dwelling services

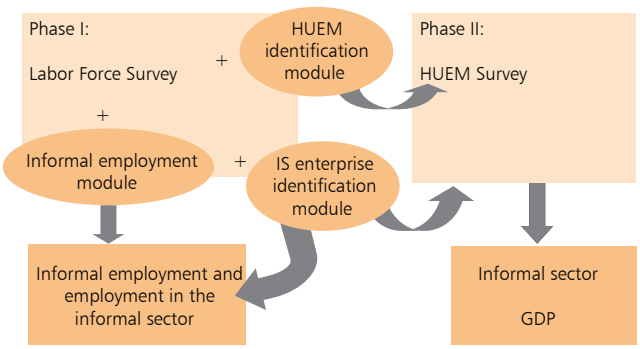
Source: Gennari, P., Guerrero, M., and Orhun, Z. The "1–2" Survey: A Data Collection Strategy for Informal Sector and Informal Employment Statistics. *UN ICMISIE Working Paper* No. 1.

The mixed survey approach utilizes a household survey in the first phase to identify the HUEMs, some of which will be sampled for the phase 2 survey (the HUEM survey). Since the LFS's ultimate sampling units are the adults in sampled households and its questions are mostly on labor and employment, the LFS is the most appropriate household survey to use for the first phase. Also, the LFS is the most frequently conducted household survey and, hence, informal employment statistics will be up to date. The LFS is expanded by adding questions to identify the HUEMs, informal enterprises, informal employment, benefits, and working conditions of workers.

The HUEMs that were identified in the second phase will be used as the sampling frame for the phase 2 survey. Hence, the cost of listing operations which could be very large because small production units are difficult to identify, will not be incurred, and the second phase—the HUEM survey—will still maintain a probability sample design. Figure 2.2 shows the graphical description of the strategy.

As seen above, the phase 1, or expanded LFS, contains three modules: (i) informal employment module, (ii) HUEM identification module, and (iii) informal sector enterprise module. The informal employment module will determine the extent of informal employment by distinguishing informal workers from formal workers. The data to be

Figure 2.2 Mixed Survey Approach



GDP = gross domestic product, HUEM = household unincorporated enterprises with at least some market production, IS =informal sector.

Source: Gennari, P., Guerrero, M., and Orhun, Z. 2009.

collected will further enable intensive analysis on the characteristics of the informal workers and their working conditions. This module, when combined with the informal enterprise module, will further enrich the examination by determining informal employment in the informal sector. This is significant since the concept of informal employment also covers the people working in the formal sector who are informally employed. The HUEM identification module determines the existence of a HUEM in the household and identifies the respondent in phase 2 of the survey. Meanwhile, phase 2 concentrates on the enterprise and its production, estimating contribution to the country's gross domestic product (GDP).

2.2 Basic Concepts

The informal sector comprises household production units (i) with at least some market production, (ii) operating with low levels of organization and technology, (iii) with no books of accounts to allow separation of production operations from household activities and distinction between labor and capital, and (iv) with employment size below a certain threshold. Other characteristics are high mobility and turnover, seasonality, lack of recognizable features for identification, and reluctance to share information.

Informal Sector: International Conference of Labour Statisticians

The 15th ICLS drew up an international definition of the informal sector (January 1998 Resolution) which was then included in the revised SNA. This would identify the informal sector separately in the accounts to be able to measure its contribution to GDP.

The ICLS defines the informal sector as follows:

(i) 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 labor and capital as factors of production and on a small scale. Labor relations, where they exist, are based mostly on casual employment, kinship or personal and social relations rather than contractual arrangements with formal guarantees.

(ii) Production units of the informal sector have the characteristic features of household enterprises where 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. No complete accounts are available that would allow separation of expenditure for production from household expenditures. Similarly, use of capital goods, such as buildings or vehicles, may be indistinguishable for business and household purposes.

(iii) Further, informal sector enterprises are operated or owned by the households or its members. They are part of household unincorporated enterprises, which are distinguished from corporations and quasi-corporations on the basis of legal organization and type of accounts. Informal household enterprises are not constituted as separate legal entities from the household who owns them. Unincorporated partnerships and cooperatives formed by members of different households that have no books of accounts are considered as informal sector enterprises.

(iv) Activities of the informal sector are not necessarily performed with the deliberate intention of evading the payment of taxes or social security contributions, or infringing labor 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.

Informal sector household enterprises cover also informal own-account enterprises, which *(i) employ contributing family workers and employees on an occasional basis, but do not have employees on a continuous basis*; and *(ii) satisfy the characteristics for registration or minimum number of employees*. Depending on the country, informal own-account enterprises may comprise those that are not registered as provided by specific laws or may include all own-account enterprises. Enterprises of informal employers are household enterprises that employ one or more employees on a continuous basis. Depending on the country, enterprises of informal employers are determined based on a threshold employment size and the non-registration of the enterprise or its employees. All, or at least some, of the goods or services produced are meant for sale or barter. In many countries, the household enterprises engaged in agricultural activities are deliberately excluded, although the 15th ICLS does not recommend this exclusion. Perhaps, this approach arose from practical purposes (Maligalig 2008).

The Informal Sector: Delhi Group

The Expert Group on Informal Sector Statistics set up by the United Nations Statistical Commission, known as the Delhi Group, proposed the following criteria to identify the informal sector: legal organization (unincorporated enterprises), no complete set of accounts, with at least some market output, and employment size (less than five workers). Other recommendations are the inclusion in the informal sector of professionals if they meet the criteria of the informal sector definition, paid domestic services (unless these are provided by employees of household where the services are rendered), and secondary jobs; and separate reporting for enterprises with less than five employees, agricultural or non-agricultural activities, urban and rural, and outworkers/home workers. This is to address differences in country practices.

Informal Sector: A Subsector in the National Accounts

For statistical and SNA purposes, the 15th ICLS defined the informal sector in terms of the characteristics of the enterprise (production units) in which the activities take place, rather than in terms of the characteristics of the persons working for the enterprise. The informal sector enterprise is defined as a subset of household unincorporated enterprises.

Household unincorporated enterprises do not constitute separate legal entities from the household members who own them. Fixed capital, such as vehicles, may be used for both production and household operations but ownership of the asset belongs to the household member and not the enterprise. As a result, it is difficult to compile a complete set of accounts for the household production activity and, for this reason, the production activity remains with the household sector as a household unincorporated enterprise.

Household unincorporated enterprises (production units) are further subdivided into three groups:

(i) formal sector enterprises comprise corporations (including quasi-corporate enterprises), non-profit institutions, unincorporated enterprises owned by government units, and those private unincorporated enterprises producing goods or services for sale or barter which are not part of the informal sector;

(ii) informal sector enterprises; and

(iii) households as production units include those that produce goods exclusively for their own final use (e.g., subsistence farming, do-it-yourself construction of own dwellings), as well as households employing paid domestic workers (e.g., housekeepers, launderers, and drivers). Households producing unpaid domestic or personnel services (e.g., housework caring for family members) for their own final consumption are outside the SNA production boundary.

The informal sector enterprises have economic objectives, behavior, and a form of organization that sets them apart from other unincorporated enterprises. They are defined based on types of production activities that they undertake but maintaining the boundary of the SNA.

The following characteristics are used further to determine informal sector enterprises in the SNA: with at least some market production, number of employees within a certain threshold or registration, and producing exclusively for own final use.

Informal Employment

Corollary to the informal sector definitions discussed earlier, the ILO also characterized the concept of employment in the informal sector. This was defined as including all jobs in the informal sector enterprises or all persons who, during a given reference period, were employed in at least one informal sector enterprise, irrespective of their status in employment or whether it was their main or secondary job (Hussmanns 2004, as cited in Maligalig 2008). It includes both formal and informal jobs in informal sector enterprises, and excludes informal jobs in formal enterprises and informal jobs in other households.

Following the recommendations of the United Nations Expert Group on Informal Sector Statistics (or Delhi Group) to supplement the definition of employment in the informal sector with a definition of informal employment, the 17th ICLS defined informal employment as comprising the total number of informal jobs characterized by absence of contracts, social protection, or entitlement to certain employment benefits (advance notice of dismissal, severance pay, paid annual or sick leave, etc.). The reason may be non-declaration of jobs or employees; casual jobs or jobs of a limited duration; jobs with hours of work or wages below specified thresholds (e.g., for social security contributions); non coverage by labor legislation; employment by unincorporated enterprises or by persons in households, etc. The definition of informal employment at the job level, not on the individual worker basis, since a person is capable of holding several jobs.

Informal employment can be classified further into two categories: informal self-employment and informal wage employment. Under informal self-employment are employers in informal enterprises, own-account workers in informal enterprises, unpaid family workers, and members of informal producers' cooperatives (Chen 2006, as cited in Maligalig et al. 2009). The dichotomy discussed suggests that informal employment cuts across workers in all employment status categories: employers, employees, own-account workers, unpaid family workers, and members of producers' cooperatives (Hussmanns 2007, as cited in Maligalig et al. 2009).

The Non-Observed Economy

An emerging concern related to the measurement of the informal sector is whether to do an exhaustive or complete measure of total economic activities, including the non-observed economy (NOE), or whether to measure only the informal sector. The extent of economic activities not captured by statistical data collection and administrative sources became known as the NOE. The NOE overlaps with, but is not the same as, the informal sector. The informal sector is part of the NOE, which also consists of illegal and/or underground or concealed activities. The NOE other than the informal sector comprises the following:

(i) underground production which covers activities that are productive and legal but are deliberately hidden from authorities to avoid payment of taxes and social security contributions and compliance with certain regulation, such as labor laws;

(ii) illegal production which includes productive activities but forbidden by law when carried out by unauthorized producers; and

(iii) productive activities which are not accounted for or missed out by the basic data collection.

Figure 2.3 17th International Conference of Labour Statisticians Conceptual Framework on Informal Employment

Production units by type	Jobs by status in employment								
	Own-account workers		Employers		Contributing (unpaid) family workers	Employees		Members of producers', consumers' 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 15th 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.

Sources: 17th International Conference of Labour Statisticians Final Report and Hussmanns, R. 2004a.

2.3 Expanding the Labor Force Survey

According to the 17th ICLS, "employees are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to labour legislation, income taxation, social protection or entitlement to certain employment benefits (advance notice of dismissal, severances of pay, paid annual or sick leave, etc.)." Note that this definition is made at the job level and not at the individual level because a person can simultaneously have two or more jobs. Informal employment can be classified into two categories: informal self-employment and informal wage employment. Under informal self-employment are employers in informal enterprises, own-account workers in informal enterprises, unpaid family workers, and members of informal producers' cooperatives (Chen 2006). Informal wage employment includes employees without formal contracts, worker benefits, or social protection, who are employed either in formal or informal enterprises. On the other hand, the 15th ICLS defined informal enterprises to be household enterprises engaged in the production of goods or services (with the primary objective of generating employment and incomes to the persons concerned); these enterprises typically operate at a low level of organization, with little or no division between labor and capital as factors of production, and on a small scale.

Based on these definitions, wage workers and employees can be classified into informal/formal employment if they are asked about the type of contract that they have with their employers. On the other hand, employers and self-employed can be asked whether they maintain a comprehensive record of accounts in order to determine whether the enterprise they own is either formal or informal. Since the expenses and assets of informal enterprises cannot be distinguished from the households to which they belong, having a comprehensive record of accounts is indicative of a formal enterprise. However, very few workers would know whether employers keep a comprehensive set of accounting records. To determine whether the enterprise to which respondent workers belong is formal or informal, workers can instead be asked whether their pay slip lists all the transactions regarding their wages and benefits.

Assessment of the Labor Force Survey

An assessment of recent LFS of Armenia, Bangladesh, Indonesia, and the Philippines was conducted in order to develop a set of questions for determining whether employment and enterprises were formal or informal, and extent of social protection mechanisms. The summary of the assessment is in Table 2.1. It was found that the recent LFSs of Armenia and Bangladesh have questions that can determine whether employment and the extent of social protection mechanisms are formal or informal, while questionnaires for Indonesia and the Philippines did not have an adequate set of questions for this purpose.

In analyzing the 2005 Bangladesh LFS, Maligalig et al. (2009) concluded that while classifying workers under formal or informal employment using a questionnaire that was not designed for such purpose was possible, there were many unresolved problems in data processing and validation that made the application of the internationally accepted definition of the informal employment difficult. Using a very conservative informal employment definition instead, they found that 87.71% of the employed workers were working under an informal arrangement. The biggest concentration of informal workers (92%) is in the rural areas. Informal workers are found to have significantly fewer benefits than those with formal employment, except for free meals and free lodging. In particular, self-employed and unpaid workers comprise a little over 20 million of informal workers but less than 2 million of them enjoy benefits.

Cuevas et al. (2009) examined Indonesia's 2007 LFS (*Sakernas*) and concluded that the survey does not have an adequate set of questions for analyzing informal and formal employment and the extent of social protection mechanisms. They recommended a list of questions that can be included in the *Sakernas* so that these analyses can be performed (Appendix 1).

Informal Employment Module

The RETA 6430 project team also studied the results of the rider survey of the 2008 LFS second quarter that the Philippine National Statistics Office (PNSO) administered with the assistance of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). The rider survey has all the additional questions identified in Table 2.1.

Table 2.1 Assessment of the Labor Force Survey Questionnaires for Armenia, Bangladesh, Indonesia, and the Philippines

Proposed Questions	Purpose	Armenia LFS 2007 Questionnaire	Bangladesh LFS 2005–2006 Questionnaire	Indonesia LFS 2007 Questionnaire	Philippine LFS 2008 Questionnaire
Employment status or class of worker	Conditions for identifying formal and informal employment	Question 13. What is your employment status?	Question 4.12. What was your status of employment where you worked most of the time during the last week?	Question 10a. Main employment status during the previous week	Question 24. Class of Worker
TERMS OF EMPLOYMENT: Are the terms of your employment covered by a written contract?		Question 13 (main job); Question 26 (second job); Question 54 (persons out of work). What is your employment status? 1) employee with a written agreement, 2) employee by oral agreement, 3) employer, 4) self-employed, 5) unpaid family worker, 6) production/consumer cooperative member, 7) Others	Question 4.16. Did you get any employment or contract letter from the employment where you worked or temporarily absent during the last week?	X	X
RECORD OF ACCOUNTS: How does your enterprise/ business maintain its records or accounts?		X	4.22. Does the working unit or establishment keep written accounts of their transactions?	X	X
FOR EMPLOYEES: Do you get a pay slip?	Condition for identifying formal and informal enterprise	X	X	X	X
Does your employer pay contributions to the legalized pension fund for you?	Social Protection Mechanisms	X	X	X	X
Do you benefit from paid annual leave/holiday leave or from compensation?		Question 4 (main job). Why did you not work during the surveyed week (although you have a job or business)? 1) Annual or additional leave, 2) sickness, injury or nursing a family member, 3) paid leave by the initiative of administration/ employer, 4) unpaid leave by the initiative of administration/employer, 5) Maternity leave, 6) child-care leave (up to 3 years), 7) Educational or professional training leave.	Question 4.20. What benefits are provided other than wages and salaries by employer?	X	X
In case of incapacity to work due to health reasons, would you benefit from paid sick leave?				X	X
In case of birth of a child, would you be given the opportunity to benefit from maternity leave?				X	X
Unless there is due cause, could your employment be terminated by your employer without advance notice?		X	X	X	X

LFS = labor force survey, X = information not collected.

It collected data on both primary and secondary jobs of the respondents.The results of this study were instrumental in the development of the module for informal employment that was administered in the three countries covered by RETA 6430. Some of these results are also presented in the next section of this handbook.

The informal employment module consists of questions listed in the first column of Table 2.1, which includes questions that could identify informal employment, and another set on social protection instruments. This module was presented and discussed with the country teams in the national statistics offices of Armenia, Bangladesh, and Indonesia. The RETA 6430 project team worked closely with the country teams in revising the questions, choice answers, and skipping patterns to ensure that the module melds well with the current LFS questionnaire and to anticipate any inconsistencies that may occur in the expanded LFS (eLFS) (current LFS + informal employment module + household unincorporated enterprises with at least some market production [HUEM] identification module[3]).

Modifying the Questionnaire

Country strategies in incorporating the informal employment questions in the LFS differ depending on (i) the questionnaire design of the existing LFS, (ii) the stage of preparation activities to which the country is at during the consultations, and (iii) the receptiveness of partners to ideas introduced. Since Armenia's Integrated Living Conditions Survey (ILCS) questionnaire is composed of multiple modules, enumerators and respondents are accustomed to relatively long interviews and multi-topic queries. This paved the way for a smooth incorporation of additional questions in the labor module. Moreover, since most of the essential items needed for informal employment analysis are already available in the ILCS, modifications in the questionnaire are comprehensible in terms of concepts and ideas.

Meanwhile, designing the eLFS questionnaire came at a late stage of LFS preparations in Indonesia. The LFS questionnaires had already been printed and inclusion of additional questions was not possible. Thus, for Indonesia, the project adopted the Philippine Informal Sector Survey (ISS) design wherein a separate module (ISS Form 1) was created for informal employment. All informal employment-related items are pooled in the ISS Form 1, completely separate from the LFS; the two, however, are linked through the survey design.

The approach implemented in Bangladesh is a combination of the approaches applied in Armenia and Bangladesh. Additional queries were incorporated in the LFS, but a separate ISS Form 1 was also created to include important items that the LFS questionnaire cannot accommodate. Thus, while the ISS Form 1 in Indonesia can stand alone and provide adequate data for a complete informal employment analysis, the ISS Form 1 in Bangladesh needs the LFS to effectively classify the employed population. This is because the essential items for informal employment identification are spread in the two questionnaires. This strategy was administered to reconcile the objectives of the project with those of the partner agency's goals.

There are two survey options that can support employment poverty analysis and have a direct measure of how many workers are poor[4]: (i) include a module that collects household consumption expenditure data,

Table 2.2 Summary of Approaches for Expanding the Labor Force Survey

Approach	Example
Additional questions on informal employment and social protection integrated into LFS questionnaire; consumption expenditure already part of the Integrated Living Conditions Survey	Armenia (Questionnaire in Appendix 2)
Additional questions on informal employment and social protection and consumption expenditure for determining poverty status in a separate form from LFS questionnaire	Indonesia (Questionnaire in Appendix 3)
Additional questions on informal employment and social protection integrated into LFS questionnaire with consumption expenditure questions (for determining poverty status) in a separate form	Bangladesh (Questionnaire in Appendix 4)

LFS = Labor Force Survey.

[3] The HUEM module identifies the household unincorporated enterprises with at least some market production. This module is used to develop the sampling frame of HUEMs from which a sample can be drawn to collect data on production, revenue, assets, and other aspects needed to calculate the contribution of the informal sector to the gross domestic product.

[4] Without the suitable survey data, the ILO estimates the number of the working poor as the product of poverty incidence and labor force (Millennium Development Goal target 1b).

or (ii) ensure that both the LFS and the Household Income and Expenditure Survey (HIES) are administered on a common set of sample households. Armenia is a good example of the first option with its ILCS having modules for labor and employment and also for household consumption expenditure. On the other hand, the Philippines uses a master sample design that ensures that at least half of the sample households are common to both the LFS and the HIES. In both cases, employment poverty analysis is possible. However, for Bangladesh and Indonesia, a one-page questionnaire on consumption expenditure of major headings only was included in the eLFS to provide data support for in-depth employment poverty analysis. The results of employment poverty analysis for the Philippines are presented in the next section.

The interview time (during the pre-test of the eLFS that included the informal employment and HUEM modules in Indonesia[5]) ranged from 9 minutes to 31 minutes, with an average of 18 minutes per household. The eLFS has 35 question items and hence, each query is timed at roughly 30 seconds.

The household expenditures section can be completed within 30 minutes on average. The shortest time spent on the segment was 23 minutes, and the longest was 37 minutes. Combining the employment and household expenditures sections, the interview can be carried out in 50 minutes on average. The shortest length of interview was recorded at 30 minutes, while the longest was 71 minutes.

The phase 1 questionnaires of the three countries differed in survey design. The survey design has been developed and adapted according to country practices, time constraints, and other factors that arose during consultations with the country partners. Due to these differences, the various country questionnaires also have different levels of effectiveness in achieving the desired objectives. Table 2.3 illustrates the characteristics of the phase 1 questionnaires of the three countries.

While the phase 1 questionnaires of the 1-2 mixed survey vary in form among the countries, they are universal on the information inquired. They all gather information on the following:

1. employment status;
2. terms of employment;
3. benefits, such as social security contribution, paid leave, maternity/paternity leave, severance pay, and termination of employment;
4. place of work;
5. industry of enterprise;
6. type of enterprise;
7. legal organization of enterprise;
8. employment size of enterprise;
9. registration of enterprise;
10. bookkeeping and accounting practices of enterprise; and
11. market production of enterprise.

Moreover, they also follow the same questionnaire worksheet layout that is deemed the most efficient design to collect information on all the jobs of the employed population.

2.4 Designing the Second Phase: Informal Sector Survey

2.4.1 Planning the Mixed Survey: Issues

This section enumerates the important considerations in designing an ISS following the mixed survey approach described in the beginning of this chapter. One of the issues is the availability of a frame that will be used to generate a probability sample. In many cases, Hussmanns (2009) argued that list frames of informal sector establishments are not available since developing countries with large informal sector either

[5] Recording the interview duration in Armenia was not possible because the ILCS has about seven modules, only two of which were relevant for our study. Recording the interview time for these two modules, which are not consecutively administered, will disrupt the flow of the interview. The results from Bangladesh's pre-testing of questionnaires are not yet available as of this writing.

do not have business registers or do not maintain an updated list. While in the case of the mixed survey approach, the list of identified HUEMs in phase 1 may serve as sampling frame for phase 2, one should carefully consider the type of survey used for phase 1. For instance, when the LFS is used, ownership is the factor that is being considered, not the physical location and hence, there may be some discrepancy or flaw in the design if physical location is considered.

Table 2.3 Comparison of Informal Sector Survey Phase 1 Questionnaires for Armenia, Bangladesh, and Indonesia

Item	Armenia	Bangladesh	Indonesia
Questionnaire Form	Expanded Section D of ILCS	Expanded LFS and ISS Form 1	ISS Form 1
General description and assessment of questionnaire forms	Can effectively classify formal and informal employment and identify the types of production units, on its own Is totally independent	Individually, the forms are inadequate to identify all the formal and informal workers or identify the production units to which they belong. The eLFS can classify the employees and casual workers, but the criteria for evaluating the employers and self-employed workers are available in ISS Form 1. Likewise, the eLFS can identify the production units to which the employees and wage workers work at, but for the self-employed, the ISS Form 1 is needed. Hence, both sets of questionnaires are equally important for an effective classification of employment and enterprises	Can stand alone and is efficient in identifying formal and informal employment, as well as the units of production. Administration of the ISS1 questionnaire needs close coordination with the *Sakernas* form since the *Sakernas* screens the employed respondents for the ISS1. It is important that the two surveys are consistent. To illustrate this point, one of the problems encountered was the mismatched *Sakernas* and ISS codes which resulted in inconsistencies in the information between the two surveys. While all the respondents in the ISS were the employed population, some of them were classified as unemployed in the *Sakernas*. Investigation of the information recorded in the ISS validated that these respondents were indeed employed during the survey period, and that the source of the discrepancies were errors in code identifiers.
Skipping pattern	Expanded Section D of ILCS 1. Benefits received and pay slips—only employees are required to answer 2. Type of enterprise—those working in the government need not answer the queries on legal status, employment size, and market production 3. Self-employment sub-module—consists of questions 36–47. This series of queries includes bookkeeping practices, registration, number of paid workers and their types of contracts, and difficulty experienced in setting up the business, among others	Expanded LFS 1. Type of contract, pay slip, and benefits received—only inquired from employees and casual workers 2. Registration, employment size of enterprises, difficulties experienced in setting up business—addressed to self-employed and unpaid family workers ISS1 3. Legal status, market production, bookkeeping practice—items addressed to employers and self-employed	ISS1 1. Type of contract, pay slip, and benefits received—only inquired from employees and casual workers 2. Bookkeeping practice—asked from own-account workers, employers, and unpaid family workers

The mixed survey approach is similar to double phase sampling in which the phase 2 survey is a subset of the phase 1 sample. However, one significant difference of the mixed survey approach from traditional double phase sampling is that the sampling units of the two phases in the mixed survey differ—households/individuals in LFS or phase 1 and HUEMs or establishments in phase 2. Because of this difference, there is no mechanism in the LFS design such that the HUEMs will be distributed evenly across sectors of national accounts, with some sectors overrepresented and some with very few HUEMs. In particular, Hussmanns (2009) concluded that some types of informal activities are likely to be less well represented in the universe than other typical informal enterprises in agriculture or trade. Hence, the strategy might result in less-efficient estimates than those from independent informal sector surveys in which the sampling frame of HUEMs is the result of listing operations conducted solely for that purpose. It is, therefore, important that the phase 2 sample be carefully designed to address this issue.

The high turnover of HUEMs is another issue that has to be considered in designing the phase 2 survey. To control for unit non-response (i.e., the unit cannot be located or has closed) in the second-phase HUEM survey, the interval between the two phases should be kept short. In fact, survey operations can be designed such that the two phases can be done almost simultaneously. This would not only reduce the ineligible HUEMs and those that cannot be located but would also save travel costs for the enumerators

Table 2.3 Comparison of Informal Sector Survey Phase 1 Questionnaires for Armenia, Bangladesh, and Indonesia *(continued)*

Item	Armenia	Bangladesh	Indonesia
Questionnaire Form	Expanded Section D of ILCS	Expanded LFS and ISS Form 1	ISS Form 1
Employment status categories	The description of Armenia's employee statuses already incorporates the information on contracts. Moreover, it presents a distinction between the own-account workers in agriculture and non-agriculture sectors. 1. Employee with a written contract for long-term employment 2. Employee with a written contract for short-term 3. Employee with verbal agreement 4. Employer 5. Own-account worker in farms 6. Other own-account workers 7. Unpaid worker/family member 8. Member of the production cooperative 9. Others	The employment status classification in the Bangladesh form primarily distinguishes the agriculture and non-agriculture workers. Furthermore, it identifies those employees working in households. 1. Employee 2. Employer 3. Self-employed in agriculture 4. Self-employed in non-agriculture 5. Unpaid worker/family member 6. Casual/Irregular paid worker 7. Day labor in agriculture 8. Day labor in non-agriculture 9. Domestic worker in a private household	Indonesia identifies its employers by the type of workers they hire and the casual employees by the sector (agriculture or non-agriculture) they work in. 1. Own-account worker 2. Employer assisted by temporary workers/unpaid worker 3. Employer assisted by permanent workers 4. Employee 5. Casual employee in agriculture 6. Casual employee in non-agriculture 7. Unpaid workers

eLFS = expanded Labor Force Survey, ILCS = Integrated Living Conditions Survey, ISS = Informal Sector Survey, LFS = Labor Force Survey.
Sources: Armenia, Bangladesh, and Indonesia ISS Phase 1 Questionnaires

and the supervisors. This, of course, is straightforward if all the HUEMs that are identified in the LFS will also be enumerated in the HUEM survey. Otherwise, reliable auxiliary information from a previous survey is needed. For example, if the primary sampling units (PSUs) sampled in the LFS are the same or very similar in previous surveys, the distribution of own-account and self-employed individuals in the survey can be a good auxiliary variable that can be used as measure of size or stratification variable in subsampling PSUs.

2.4.2 Designing Field Operations

A simultaneous field operation for both the eLFS and the ISS is preferred because it would reduce inconsistencies between the two surveys and, at the same time, reduce survey operations costs. There are several options for implementing this approach by designing phase 2 (the ISS) such that (i) a subsample of the PSUs of the household sample survey can be taken, in which all the informal sector units will be enumerated; (ii) a subsample of the HUEMs that were identified will be interviewed for the phase 2; and (iii) all HUEMs that have been identified will be interviewed. Decision on which is the most appropriate variation depends on the following conditions: (i) availability of auxiliary information from previous survey results, (ii) budget limitations, and (iii) skill level of enumerators and field supervisors.

A subsample of PSUs may be drawn prior to the survey if relevant auxiliary information is available. For example, if the distribution of own-account or self-employed individuals by sector (of national accounts) is available for each domain, then PSUs can be selected accordingly. Subsampling HUEMs for phase 2 would usually require another field operation; to subsample, a list frame is needed and hence results of phase 1 must first be processed. Furthermore, since the HUEMs are not likely to be distributed evenly across geographical areas, balancing the workload of field operation staff will be more challenging. Subsampling HUEMs in simultaneous phase 1 and phase 2 operations can only be implemented if the enumerators and field supervisors are adept at screening the HUEMs and are able to apply the correct sampling fractions. The third option is the easiest to implement but would require a larger budget since the sample size is not controlled at the outset. It could turn out that the sample size for the ISS is very large and requires a longer enumeration period and more human resources to complete. Also, the number of questionnaires that have to be printed will be quite large. And since the distribution of the HUEMs is not likely to be uniform across PSUs, there is no mechanism for making the workload among enumerators equitable.

The third option was implemented for both Mongolia and Sri Lanka because its cost requirements were within the available budget. However, in the case of Armenia, Bangladesh, Indonesia, and the Philippines, option 1 (subsample of PSUs) was deemed the most viable.[6]

2.4.3 Designing the Sample for the Informal Sector Survey

If simultaneous field operations for both the LFS and the ISS will be implemented with a limited budget for the ISS, then subsampling PSUs is the best option. Good auxiliary data are needed for subsampling PSUs. Moreover, since the primary purpose of ISS (phase 2) is to estimate the contribution of the informal sector to GDP, the sectors of national accounts must be well represented in the ISS sample. To achieve this, the PSUs must be stratified according to the sectors of national accounts. This is straightforward if the HUEMs in PSUs belong to the same sector. Often, however, HUEMs in a PSU could come from different sectors of the industry—some are quite prevalent or widespread in many PSUs (e.g., agriculture; trade; transport, communications, and storage) while others are hard to find (which we will term a sparse sector).

As a solution, the following rule can be applied in stratifying the HUEMs: if a PSU contains any sparse sector, classify that PSU under the sector that has the least HUEM count. Otherwise, classify it under the sector with the most HUEM count. The first part of the rule ensures that sparse sectors will be represented in phase 2. The second part of the rule, which identifies the dominant sector, allows us to develop a subsampling strategy for the PSUs that contain the dominant sector. The application of this rule is further explained in Box 2. Only PSUs in the dominant sectors

[6] Mongolia, the Philippines, and Sri Lanka are three of the six countries covered in the Interregional Cooperation on the Measurement of Informal Sector and Informal Employment (ICMISIE) Project of the United Nations, with the Economic and Social Commission for Asia and the Pacific as the lead agency.

will be subsampled, and all those in the sparse sectors will be included in the phase 2 survey.

This stratification rule requires that the sector of possible HUEMs in the sample PSUs in the LFS must be known or can be inferred or estimated. Possible HUEMs are those self-employed or own-account workers. The industry and classification of worker can only be gathered from the previous LFS in which the same PSUs and households were selected. The sample design of both the Philippines' and Indonesia's LFS fulfills this requirement. In both countries, the same set of PSUs are surveyed, half of which will have the same households as respondents. Hence, PSUs can be stratified according to the dominant/sparse sector rule.

The details on the sampling design adopted for the ISS of Armenia, Bangladesh, Indonesia, and the Philippines are provided in Sections 2.4.4–2.4.7.

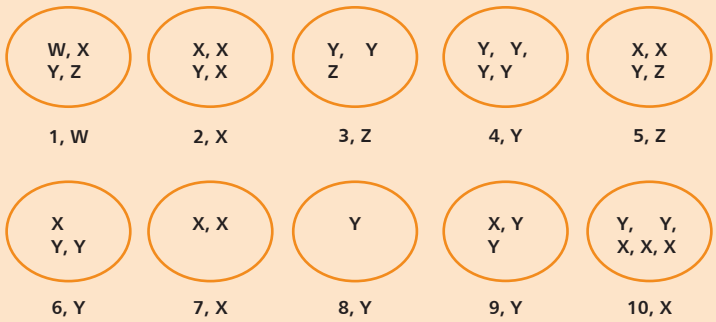
2.4.4 Philippine Informal Sector Survey Sample Design

In the case of the Philippines, the LFS is conducted every quarter with a master sample design such that four consecutive quarters do not share common sample households. However, at least half of the sample from the same quarters of two consecutive years will be common. In the original master sample design, there are four independent replicates covering 2,128 PSUs and about 51,000 households. All household surveys of national coverage use the master sample. The four replicates would render regional estimates. When only a single replicate is used, only national-level estimates would be possible.

To design the 2008 ISS in the Philippines, the 2007 April round LFS was examined, in which half of the sample will still be in the 2008 ISS. Those who are self-employed or own-account workers are deemed to

Box 2 Illustration of the Dominant/Sparse Sector Rule

Assume that there only four sectors (W, X, Y, and Z) and 10 primary sampling units (PSUs) in a previous survey.



Each circle represents one PSU, and each potential household unincorporated enterprise with at least some market production (HUEM) (self-employed or own-account) is represented by a letter of the industry it belongs to. The basis of this could be a previous survey with common households. The number below the circle represents the PSU number and the letter represents the stratum classification.

Ascertain first which sectors are sparse. To do this, construct a table that gives the PSU count in which a sector appears. In the diagram, W appears only in PSU 1, hence it is given a PSU count of 1 while Z appears in three PSUs and X in seven PSUs. Sector Y appears in all PSUs except in PSU 7, so its total PSU count is 9. There are 33 possible HUEMs in the diagram.

By our classification rule, if there is a sparse sector in any PSU, that PSU will be classified under that sector. If there are two sparse sectors in a PSU, the PSU will be classified under that sector with the fewest PSUs that contain that sector. In our example, only one PSU contains W while three PSUs contain Z; hence, W is the least sparse sector. PSUs that do not contain any sparse sector are classified according to the most dominant sector.

Applying the rules discussed above, PSU 1 was classified under W because while this PSU has both sparse sectors, W and Z, but W $<$ Z. Other PSUs with sparse sectors, such as 3 and 5, are classified the same way. For the rest (those without sparse sectors), the dominant sector rule is applied. Subsampling is done only on dominant sectors.

be potential HUEMs. The distribution of these potential HUEMs across industry sectors was derived. On this basis, the Philippine National Statistics Office (PNSO) deemed fishing, transport, trade, and agriculture as the dominant sectors. Table 2.4 presents the subsampling options that were considered by the PNSO for the ISS. Eventually, PNSO chose Option 4A, which has the lowest number of PSUs, because of budget limitations. Note that subsampling was also performed on the 83 PSUs in which there were no potential HUEMs.

the August 2008 and August 2009 *Sakernas* will be about 50% while there will be 100% common PSUs for both rounds.

Because of the limited budget available for the ISS, the Asian Development Bank (ADB) and BPS–Statistics Indonesia agreed to undertake the ISS in pilot provinces only. The sample packages were analyzed so that the counts of possible HUEMs (own-account workers and employer with temporary employees) for each sector and province were taken. PSU distribution

Table 2.4 Primary Sampling Unit Subsampling Options: The Philippines

Sector Strata	LFS	Option 3	Option 4	Option 4A	Option 5
Electricity, gas, and water	14	14	14	14	14
Financial intermediation	42	42	42	42	42
Education	23	24	24	24	24
Mining and quarrying	10	10	10	10	10
Health	21	11	11	11	11
Construction	46	31	31	31	31
Real estate	53	33	33	33	33
Hotels and restaurants	56	50	50	50	50
Others	62	53	53	53	53
Manufacturing	102	111	111	111	111
Fishing	172	172	25	25	25
Transport, communication, and storage	186	186	28	28	28
Wholesale and retail trade	1,118	25	166	25	83
Agriculture	1,230	28	182	28	45
None	83	2	12	12	12
Total	**3,218**	**792**	**792**	**497**	**572**

LFS = Labor force survey.

2.4.5 Indonesia Informal Sector Survey Sample Design

Indonesia's sampling design for the *Sakernas* (Labor Force Survey) is similar to that of the Philippines in the sense that it has independent replicates. However, there is no master sample in Indonesia that links all household surveys through a common set of households. A fresh set of households from the same sample PSUs is drawn for each type of survey.

The *Sakernas* is conducted twice a year such that the February round can provide estimates at the provincial level while the August round renders district-level estimates. The total sample sizes for the February and August rounds are 68,000 and 285,000 households, respectively. To design the August 2009 ISS, the sample packages (replicates) 1–4 of the August 2008 *Sakernas* were examined. Households for two packages (1 and 4) will remain the same as that of August 2008, while there will be a fresh set of households for the other two packages (2 and 3). This means that the common sampled households selected between

across sectors was also generated such that a PSU is counted to a particular sector if a possible HUEM (or more) exists in that PSU. The resulting table was used to determine the pilot provinces, which should contain HUEMs representing all sectors and yet still be manageably small. There are only three provinces that have possible HUEMs for all sectors of national accounts: Jawa Barat (451 PSUs), Jawa Timur (556 PSUs), and Banten (123 PSUs).

Initially, BPS-Statistics Indonesia proposed to survey Yogyakarta as a pilot province for ISS. However, based on a preliminary examination of the August 2008 *Sakernas,* no possible HUEM engaged in electricity, gas, and water and transport, communication, and storage was identified from Yogyakarta's data. To be able to have representation for the two sectors of economic activity, a workable compromise was to include at least one of the three identified provinces that have possible HUEMs for all sectors of national accounts. In turn, Yogyakarta and Banten comprise the pilot provinces for ISS.

A closer examination of Table 2.5 reveals the following observations:

(i) Possible HUEMs in agriculture and trade are prevalent, with 99 out of 142 PSUs for Yogyakarta and 81 out of 123 PSUs for Banten having agriculture, and 126 PSUs in Yogyakarta and 112 in Banten PSUs having trade.

(ii) Manufacturing HUEMs are also in many PSUs but the total number of HUEMs for each province is lower compared to agriculture and trade, indicating that the average number of HUEMs per PSU is quite small.

(iii) Possible construction HUEMs are present in 17 PSUs in Yogyakarta and 19 PSUs in Banten; however, the total HUEMs are only 18 for Yogyakarta and 24 for Banten, indicating about only one construction HUEM per PSU on the average.

(iv) The sparse sectors are electricity, gas, and water; finance; education; and health.

The enumeration period, however, was spread over 12 months of the year, such that for each month, 82 sampled PSUs are covered and 656 households are interviewed. These PSUs cover all the *marzes*, including Yerevan. Also note that the strata (urban, other urban, and rural) are well represented. As Table 2.6 shows, the sample was distributed uniformly according to the strata and months, hence creating a balanced sample for each month.

Unlike in Indonesia and the Philippines, in Armenia, a fresh set of PSUs is selected for each survey round; hence, there is no available auxiliary variable that can be used in applying the dominant/sparse sector rule. The design variables are the only auxiliary variables that are available. These are the *marz* (province) and urban/rural classification for Armenia, and the geographic characteristics, such as region (division), province (*zila*), municipality (*upazila*), urban/rural classification, and strata, for Bangladesh. Since the HUEMs in the rural areas are most likely to be agricultural, only the PSUs in the rural areas were subsampled for Armenia. Table 2.7 presents the PSU distribution in Armenia.

Table 2.5 Primary Sampling Unit Distribution for Labor Force Survey and Phase 2 of the Informal Sector Survey: Indonesia

Sector Strata	Banten		Yogyakarta	
	Sakernas	Subsample for ISS	*Sakernas*	Subsample for ISS
Agriculture	29	10	51	17
Construction	17	17	15	15
Electricity, gas, and water	2	2	...	...
Education	2	2	2	2
Financial intermediation	1	1	1	1
Health	3	3	5	5
Hotels and restaurants	8	8	6	6
Manufacturing	6	6	12	12
Mining and quarrying	5	5	9	9
Others	4	4	10	10
Transport, communication, and storage	10	10	...	...
Wholesale and retail trade	36	12	31	10
Total	**123**	**80**	**142**	**87**

... = no observation/no data available, ISS = informal sector survey, LFS = labor force survey, PSU = primary sampling unit.

2.4.6 Armenia Informal Sector Survey Sample Design

The Integrated Living Conditions Survey (ILCS) covers all the households in the 10 *marzes* (provinces) and the capital, Yerevan. It has a two-stage sampling design with the PSUs as villages or urban blocks and the ultimate sampling units as households. In addition to the *marzes*, all the PSUs are stratified according to either urban, other urban areas, and rural. For 2009, 984 PSUs were sampled, and eight households from each of the sampled PSUs were interviewed.

2.4.7 Bangladesh Informal Sector Survey Sample Design

The LFS in Bangladesh is usually conducted every 3 years. Prior to the 2010 LFS and ISS, the Bangladesh 2005 LFS and 2005 Household Income and Expenditure Survey (HIES) were the most recent surveys that the Bangladesh Bureau of Statistics conducted, both of which employed integrated multi-purpose sampling design (IMPS). In general, IMPS has a stratified cluster design. Based on the 2001 Census of Population, clusters of about 200 households each were formed

Table 2.6 Distribution of Sampled Primary Sampling Units Across Strata and Month

Marz	Strata	Number of Primary Sampling Units												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	
Yerevan	urban	14	14	14	14	14	14	14	14	14	14	14	14	168
Aragatsotn	urban	2	2	2	2	2	2	2	2	2	2	2	2	24
Aragatsotn	rural	4	4	4	4	4	4	4	4	4	4	4	4	48
Ararat	urban	4	4	4	4	4	4	4	4	4	4	4	4	48
Ararat	rural	4	4	4	4	4	4	4	4	4	4	4	4	48
Armavir	urban	4	4	4	4	4	4	4	4	4	4	4	4	48
Armavir	rural	4	4	4	4	4	4	4	4	4	4	4	4	48
Gegharkunik	urban	3	3	3	3	3	3	3	3	3	3	3	3	36
Gegharkunik	rural	4	4	4	4	4	4	4	4	4	4	4	4	48
Lori	urban	4	4	4	4	4	4	4	4	4	4	4	4	48
Lori	rural	4	4	4	4	4	4	4	4	4	4	4	4	48
Kotayk	urban	4	4	4	4	4	4	4	4	4	4	4	4	48
Kotayk	rural	4	4	4	4	4	4	4	4	4	4	4	4	48
Shirak	urban	4	4	4	4	4	4	4	4	4	4	4	4	48
Shirak	rural	4	4	4	4	4	4	4	4	4	4	4	4	48
Syunik	urban	3	3	3	3	3	3	3	3	3	3	3	3	36
Syunik	rural	2	2	2	2	2	2	2	2	2	2	2	2	24
Vayots Dzor	urban	2	2	2	2	2	2	2	2	2	2	2	2	24
Vayots Dzor	rural	2	2	2	2	2	2	2	2	2	2	2	2	24
Tavush	urban	2	2	2	2	2	2	2	2	2	2	2	2	24
Tavush	rural	4	4	4	4	4	4	4	4	4	4	4	4	48
Total		82	82	82	82	82	82	82	82	82	82	82	82	984

PSU = primary sampling unit.

Table 2.7 Primary Sampling Units Distribution for Phases 1and 2 of the Informal Sector Survey: Armenia

Marz	Settlement	No. of PSUs	
		Phase 1: ILCS	Phase 2: ISS
Yerevan	urban	168	168
Aragatson	other urban	12	12
	rural	48	8
	urban	12	12
Ararat	other urban	12	12
	rural	48	8
	urban	36	36
Armavir	other urban	12	12
	rural	48	8
	urban	36	36
Gegharkunik	other urban	12	12
	rural	48	8
	urban	24	24
Lori	other urban	24	24
	rural	48	8
	urban	24	24
Kotayk	other urban	12	12
	rural	48	8
	urban	36	36
Shirak	other urban	12	12
	rural	48	8
	urban	36	36
Syunik	other urban	12	12
	rural	24	4
	urban	24	24
Vayots Dzor	other urban	24	24
	rural	24	4
Tavush	other urban	12	12
	rural	48	8
	urban	12	12
Total		984	624

ILCS = Integrated Living Conditions Survey, ISS = Informal Sector Survey, PSU = primary sampling unit.

as enumeration blocks for each *zila* (municipality). These enumeration blocks served as the PSUs in IMPS and were classified as urban, rural, and statistical metropolitan areas (SMAs). Further geographical stratification was also introduced by classifying the zilas according to six divisions—Barisal, Chittagong, Dhaka, Khulna, Rajshahi, and Sylhet. In all, 129 strata were formed: 64 strata corresponding to 64 rural zilas, 61 strata classified under urban with the other three (Gazipur, Narayanganj, and Khulna) taken together to form one stratum under the SMA in addition to the other three SMA strata formed from urban areas with very large population (Dhaka, Chittagong, and Rajshahi).

One thousand PSUs were selected from an unknown total number of PSUs. For each of the selected PSUs, 40 households were randomly selected, making the total sample households equal to 40,000. The survey weight for a sampled household in the 2005 LFS and the Household and Income Expenditure Survey (HIES) was derived as the ratio of total households (updated as of April 2006) to the sample households in the strata to which the sampled household belongs. This approach does not reflect the selection probabilities that were applied at the time the sample households were drawn. Survey weight is usually derived as the product of the base weight (equal to the inverse of the selection probability) and the adjustments for non-response and non-coverage. And because measure of sizes and selection probabilities

were not properly documented, the appropriate survey weights cannot be reconstructed anymore.

Maligalig and Barcenas (2008) found IMPS to be technically deficient. In particular, large design effects were derived for important characteristics of interest, such as unemployment rate in the SMA and for large divisions, such as Dhaka, Chittagong, and Rajshahi, because of ineffective stratification measures. Incorrect survey weights were also used. Moreover, the number of households sampled per PSU can still be reduced and the number of PSUs increased to mitigate the very large design effects.

Because of these issues and others that were discussed comprehensively in Maligalig and Barcenas (2008), the Bangladesh Bureau of Statistics requested ADB, through RETA 6430: Measuring the Informal Sector, for technical advice on the development of a new sampling design for the 2010 LFS, which would also provide the sampling frame for the proposed ISS that will be conducted under RETA 6430.

In the new master sample proposed, divisions are the designated domains. In addition, considering the positive intraclass correlations of major characteristics of interest, the total number of households to be enumerated per PSU was reduced from 40 to 20[7] while the number of PSUs to be selected was increased from 1,000 to 1,500. To counter large design effects, uniform selection probabilities within domains were maintained and stratification measures were introduced.

Like Armenia, a fresh set of PSUs is selected for each survey round in Bangladesh; hence, there is no available auxiliary variable that can be used in applying the dominant/sparse sector rule. Thus, for the second phase, only the design variables were used as auxiliary data for stratification, i.e., urban/rural classification and strata. The PSUs were subsampled according to this scheme. It was assumed that PSUs in the rural areas will have mostly agriculture HUEMs. In the case of Bangladesh, since the new master sample stratified the PSUs from rural areas according to the extent of agriculture as livelihood in a particular PSU, only those PSUs that fall under strata 3 and 4 were subsampled for the second phase. These are the PSUs that have the majority of households in agriculture. Table 2.8 shows the distributions of the sample PSU across domains of Bangladesh.

Table 2.8 Distribution of Primary Sampling Units in the Informal Sector Survey: Bangladesh

Division	Rural				Urban		Total
	1	2	3	4	1	2	
Phase 1 (LFS)							
Barisal	42	38	39	37	15	11	**182**
Chittagong	50	47	46	40	36	27	**246**
Dhaka	65	58	63	58	67	59	**370**
Khulna	41	44	41	42	22	20	**210**
Rajshahi	69	67	69	63	25	21	**314**
Sylhet	39	40	39	38	11	11	**178**
Total	**306**	**294**	**297**	**278**	**176**	**149**	**1,500**
Phase 2							
Barisal	42	38	13	12	15	11	**131**
Chittagong	50	47	15	13	36	27	**188**
Dhaka	65	58	21	19	67	59	**289**
Khulna	41	44	14	14	22	20	**155**
Rajshahi	69	67	23	21	25	21	**226**
Sylhet	39	40	13	13	11	11	**127**
Total	**306**	**294**	**99**	**92**	**176**	**149**	**1,116**

LFS = Labor Force Survey.

2.5 The Informal Sector Survey Questionnaire

Screening of HUEM Survey Respondents

The mixed survey approach administered in the three countries utilized the expanded Labor Force Survey (eLFS) in the first phase to screen the respondents for the second phase (the HUEM survey). The following questionnaire items from the eLFS were used to identify the potential HUEMs, whose owners were interviewed in the next phase: (i) employment status, (ii) legal status, (iii) marketed production, and (iv) business records or accounts.

Meanwhile, the following conditions were applied to determine whether the enterprise is a potential HUEM (Table 2.9):

[7] Originally, the proposed master sample calls for reducing the total number of sample households to be enumerated per PSU from 40 to 10 as initial computations suggest that 10 is the most efficient among the considered options. However, BPS-Statistics Indonesia decided to increase the sample from 10 to 20 due to administrative concerns. In the field, the sample size per PSU was updated and readjusted to conform with the results of the listing operations.

Table 2.9 HUEM Decision Matrix

Employment Status		Legal Status		Market Production		Business Records or Accounts
Own-account worker	&	Single proprietorship/ individual business or farm	&	Yes	&	No written accounts
Employer		Others				Informal records for personal use
		Do not know				Simplified accounting format required for tax payment

HUEM = household unincorporated enterprise with at least some market production.

Those respondents that satisfied the conditions presented above were evaluated to own or work in a potential HUEM and, therefore, were interviewed for the HUEM survey. This assessment was conducted for all the respondents and job numbers. It was necessary that all jobs—whether primary or secondary and regardless if it is the same respondent or not—were screened for the HUEM survey. An employed person may be a formal employee, working as a regular bus driver in a company as his main job, but may also be working as a tricycle driver in his second job. Thus, he can be considered as an own-account worker in this other job. If he receives payment for the transport services he provides, and the legal status of his business is single proprietorship with no business records or accounts, then his business is a potential HUEM. These considerations were applied in the HUEM surveys conducted; thus, a person with the described characteristics was a respondent in this phase.

It should be noted that, as a rule, the respondent interviewed for the HUEM survey was the owner of the enterprise. This is a strict condition implemented because the respondent must have extensive knowledge of the revenues and expenditures, as well as the production process, of the enterprise to be able to answer the questions in the HUEM.

Contents of Informal Sector Survey Questionnaire

This questionnaire has two parts:

1. Cover Page

   a. *Location Identification.* This contains the particulars about the geographic location of the household that is being interviewed and is labeled Section I.

   b. *Enumerators and Supervisors.* Certification by the enumerator and his/her supervisor regarding the manner by which the data are collected are included in this portion, identified as Section II.

2. Questionnaire Items Portion[8]

This is divided into seven[9] major segments, sections A to G.

Subject
A. Organization of Business
B. Employment and Compensation
C. Production, Inventory, and Sale
D. Expenditures on Raw Materials and Stocks
E. Capital Expenditures
F. Banks, Micro-Finance Services, & other Support Structures
G. Problems and Prospects

a. Section A, Organization of Business (Questions A.1.–A.9.1) contains inquiries on the location, bookkeeping practices, and registration of the enterprise.

b. Section B, Employment and Compensation (Questions B.1.–B.3.3.) gathers information on the characteristics of the employed working in the enterprises and the monetary payments or benefits they receive.

c. Section C, Production, Inventory, and Sale (Questions C.1.–C.9.1.) records the costs, sales, and revenues of the enterprise from production, either in agriculture or non-agriculture sectors.

d. Section D, Expenditures on Raw Materials and Stocks (Questions D.1.–D.3.) documents the expenditures on inputs to production incurred by the enterprise, either in agriculture or non-agriculture enterprises.

e. Section E, Capital Expenditures (Questions E.1.) is composed of queries on the types and costs of fixed capital incurred by the enterprise.

[8] Labeling differs in each country.

[9] Except for Bangladesh, which combined expenditure, production, inventory, and sale in one section.

f. Section F, Banks, Micro-Finance Services, & Other Support Structures (Questions F.1.–F.5.) collects data on the financial knowledge and practices of owners/employers of the enterprises, primarily for policy-making purposes.

g. Section G, Problems and Prospects (Questions G.1.–G.3.) gathers information on the difficulties encountered by owners and employers in operating the enterprise.

Also, the questionnaire has been designed to take into consideration the industry-specific characteristics of production. Particularly, different reference periods were applied, depending on the classification of the activity by which the HUEM is engaged in, whether it is in agriculture or non-agriculture. This was implemented to better capture the production activities of the units. It is believed that if the enterprise is an agricultural production unit, its activities are subject to seasonality of crop production, such as planting and harvesting. Consequently, the set of information concerning agriculture was inquired using the "last 6 months" as reference period. Meanwhile, those queries directed to non-agriculture production applied the "last month" as the reference period.

In general, the ISS form facilitates data collection of the basic components of gross value added (GVA), with some changes among the three countries covered by the study. For instance, there are some data that are collected in one country but not in the others, prompting the need for imputations in the estimation of the informal sector GVA. Table 2.10 compares the data collected for each of the three countries.

Table 2.10 Contents of the Informal Sector Survey Form: Armenia, Bangladesh, and Indonesia

National Accounts Item	Description	Armenia	Bangladesh	Indonesia
Income approach—compensation and operating surplus	Gathers information on the incomes paid from the production and other components of GVA under the income approach	Section B, Employment and Compensation (Questions B.1.–B.3.)	Section B, Employment and Compensation (Questions EC.1.–EC.3.)	Section B, Employment and Compensation (Questions B.1.–B.3.)
Production approach—output	Information include sales, revenues, inventories and own consumption of the enterprise from production, either in agriculture or non-agriculture enterprises	Section C, Production, Inventory and Sale (Questions C.1.–C.9.)	Section C. Expenditure, Production, Inventory and Sale–(Questions EX1–EX3); (Questions PIS 1–PIS 10).	Section C, Production, Inventory and Sale (Questions C.1.–C.9.)
Production approach—intermediate input	Data gathered are on expenditures on inputs to production incurred by the enterprise, either in agriculture or non-agriculture enterprises	Section D, Expenditures on Raw Materials and Stock (Questions D.1.–D.3.)		Section D, Expenditures on Raw Materials and Stock (Questions D.1.–D.3.)
Other variables—gross fixed capital formation	Consists of items s on the types and costs of fixed capital purchases / sold by the enterprise	Section E, Capital Expenditures (E.1.)	Section E, Capital Expenditures (CE.1.)	Section E, Capital Expenditures (E.1.)
Annualization of GVA estimates	Records the sales trend of the business which can be utilized to approximate the annual level of production or verify the estimated degree of business activities	Section C (Question C8)	Section C (Question PIS 10)	Section C (Question C8)
Specific				
Production approach—Inventories	Availability of beginning and ending inventories of output	Beginning and ending inventories	Beginning and ending inventories	Ending inventories only
Production approach—FISIM	Availability of interest paid and received	Not available	Interest paid and received	Interest paid and received
Production approach—services of owner-occupied dwellings	Availability of imputed rent	Not available	Section A (Question OB.7.1)	Section A (Question A.3.1)

FISIM = financial intermediation services indirectly measured, GVA = gross value added, ISS = informal sector survey.
Source: Authors' analysis of the ISS questionnaires used by Armenia, Bangladesh, and Indonesia.

As in the case of the phase 1 questionnaire, the differences in the questionnaire were prompted by the various circumstances that surrounded the questionnaire design stage in each country. The survey schedule is the primary factor that influenced the design and the administration of the design. Note that Armenia implemented a rolling sample and carried out the HUEM survey for the whole of 2009 (from January to December). This design followed that of the ILCS to which the ISS is a rider. On the other hand, the Indonesia ISS was conducted in August 2009, simultaneous with the August round of the *Sakernas*. Meanwhile, the Bangladesh survey was accomplished in April 2010, together with the LFS.

Valuable items were added to the questionnaire as products of consultations with the country partners. For example, the National Statistical Service of the Republic of Armenia (NSSRA) partners brought up the need to include the item "own consumption" among the tables in Section C, as this item is a significant part of the HUEM production, especially in agriculture. And since the Armenia schedule was ahead, the other two countries also benefited from the idea. Unfortunately, while Bangladesh and Indonesia gained from the experiences of Armenia, Armenia was at a disadvantage due to the early start of its survey operations. To illustrate, Armenia's questionnaire did not include the item that would estimate the financial intermediation services indirectly measured (FISIM) and the services of owner-occupied dwellings (imputed rent). This is because these queries were incorporated in the questionnaires while the Armenia ISS was already ongoing. The imputed rent item was a result of the RETA 6430 team brainstorming, while the query relating to FISIM was an initiative of the BPS-Statistics Indonesia national accounts specialists.

Meanwhile, there was an oversight with regard to the inventory item for Indonesia that was discovered too late. All preparations had been completed and the questionnaires printed when the difficulty in estimating for the inventory item was realized. Thus, only the ending inventories in the HUEM production were recorded. Bangladesh, on the other hand, due to the late conduct of the LFS and consequently the ISS, benefited from all the experiences of the two other countries. Thus, the Bangladesh phase 2 form is considered the most complete form of the three.

Still, improvements in the questionnaire design are needed as proven by the experience in its administration. The following summarizes the recommended modifications to the HUEM form.

General Recommendations

1. Section C: Production, Inventory, and Sales: The worksheet of this section needs to be revised for a more efficient conduct and less interview time. At present, it inquires about the kind of product, the quantity of production, the unit of measure used for each product, and the total value sold for each product. Among these items, only the kind of product and the total value are significant. Thus, it is recommended that these two items remain in the worksheet and the other two are deleted.

   Experience during the estimation process showed that information on specific items sold or produced by the HUEM is beneficial especially when there is doubt on the industry to which the HUEM was classified in. These items did not only help in validating the HUEM's industry category, but the information also provided confirmation on the over- or underestimation of HUEM production for specific industries. Thus, it is still important that the products and/or services of the HUEM are itemized.

2. Section E: Capital Expenditures: This is the section which enumerators had the greatest difficulty understanding and administering. As a consequence, problems in estimating the own produced assets (for the GVA estimation production approach) and the consumption of fixed capital (for the income approach) were encountered due to the inconsistencies in data collected. Thus, it is recommended that this section be reviewed by national accountants and revised for a more effective collection of information.

3. Enumerator's Manual: The experiences of enumerators in conducting the ISS should be incorporated in the manual. Numerous tips and

hints on how to administer the questionnaire should be added, as well as more examples on how the survey form should be filled out.

Specific Recommendations

4. FISIM: The item collecting data for FISIM should be placed in a different section. Currently, it is among the expenditure items in Section D. It is proposed that this question be presented as a separate item, like the query on imputed rent. However, study on how to phase the inquiry must be done to be able to collect the correct type of information.

   Most importantly, all ISS questionnaire forms should include this item.

5. Imputed rent: Only the Armenia questionnaire lacks this query. It is proposed that the ISS form be modified to incorporate the item.

6. Inventory: Both the beginning and ending inventories must be collected to be able to compute for the change in inventory. It is recommended that the Indonesia questionnaire be modified accordingly.

7. Section E title: The title itself of Section E added confusion on the information to be gathered for this portion of the questionnaire, as commented by the national accountants from the different countries. Hence, it is proposed that the title be changed to simply "Capital."

8. Land improvements: This item should be added to Section E since this is one of the vital pieces of information needed to compute for the own produced assets of agriculture HUEMs.

2.6 Field Operations

It is expected that since the ISS is a new survey, difficulty in administration of the questionnaires will be experienced. However, while some enumerators learned to be more confident in conducting the ISS interviews during the course of the survey, some still struggled. One of the hypothesized reasons for such is the background or expertise of the enumerators. The enumerators who participated in the ISS were typically trained for the household surveys and not establishment surveys, specifically, because the survey was under the labor and employment wing or section of the national statistics offices (NSOs).

The experience of establishment survey enumerators would have been an advantage in the identification of HUEMs and inquiries about the characteristics of these establishments. Moreover, they will be able to classify the enterprises into the types of industries they belong to more efficiently. For example, they will be able to recognize that those HUEMs whose primary activity deals with the production of cheese would belong to the manufacturing industry even if the secondary activities fall under the agriculture sector.

Ideally, survey operations must be done simultaneously for both phases—the eLFS and the ISS—to cut the travel and other costs of the enumerators and supervisors and, more importantly, to avoid many inconsistencies between the eLFS and the ISS that could arise when there is a lull period between the two phases. This happened in the field operations in Indonesia in which the ISS, including the form 1 for phase 1, was administered several weeks after the *Sakernas*.

An example is provided by the survey operations in Pagdelang regency in Banten. Due to the wide distance between the PSUs in the regency, instead of administering the ISS right after the *Sakernas*, the ISS interviews were conducted on a different day and schedule, and by different enumeration teams. The *Sakernas* was first completed in the PSUs (by the *Sakernas* enumeration teams) and afterwards, the ISS followed (administered by the ISS teams). This setup was deemed practical to be able to meet the *Sakernas* deadline (as there were 51 widely dispersed PSUs to which the *Sakernas* needed to be administered). The strategy enabled the *Sakernas* teams to finish the

survey in one PSU within a significantly shorter period of time compared to administering the ISS directly afterward. Hence, the *Sakernas* teams were able to move faster from one PSU to another. Meanwhile, the ISS teams were able to concentrate in the ISS interviews without worrying about completing the *Sakernas*.

While this strategy ensured the completion of both surveys on time, a significant downside is foreseen. It is probable that the HUEM, which may have existed during the weeks in which the *Sakernas* was conducted, may no longer be there by the time the ISS was carried out. This scenario is deemed likely given the short life span of HUEMs.

During the data processing stage, inconsistencies between the *Sakernas* and Form 1, which contains questions on informal employment, social protection, HUEM identifiers, and consumption expenditures, were identified. There were cases in which the employment status of respondents' primary jobs is not consistent with the information reported in the ISS. Moreover, 226 unmatched cases between the *Sakernas* and ISS1 were recorded, which translated to 83 unmatched cases between the *Sakernas* and ISS2. The source of the problem is hard to trace because there is a possibility that identifiers assigned for each record are not consistent between the *Sakernas* and ISS Form 1. This is further discussed in Section 2.7. This was not a problem for Armenia, since both the ILCS and ISS were administered at the same time.

Armenia, however, encountered other field operations problems. The enumerators that were engaged to administer the ISS received training on household surveys and were not familiar with concepts related to computations of GVA and other establishment survey terminology. During the 5 months of field operations, very few HUEMs were identified. This may be one of the reasons why some sectors (e.g., fishing, real estate, education, and health) were not adequately represented in the sample. The NSSRA had to recall the enumerators and supervisors for retraining. In addition, it is possible that during ISS data collection, there was hardly any business activity during the reference period. This may be due to the seasonality of production such as in agriculture (planting, harvesting, etc.). During these periods of "no business activity," some respondents reported to have had secondary activities (Question A4. "*In addition to the main activity you described above, do you carry out other activities in this place of business?*" including its corresponding International Standard Industrial Classification). However, the detailed information about the production of the secondary activities was not collected.

One of the universal experiences in the ISS was the instance in which some respondents did not have a clear understanding of selected questions. In particular, the question "Do you sell goods / services?," was associated only with the selling of tangible goods; services were disregarded. Consequently, some service-oriented activities, which were supposed to be HUEMs, were not classified as such. On the other hand, because most interviewers were only trained to conduct household surveys, there are instances when the economic activities of the HUEMs were misclassified in terms of the industrial classification. Also, some interviewers failed to account for agricultural products that were works-in-progress (i.e., planted) during the survey period.

A strict rule in administering the HUEM questionnaire was that the respondent should be the owner of the enterprise. This condition was specified to the enumerators since the ISS respondent must have extensive knowledge of the revenues and expenditures, as well as the production process, of the enterprise. In cases where the respondent for Form 1 is only a responsible member of the household and the owner of the HUEM is not available for interview, enumerators were given instructions on how to make an appointment with the owner.

This rule created some difficulties for the enumerators. The HUEM survey was carried out right after the eLFS whenever the situation permitted. However, there were instances when the HUEM owner was not home during the eLFS and only the responsible member of the family was present. Sometimes, days passed before the enumerators were able to conduct the interview due to the unavailability of the HUEM owners. Some enumerators, on the other hand, had experiences with uncooperative respondents, who considered time spent during the interview is actually time away from working in their HUEMs. Thus, there were cases in which the interviews were conducted in the respondent's place of work, in between the periods when the HUEM owner was tending to his or her business.

2.7 Data Processing

An optimal procedure for processing survey data is needed to strengthen statistical data collection. Factors such as the length and complexity of the questionnaires, sampling design, and survey timing and scheduling may contribute to the complexity of the data processing task (United Nations 1981). This section provides an overview on how to facilitate an efficient data processing strategy that could minimize and address the diverse operational problems arising from data processing activities.

First, all completed questionnaires from field operations must be properly archived. Ideally, the questionnaires are to be compiled in different folios sorted by cluster or PSU. It is also useful that aside from ensuring that each folio bears complete information depicting its corresponding geographic identification, sample size, and number of completed questionnaires, such information is also maintained in a computer database. This will allow data processing supervisors to quickly compare the expected number of questionnaires with the actual number of completed questionnaires turned over from the field offices. Some instances may prompt the need for going back to the field to collect or verify data. In any case, availability of such information will enable the survey managers to implement appropriate steps. Further, there should be a mechanism to ensure that each record is assigned with a unique identifier—perhaps a combination of geographic location, household control number, household member ID, and perhaps job number (in the case of the ISS). The sample structure must also be provided—domain, stratum, and cluster—because this will be needed to compute the sampling variance. In the case of the ISS (which consists of two phases), it is important to ensure that common sampling units are assigned with the same identifiers for both the eLFS and HUEM survey. This can be facilitated if the data from these phases are processed simultaneously. Otherwise, it may result in inconsistencies in the coding schemes adopted and, consequently, it will complicate the task of linking the records later on.

In some cases, a preliminary quality assessment of the completed survey questionnaires may be put in place before computer encoding. The objective is to prepare the data in a format that can be recognized by the database software. This preliminary quality assessment must also be designed to identify and address problems that are prone to being missed out by automated algorithms. For example, consider the classification of economic activities in the HUEM survey. In the field, survey enumerators or interviewers would write the perceived economic activity of the interviewed HUEM. Then, the field supervisor would write the corresponding industrial code. If both the survey enumerators and field supervisors are not adequately trained in national accounts concepts, chances of misclassification under an incorrect industry are not negligible. Addressing this limitation may entail closely examining the types of products reflected in the questionnaire and from this set of information, inferring the more appropriate industry to which it belongs. By including a preliminary quality assessment, reviewers with knowledge of national accounts will have the opportunity to immediately identify inconsistencies from the reported data and, in turn, implement the necessary corrections.

The next step is data entry. Although a preliminary data quality assessment has been put in place prior to computer encoding, automated procedures designed to identify and correct data inconsistencies are very important. To simplify the process, the database software must be carefully designed to mimic the appearance of the survey questionnaire. This strategy is expected to minimize data entry mistakes, and it can also speed up the encoding process. In addition, it is helpful if the software can immediately alert the encoders when they key in inconsistent information (e.g., values falling outside of an expected range). In addition, some surveys follow a hierarchy of questionnaire items. In particular, there are questions that should be answered only if the responses to some other variables satisfy certain criteria. Hence, computer programmers should consider incorporating this type of skipping pattern into the database software. In the case of the eLFS, for example, the existence of a secondary job should necessarily imply that the record for the first job has already been encoded. Similarly, if a unit in the eLFS or ISS Form 1 is classified as a HUEM (and this HUEM belongs to a sampled PSU), the system should give a message if it does not find its corresponding ISS Form 2 encoded in the database. In general, the database software should accommodate a facility that will check that the encoded information is complete, recorded in the prescribed format, and internally consistent. From time to time, it is useful for the system to produce summary reports to enable

the survey managers to monitor the progress of the encoding process. More importantly, backup copies of the encoded data should be available.

Whether or not an automated consistency check has already been introduced during the encoding process, it is still possible to miss out other data issues. Thus, once the encoded data has already been compiled, it is important to carry out another iteration of quality assessment, data cleaning, and imputations. The next sections discuss these other considerations, before using the survey data for estimation and subsequent analyses.

2.8 Data Quality Assessment

Assessment of the data quality is important to ensure that the estimates to be derived from this survey will be acceptable and can be used for research and policy analysis. In this context, there are three aspects of data quality that need to be addressed: (i) the efficiency of the sampling design, (ii) the extent of missing data and non-response, and (iii) measurement errors. As mentioned earlier, since the HUEMs, which are the sampling units of the ISS, are not homogeneous within a PSU and in many cases, to control the budget of the ISS, PSUs from the LFS must be subsampled, the survey weights of the HUEMs must vary widely and may therefore contribute significantly to the increase of the variance of an estimate. Hence, the efficiency of the sampling design needs to be examined before any data analysis is performed.

A complete set of information must be available for the computation of the GVA or the economic output, whatever the estimation approach utilized. There could be cases wherein some components of the GVA are missing and must be imputed. Operationally, different approaches to computation of GVA may lead to statistical discrepancies. To ensure minimum statistical discrepancy, it is vital that appropriate statistical tools and methodologies are applied when addressing data inconsistencies. A subsection discusses how to identify inconsistent data and offers solutions for problems that may be encountered. For detailed discussion of case-specific approaches to data editing and imputation, see Chapters 4 and 5.

2.8.1 Evaluation of the Phase 2 Sample

The survey weight for the phase 2 survey is the product of the survey weights in phase 1 and the inverse of the selection probability of the sampled PSU. The survey weights of respondents in phase 1 are known since phase 1 is the eLFS, or in the case of Armenia, the Integrated Living Conditions Survey (ILCS). For a HUEM in either the urban or other urban areas of Armenia, its survey weight will be equal to the survey weight of the respondent household to which it belongs in the first phase (ILCS) since the selection probability of all sampled PSUs in urban or other urban areas for phase 2 is 1. The selection probability of a PSU in a rural area is 1/6; hence, the survey weight for phase 2 of a HUEM in the rural areas of Armenia is six times the survey weight of the households that owned it in the ILCS.

In the case of Indonesia, if a HUEM is in a PSU that is classified under a sector other than agriculture, its phase 2 survey weight is equal to the phase 1 survey weight. However, the survey weight for a HUEM in a PSU that has been classified under agriculture, say in Banten, will be the phase 1 survey weight of the household that owns it multiplied by 29/10 or 2.91.

Note that the initial survey weight of all HUEMs in a specific PSU will be uniform regardless of the current sectors of the HUEMs. For example, in Armenia, if a HUEM is in the finance sector but is found in a PSU that has been classified under rural area, that HUEM will have a survey weight of 6 for phase 2. Similarly, if a HUEM is in the transport sector in a PSU that has been classified under agriculture in Banten, Indonesia, then that HUEM will have 29/10 or 2.91 as survey weight for phase 2.

By the same token, in the Philippines, the survey weight of a HUEM in a PSU that was pre-classified under agriculture will be the product of the phase 1 (LFS) survey weight of the household to which it belongs and the inverse of the PSU selection probability, which is 1,230/28 or 43.93, regardless of the current economic sector to which this HUEM is engaged in. This is a very large multiplier and could cause a wide variation of survey weights of HUEMs in the PSUs that were classified under agriculture. Similarly, those HUEMs in PSUs classified under wholesale and retail trade will have an even larger phase 1 survey weight multiplier of 44.72.

Since most of the estimates in the phase 2 survey will be derived at the sector level and this sector may be different from the sector to which the PSUs were classified, it is expected that survey weights in phase 2 will vary widely. In addition, if the dominant/sparse sector scheme is not efficiently implemented, the resulting survey weights may vary significantly.

Wide variation in survey weights may cause a substantial increase in the variance of the estimate and, consequently, the estimate of the sampling error. It is, therefore, prudent to validate the extent to which the increase in the variance of the estimate at the sector level is due to the variation of the survey weights. A rough approximation of the contribution of the increase in the variation of weights to the variance of the estimate is $1 + L = 1 + cv(w)^2$, where $cv(w)$ is the coefficient of variation of weights (Kish 1992).

Table 2.12 presents the summary statistics of initial survey weights, by sector, in the Philippines ISS that was conducted in June 2008. Note that the surveyed HUEMs were classified according to the sectors that they declared and not according to their PSU sector classification derived from the 2007 LFS. Hence, an agriculture HUEM here can come from a PSU that has been classified under any industry. Because of this, the variation in the initial survey weights is quite large. For agriculture HUEMs, the minimum survey weight was about 170 and the maximum was about 18,600.

Table 2.11 Evaluating the Implementation of Dominant/Sparse Sector Rule

Pre-ISS Strata using Dominant/ Sparse Sector Rule	Post-ISS Sector Using Dominant/ Sparse Sector Rule	Philippines: Percent Correctly Classified	Indonesia: Percent Correctly Classified
Agriculture	Agriculture	47.9	41.5
Construction	Construction	0.0	40.0
Education	Education	28.6	0.0
Electricity, gas, and water	Electricity, gas, and water	0.0	0.0
Financial intermediation	Financial intermediation	60.0	0.0
Fishing	Fishing	75.0	*
Health	Health	20.0	20.0
Hotels and restaurants	Hotels and restaurants	62.5	28.6
Manufacturing	Manufacturing	81.8	25.0
Mining and quarrying	Mining and quarrying	50.0	100.0
Other services	Other services	28.6	0.0
Real estate	Real estate	37.5	*
Transport, communication, and storage	Transport, communication, and storage	21.3	0.0
Wholesale and retail trade	Wholesale and retail trade	6.3	15.8

ISS = Informal Sector Survey.
* In the dominant/sparse sector classification for Indonesia, Agriculture includes Fishing, while Other services includes Real estate.

Table 2.12 Summary Statistics of Initial Survey Weights by Phase 2 Sector, Before Trimming: The Philippines

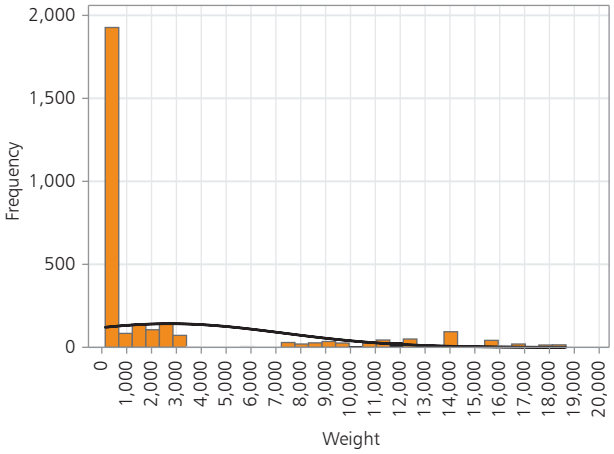
HUEM Sector in Phase 2	No. of HUEMs	Minimum	Mean	Maximum	Standard Deviation	CV (%)	$1 + CV^2$
Agriculture	653	171	5,295	18,665	5,928	112	2.25
Fishing	244	222	2,927	16,869	3,532	121	2.46
Mining and quarrying	48	148	637	8,648	1,637	257	7.60
Manufacturing	304	148	1,547	14,971	3,352	217	5.70
Electricity, gas, and water	...	...	...	...	...	...	...
Construction	54	327	601	2,902	419	70	1.49
Wholesale and retail trade	1033	137	2,171	18,665	4,068	187	4.51
Hotels and restaurants	79	194	2,180	16,869	4,016	184	4.39
Transport, communication, and storage	333	182	2,126	18,665	4,047	190	4.62
Financial intermediation	9	194	2,387	17,568	5,695	239	6.69
Real estate	55	290	940	16,803	2,216	236	6.55
Education	7	487	566	655	61	11	1.01
Health	17	194	629	2,030	395	63	1.39
Other community and social services	137	233	1,450	17,568	3,222	222	5.94

... = no data/data not available, CV = coefficient of variation, HUEM = household unincorporated enterprises with at least some market production.

The contribution of the wide variation in weights is about an increase in the variance of the estimate by 7.60 times. Only the initial survey weights of HUEMs in education and construction are acceptable.

The initial survey weights have to be trimmed and refined so that the $1 + L = 1 + cv(w)^2$ will be at a tolerable level which, in this case, is set at less than 2. To identify the point at which to trim the weights, the histogram of the initial survey weights was constructed (Figure 2.4). If the maximum survey weight is set at 1,000, then about 32.3% of the survey weights would be trimmed. Table 2.13 provides a descriptive summary of the trimmed weights. The wide variation in the survey weights attached to HUEMs engaged in agriculture activities will inflate the sampling variance of its survey estimator by 2.25 times compared to the sampling variance of the estimator that does not use survey weights.

Figure 2.4 Histogram of Initial Survey Weights, Phase 2 Informal Sector Survey: The Philippines



Source: Authors' computations.

After the survey weights are trimmed, the weighted counts for each sector are obtained and adjusted again so that the weighted counts of each sector equal the weighted counts of HUEMs in phase 1. Since HUEMs are identified including their corresponding sector, the distribution of HUEMs by sector can also be obtained from phase 1. Since there is no subsampling of PSUs in phase 1, these counts can be considered a better approximation of the true distribution of HUEMs and hence, may be used to compensate for non-coverage, which was caused by weight trimming and other errors that were committed during the design process. For example, it was found that in the original master sample design, there were 2,826 PSUs instead of 3,218 (which was the basis of the PSU subsampling). This discrepancy came about when some of the big sampled PSUs were subdivided and renumbered, resulting in the artificial increase in PSUs. It would have been easier to reclassify according to the original PSU counts, compute the PSU selection probabilities again for the dominant sectors, and apply the corrected survey weights on the HUEMs in phase 2. However, subsampling was really implemented on the 3,218 count and, hence, initial survey weights must be computed on this basis.

In the case of Armenia, since the great variation in the survey weights of the ILCS affected the contribution of the weights in the ISS to sampling error, we need to minimize this unnecessary inflation of sampling error. Thus, a similar trimming approach, discussed earlier, was also implemented. Tables 2.15 and 2.16 provide a descriptive summary of the survey weights before and after trimming.

2.9 Data Cleaning

To ensure the quality of survey data, different strategies designed to identify questionable survey data and apply the appropriate methodology to correct these discrepancies may be explored. While the strategies range from simple or manual procedures (e.g., eyeballing the data) to automated algorithms, the rules should generally be based on experts' broad knowledge of the different aspects in the topic under consideration. In most cases, encoding errors can be corrected after executing a well-designed data cleaning exercise. But there are instances when erroneously encoded data are only discovered after observing unexpected results (e.g., negative GVA figures,[10] aberrant value of outputs, etc.), in which another iteration of data cleaning should be undertaken. This implies that data cleaning is a continuous process.

In general, the usual data discrepancies involve missing values, data values falling outside the expected range, totals not equal to the sum of the parts, and outliers. In application, correcting for these data discrepancies may require checking for encoding errors, going back to the field to verify the validity of data, imputing the data using statistical tools, or a combination of these approaches.

[10] Theoretically, negative GVA is possible as a result of intermediate inputs exceeding the enterprise's output. Care should be taken in dealing with negative GVA figures.

Table 2.13 Summary Statistics of Survey Weights by Phase 2 Sector, After Trimming: The Philippines

Industry	No. of Sampled HUEMs	Minimum	Mean	Maximum	Standard Deviation	CV (%)	1 + CV²
Agriculture	653	1,761	7,448	10,320	3,211	43	1.19
Fishing	244	867	3,337	3,910	1,032	31	1.10
Mining and quarrying	48	404	900	2,730	482	54	1.29
Manufacturing	304	551	1,979	3,730	802	41	1.16
Electricity, gas, and water	...	...	...	...	...	...	...
Construction	54	1,364	2,249	4,170	548	24	1.06
Wholesale and retail trade	1,033	727	3,136	5,310	1,363	43	1.19
Hotels and restaurants	79	637	1,978	3,290	762	39	1.15
Transport, communication, and storage	333	1,000	3,348	5,490	1,447	43	1.19
Financial intermediation	9	558	1,574	2,880	712	45	1.20
Real estate	55	1,022	2,069	3,520	542	26	1.07
Education	7	1,007	1,171	1,356	125	11	1.01
Health	17	676	1,985	3,490	683	34	1.12
Other community and social services	137	934	2,172	4,010	842	39	1.15

... = no observation/no data available, CV = coefficient of variation, HUEM = household unincorporated enterprises with at least some market production.

Table 2.14 Summary Statistics of Survey Weights by Phase 2 Sector, by Province: Indonesia

Industry	No. of Sampled HUEMs	Minimum	Mean	Maximum	Standard Deviation	1+CV²
Banten						
Agriculture	689	386	890	2,877	518	1.34
Construction	1	421	421	421	...	...
Education	6	395	681	1,364	353	1.27
Financial intermediation	10	394	518	1,364	298	1.33
Health	2	394	408	421	19	1.00
Hotels and restaurants	93	386	691	1,947	429	1.39
Manufacturing	123	386	658	1,884	389	1.35
Mining and quarrying	24	409	544	928	191	1.12
Other Services	62	386	816	2,781	525	1.41
Transport, communication, and storage	43	394	825	2,781	602	1.53
Wholesale and retail trade	232	386	805	2,781	509	1.40
Yogyakarta						
Agriculture	76	880	2,293	4,257	1,008	1.19
Construction	3	1,290	2,279	4,257	1,713	1.56
Education	2	1,367	1,393	1,419	37	1.00
Financial intermediation	16	1,151	1,886	3,873	1,068	1.32
Health	4	1,089	1,848	3,798	1,303	1.50
Hotels and restaurants	53	1,089	1,832	4,257	1,070	1.34
Manufacturing	27	880	1,474	3,873	759	1.27
Other Services	52	880	1,578	3,870	801	1.26
Transport, communication, and storage	86	879	1,989	4,575	1,093	1.30
Wholesale and retail trade	226	879	1,836	4,260	1,037	1.32

... = no observation/no data available, CV = coefficient of variation, HUEM = household unincorporated enterprises with at least some market production.

Table 2.15 Armenia's Informal Sector Survey Base Weights

Industry	No. of Sampled HUEMs	Minimum	Mean	Median	Maximum	Standard Deviation	1 + CV²
Agriculture	353	26	240	78	1,539	430	4.21
Manufacturing	47	26	173	74	1,547	328	4.57
Construction	40	26	192	105	1,539	327	3.90
Wholesale and retail trade	45	26	175	102	360	129	1.54
Transport, communication, and storage	26	26	125	105	345	101	1.65
Real estate	1	360	360	360	360	...	...
Education	7	26	103	89	190	65	1.39
Health	2	29	54	54	78	34	1.41
Other community social and personal service	27	26	148	45	1,364	267	4.25
Total	**548**	**26**	**213**	**82**	**1,547**	**378**	**4.13**

... = no observation/no data available, CV = coefficient of variation, HUEM = household unincorporated enterprises with at least some market production.
Source: Authors' estimates using Informal Sector Survey data.

Table 2.16 Armenia's Final Informal Sector Survey Weights

Industry	No. of Sampled HUEMs	Minimum	Mean	Median	Maximum	Standard Deviation	$1 + CV^2$
Agriculture	353	91	541	509	1,084	317	1.34
Manufacturing	47	10	70	38	372	94	2.82
Construction	40	44	230	178	601	182	1.62
Wholesale and retails trade	45	41	270	243	498	183	1.46
Transport, communication, and storage	26	34	205	185	463	162	1.62
Real estate	1	360	360	360	360		
Education	7	26	103	89	190	65	1.39
Health	2	29	54	54	78	34	1.41
Other community social and personal service	27	48	185	74	579	199	2.16
Total	**548**	**10**	**414**	**361**	**1,084**	**323**	**1.61**

CV = coefficient of variation, HUEM = household unincorporated enterprises with at least some market production.
Source: Authors' computations using Informal Sector Survey data of Armenia.

Detection of possible encoding errors or data inconsistencies is the primary step in data cleaning. A good way to start is to prepare tables of descriptive statistics for all the major variables, by neighborhood. The concept of neighborhood is discussed in the following section.

2.10 Statistical Neighbors

Most of the imputation procedures discussed throughout this document make extensive use of the concept of statistical neighbors. Since enterprise efficiency is usually influenced by size, ownership, location, and seasonality of operation, this information was used in defining neighborhood systems.

In general, we define statistical neighbors as HUEMs engaged in similar types of economic activities, located within a similar geographic domain, more or less operating within similar nature of seasonality (as indicated by business activity fluctuation, whether *no activity, minimum, average,* or *maximum*), and falling within the same range of GVA. The number of workers, as an additional criterion in defining neighborhoods, may also be explored.

A strictly specific (or very disaggregated) definition of neighborhood may produce zero cells. Note that the definition of neighborhood provided could be relaxed to contextualize the resulting data from the HUEM survey. For example, enterprises engaged in similar types of economic activities may refer to those falling within the same 2-digit group on the basis of International Standard Industrial Classification when the number of observations under a particular 3-digit group is very small. In the same way, a geographic domain may either refer to a province or a group of provinces with similar characteristics.

While data discrepancies or questionable data entries may be identified using automated procedures available from most of the existing database software (e.g., box plots for outliers), it is also useful to apply manual examination of the data carefully. Using a hypothetical monetary currency, Example 2.1 explains this procedure.

On the other hand, imputation is the process of replacing missing or questionable data entries (e.g., unreasonable outlying values) with plausible values, using either deterministic or stochastic methods. As much as possible, imputations must be at a minimum such that the distribution of the major variables is not significantly affected by these revisions. Ideally, good imputation techniques preserve structural relationships among the major variables while minimizing non-response bias. Deterministic imputation methods (e.g., mean value imputation, the sequential hot deck method, and nearest neighbor imputation) are usually simple to implement but may perform poorly when non-response is not random, leading to reduction in the variation of variable of interest or distortion of distributions. Stochastic methods (e.g., the random hot deck method or generalized edit and imputation system) are combinations of the deterministic methods geared toward preserving the distribution and variability of the variables under consideration.Table 2.17 summarizes these imputation methods.

Be it a deterministic or stochastic method, it must be emphasized that all imputation procedures must be comprehensively documented for future reference.

The following examples illustrate the procedures for data imputation using the concept of statistical neighbors.

Example 2.1

Consider a HUEM owner engaged in planting of vegetables. At the beginning of the reference period, the HUEM owner bought seeds as raw materials, amounting to X in monetary units. He also bought fertilizer amounting to Y. Before the end of the reference period, the HUEM owner was able to sell vegetables amounting to Z in monetary units. The survey enumerator recorded the production activity as follows:

C.3. Products sold without transformation					D2. For products sold without transformation, how much did you spend to buy stocks?				
Agriculture					Agriculture				
No.	Kind/ Name of Item	Quantity	Unit	Total Value	No.	Kind/ Name of Item	Quantity	Unit	Total Value
1	rice	20	sacks	15,000	1	seeds	10	pack	3,000
2					2	Fertilizer	3	kilogram	1,500
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
C.3.1. Total (last 6 months)				15,000	D.2.1. Total (last 6 months)				4,500

Ideally, since seeds and fertilizer were used as inputs, these should have been recorded under "D.1 How much did you spend on raw materials used for your business over the specified period?". Had this error been overlooked (let's refer to this as scenario 1), the value of output, using the formula discussed in Chapter 3, would be equal to 15,000 – 3,000 – 1,500 while intermediate inputs would be zero. If corrected (scenario 2), the value of output would be 15,000, and the intermediate input would be 3,000 + 1,500. Either way, gross value added (GVA) would be equal to 10,500. Detection of such encoding errors may not be an easy task using automated diagnostic tools especially since this will result in the same GVA. But, if we are using concepts such as gross value added ratio (GVAR), this may be such a problem since in scenario 1, GVAR = 1 while in scenario 2, GVAR = 10,500/15,000 = 0.7.

Table 2.17 Imputation Techniques

Imputation Method	Approach	Remarks
Mean value imputation	Replaces the missing value with mean of reported values for the specific imputation class	Tends to preserve respondent means but may destroy multivariate relationships
Sequential hot deck method	Replaces the missing value with the value from the last corresponding unit preceding in the data	The data should be sequentially ordered (usually in terms of geography and major variables)
Nearest-neighbor imputation	Replaces the missing value with the entry of the nearest neighbor	Nearest neighbor is identified using some distance function which minimizes the distance between the respondent with the missing value and the surrounding neighborhood
Random hot deck method	Replaces the missing value with the value from the last corresponding unit preceding in the data, plus some random residual	Uses statistical models that establish relationship between the variable of interest and some auxiliary variables within the imputation class
Generalized Edit and Imputation System	Replaces the missing value using one or combination of the previous approaches	Not all missing values are imputed; the number of imputations is minimized by following some matrix algorithm, such as the Chernikova algorithm

Example 2.2

For simplicity, suppose we encounter missing intermediate inputs (or outputs), we may combine the mean value and nearest neighbor approaches to impute. In the case of informal sector survey, we may consider the nearest neighbor as the respondent(s) who are engaged in the same economic activity (following 3 or 4 digit of industry classification) within the same geographic domain. Note that we can also add another criterion in identifying the neighbors. We could use the average ratio of intermediate inputs to outputs (or output to intermediate inputs) computed from the nearest neighbor. Or, if both intermediate inputs and outputs are missing, we can use the average levels computed from the nearest neighbor.

Respondent	Sales	Intermediate Consumption	Ratio of Intermediate Consumption to Revenue
HUEM 1	46,565,678	46,531,113	0.9993
HUEM 2	56,315,473	55,580,973	0.9870
HUEM 3	14,614,563	14,548,797	0.9955
HUEM 4	36,357,812	...	...
HUEM 5	45,856,580	38,433,000	0.8436

... = no observations/no data available, HUEM = household unincorporated enterprise with at least some market production.
Note: Ratios in the example have been rounded-off but imputations will be more precise if actual values are used.

Note that we could also follow a similar approach when we encounter a data entry that falls outside the expected logical boundary. Further, imputations may not only be limited to missing values. In some cases, variables taking a value of zero may need to be imputed. For instance, cases where intermediate inputs and outputs are both zero (but it seems there was economic activity during the reference month) should be carefully scrutinized. In doing so, the type of economic activity, as well as the concept of seasonality, may have to be taken into consideration.

Respondent	Sales	Intermediate Consumption	Business Activity During Reference Period	Ratio of Intermediate Consumption to Revenue
HUEM 1	90,844,547	20,499,547	maximum	0.2257
HUEM 2	46,565,678	46,531,113	average	0.9993
HUEM 3	56,315,473	55,580,973	average	0.9870
HUEM 4	14,614,563	14,548,797	average	0.9955
HUEM 5	...	...	average	...
HUEM 6	45,856,580	38,433,000	average	0.8436

... = no observations/no data available, HUEM = household unincorporated enterprise with at least some market production.
Note: Ratios in the example have been rounded-off but imputations will be more precise if actual values are used.

Example 2.3

The data on minimum, average, and maximum monthly gross sales may be used to study the nature of seasonality that the HUEM experienced throughout the year. Such information are useful in converting monthly or semestral estimates of the different components of GVA to annual figures.

In the case of the HUEM survey, it is possible to confuse the reference period for the business fluctuation module with the reference period for production and expenditure modules (i.e., past 6 months for agriculture, past month for non-agriculture). Ideally, the data on minimum, average, and maximum gross sales should correspond only for a month. If there are cases when this has not been followed, especially for agriculture, the corresponding monthly estimate should be computed.

In the following example, it is quite noticeable that the reported range of gross sales by HUEM # 3 is quite unusual if we assume that the values are expressed as monthly figures. It is quite likely that these reported values correspond to 6 months. If we have confirmed that such is the case, we can convert the reported values under C.9.1.1, C.9.1.2, and C.9.1.3 of HUEM # 3 to monthly figures by dividing them by 6.

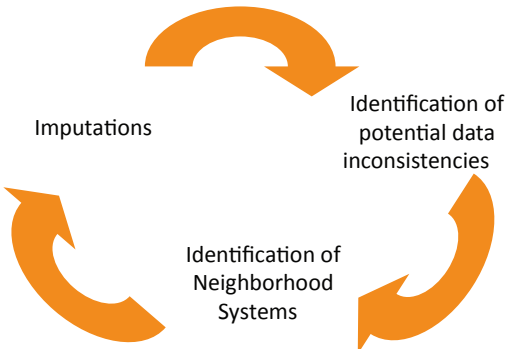
Error in Reporting the Minimum, Average, and Maximum Monthly Sales/Revenue

HUEMs	Sales (for the last 6 months)	Minimum, Average, and Maximum Gross Sales		
		C.9.1.1 (Minimum sale)	C.9.1.2 (Average sale)	C.9.1.3 (Maximum sale)
HUEM 1	1,203,254	200,000	550,000	750,000
HUEM 2	31,238,489	5,300,000	6,000,000	10,000,000
HUEM 3	25,974,121	25,900,000	35,000,000	50,000,000
HUEM 4	53,908,202	4,000,000	9,000,000	15,000,000
HUEM 5	17,506,651	2,000,000	3,000,000	5,000,000

HUEM = household unincorporated enterprise with at least some market production.

Data cleaning is a continuous process, that is, while it is one of the first steps in data processing, it may still be needed in the middle of data analysis or any other step in the whole process of estimation. Data cleaning should be conducted as long as data inconsistencies are encountered. Figure 2.5 illustrates this process and emphasizes on the circular flow of activities, from the identification of potential data inconsistencies to the determination of neighborhood systems to the application of imputations. The cycle is repeated as long as inconsistencies are observed.

Figure 2.5 Data Cleaning Process



Chapter 3
Measuring and Analyzing Informal Employment

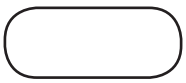
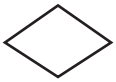
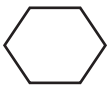
3.1 Road Map

Measuring informal employment using the phase 1 data of the 1–2 mixed survey involves intensive investigation and understanding of the dataset itself. The essence of the methodology is the identification of reliable variables and conditions to apply in distinguishing formal and informal jobs and in classifying the production units these jobs are engaged at. The highlight, therefore, of the technique is the generation of decision matrices. This is achieved through the application of iterative procedures, in combination with the knowledge of labor concepts and consideration of local or country-specific practices. Thus, while a general framework of the informal employment and informal establishment decision matrices can be formulated, each country may be considered a different case.

This section presents the flowcharts that outline the methodology. Figure 3.1 aptly illustrates the iterations in the procedure and may serve as a guide on how to formulate the decision matrices. Applications of the methodology and generation of informal sector statistics are discussed throughout the chapter.

Table 3.1 presents the symbols used in the process flowchart and their corresponding interpretations.

Table 3.1 Flowchart Symbols and Definitions

Symbol	Definition
 Start/end	Specifies the beginning and ending of the flowchart
 Process	Indicates a major stage or step in the process
 System process	Used to represent a system process involved in the major stage or step of the main process. The number indicates the stage or step number in the main flowchart
 System process flowchart	Presents the separate system flowchart involved in the major stage or step of the process. The number identifies the stage of the system process in the main process
	Denotes a decision point where alternative paths are possible
 Document	Indicates the use of a document or the reference material. For example, if Chapter 3 is written, then the task on hand is explained in Chapter 3
Connector	Represents the next stage or step in the process
Broken Connector	Represents the next stage or step in the process whose implementation depends on special cases or circumstances
 Preparation	Implies data preparation
 Data	Indicates data results
	Presents the special system flowchart whose implementation depends on special cases or circumstances

3.2 Overview of Informal Employment

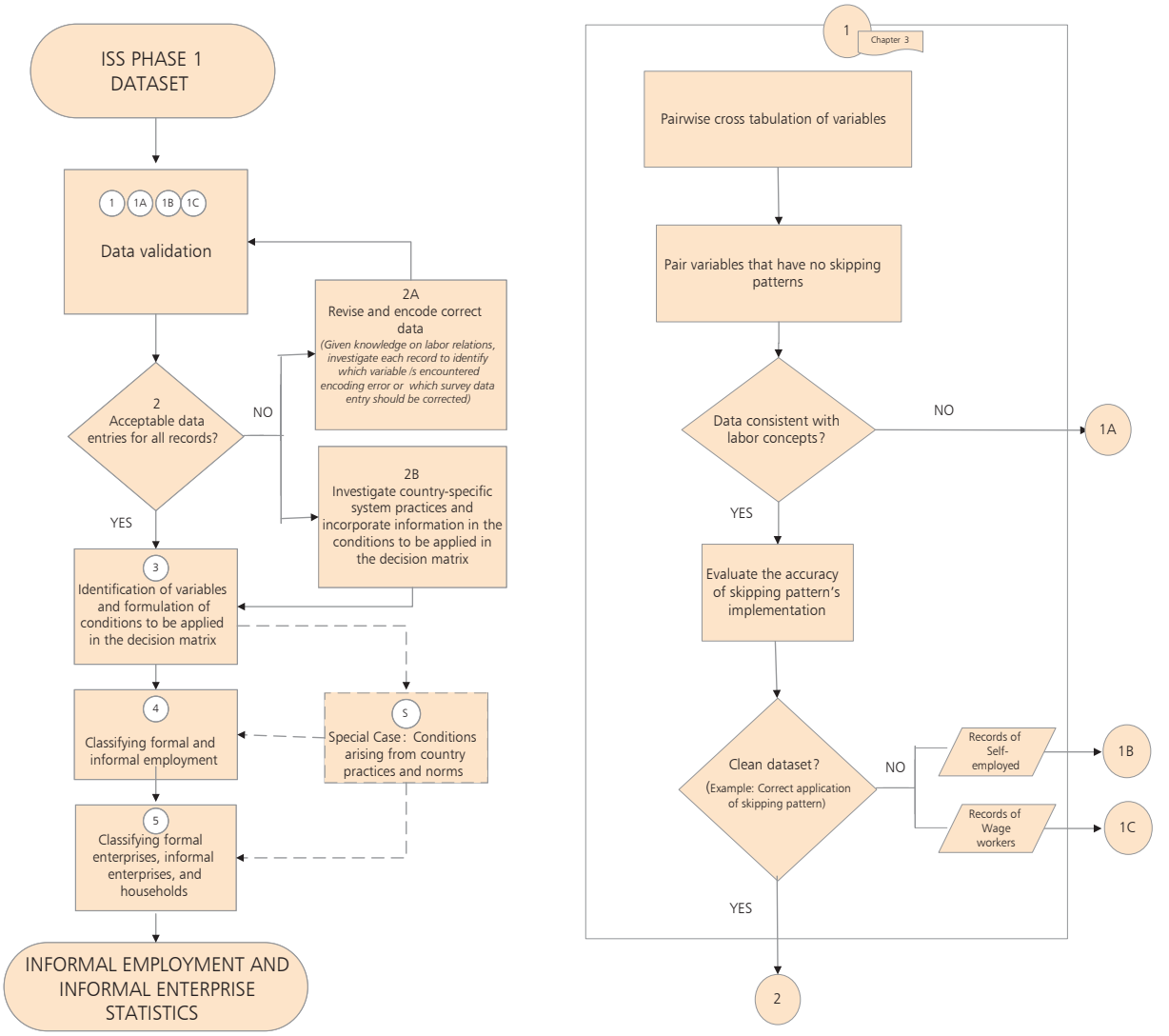
Informal employment has remained a vital source of jobs for the labor force population, particularly in developing countries where market economies are growing. As production moves from large registered enterprises to more decentralized, flexible, and specialized units, a significant number of regular full-time jobs are implicitly being transformed into jobs that are characterized by informal arrangements (International Labour Organization's [ILO] *Manual*

on Surveys of Informal Employment and Informal Sector). The types of arrangements these jobs have vary increasingly through time, thus, complicating the measurement of informal employment.

Labor force surveys (LFS) remain the most intuitive data source for measuring different employment statistics. The fact that the survey covers different types of jobs ranging from permanent to temporary and casual jobs, makes it a viable source of statistics on informal employment. In particular, by collecting information on both primary and secondary jobs and adding indicators that can be used to infer the nature of employment arrangement, informal employment can be estimated from an expanded labor force survey (eLFS).

This chapter provides detailed discussion of the operational methodology for estimating informal employment using the eLFS from the mixed survey approach. The techniques outlined are data intensive in the sense that consistency checks of the interrelationships between the variables, which will serve as indicators of nature of employment, are indispensable. The chapter also provides examples of analyses that can be facilitated using the survey results.

Figure 3.1 Informal Employment and Informal Establishment Estimation Process Flow



ISS = informal sector survey

Figure 3.1 continued on next page

For more academic discussions of measuring informal employment, readers may refer to the latest draft of ILO's *Manual on Surveys of Informal Employment and Informal Sector* (Chapter 4: Household Surveys on Informal Sector Employment and Other Types of Informal Employment).

As a review, according to the 17th International Conference of Labour Statisticians (ICLS) final report,

> since the adoption of the resolution concerning statistics of employment in the informal sector by the 15th ICLS in 1993, and the inclusion in the System of National Accounts, 1993, of the 15th ICLS informal sector definition, it had been recommended by the

Figure 3.1 Informal Employment and Informal Establishment Estimation Process Flow *(continued)*

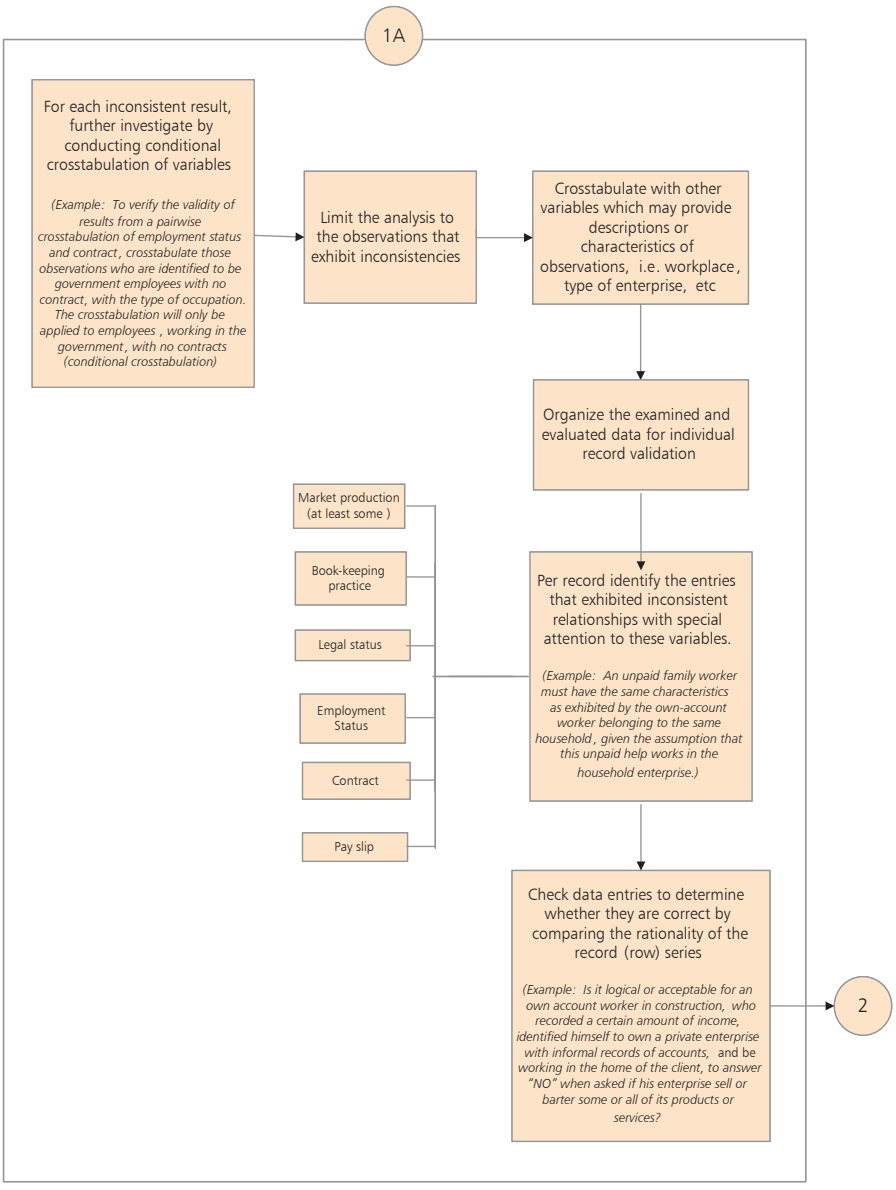


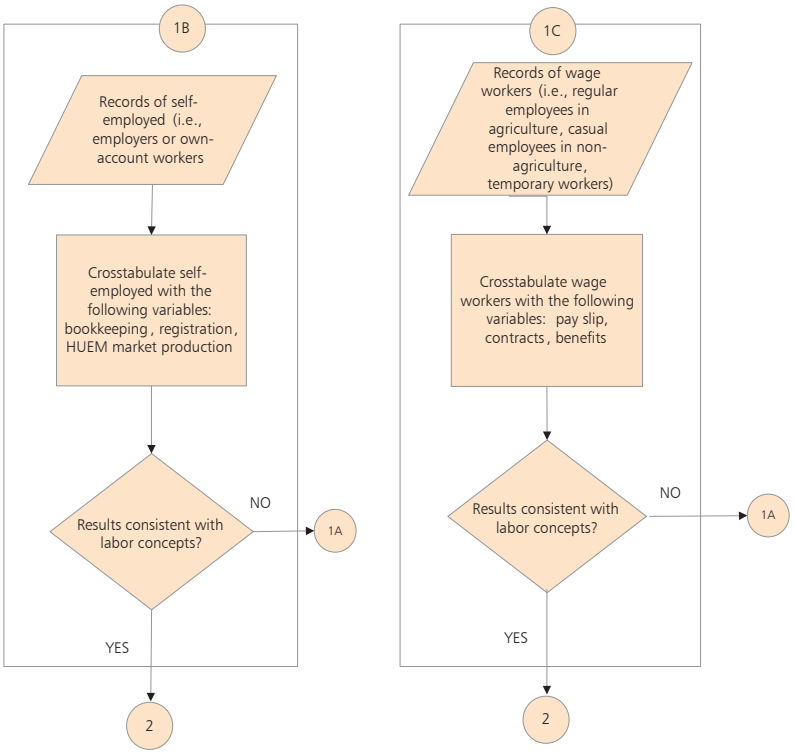
Figure 3.1 continued on next page

Expert Group on Informal Sector Statistics (Delhi Group) and others that the definition and measurement of employment in the informal sector should be complemented with a definition and measurement of informal employment.

Hence, the conceptual framework on informal employment developed by the ILO linked the enterprise-based concept of employment in the informal sector with a broader, job-based concept of informal employment. As a result, clear delineations among (i) employment in the informal economy, (ii) informal employment, (iii) employment in the informal sector, and (iv) informal employment outside the informal sector were established.

Recall the discussions in Chapter 2. While the concept of informal sector refers to production units as observation units, the concept of informal employment refers to jobs as observation units. The framework provided in Figure 2.3 also applied this job-holding estimation for the purpose of statistics on informal employment. In addition, the framework applies the 15th ICLS resolution and excludes households employing paid domestic workers from informal sector enterprises, and treats them separately as part of a category named "households." On the other hand, informal employment comprises the total number of informal jobs, whether carried out in formal sector enterprises, informal sector enterprises, or households, during a given reference period.

Figure 3.1 Informal Employment and Informal Establishment Estimation Process Flow *(continued)*



HUEM = household unincorporated enterprise with at least some market production.

Figure 3.1 continued on next page

Hence, given the conceptual framework, informal employment includes

(i) Own-account workers and employers employed in their own informal sector enterprises. The employment situation of own-account workers and employers can hardly be separated from the type of enterprise, which they own. The informal nature of their jobs follows thus directly from the characteristics of the enterprise.

(ii) Contributing family workers, irrespective of whether they work in formal or informal sector enterprises. The informal nature of their jobs is due to the fact that contributing family workers usually do not have explicit, written contracts of employment, and that usually their employment is not subject to labor legislation, social security regulations, collective agreements, etc.

(iii) Members of informal producers' cooperatives. The informal nature of their jobs follows directly

Figure 3.1 Informal Employment and Informal Establishment Estimation Process Flow *(continued)*

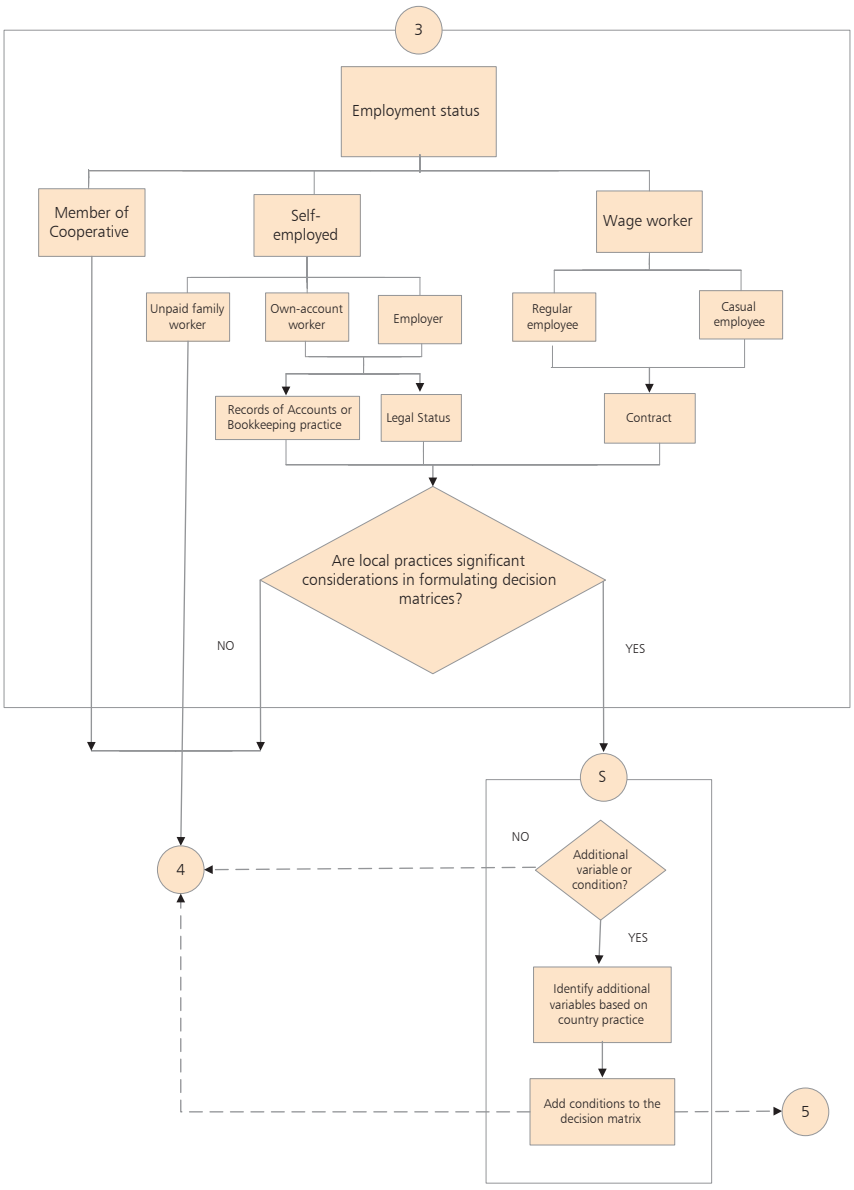


Figure 3.1 continued on next page

from the characteristics of the cooperative of which they are members.

(iv) Employees holding informal jobs in formal sector enterprises, informal sector enterprises, or as paid domestic workers employed by households. Employees are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to national labor legislation, income taxation, social protection, or entitlement to certain employment benefits (advance notice of dismissal, severance pay, paid annual or sick leave, etc.) for reasons, such as 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 labor regulations are not applied, enforced, or complied with for any other reason.

(v) Own-account workers engaged in the production of goods exclusively for own final use by their household (cell 9).

Figure 3.1 Informal Employment and Informal Establishment Estimation Process Flow *(continued)*

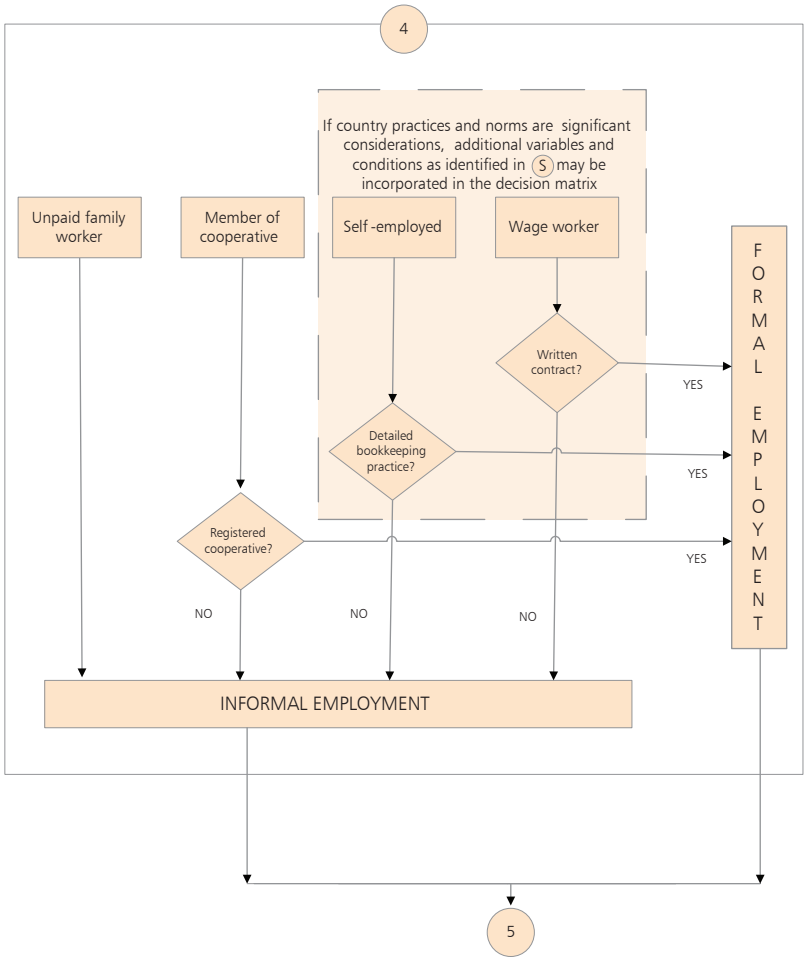


Figure 3.1 continued on next page

The framework also presents the important information of informal employment outside the informal sector, which is comprised by the following types of jobs:

(i) employees holding informal jobs in formal sector enterprises (cell 2) or as paid domestic workers employed by households;

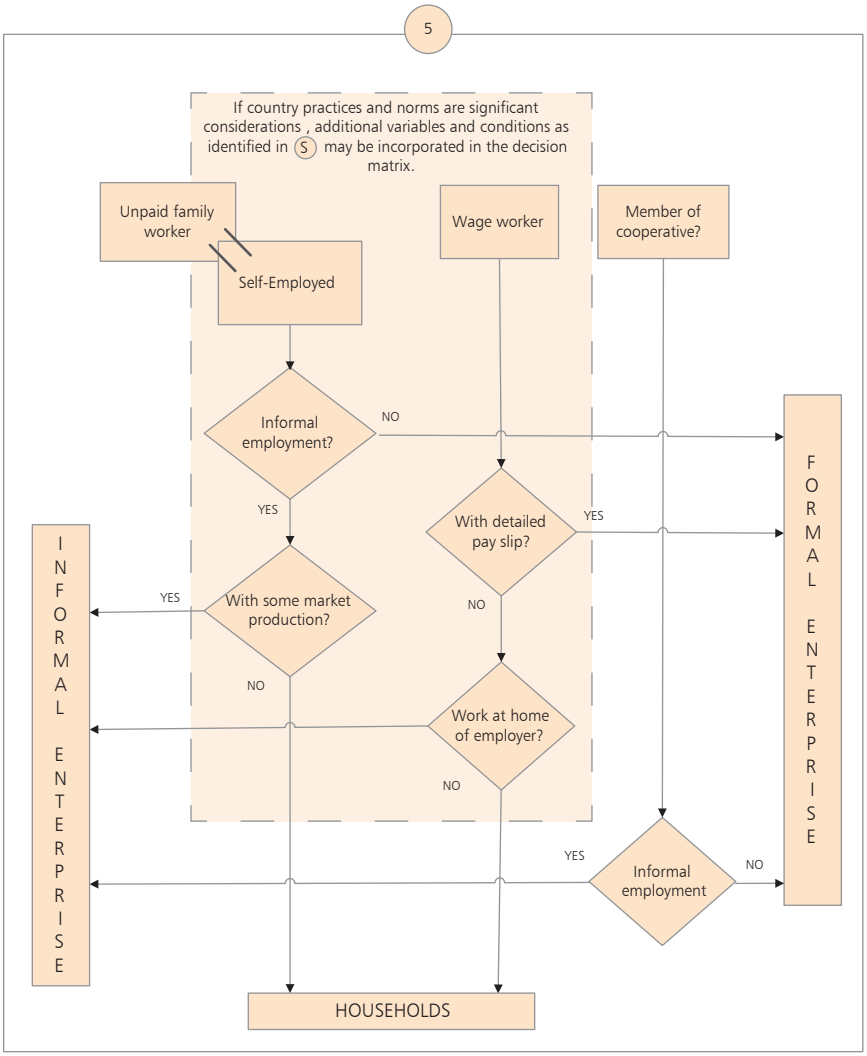
(ii) contributing family workers working in formal sector enterprises; and

(iii) own-account workers engaged in the production of goods exclusively for own final use by their household (cell 9), if considered employed according to the resolution concerning statistics of the economically active population, employment, unemployment, and underemployment adopted by the 13th ICLS.

One significant idea to consider in analyzing the nature of employment is whether informality pertains to persons or jobs. According to the 15th and 17th ICLS, employment in the informal sector is defined as

> comprising all jobs in informal sector enterprises, or all persons who, during a given reference period, were employed in at least one informal sector enterprise, irrespective of their status in employment and whether it was their main or a secondary job …. A person can

Figure 3.1 Informal Employment and Informal Establishment Estimation Process Flow *(continued)*



simultaneously have two or more formal and/or informal jobs. Due to the existence of such multiple jobholding, jobs rather than employed persons were taken as the observation units for employment … informal employment as comprising the total number of informal jobs, whether carried out in formal sector enterprises, informal sector enterprises, or households, during a given reference period (Hussmanns 2004a and 2004b).

Additional concepts have also been introduced by organizations dedicated to endeavors pertaining to the informal economy and informal employment, such as the Women in Informal Employment: Globalizing and Organizing (WIEGO). According to one of the known affiliates of WIEGO, Martha Chen, in her paper entitled, *Rethinking the Informal Economy: Linkages with the Formal Economy and the Formal Regulatory Environment*, while the informal economy consists of a range of informal enterprises and informal jobs, it can still be segmented into the following:

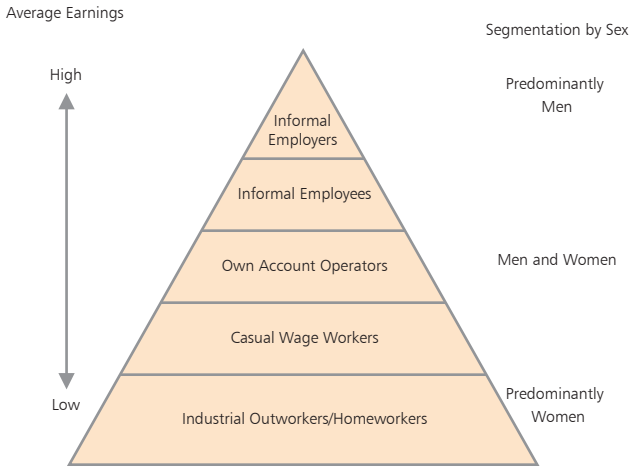
(i) *Self-employment in informal enterprises:* workers in small unregistered or unincorporated enterprises, including
   (a) employers,
   (b) own-account operators: both heads of family enterprises and single person operators, and
   (c) unpaid family workers

(ii) *Wage employment in informal jobs:* workers without worker benefits or social protection who work for formal or informal firms, for households or with no fixed employer, including
   (a) employees of informal enterprises;
   (b) other informal wage workers, such as casual or day laborers, domestic workers, unregistered or undeclared workers, and some temporary or part-time workers; and
   (c) industrial outworkers (also called home workers)

Research also showed distinct characteristics of the informal economy in terms of income earnings and sex of workers. Chen (2007) depicted this in an "iceberg" segmentation of the informal economy, which illustrates the significant gaps in earnings within the informal economy and general trends in men–women employment ratios, as shown in Figure 3.2. Given that the figure represents increasing earnings toward the top, it shows that employers have the highest earnings, followed by their employees and other more "regular" informal wage workers, own-account operators, "casual" informal wage workers, and industrial outworkers. It also demonstrates that, in general, men are likely to be overrepresented in the top segment while women tend to be overrepresented in the bottom segments. However, the shares of men and women in the intermediate segments vary across sectors. These concepts ultimately point to the significant gender disparity in earnings within the informal economy, with men having the advantage over women.

The concepts and ideas presented are the main considerations applied in the estimation and analysis of informal employment in Armenia, Bangladesh, and Indonesia using the eLFS.

Figure 3.2 Segmentation of the Informal Economy



Note: The informal economy may also be segmented by race, ethnicity, or religion.
Source: Chen, M. 2007.

3.3 Classifying Informal and Formal Employment

Identifying whether a job is under a formal or informal arrangement requires intensive data analysis to allow reliable inference on its nature of employment. This section outlines detailed steps undertaken in constructing a "decision matrix" that will distinguish formal from informal jobs based on the key information provided in the survey. In addition, in constructing decision matrices, we also attempt to infer the sector under which the respondent works for, either in the formal enterprises, informal enterprises, or households (subsistence).

3.3.1 Measuring Informal Employment and Informal Enterprises

This section discusses how to distinguish formal from informal jobs. In addition, using other relevant indicators from the eLFS, the type of establishment for which the job is engaged can also be inferred. Using this information, one can also estimate the incidence of informal employment in formal enterprises.

Classifying informal employment using the informal sector survey (ISS) data entails determining the characteristics of the dataset and then applying the ICLS concepts and definitions in consideration of these observed characteristics. The significance of this type of analysis was acquired from the results of Maligalig et al. (2008) in identifying informal employment in Bangladesh using the 2005–2006 Labor Force Survey (LFS). The methodology developed, that is, cross-tabulating variables to determine the properties of the dataset, as well as examining the relationships among them, is also the appropriate process to apply to the phase 1 dataset. Through the series of cross tabulations, the survey questions were examined, the responses validated, and reliable variables to apply in the decision matrixes were identified.

The process of identifying informal employment and informal enterprises also promotes consideration of country-specific customs and norms for an effective formulation of the employment and enterprise decision matrices. Some of the dataset characteristics that the cross tabulations reveal can only be explained and understood if the practices in the countries are well taken into account. The succeeding discussions present the process carried out in constructing these decision matrices.

Indonesia

Table 3.2 shows the combination of questions used for the cross tabulation analysis using the ISS Form1 of Indonesia. Box 3.1 describes how the cross tabulation procedure is implemented.

> The cross tabulations described the type of dataset and the potential variables to consider for the informal employment decision matrix. Cross tabulation is basically a form of validation exercise as it accounts for the rationality of the respondents' answers.

Table 3.2 Combination of Questions from the 2009 Indonesia Informal Sector Survey Used in the Cross Tabulation Analysis

Question	Description		Question	Description
Q.05	Employment status	versus	Q.17	Type of enterprise
Q.05	Employment status	versus	Q.16	Legal status of enterprise
Q.05	Employment status	versus	Q.28	Bookkeeping practice
Q.05	Employment status	versus	Q.07	Type of contract
Q.05	Employment status	versus	Q.29	Type of pay slip
Q.05	Employment status	versus	Q.27	Market enterprise (sell goods or services)
Q.07	Type of contract	versus	Q.29	Type of pay slip
Q.14	Place of work	versus	Q.17	Type of enterprise
Q.14	Place of work	versus	Q.16	Legal status of enterprise
Q.28	Bookkeeping practice	versus	Q.22-25	Registration of enterprise
Q.28	Bookkeeping practice	versus	Q.16	Legal status of enterprise
Q.16	Legal status of enterprise	versus	Q.22-25	Registration of enterprise
Q.16	Legal status of enterprise	versus	Q.29	Type of pay slip
Q.29	Type of pay slip	versus	Q.18	Employment size

Source: Indonesia Informal Sector Survey Questionnaire

Table 3.3 Employment Status and Type of Enterprise Cross Tabulation

Employment Status	Type of Enterprise								
	Factory or Plantation	Bank or Insurance Company	Restaurant/ Commercial/ Service Chain	Construction Company	Hospital/ School	Engineering Firm	Farm/ Small Workshop/ Garage	Others	Total
Own-account	64	0	184	23	10	6	394	404	1,085
Employer assisted temporary worker	44	0	51	2	0	1	541	211	850
Employer assisted permanent worker	20	0	37	4	0	1	88	23	173
Employee	465	41	403	89	163	33	166	429	1,789
Casual employee in agriculture	13	0	1	0	0	0	110	26	150
Casual employee in non-agriculture	27	0	33	87	5	5	35	143	335
Unpaid worker	45	0	53	1	1	0	444	198	742
Total	678	41	762	206	179	46	1,778	1,434	5,124

Table 3.4 Place of Work and Type of Enterprise Cross Tabulation

Place of Work	Type of Enterprise								
	Factory or Plantation	Bank or Insurance Company	Restaurant/ Commercial/ Service Chain	Construction Company	Hospital/ School	Engineering Firm	Farm/ Small Workshop/ Garage	Others	Total
Home with no work space	99	1	119	3	4	4	129	172	531
Home with work space	29	0	31	4	1	1	102	56	224
Fixed location away from home	360	21	300	35	91	20	373	481	1,681
Farm	37	0	13	5	2	2	816	103	978
Workplace of client	5	2	15	3	4	1	23	38	91
Construction site	72	13	81	130	38	11	12	103	460
Market	2	0	27	5	1	0	146	45	226
Street	3	1	33	1	2	0	79	51	170
Employer's home	25	0	37	6	0	1	17	95	181
Others	6	0	25	2	0	0	3	39	75
Vehicle	19	0	53	8	0	4	66	143	293
No fixed location/ mobile	21	3	28	4	36	2	12	108	214
Total	678	41	762	206	179	46	1,778	1,434	5,124

There are also instances when combinations of three or four variables were cross tabulated to further validate the inconsistencies and understand the source of the problem. For example, to confirm whether the hypothesis that the enumerators, as well as the respondents, misinterpreted the type of enterprise question, the employment and legal status of those working at home with no work space (place of work) and with a factory/plantation (type of enterprise) were tabulated, hence, the conditional cross tabulations (Tables 3.3 and 3.4). This is in response to the observations on the employment status versus type of enterprise and place of work versus type of enterprise cross tabulations. This investigation showed a number of self-employed (own-account and employers) respondents who are single proprietors that worked at home but have a factory or plantation type of enterprise. These results provide contradictory conclusions. First, a self-employed person cannot have a plantation or factory type of enterprise since he or she is a single worker in the business. And second, it is difficult to imagine a factory or plantation enterprise with the home of the owner as the workplace of the same business.

Similar inconsistencies were also observed in other multivariate or conditional cross tabulations, which may have stemmed from the unfamiliarity of enumerators and respondents with some concepts, and the misinterpretations of the questions. These are to be expected since the ISS is a new survey; hence, analyzing the dataset would require additional care and attention.

Box 3.1 Cross Tabulation Results of the 2009 Indonesia ISS1

The skipping pattern was strictly implemented to the bookkeeping query such that only own-account, employers, and unpaid family workers answer this question (Box Table 1). It can also be observed that there are five unpaid family workers who are working in enterprises that have detailed formal accounts. Based on the International Conference of Labour Statisticians (ICLS) framework, while contributing/unpaid family workers are automatically classified as informally employed, it is possible for this kind of worker to work in formal enterprises. Thus, these five observations may still present correct information.

Box Table 1 Employment Status and Bookkeeping Practice Cross Tabulation

Employment Status	Bookkeeping Practice					
	No Written Accounts	Informal Records for Personal Use	Simplified Accounting for Tax Payment	Detailed Formal Accounts	Others	Total
Own-account worker	894	180	4	5	2	1,085
Employer with temporary workers	758	84	4	3	1	850
Employer with permanent workers	94	55	2	22	0	173
Unpaid family worker	649	76	12	5	0	742
Total	2,395	395	22	35	3	2,850

The skipping pattern was also strictly implemented to survey questions relating to the type of contracts and kinds of pay slip received by workers (Box Tables 2 and 3). The contract and pay slip queries were inquired from all 2,274 wage workers—employees and casual workers. This shows that the collected data is "clean" or consistent with respect to the two variables. The questions were asked from the appropriate respondents.

Box Table 2 Employment Status and Type of Contract

Employment Status	Type of Contract			
	Written Contract	Verbal Contract	No Contract	Total
Employee	812	145	832	1,789
Casual employee in agriculture	4	11	135	150
Casual employee in non-agriculture	10	33	292	335
Total	826	189	1,259	2,274

Box Table 3 Employment Status and Type of Pay Slip

Employment Status	Kind of Pay slip			
	Yes, Complete Information	Yes, Simple Pay Slip	No Pay Slip	Total
Employee	988	280	521	1,789
Casual employee in agriculture	12	11	127	150
Casual employee in non-agriculture	28	35	272	335
Total	1,028	326	920	2,274

While there are no problems in terms of queries being administered to the correct respondents, Box Table 4 shows that there is a need to further analyze the results when the contract and pay slip variables are combined. The existence of a written contract signifies formality of employment. Meanwhile, the detailed pay slip received indicates formality of the enterprise in which an employee works; it signifies a formal accounting practice. In the absence of the contract variable, pay slips are sometimes used as a substitute condition to determine whether a person is formally or informally employed. But, as mentioned, it is more reflective of the nature of the establishment rather than that of the workers. This distinction is evident in Box Table 4. There are workers with written contracts, but they only receive simple pay slips, or none at all. Conversely, there are respondents who receive pay slips with complete information but they are only engaged in verbal contracts, or none at all.

Box Table 4 Type of Contract and Pay Slip

Type of Contract	Kind of Pay Slip			
	Yes, Complete Information	Yes, Simple Pay Slip	No Pay Slip	Total
Written contract	681	93	52	826
Verbal contract	37	54	98	189
No contract	310	179	770	1,259
Total	1,028	326	920	2,274

At first glance, these results seem to be inconsistent. However, analysis using the ICLS framework on informal employment provides justification for the data collected. According to the ICLS, there are formal enterprises that employ workers informally. This is associated with informal employment outside the informal sector. On the other hand, it is also possible that informal enterprises hire workers formally. This is categorized as employment in the informal sector. Furthermore, households are defined to employ workers either formally or informally.

(Box 3.1 continued on next page)

Box 3.1 Cross Tabulation Results of the 2009 Indonesia ISS1 *(continued)*

Among those workers with no contract but who receive pay slips with detailed information, 37 (12%) are casual employees (Box Table 5). This class of workers is typically associated with informal employment, especially those who are engaged in agriculture. These results place uncertainty on whether the pay slip variable would be a reliable condition to apply in determining the formality or informality of employment, but not in identifying the nature of the establishment.

These results point to the distinction of using the contract and pay slip variables. Both are strong conditions to apply; however, it seems like they need not be combined, but should be used separately—contract for employment and pay slip for establishment.

Box Table 5 Type of Pay Slip Received by Workers with No Contract

Employment Status	Type of Pay Slip			
	Yes, Complete Information	Yes, Simple Pay Slip	No Pay Slip	Total
Employee	273	140	419	**832**
Casual employee in agriculture	12	11	112	**135**
Casual employee in non-agriculture	25	28	239	**292**
Total	**310**	**179**	**770**	**1,259**

In analyzing the conclusions implied by the cross tabulations, it is imperative that the customs and norms in the country are consulted whenever some inconsistencies are observed. One critical case in Indonesia is the familiarization of government employees with the term "contract." It was observed that there was a number of government employees with no written contract. At first, this was construed as the same case as in the Philippines where some casual employees were employed by local government projects with no written agreement. This is particularly common at the *barangay* (village—the smallest administrative unit in the Philippines) level in the provinces. Upon consultation with the BPS-Indonesia, it was learned that such arrangements in Indonesia are not common, and that a more probable explanation for the results is the unfamiliarity of the respondents with the term "contract." Government employees are provided with "certificates," which is actually the same concept as the written contract inquired about in the questionnaire. But because the ISS 2009 questionnaire was not able to adopt the local terminologies, there has been a misinterpretation of the query.

Classification of enterprises requires the application of the ICLS conceptual framework, which identified the three types of production unit: formal enterprises, informal enterprises, and households. Determining the workers that are employed in households poses difficulty since no single variable or answer choice from the questionnaire may be used. Typically, this variable is available in the employment status query, like that in the Philippines, through the answer choice of "*worked in private households*." On the other hand, Armenia can identify the households using the legal status variable answer choice "*private household employing domestic staff*."

One of the variables deemed critical in identifying the households in Indonesia is the query "*Does the enterprise you own sell its goods or services?*" since households are defined in the framework to be producing exclusively for their own consumption. However, this is deemed insufficient to isolate the employees working as domestic staff in households; thus, another condition was applied. The additional variable "*place of work,*" specifically those working in the "*employer's home,*" was evaluated to be useful for this purpose.

Another significant finding from the cross tabulations involving the market production query suggested caution in using the variable "*Does the enterprise you own sell its goods or services?*" Results implied that there may be respondents who did not fully understand the question in relation to their type of work. For example, the respondents who work in corporations and receive detailed pay slips may be employed in a construction company which, in the view of the employee, does not sell any tangible product. Technically, the company "sells" its services to the agency, people, or other companies that hire them. But, for an ordinary employee, this concept may not be grasped easily. Hence, when asked if the enterprise sells any of its products or services,

the respondent may have answered "*No*." The same reasoning is hypothesized for those own-account workers and employers who answered "*No*" to the query yet exhibited qualities of owning market-producing enterprises, such as a self-employed worker reporting income during the reference period, and/or an enterprise engaging paid employees for the production during the reference period. The enterprise may have been providing services, which is typically not associated with "selling" of products.

Thus, given the results of the cross tabulations, the dataset was revalidated to determine the consistency of the answers to the "selling" query with the other variables that make up the characteristics of each observation. Individual analysis and evaluation of the observations (which answered "*No*" to the selling question) were conducted and records were revised based on the examination. After each cycle of revisions, the variables were again evaluated. The process was reiterated until no inconsistency was observed when the variables were cross tabulated.

As mentioned earlier, while identification of the variables to be included in the decision matrices is based on the 15th and 17th ICLS definitions of informal employment and informal enterprises, the characteristics of the dataset itself and the local practices are also taken into consideration. To illustrate, given the emphasis on the registration and size of enterprise variables in defining informal employment and classifying informal enterprises, these two variables were scrutinized. However, analyses of variables through the cross tabulations, showed that they are not reliable conditions for Indonesia. First, about 10%–13% of respondents answered "*Don't know*" to all four registration-related queries. This result is highly influenced by the country's culture, which would mean embarrassment to the enterprise owner whose business is not registered. Given the same argument, the respondent may also say that the business is registered to avoid this embarrassment.[11] These facts were relayed by Indonesian enumerators during consultations and discussions regarding difficulties encountered during the survey. Second, an enterprise may be considered or interpreted by the respondent to be registered in a tax agency or with the local authorities, but does not actually manifest characteristics of a formal enterprise. In Indonesia, a kind of local tax called "retribution tax" is being paid (daily) by vendors to the local government. According to the BPS-Statistics Indonesia staff, respondents may think they are registered in a tax agency if they pay this retribution tax, and answer "*Yes*" to the query. Examination of this particular record may show all characteristics of a unit that is informal, except that the enterprise is registered. It was, therefore, concluded that Asian countries have different concepts about registration of enterprises, especially since these observations are similar to those experienced in the Philippines during the informal sector survey of 2008.[12] In these countries, registration with the local government, the national government, or other government agencies may be required for business operation; however, registration, especially with the local authorities, may only imply a permit to put up a business and does not necessarily make a unit a formal one.[13]

These conclusions are supported by the survey results: of the 2,850 respondents who answered both questions on bookkeeping and registration with the tax agency, only 172 answered that they were registered, and 105 replied that they do not know whether they are registered or not. Of the 172 registered respondents, only 27 said that they have a detailed formal book of accounts. Meanwhile, of the 105 who answered "*Don't know*," 3 had formal bookkeeping practices. The same patterns resulted from the cross tabulations of bookkeeping practice and other variables related to registration. Thus, it was surmised that registration, at least for the Asian countries, is not a reliable condition to apply to the informal employment and informal enterprises decision matrices.

The whole process of determining the properties of the dataset has led to the conclusion that in classifying the informality of employment for own-account workers and employers, the reliable variables are the employment status and bookkeeping practice

[11] The same was experienced in the Philippines during the field operations of the ISS in 2008.

[12] The Philippines ISS 2008 was funded by the United Nations Economic and Social Commission for Asia and the Pacific.

[13] In the Philippines, the owner of a small *sari-sari* store (convenience store selling various basic commodities) would need to register with the *barangay* to be able to operate. However, these units typically do not have formal books of accounts and do not pay taxes as they do not typically reach the minimum level of income required to pay taxes.

of the enterprise, with priority on the following answer choices: (i) no written accounts, (ii) informal records, and (iii) simplified accounting practices. On the other hand, for employees, the employment status and type of contract variables are the significant conditions to apply. Meanwhile, with reference to the ICLS definitions and the results of the cross tabulations, the decision matrix for informal enterprises uses the following variables: employment status, bookkeeping practice, place of work, pay slip, and market enterprise.

These decision matrices are presented in Tables 3.5 to 3.8.

Table 3.5 Decision Matrix for Determining Formal and Informal Employment: Employees and Unpaid Family Workers

Criteria	Employment Status		Contract
Informal employment	Employee	&	Verbal contract
	Casual employee in agriculture	&	No contract
	Casual employee not in agriculture		
	Unpaid workers		
Formal employment	Employee	&	Written contract
	Casual employee in agriculture		
	Casual employee not in agriculture		

Table 3.6 Decision Matrix for Determining Formal and Informal Employment: Own-Account Workers and Employers

Criteria	Employment Status		Records of Accounts
Informal employment	Own-account worker	&	No written accounts
			Informal records for personal use
	Employer assisted by temporary workers or unpaid worker		Simplified accounting format for tax purposes
	Employer assisted by permanent workers		Others
Formal employment	Own account worker	&	With detailed formal accounts
	Employer assisted by temporary workers or unpaid workers		
	Employer assisted by permanent workers		

Table 3.7 Decision Matrix for Classifying Production Units: Own-Account Workers, Employers, and Unpaid Family Workers

Production Unit	Employment Status	Bookkeeping		Sell Good or Service		
Formal enterprise	Own-account worker	&	With detailed formal accounts	&	1	Yes
	Employer assisted by temporary workers					
	Employer assisted by permanent workers					
	Unpaid workers					
Informal enterprise	Own-account worker	&	No written accounts	&	1	Yes
			Informal records for personal use			
	Employer assisted by temporary workers		Simplified accounting format for tax purposes			
	Employer assisted by permanent workers		Others			
	Unpaid workers	&	No written accounts			
			Informal records for personal use			
			Simplified accounting format for tax purposes			
			Others			
Household	Own-account worker	&	No written accounts	&	1	No
			Informal records for personal use			
			Simplified accounting format for tax purposes			
			Others			

Table 3.8 Decision Matrix for Classifying Production Units: Employees (Regular and Casual)

Production Unit	Employment Status	Place of Work		Pay Slip		Sell Good or Service		
Formal enterprise	Employee			&	Yes, with complete information			
	Casual employee in agriculture							
	Casual employee not in agriculture							
Informal enterprise	Employee			&	Yes, with simple pay slip			
	Casual employee in agriculture							
	Casual employee not in agriculture				No			
Household	Employee	&	Employer's home	&	Yes, with simple pay slip	&	2	No
	Casual employee not in agriculture				No			

Box 3.2 Evaluating Variables and Conditions for Classification of Household Production Unit

Production units are defined by the International Conference of Labour Statisticians (ICLS) as formal and informal enterprises and households. Unfortunately, the Informal Sector Survey (ISS) 1 questionnaire does not have a variable that can directly identify household production units. Thus, in examining the variables to consider, the definition of a household in the ICLS framework is applied—households producing goods exclusively for their own final use and households employing paid domestic workers. Using this information, the primary variables cross tabulated were employment status (or class of worker) and the whether the enterprise is selling its goods and services or not (Box Table 1).

Box Table 1 Employment Status and Market Production of Enterprise

Employment Status	Does Enterprise Sell its Goods or Service?		
	Yes	No	Total
Own-account worker	1,008	77	**1,085**
Employer with temporary worker	727	123	**850**
Employer with permanent worker	164	9	**173**
Employee	1,369	420	**1,789**
Casual employee in agriculture	98	52	**150**
Casual employee in non-agriculture	240	95	**335**
Unpaid family worker	670	72	**742**
Total	**4,276**	**848**	**5,124**

At this point, investigation was divided into two parts: first, which is also the focus of the discussion, the own-account workers represented the households producing goods exclusively for their own final use and thus are considered non-market enterprises. Second, the wage workers (employees and casual workers) represented the households employing domestic workers. The exclusion of the employers and unpaid family workers in the analysis was based on the ICLS framework wherein only own-account workers and employee statuses may be present in the household production unit.

Box Table 2 shows the examination of the own-account workers in non-market enterprises. Data seemed to be consistent with the general characteristics of enterprises of own-account workers; that is, they were neither corporations nor cooperatives. Since the investigation involved households, the respondents who are working at home, with or without a work space, were further studied (Box Table 3), specifically with regard to their bookkeeping and tax payment practices. These two accounting variables were taken into consideration for a clearer description of these home-based enterprises.

Box Table 2 Place of Work and Legal Status of Own-Account Workers in Non-Market Enterprises

Place of Work	Legal Status						
	Single Proprietorship	Partnership	Corporation	Cooperatives	Others	Don't Know	Total
Home with no work space	6	0	0	0	3	0	**9**
Home with work space	10	0	0	0	1	0	**11**
Fixed location away from home	22	0	0	0	0	0	**22**
Farm	10	0	0	0	0	1	**11**
Home or workplace of client	2	0	0	0	0	0	**2**
Construction site	0	1	0	0	1	0	**2**
Market	9	0	0	0	0	0	**9**
Street	1	0	0	0	0	1	**2**
Employer's home	1	0	0	0	1	0	**2**
Others	0	0	0	0	0	0	**0**
Vehicle	3	1	0	0	2	0	**6**
No fixed location/mobile	1	0	0	0	0	0	**1**
Total	**65**	**2**	**0**	**0**	**8**	**2**	**77**

Results of Box Table 3's cross tabulation are consistent with non-market enterprises. This suggests that the filtering implemented may have some merit. In order to further understand the characteristics of the data, the cross tabulation of variables was extended to all categories of employment status, which answered the bookkeeping question. Data were also consistent, except for the one observation that indicated its tax payment to be the corporate type (Box Table 4). However, when asked whether the enterprise was registered with any tax agency, the respondent answered "*No,*" which is more in line with the other records for the particular observation. Thus, it is concluded that the registered tax payment is an encoding error.

Given the analysis, the bookkeeping and place of work items for own-account workers of non-market enterprises seem to be acceptable conditions for determining households producing goods or services for own final consumption.

Box Table 3 Bookkeeping and Tax Payment of Non-market Enterprises of Own-account Workers Working at Home

Bookkeeping	Type of Tax Payment	
	No Tax Payment	Total
No written accounts	24	**27**
Informal records	4	**5**
Total	**29**	**33**

Numbers may not sum precisely because of rounding.

Box Table 4 Bookkeeping and Tax Payment of Non-market Enterprises of Own-account Workers, Employers, and Unpaid Family Workers Working at Home

Bookkeeping	Type of Tax Payment				
	No Tax Payment	Corporate Tax	Others	Don't Know	Total
No written accounts	24	0	2	1	**27**
Informal records	4	1	0	0	**5**
Simplified accounting	1	0	0	0	**1**
Total	**29**	**1**	**2**	**1**	**33**

Armenia

The same methodology used on the Indonesia ISS1 was applied to the Armenia dataset. First, it should be noted that the dataset of the Armenia 2009 Integrated Living Conditions Survey (ILCS) Section D[14] is divided into two types of variables: one pertains to the primary job, while the other relates to the second or other jobs. Since the employment status categories of Armenia already incorporate the concept of employment contract, the variable is no longer a separate item in the questionnaire. Moreover, given that the "employee, "as a category of employment status, explicitly identifies the type of contract or agreement which workers are engaged in, it was concluded that there is no employee in Armenia without any kind of contract, written or verbal. Cross tabulations of variables are presented in Table 3.9.

Table 3.9 Combination of Questions from the Section D of the 2009 Integrated Living Conditions Survey Used for the Cross Tabulation Analysis

Question	Description		Question	Description
Q.8	Employment status	versus	Q.9	Type of enterprise
Q.8	Employment status	versus	Q.10	Legal status of enterprise
Q.8	Employment status	versus	Q.43	Bookkeeping practice
Q.8	Employment status	versus	Q.7	Place of work
Q.8	Employment status	versus	Q.34	Type of pay slip
Q.8	Employment status	versus	Q.27	Market enterprise (sell goods or services)
Q.8	Employment status	versus	Q.45	Registration of enterprise
Q.7	Place of work	versus	Q.9	Type of enterprise
Q.7	Place of work	versus	Q.10	Legal status of enterprise
Q.7	Place of work	versus	Q.45	Registration of enterprise
Q.43	Bookkeeping practice	versus	Q.45	Registration of enterprise
Q.43	Bookkeeping practice	versus	Q.10	Legal status of enterprise
Q.10	Legal status of enterprise	versus	Q.45	Registration of enterprise
Q.10	Legal status of enterprise	versus	Q.34	Type of pay slip

Results of the cross tabulations (e.g., employment status versus legal status, etc.) generally showed consistent relationships between the different possible responses. But experience with Indonesia's ISS1 data showed that it is important to completely understand the definitions of answer items, especially if they manifest some deviations from expected relationships. In this case, there are a number of own-account workers who identified their businesses to be joint-stock companies or corporations. Hence, the use and definition of joint-stock company or corporation in Armenia must be clarified to determine whether this situation is really an inconsistency in the data or is actually an acceptable case. The same argument is applied to those own-account observations who identified the registered cooperative as the legal status of their production unit.

On the other hand, the following are examples of cases where combinations of three or four variables were cross tabulated for further examination, a typical case in the conditional cross tabulation exercise. To learn more about these own-account workers (working in companies and registered cooperatives), the employment size of their enterprises and their workplaces were also examined. Results suggest two types of situation. Either the corporation or company answer choice was misinterpreted by respondents since most of them reported that the employment size of the establishment is only less than five, or there is a different definition and concept (than the usual) for corporation or company in Armenia. With regard to the workplace, it is unfortunate that the factory choice was lumped with the office, workshop, and kiosk items, since this cannot be used to verify whether the identified employment size is consistent with the place of work. Nevertheless, cross tabulation of employment status and type of enterprise suggested that the dataset is clean. The tables also illustrate that all government employment is covered by written contracts, whether the arrangement is short or long. In addition, employers or own-account workers only identified either private employer or privately owned enterprise as the type of enterprise where they worked; none registered state-owned, municipals, or nongovernment organizations (NGOs).

[14] The survey covers 12,180 respondents, which is equivalent to 16,679 records of jobs.

Box 3.3 Cross Tabulation Results of the 2009 Armenia (Expanded) Section D of the Integrated Living Conditions Survey

Cross tabulations of the employment status and pay slip showed that the skipping pattern was strictly implemented in the survey. Only the employees, totaling 5,828, answered the pay slip query (Box Table 1). However, since 78.8% of the employees (primary job) answered that they do not receive any pay slip and 53.1% of them work in the government (state-owned and municipal enterprises), further investigation on the relationship between the two variables was conducted.

Box Table1 Employment Status and Pay Slip Cross Tabulation

Employment Status	Primary Job				Second Job			
	Yes, with Complete Information	Yes, Simple Pay Slip	No	Total	Yes, with Complete Information	Yes, Simple Pay Slip	No	Total
Employee with a written contract for long term	188	942	3,007	4,137	0	5	18	23
Employee with a written contract for short term	9	93	557	659	1	1	4	6
Employee with verbal agreement	0	0	1,032	1,032	0	0	15	15
Total	197	1,035	4,596	5,828	1	6	37	44

Of the employees (primary job) who do not receive pay slips, 48% work for the government (Box Table 2). This should prompt caution in succeeding analyses that involve the use of the pay slip variable in classifying formal and informal establishments. Further investigation is required before any conclusion is drawn. The high prevalence of government employees without pay slips is an anomaly since the government is a formal establishment and all of its employees are under formal arrangements (Box Table 3). These observations prompted additional study of the customs in Armenia since they imply that providing pay slips is not a practice in the country. It should be noted that Armenia is a country in transition and that it is still in the early stages of a market economy. Thus, the labor norms in most countries may not yet be present in Armenia's system. Moreover, it is also possible that the respondents are not familiar with the term "pay slip," which could have caused confusion during the interview.

Box Table 2 Type of Enterprise of Employees Who Do Not Receive Pay Slips

Type of Enterprise	Employees Who Do Not Receive Pay Slips	
	Primary Job	Second Job
State-owned	2,060	7
Municipals	145	2
NGOs	45	5
Privately owned	2,259	19
Private employers	87	4
Total	4,596	37

NGO = nongovernment organization.

Box Table 3 Type of Enterprise of Employees

Type of Enterprise	Primary Job				Second Job			
	Employee with a Written Contract for Long Term	Employee with a Written Contract for Short Term	Employee with Verbal Agreement	Total	Employee with a Written Contract for Long Term	Employee with a Written Contract for Short Term	Employee with Verbal Agreement	Total
State-owned	2,690	177	0	2,867	8	2	0	10
Municipals	196	29	0	225	4	0	0	4
NGOs	51	18	0	69	5	1	0	6
Privately owned	1,200	435	945	2,580	6	3	11	20
Private employers	0	0	87	87	0	0	4	4
Total	4,137	659	1,032	5,828	23	6	15	44

NGO = nongovernment organization.

Consultation with staff of the National Statistical Service of the Republic of Armenia clarified the pay slip issue, and it was learned that the first hypothesis is correct (i.e., providing pay slips is not common practice). Given this information, the use of pay slip as one of the conditions for determining the formality or informality of an establishment needs to be reevaluated.

The relationship between bookkeeping and registration of enterprises was also identified through the cross tabulation of variables. Enterprises with complete bookkeeping—a characteristic associated with formal establishments—are all registered. The same is noted among those with simplified legal accounts (Table 3.10). Thus, given the strict implementation of registration in Armenia, this relationship is quite significant, suggesting that a combination of bookkeeping and registration will most likely be among the conditions implemented for identifying formal and informal employment/enterprises among the self-employed. Along this line of thought, the observations registered, which have either complete bookkeeping or simplified legal accounting practices, were further examined to determine if they would manifest inconsistencies with other variables, such as type of enterprise and

Table 3.10 Bookkeeping and Registration Cross Tabulation of Primary Jobs

Bookkeeping	Registration						
	Yes	In the Process of Being Registered	No	Don't Want to Answer	Don't Know	Activity Has Been Implemented in Farm	Total
Complete bookkeeping	50	0	0	0	0	0	**50**
Simplified legal account	147	0	0	0	0	0	**147**
Informal records	0	9	42	5	1	106	**163**
No written accounts	0	8	190	8	2	2,984	**3,192**
Others	6	1	0	0	0	0	**7**
Total	**203**	**18**	**232**	**13**	**3**	**3,090**	**3,559**

legal status. The examination showed that the said observations illustrate characteristics consistent with the concept of formal enterprises.

The analysis of the different variables showed that the skipping pattern was strictly implemented such that the dataset can be considered relatively clean. These results also reflect the effectiveness of the survey operations and data processing by the National Statistical Service of the Republic of Armenia (NSSRA). The summary of the skipping patterns is as follows:

1. Only employees answered the pay slip and benefits questions.

2. Only own-account workers and employers answered the bookkeeping and registration questions.

3. Those who identified state-owned, municipals, and NGOs as their type of enterprises no longer answered the legal status query. Thus, all legal status respondents are from privately owned enterprises and with private employers.

4. Unpaid family workers and members of cooperatives did not answer the pay slip, benefits, bookkeeping, and registration questions.

Thus, the results of the investigation identified the following variables to be considered in formulating the formal–informal employment decision matrix:

1. employees and unpaid family members: employment status;

2. employers and own-account workers: employment status, bookkeeping practice, enterprise registration;

3. members of cooperative: employment status, legal status; and

4. others: employment status, type of enterprise.

Meanwhile, given the outcomes of the cross tabulations and analysis of the data, the following assumptions were formulated and applied in determining the informal enterprise decision matrix:

Box 3.4 Classifying Members of Cooperatives in Armenia

While in general, the results of cross tabulating employment status and employment size showed consistent data, there are some observations that showed questionable characteristics. A case in point is the membership of the three observations in a cooperative, which seems dubious since the size of the establishment is only less than five, much lower than the usual membership of a cooperative. Fortunately, the question on legal status confirmed that these three observations are, indeed, members of the cooperative since they identified the "registered cooperative" as the legal status of their organization. Based on the International Conference of Labour Statisticians framework on informal employment, members of cooperatives assume the classification of their organization. That is, only formal employment exists in formal cooperatives and informal employment in informal cooperatives. With this, the task at hand is to identify the formality of the cooperatives in which they are members. Furthermore, for members of informal producers' cooperatives, the informal nature of their jobs follows directly from the characteristics of the producers' cooperative of which they are members. Provided that regulations in Armenia give heavy consideration to the registration of the enterprise or organization, it can be hypothesized that a registered cooperative is considered to be a formal organization and its members can also be classified as formal.

1. State-owned, municipals, and NGOs are automatically considered formal establishments. Since these are available in the enterprise query, this variable will be included among the conditions.

2. In view of the strict implementation of registration in Armenia, registered cooperatives are considered formal.

3. Using the International Conference of Labour Statisticians (ICLS) framework on informal employment definition of households, respondents with the legal status "private household employing domestic staff" are classified as a household production unit.

4. Also using the ICLS framework, those producing for own consumption are identified as households. Thus, those own-account workers and employers who are confirmed to be "not selling" their goods and services are considered households (with subsistence production).

5. Since the questions answered by unpaid family workers are very limited and not sufficient to identify the nature of the enterprises they work for, the unpaid family worker can assume the type of enterprise to which the own-account or employer family member belongs. This method of classification assumes that the unpaid family worker works in the enterprise of the owner who is a member of the same household. Therefore, they should both have the same type of enterprise. The following are the specific cases under this assumption:

    a. For households with more than one own-account worker, the unpaid family worker will assume the enterprise of the own-account worker with the same activity, place of work, and answer to the "selling of products/services" query. These observations are individually analyzed.

    b. Individual analysis and matching of observations, based on activity, place of work, and answer to the "selling of products/services" query, are also carried out for the following:

        i. Unpaid family worker status of observations in the first job but the corresponding own-account worker status of household member is in the second job.

        ii. Unpaid family worker status of observations in the second job but the corresponding own-account worker status of household member is in the first job.

6. Some own-account workers in Armenia hire paid workers even if the production is for own consumption. The mode of payment for the workers is typically in kind. In the same manner, some unpaid family workers help in the production activities for own consumption. Given that the production of the enterprise is for own consumption and the unit is classified as household, there will be some cases in Armenia wherein the production unit of an unpaid family worker will be the household. This is not in accordance with the ICLS framework, which states that unpaid family workers may only exist in formal or informal enterprises. Hence, specific mention of the practice in Armenia should be provided along with the estimates.

7. Since the provision of pay slips is not a common practice in Armenia, e.g., NSSRA staff do not receive pay slips, this condition will not be applied because the present situation renders it unreliable. However, this can be revisited when conditions in Armenia change.

The analysis of the dataset and the investigation of the cross tabulation results led to the formulation of the decision matrices shown in Tables 3.11 to 3.15.

Table 3.11 Decision Matrix for Determining Formal and Informal Employment: Employees, Unpaid Family Workers, Members of Cooperatives, and Others

Nature of Employment	Employment Status	Legal Status	Type of Enterprise
Formal employment	Employee with long-term written contract		
	Employee with short-term written contract		
	Members of cooperatives	& Registered cooperative	
	Others	& Joint-stock company	or State-owned
		& Registered cooperative	or Municipals
		& Condominium	or NGO
Informal employment	Employee with verbal agreement		
	Unpaid family worker		
	Members of cooperatives	& Individual business	
		& Partnership	
	Others	& Farm	
		& Others	
		& Don't know	

NGO = nongovernment organization.

Table 3.12 Decision Matrix for Determining Formal and Informal Employment: Own-Account Workers and Employers

Nature of Employment	Employment Status	Registration	Bookkeeping
Formal employment	Employer	& Yes	& Complete bookkeeping
	Own-account workers in farm	& Yes	& Simplified legal accounts
	Other own-account workers	& Yes	& Others
Informal employment	Employer	& In the process of being registered	& Informal records
	Own-account workers in farm	& No	& Informal records
		& Don't want to answer	& No written accounts
	Other own-account workers	& Don't know	& No written accounts
		& Activity has been implemented in farm	& Others

Table 3.13 Decision Matrix for Classifying Production Units: Employees, Members of Cooperatives, and Others

Nature of Enterprise	Employment Status	Legal Status	Type of Enterprise	Sell Products and Services
Formal enterprises	Employee with long-term written contract			
	Employee with short-term written contract			
	Employee with verbal contract	& Joint-stock company	or State-owned	
		& Registered cooperative	or Municipals	
	Others	& Condominium	or NGO	
	Member of cooperative	& Registered cooperative		
Informal enterprises	Employee with verbal agreement	& Individual business		& Yes, regularly
		& Partnership		& Yes, regularly
		& Farm		& Yes, from time to time
		& Others		& Yes, from time to time
		& Don't know		& Yes, from time to time
	Others	& Individual business	& Privately-owned enterprise	
		& Partnership	& Privately-owned enterprise	
		& Farm	& Private employer	
		& Others	& Private employer	
		& Don't know	& Private employer	
Households	Employee with verbal agreement	& Private household employing domestic staff		

NGO = nongovernment organization.

Table 3.14 Decision Matrix for Classifying Production Units: Own-Account and Employers

Nature of Employment	Employment Status		Bookkeeping		Registration		Sell Products and Services
Formal enterprise	Employer	&	Complete bookkeeping Simplified legal accounts Others	&	Yes		
	Own-account workers in farm Other own-account workers	&	Complete bookkeeping Simplified legal accounts Others	&	Yes	&	Yes, regularly Yes, from time to time
Informal enterprise	Employer	&	Informal records No written accounts Others	&	In the process of being registered No Don't want to answer Don't know Activity has been implemented in farm		
	Own-account workers in farm Other own-account workers	&	Informal records No written accounts Others	&	In the process of being registered No Don't want to answer Don't know Activity has been implemented in farm	&	Yes, regularly Yes, from time to time
Household	Own-account workers in farm Other own-account workers	&	Informal records No written accounts Others	&	In the process of being registered No Don't want to answer Don't know Activity has been implemented in farm	&	No Don't know

Table 3.15 Decision Matrix for Classifying Production Units: Unpaid Family Workers

Nature of Enterprise	Legal Status		Sells Products and Services
Formal enterprises	Joint-stock company Registered cooperative Condominium		
Informal enterprises	Individual business Partnership Farm Others Don't know	&	Yes, regularly Yes, from time to time
House-holds	Individual business Partnership Farm Others Don't know	&	No Don't know

By identifying the nature of job arrangements of the labor force, we can turn to detailed analyses of the conditions of workers in the informal sector and those who are informally employed using the results from the mixed survey. These may be used as evidence-based guidelines in providing directions for socioeconomic and labor policies. The following sections discuss how the survey data may be useful in providing a clearer picture of informal employment and informal sector in terms of labor market profile, wages, gender differences, social protection coverage, etc.

Box 3.5 Evaluation of Variables: Contracts Versus Benefits Received

In Armenia, labor regulations are strictly observed. It was learned that only those workers with written contracts receive benefits and those with verbal contracts receive none. However, having a written contract does not guarantee that a worker will receive employment benefits. The only conclusion gleaned from the results is that a worker who has a written contract is likely to receive social protection.

A large proportion of workers with written contracts (75.5%) have pension funds paid by their employers; still, not all of them receive pension. Meanwhile, more than half of those who have written contracts received either sick leave or paid leave (or both). This translates to one in every three workers with written contracts who does not receive any of the said benefits. The type of benefit received by the least number of people is maternity or paternity leave, which is received by only 23.9% of workers with written contracts.

Given these results, the contract variable is deemed more important than the variables representing the employment benefits received. Depending on the custom of the country, the receipt of benefits exhibits varying patterns. In the Philippines, which has a culture very similar to that of Indonesia, some households provide a contribution to the Social Security System—the pension fund for workers in the private sector—for their household helpers. These workers generally have no contracts or only have verbal arrangements with their employers and cannot be considered as formal workers. Moreover, there are some arrangements, especially the short-term contracts, in which no pension contributions, sick leaves, or paid leaves are provided to employees. In the Philippines, it is possible for a person not to receive employment benefits provided to regular employees if he or she is still under probationary employment as stipulated in his or her contract (not more than 6 months in duration).

3.4 Labor Market Profile

Operators of informal enterprises are usually characterized as own-account workers, self-employed, or perhaps small-scale employers. On the other hand, depending on the nature of job arrangement, laborers and even company employees may be classified as either formally or informally employed. Workers in some industries, such as agriculture, may have a higher propensity to work with informal arrangement compared to counterparts from a different economic sector. In some cases, the geographic location provides an insight into why a particular economic activity is mostly employing formal or informal workers.

In general, for this type of labor market profile analysis that looks at the differences between formal and informal employment, it is more straightforward to adopt the concept of job as the unit of analysis instead of the person. The motivation behind this is the fact that a person may assume multiple jobs with different arrangements. For example, an employed person can both be formally employed (in his or her primary job) and informally employed (in his or her secondary job). Under this type of framework, total formal employment and total informal employment will not sum to the number of employed persons in the population. Instead, it will correspond to the total number of jobs in the labor market. It is important to emphasize this point because in some cases people tend to confuse the term employment, which refers both to the total employed population and describe informal arrangements. The debate on which unit of analysis to use, whether person or job, is addressed in the 17th ICLS.

According to the 17th ICLS, "informal employment is composed of the total number of informal jobs, whether carried out in formal sector enterprises, informal sector enterprises, or households, during a given reference period." Hussmanns (2004) further states that

> a person can simultaneously have two or more formal and/or informal jobs. Due to the existence of such multiple jobholding, jobs rather than employed persons were taken as the observation units for employment. Employed persons hold jobs that can be described by various job related characteristics, and these jobs are undertaken in production units (enterprises) that can be described by various enterprise-related characteristics.

Analysis of informal employment, therefore, is job- rather than person-oriented; consequently, the total employment estimate, by nature of employment, is naturally greater than the total employed population. Otherwise, we can group the population of employed persons into the following categories: (i) persons with only one job under a formal arrangement, (ii) persons with only one job under an informal arrangement, (iii) persons with multiple jobs that are mostly under formal arrangements, and (iv) persons with multiple jobs that are mostly under informal arrangements. An example of this kind of analysis is presented in Box 3.6.

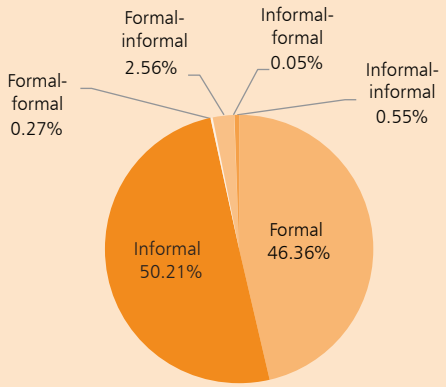
3.5 Comparative Analysis of Wages

A steady stream of income from secure wage employment and entrepreneurial activities serves as armor to cope with economic risks, especially for majority of the labor population in developing countries. Long-term fluctuations in wages and entrepreneurial income, which comprise the bulk of households' resources, can have significant impact on the direction of one's mobility in the economic ladder.

Wages are traditionally perceived as skill premiums; the more skilled the worker is, the higher his or her potential wage. However, studies show that even within a country, these skill premiums vary widely, depending on factors, such as location, demography (e.g., sex, ethnicity, etc.), decentralized labor market policies, among others. In general, when wage received by a person fall short of his or her wage potential, wage inefficiency occurs which, in turn, may lead to wage inequality. Wage inequality can be explained by either an increase in the relative demand for skills, a slowdown in the growth of the relative supply of skilled workers, or erosion of labor market institutions that protect wage workers at the bottom distribution (Moretti 2010). Existing literature also links increasing trade liberalization with the rise in wage inequality. Based on the available data used in compiling the International Labour Organizations's *Global Wage Report 2008–2009*, wage inequality has increased in more than two-thirds of the countries considered in their study.

Box 3.6 A Snapshot of Armenia's Employment Profile in 2009

Box Figure 1 Distribution of Employed Persons, by Nature of Employment: Armenia, 2009

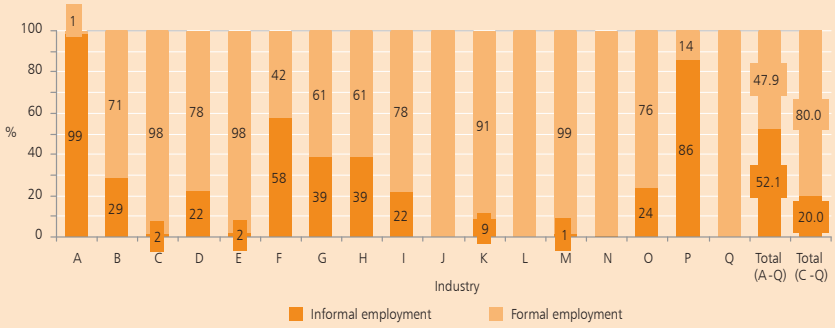


Source: Authors' computations based on the Integrated Living Conditions Survey, 2009.

In the case of Armenia, Section D of the Integrated Living Conditions Survey collected information on both primary and secondary jobs. For simplicity, it is assumed that a person can take at most two jobs. Estimates show that almost 97% of the total employed population relies on a single job; the remaining 3% works in multiple jobs. More than half of total employed population depends solely on informal jobs; 46 out of 100 carry out one formal job. Roughly 2.6% juggles between a formal primary job and an informal secondary job.

The graph shows that there are some industries that generate mostly formal jobs, such as financial intermediation (sector J); public administration, defense, and social security (sector L); and extraterritorial organizations (sector Q). The highest incidence of informal jobs was noted in the agriculture (sector A), private households with employed persons (sector P), and in construction (sector F), at 99%, 86%, and 58% of the total employment, respectively.

Box Figure 2 **Distribution of Employment by Nature of Employment and Industry**



Source: The Informal Sector and Informal Employment in Armenia. National Statistical Service of the Republic of Armenia and ADB. 2010.
Note: A - Agriculture, hunting, and forestry, B - fishing, C - Mining and quarrying, D - Manufacturing, E - Electricity, gas, and water, F - construction, G - Wholesale and retail trade, repairs, etc., H - Hotels and restaurants, I - Transport, storage, and communications, J - Financial intermediation, K - Real estate, renting, and business activities, L - Public administration and defense, social security, M - Education, N - Health and social work, O - Other community, social and personal services, P - private households with employed persons, Q - Extraterritorial organizations

High wage inequality leads to reduced earnings opportunities for a broad spectrum of the workforce (Mishel and Burtless 1995). This distortion in the labor structure, compounded by the limited number of jobs available, makes mobility harder for those at the bottom of the labor force. In particular, for developing countries where there is a surplus of labor, a significant number of job seekers are forced to accept the first opportunity that comes along without due consideration of job security or social benefits. This has several socioeconomic impacts. For example, when unskilled workers take on a disproportionate share of the lower wages, as in the case study of Owen and Yu (2003), productivity is affected. In addition, high wage inequality can also be correlated with increasing household income inequality and vulnerability to economic shocks.

It is operationally useful to examine the relationship of differences in wages and income with respect to the nature of employment. For instance, those at the bottom end of the working population are exposed to informal employment; hence, it is not straightforward to conclude that gains in wages (usually accompanied by a decrease in the probability of employment in the formal sector) make them better off overall (Loewenson 1998), especially when other social protection benefits are not available to them. As discussed earlier, indicators collected from the mixed survey with respect to respondents' primary and secondary jobs (e.g., employment status, the presence of job contracts, pay slips, place of work, and firms' bookkeeping practice) can be used to infer the type of production unit for which an employed person works, including the nature of employment (formal or informal). These data can

be used to generate analytical tables that could be useful in examining the extent at which the nature of employment determines the wage gaps existing between urban and rural areas, males and females across different geographic regions, and agriculture and non-agriculture sectors. An example of the kind of analysis that may be carried out using the results from the mixed survey is provided in Box 3.7.

Box 3.7 Wage/Income Gap Between Formal and Informal Employment

On average, a worker in Armenia earns about 66,511 drams per month (approximately $183). In Indonesia, Yogyakarta's typical worker earns Rp1,092,962 (approximately $122); while in Banten, average earnings per worker is about Rp1,304,547 (approximately $145).

As expected, formally employed workers receive higher earnings than those who work under informal job arrangements. In particular, workers with formal job arrangement in Armenia and Banten earn 1.59 times more than those who are informally employed. In Yogyakarta, the average earnings among the formally employed population are more than twice what informal workers in the province earn.

Survey results also suggest that wage differences between formal and informal employment are relatively high in service-oriented sectors, such as health and social work, and hotels and restaurants.

3.6 Extent of Social Protection

Most of the working poor are engaged in informal employment. Some are engaged in formal enterprises but most are in informal enterprises. Similar to workers in the formal economy, workers in the informal economy also face the same set of risks and/or life events, such as grave illness, disability, maternity, loss of assets, old age, and death. In addition, the working conditions for many informal workers have more risks compared to the working conditions of workers in the formal sector. Their working environment is not usually protected by health and safety legislation. And unlike most of those workers in the formal economy, workers in the informal economy are not likely to have health and social security insurance, disability allowances, or retirement benefits. Because they receive lower wages in general, they are less likely to have savings for emergencies and to hedge against economic risks.

A well-designed social protection system can enable labor markets to match workers with jobs efficiently (Brooks et al. 2010). In addition, efforts to alleviate poverty should be focused on the needs and constraints faced by the working poor in the informal economy. This requires reorientation toward worker-centered economic policies and clear understanding of the linkages between informal employment, social protection, and poverty.

At present, very few national statistical systems in Asia regularly collect data on informal employment and social protection mechanisms: *What is the prevalence of informal employment in the country? Where are these workers? In which industries are they mostly prevalent? How many workers have pension funds? How many workers have paid vacation leave, sick leave, maternity leave, severance pay?* The answers to these questions would surely inform policy and add to the understanding of informal employment. However, labor force surveys (LFS) conducted by national statistical systems do not usually have questions on informal employment and social protection mechanisms. Because there are practically no official (government) statistics on these important issues, there is marginal public awareness of them and, more importantly, design and monitoring of policies and programs are not well-informed. By incorporating an informal employment module, which collects indicators of social protection coverage into the regular LFS questionnaire, a wealth of information can be derived which, in turn, can be used to outline evidence-based socioeconomic policies. In particular, using the data from the expanded Labor Force Survey (eLFS), one can carefully examine whether there are wide gaps between the number of formal and informal workers receiving employment benefits, whether formal employment provides better chances of being given these benefits, and whether there is an advantage of being employed by a formal enterprise, regardless of the nature of the employment arrangement (i.e., whether formally or informally employed by the firm). In general, the survey results can facilitate data-intensive research that can provide valuable inputs for policy and program interventions.

While the concept of social protection spans all categories of employment status, it would seem, after examining the variables collected from the mixed

survey, to be operationally more relevant to concentrate on wage workers. For instance, the application of paid leave or termination pay may hardly be applicable for own-account workers or self-employed individuals.

Asian countries have different concepts about registration of enterprises whether a person is a wage worker or not. Classifying a person entails taking into account information on all jobs assumed by each person. Wage employment is defined as a labor condition in which an employer–employee relationship exists, regardless whether it is considered to be a formal or informal one. Thus, the wage worker classification is typically composed of regular employees, casual employees, temporary workers, domestic workers, or any other employment status reflecting an employer–employee association.

In earlier discussions, Chen (2007) defined wage employment in informal jobs to be workers without worker benefits or social protection who work for formal or informal firms, for households, or with no fixed employer. In the framework presented, they are composed of employees of informal enterprises or other informal wage workers, such as casual or day laborers, domestic workers, unregistered or undeclared workers, some temporary or part-time workers, and industrial outworkers (also called home workers). With regard to the composition of wage workers, Chen's views reflect that of this handbook's concepts. However, they diverge on the treatment of benefits or social protection received. Unlike Chen's informal wage worker definition, receipt of benefits is a possibility here; that is, the presence of social protection does not identify informal employment but only reflects the conditions where it exists.

Determining the wage workers from the ISS1 or the eLFS involves consideration of all jobs of the employed population. This indicator represents all employed people who are classified as employees in one or all of their jobs. Thus, if a person is an employee (regular or casual) in the first job, or is considered to be a wage worker. But if the observation has an employment status other than employee with respect to the first job, then the second job will be considered. If the person is an employee or a casual worker in the second job, then or will also be classified as a wage worker; otherwise, the next job will be considered. This process is followed until the last job of the person has been evaluated.

In cases when a person is classified as an employee in both his or her primary and second jobs, the methodology gives priority to the primary job. Thus, if the person is a formal employee in his or her first job, he or she is classified under formal employment, even if he or she is informally employed in the second job, and vice versa. Table 3.16 further illustrates the process while Box 3.8 provides an example of the kind of social protection analysis that may be carried out using the results from the mixed survey. In particular, it facilitates comparative analysis on the working conditions of wage workers under formal and informal employment in Indonesia.

3.7 Gender Analysis

The paradigm on economic development is multidimensional, and the challenge is to learn from the diverse experiences of different countries and be able to contextualize such knowledge in helping the developing world traverse the path of sustainable development. The Millennium Development Goals highlight the importance of the gender dimension in achieving long-term economic development. Studies show that the extent of women's role in education and the labor economy are vital for meeting the third Millennium Development Goal, "*promote gender equality and empower women*."

Carr and Chen (2004) argue that although efforts among developing countries have enabled women to be increasingly integrated in global economy, they still confront problems on employment parity. Occupational discrimination still exists such that women are relatively concentrated in low-wage and low-productivity occupations compared to their male counterparts. In some labor-intensive production enterprises employing largely female workforce, Carr and Chen (2004) argue that women tend to remain at the lower end of the commodity chain where they account for less than 10% of the total sales of what they produce.

In general, informal employment is perceived to be a larger source of employment for women than for men (ILO 2002). They are mostly engaged in home-based work (e.g., as garment makers or embroiderers) working on own-account or as unpaid

Table 3.16 Identification of Wage Workers based on the Indonesia Informal Sector Survey Form 1

Sex	Age	1st Job			2nd Job			3rd Job			Wage Employment	
		Status	Contract	Nature	Status	Contract	Nature	Status	Contract	Nature	Job No.	Nature
Women	42	employee	written	formal	casual in agriculture	verbal	informal				1st	formal
Women	60	employee	verbal	informal	unpaid worker		informal				1st	informal
Men	35	employer with temporary worker		informal	employer with temporary worker		informal	casual in non-agriculture	no contract	informal	3rd	informal
Men	76	own-account		informal	employee	no contract	informal				2nd	informal
Men	44	employer with temp worker		informal	employee	verbal	informal				2nd	informal
Men	33	own-account		informal	casual in agriculture	written	formal				2nd	formal
Women	48	employer with temp worker		informal	employee	written	formal				2nd	formal
Men	36	employer with permanent worker		informal	employee	written	formal				2nd	formal
Men	36	employee	written	formal							1st	formal
Men	44	employer with temp worker		informal	employer with temporary worker		informal	employee	no contract	informal	3rd	informal
Men	45	employer with temporary worker		informal	employer with permanent worker		informal	employee	written	formal	3rd	formal

family members, with very limited social protection coverage. Kantor (2009) recognized the importance of carefully examining how the processes of exclusion and constrained and adverse inclusion affect women's labor market opportunities. Still, expanding quality employment opportunities for women is economically desirable in the sense that any significant improvements in their role can yield a domino effect of positive impacts on breaking the vicious circle of poverty (Todaro and Smith 2009).

This calls for comparative analyses across women's employment status-groups using empirical data. The data collection tools used in the proposed mixed survey approach for measuring informal employment and the contribution of the informal sector to total economy provide a good reference for outlining evidence-based socioeconomic policies that can address the gender gap existing in the labor economy, especially in the informal sector. The first phase of the proposed mixed survey approach (i.e., the eLFS) links data on total employment with indicators that can be used to identify informal employment. The collected employment indicators can be disaggregated by sex and age group, thus providing a more comprehensive picture of the total workforce. In addition, the data to be derived from the eLFS data can facilitate analysis of the extent of social protection received by employers, wage workers, own-account workers, and unpaid family members. These statistics may be used to explore whether there are significant differences in the social protection coverage (e.g., place of work; pension; paid leave, including maternity and paternity, sick leave, and vacation; and compensation received upon termination of employment) between men and

Box 3.8 Social Protection Coverage of Wage Workers in Yogyakarta and Banten

Recall that the availability of social protection does not define the formality or informality of wage employment, although it describes the types of working conditions faced by these workers. The expanded Labor Force Survey (eLFS) collected information on the types of benefits received by employees:

- Does your employer pay contributions to the legislated pension fund for you?
- Do you benefit from paid annual leave or holiday leave or from compensation instead of it?
- In case of incapacity to work due to health reasons, would you benefit from paid sick leave?
- In case of birth of a child, would you be given opportunity to benefit from maternity or paternity leave?
- Unless there is due cause, could your employment be terminated by your employer without advance notice?
- In case of termination of employment (either initiated by you or your employer) would you receive the benefits and compensation specified in the existing labor laws?

In the case of Indonesia, the informal sector survey form 1 (ISS1) results covering the provinces of Yogyakarta and Banten revealed noteworthy employment trends with regard to the benefits received by wage workers.

In both provinces, less than half of the wage workers receive employment benefits. The highest percentage of workers with benefits, specifically those with sick leave, was recorded at 33.0% for Yogyakarta and 39.7% for Banten. Only 15.4% of wage workers in Yogyakarta and only 17.2% in Banten received pension contributions from employers. Workers have a greater probability of receiving compensation upon termination of employment than of their employers contributing to their pensions. While both provinces display the same trend, wage workers in Banten seem to be better off, as they have a higher chance of receiving benefits than those in Yogyakarta (Box Figure 1).

As expected, the likelihood of a formal worker receiving benefits is greater than that of an informal worker. In general, more than half of the people engaged in formal employment have benefits; and this is true in both provinces (Box Figure 2). Comparative analysis of Yogyakarta's and Banten's trends introduced interesting ideas to consider. The proportions of formal workers with benefits are higher in Yogyakarta than in Banten for all types of benefits analyzed, whereas the number of informal workers with benefits is at least 4 percentage points greater in Banten than in Yogyakarta. The widest gap is among the informal wage workers receiving paid leave. This seems to imply that the larger number of wage workers with benefits in Banten (19.7%) than in Yogyakarta (11.8%) is influenced by the informal employment conditions in the province.

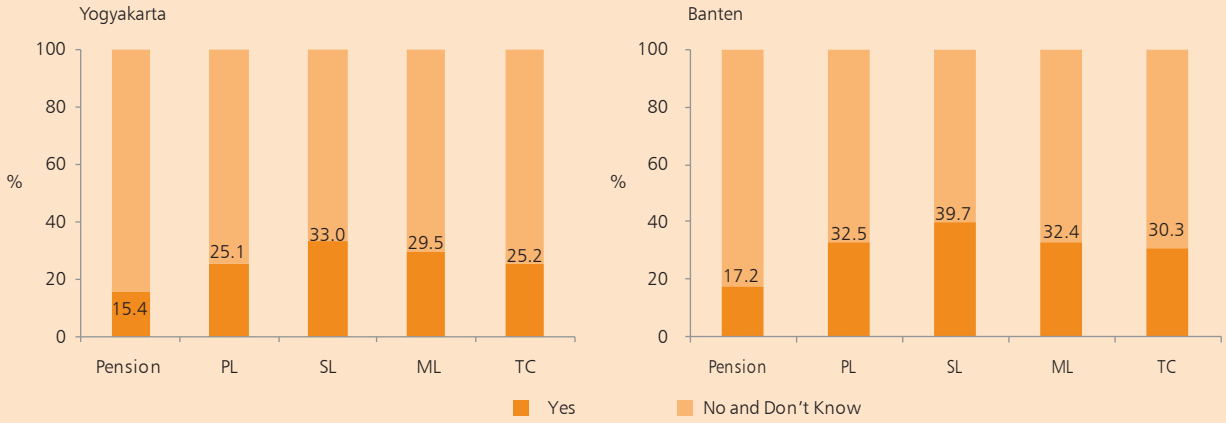
It is interesting to note that while the distribution of formal workers with benefits in formal enterprises is the same in Banten and Yogyakarta, that is, more than 80% of them are employed in such, the case is different in terms of informal employment. The informal workers who receive benefits in Banten are generally employed by formal enterprises. This suggests a link between employment in formal enterprises and the provision of benefits to wage workers, a relationship that merits further examination.

(Box 3.1 continued on next page)

women in both the formal and informal economy. Further, the data from the first phase of the survey can be combined with that of the second phase (i.e., the ISS) to be able to analyze gender differences with respect to labor productivity and other detailed production characteristics of informal enterprises. In addition, if household income and expenditure survey (HIES) data is also linked with the eLFS, one can identify the conditions under which women's labor contributes to household welfare (e.g., mobility to and from poverty). With the regular conduct of an eLFS and periodic conduct of an ISS, the resulting time series data opens windows to explore seasonality and temporal patterns of different aspects of both men's and women's work in the informal economy. Moreover, it can guide policy makers in assessing the progress of attaining gender-sensitive economic development leading to important directions for future work. Box 3.9 provides an example of the kind of analysis that may be carried out using the results from the mixed survey.

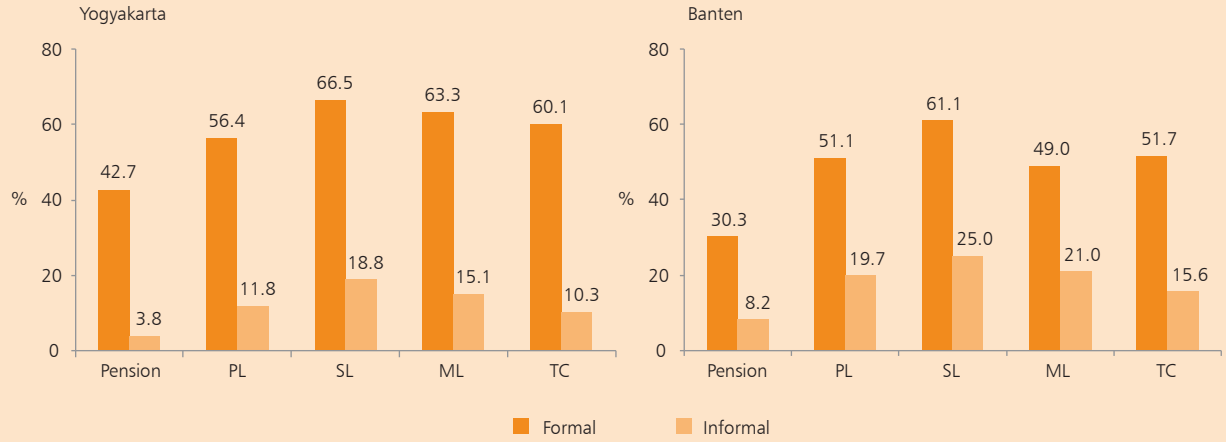
Box 3.8 Social Protection Coverage of Wage Workers in Yogyakarta and Banten *(continued)*

Box Figure 1 Percentage of Wage Workers Who Received Benefits: Yogyakarta and Banten, 2009



ML = maternity leave, PL = paid leave, SL = sick leave, TC = compensation received upon termination/severance pay.
Source: Authors' computations based on the Indonesia ISS, 2009.

Box Figure 2 Percentage of Wage Workers Who Received Benefits by Nature of Employment: Yogyakarta and Banten, 2009



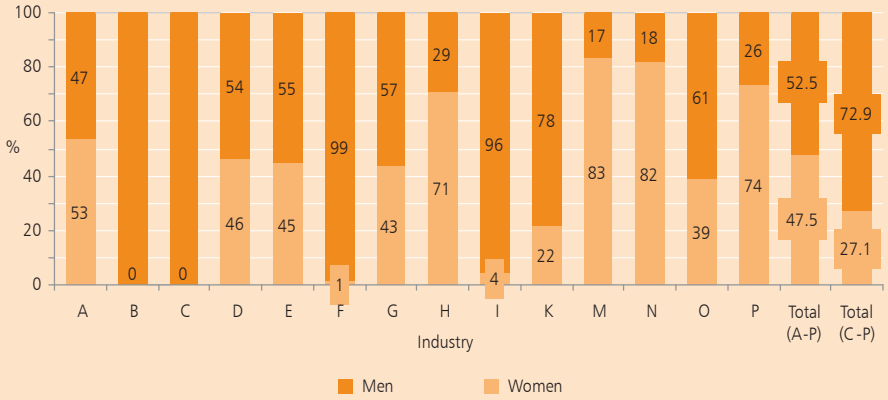
ML = maternity leave, PL = paternity leave, SL = sick leave, TC = compensation received upon termination / severance pay.
Source: The Informal Sector and Informal Employment in Indonesia. BPS-Statistics Indonesia and ADB. 2010.

Box 3.9 Assessing Gender Differences in the Labor Market

From the provinces of Yogyakarta and Banten, women's labor participation rate is lower than that of men. Survey results suggest that there are more jobs assumed by men than women; the ratio is approximately 3:2 in Yogyakarta and 2:1 in Banten. But the data also point to the importance of women in home-based work. In particular, for every man working as an unpaid family member, there are three women with the same employment status.

In Armenia, the proportion of total informal jobs assumed by men is approximately 52.5%; the remaining 47.5% are assumed by women. For every unpaid job (as a family member) assumed by a man, there are approximately two unpaid jobs occupied by women. In addition, informally employed women in the country are concentrated in service-oriented sectors (which are usually considered spheres for women): education, health, private households, and hotels and restaurants. Informal jobs assumed by men are mostly found in the sectors of fishing; mining; transport, storage, and communications; and construction, as well as in real estate, renting, and business activities, due to the physical requirements of the activities in the said industries.

Box Figure 1 Sex Distribution in Informal Employment, by Industry



Source: The Informal Sector and Informal Employment in Armenia. National Statistical Service of the Republic of Armenia and ADB. 2010.
Note: A - Agriculture, hunting, and forestry, B - fishing, C - Mining and quarrying, D - Manufacturing, E - Electricity, gas, and water, F - construction, G - Wholesale and retail trade, repairs, etc., H - Hotels and restaurants, I - Transport, storage, and communications, J - Financial intermediation, K - Real estate, renting, and business activities, L - Public administration and defense, social security, M - Education, N - Health and social work, O - Other community, social and personal services, P - private households with employed persons

Chapter 4
Estimating Contribution of Informal Sector to Gross Domestic Product

4.1 Road Map

Estimation of the informal sector gross value added (GVA), using the informal sector survey (ISS) dataset, entails a series of interdependent steps, which is presented in Chapters 4 and 5. The methodology is not straightforward. It is a set of iterative procedures that requires meticulous attention to detail. While the individual steps themselves are not complicated, they involve numerous iterations that may cause confusion. Moreover, due to the other system processes involved in some of the major stages of estimation, it is easy to get lost in the details provided in the previous three chapters.

This part of the handbook presents a flowchart that may serve as a guide to specialists attempting to estimate the informal sector GVA. The flowchart simplifies the complex estimation methodology and provides a visual representation of the linkages of each stage. In this manner, the interdependencies of the steps are readily realized. The flowchart thus provides an overview of the discussions presented in this chapter.

This flowchart is a product of a series of discussions and consultations with the national accounts specialists of the country teams and the regional technical assistance (RETA) 6430 team. Table 4.1 presents the different symbols used in the process flowchart and their corresponding interpretations.

Table 4.1 Flowchart Symbols and Definitions

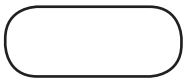
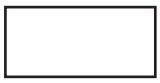
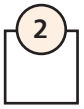
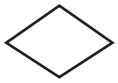
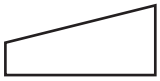
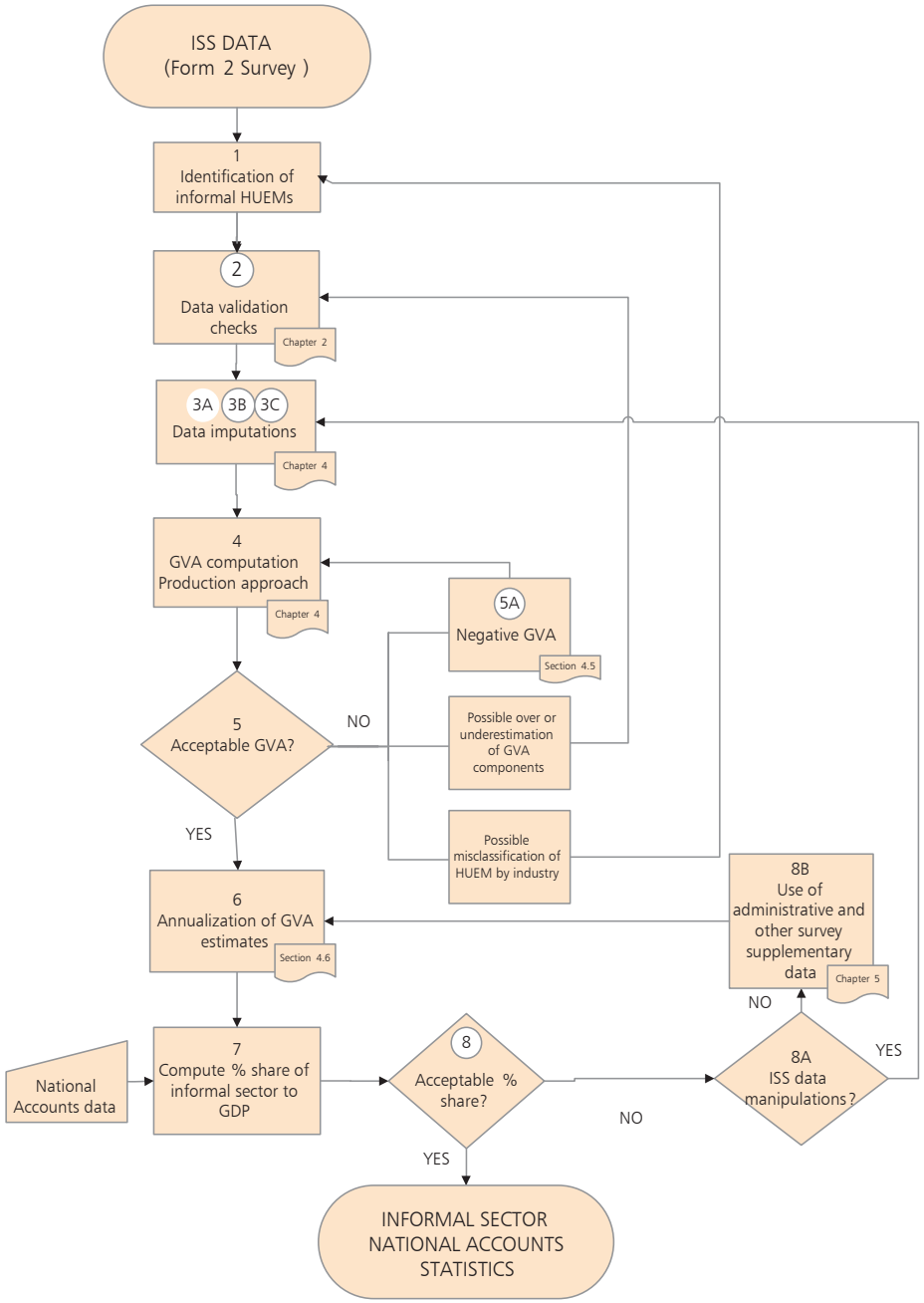
Symbol	Definition
 Start/end	Specifies the beginning and ending of the flowchart
 Process	Indicates a major stage or step in the process
 System process	Used to represent a system process involved in the major stage or step of the main process. The number indicates the stage or step number in the main flowchart
 System process flowchart	Presents the separate system flowchart involved in the major stage or step of the process. The number identifies the stage of the system process in the main process
	Denotes a decision point where alternative paths are possible
 Document	Indicates the use of a document or the reference material. For example, if Chapter 3 is written, then the task on hand is explained in Chapter 3
 Manual Input	Indicates manual input or incorporation of data into the process
Connector	Represents the next stage or step in the process
 Preparation	Implies data preparation
 Data	Indicates data results

Figure 4.1 Gross Value Added Estimation Methodology: Process Flowchart

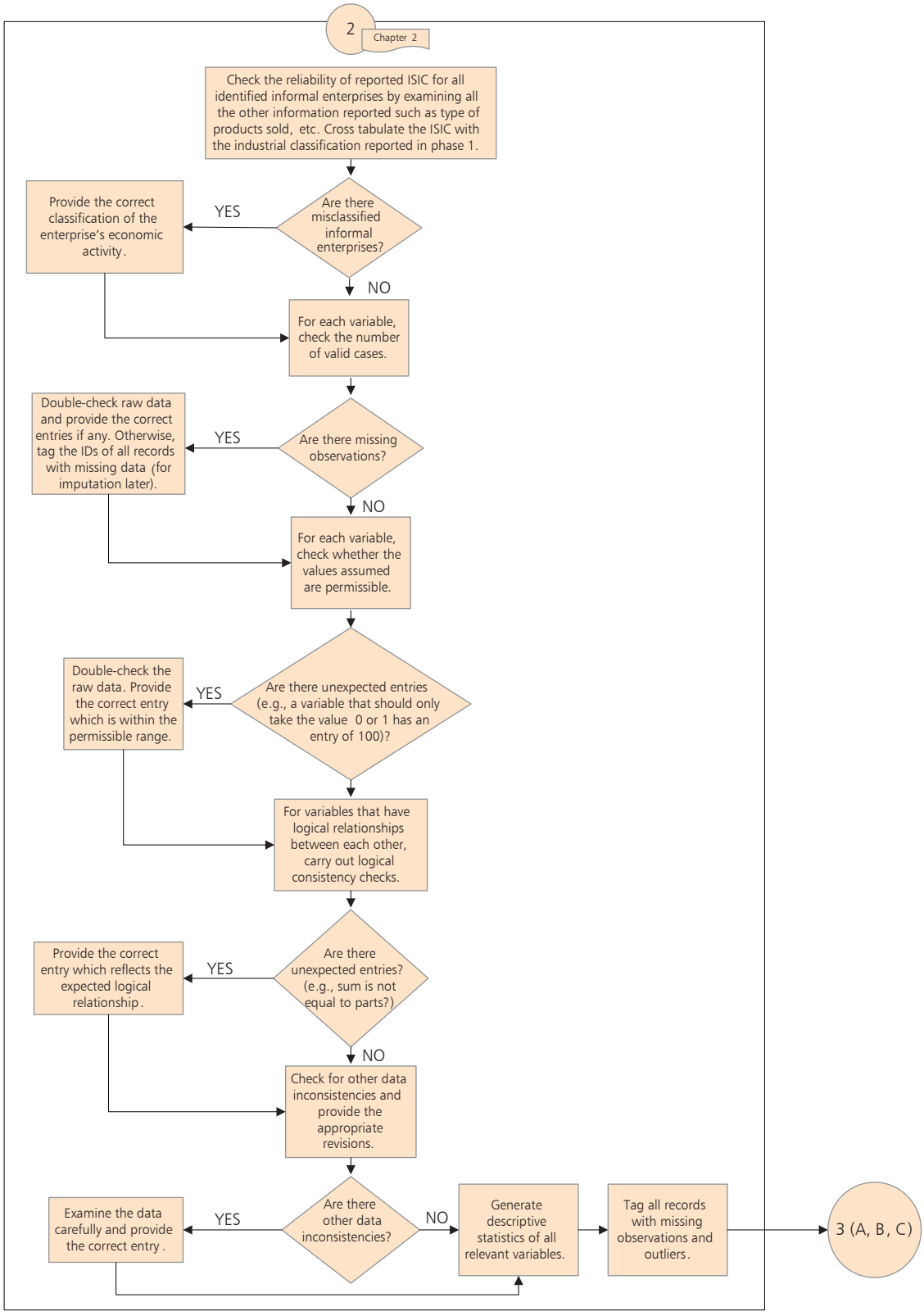


GDP = gross domestic product, GVA = gross value added,
HUEM = household unincorporated enterprise with at least some market production, ISS = informal sector survey.

Figure 4.1 continued on next page

Figure 4.1 Gross Value Added Estimation Methodology: Process Flowchart *(continued)*

System Flowchart of Stage 2: Data Validation Checks

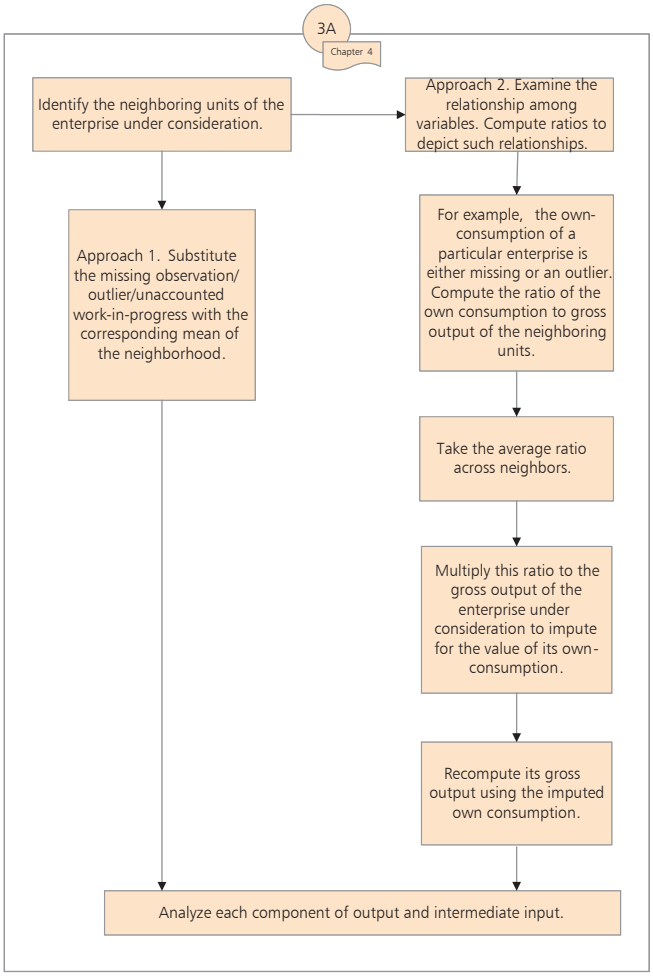


ISIC = International Standard Industrial Classification

Figure 4.1 continued on next page

Figure 4.1 Gross Value Added Estimation Methodology: Process Flowchart *(continued)*

System Flowchart of Stage 3: Part A Data Imputations



Notes: In general, we define statistical neighbors as household unincorporated enterprises with at least some market production (HUEMs) engaged in similar type of economic activities, located within similar geographic domain, more or less operating within a similar nature of seasonality (as indicated by business activity fluctuation, whether *no activity, minimum, average, or maximum*) and fall within the same range of gross value added. The number of workers as an additional criterion in defining neighborhoods may also be explored.

A strictly specific (or very disaggregated) definition of neighborhood may produce zero cells. Note that the definition of neighborhood provided above could be relaxed to contextualize the resulting data from the HUEM survey. For example, enterprises engaged in similar type of economic activities may refer to those falling within the same 2-digit group on the basis of International Standard Industrial Classification when the number of observations under a particular 3-digit group is very few. In the same way, a geographic domain may either refer to a province or a group of provinces with similar characteristics.

Figure 4.1 continued on next page

Figure 4.1 Gross Value Added Estimation Methodology: Process Flowchart *(continued)*

System Flowchart of Stage 3: Part B Data Imputations

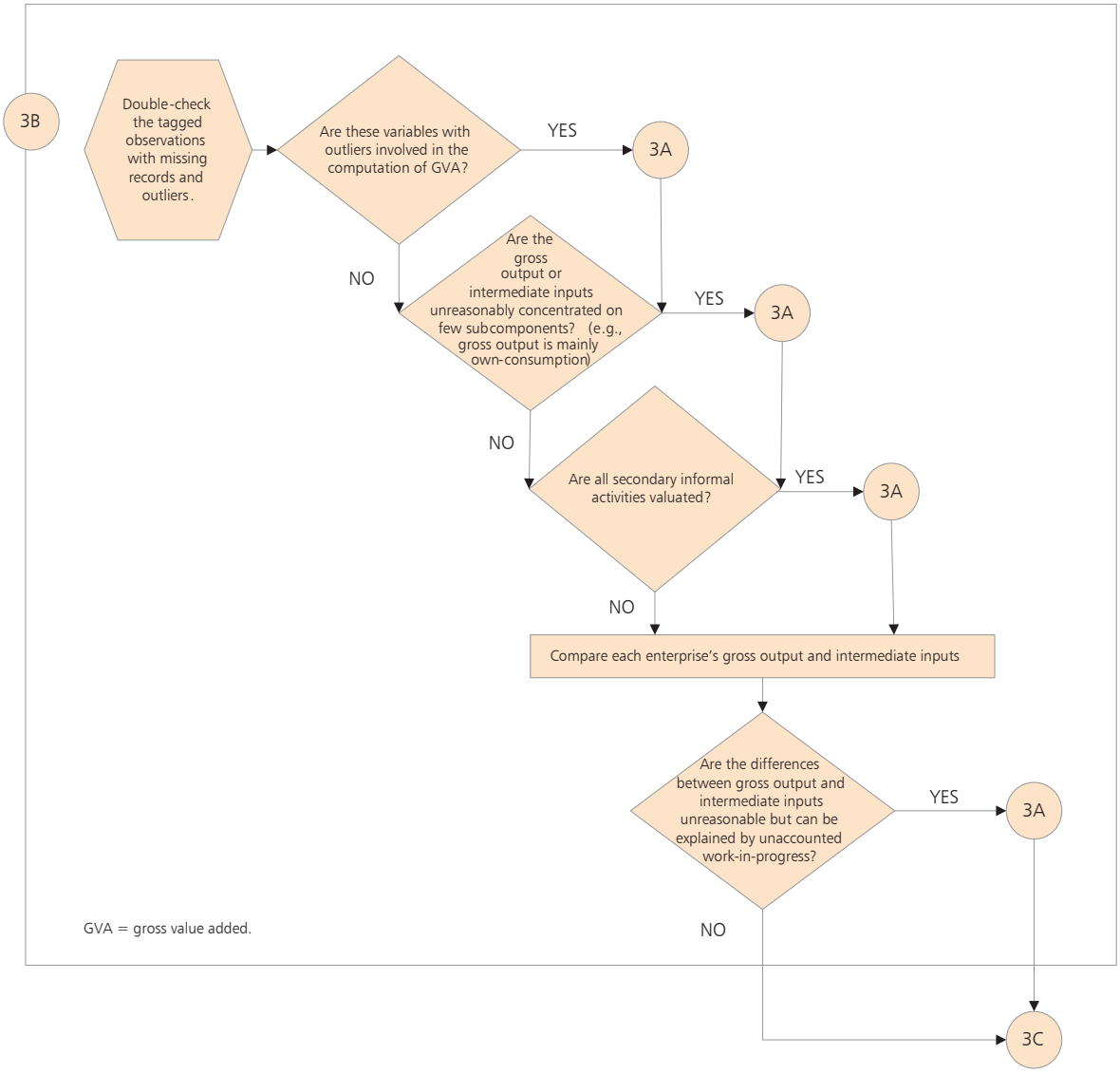
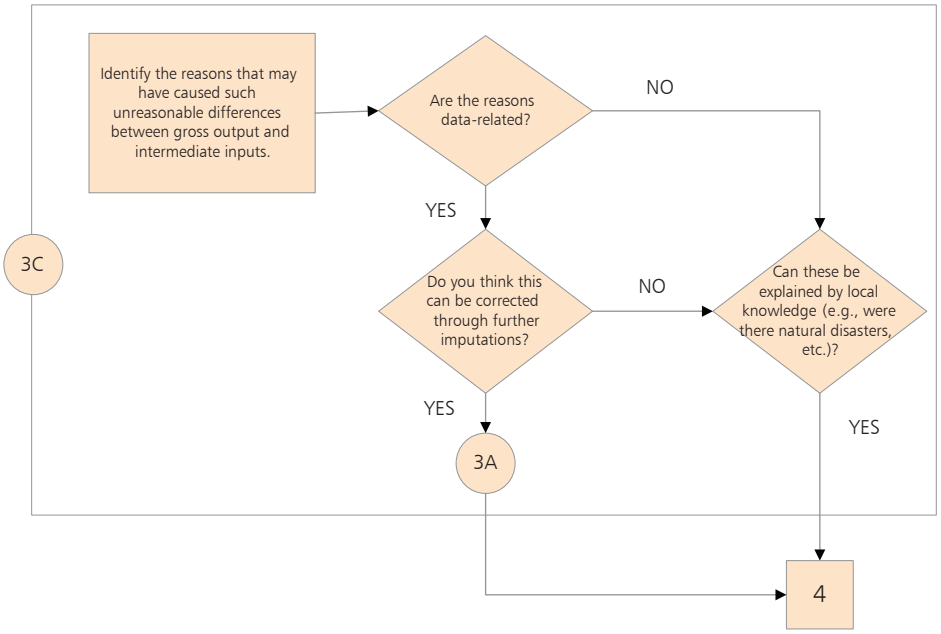


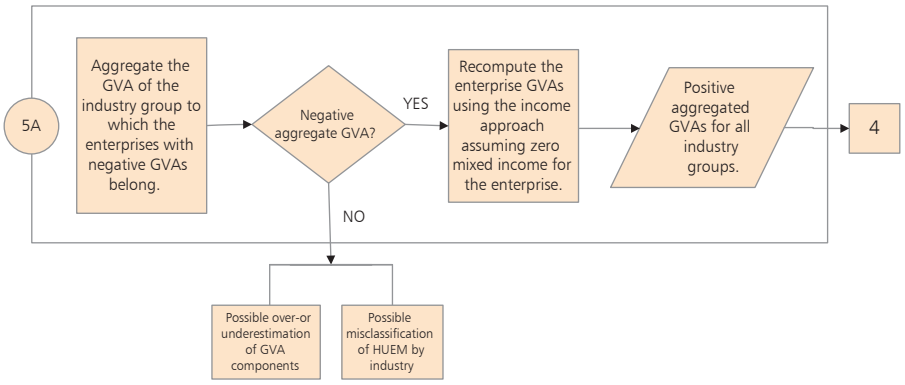
Figure 4.1 continued on next page

Figure 4.1 Gross Value Added Estimation Methodology: Process Flowchart *(continued)*

System Flowchart of Stage 3: Part C Data Imputations



System Flowchart of Stage 5: Examining Gross Value Added

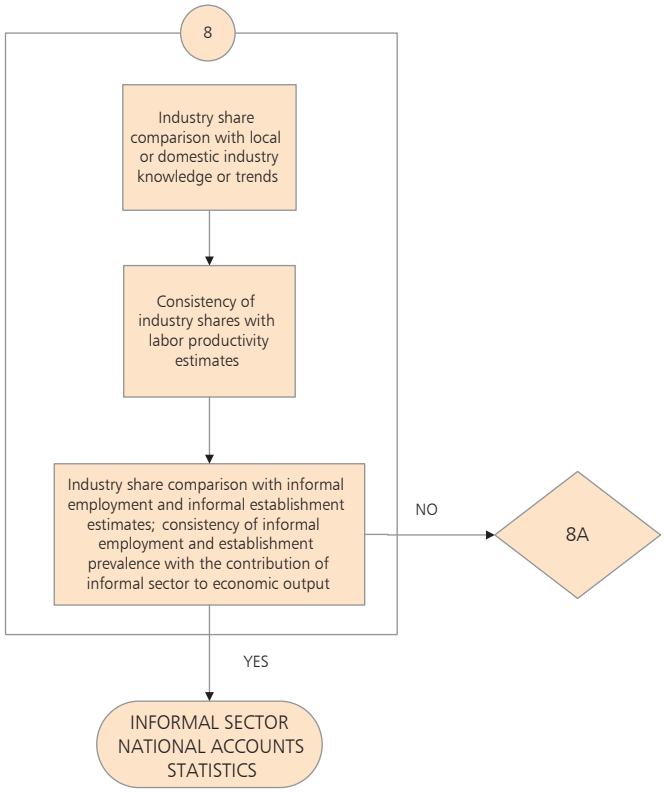


GVA = gross value added, HUEM = household unincorporated enterprise with at least some market production.

Figure 4.1 continued on next page

Figure 4.1 Gross Value Added Estimation Methodology: Process Flowchart *(continued)*

System Flowchart of Stage 8: Analysis of the Contribution of Informal Sector to Gross Domestic Product



Note: One can also compare the computed informal sector gross value added, by industry, with other indicators depending on the availability of relevant information.

4.2 Overview on Measuring Informal Sector Gross Value Added

This chapter provides a detailed discussion of the methodology for estimating the informal sector GVA. While the general principles behind the production and income approaches used in the system of national accounts to estimate GVA still apply in the context of the informal sector, modifications must be applied to some specific processes in order to effectively capture the economic output of this sector. These adjustments are brought about by a combination (i) the innate characteristics of the informal sector, (ii) production patterns and properties of informal enterprises, (iii) inefficiencies in the ISS Form 2 questionnaires, and (iv) lessons learned during the ISS Form 2 survey operations. Due to these varying factors, some adjustments are needed to tie the national accounts concepts with the data collected from the household unincorporated enterprise with at least some market production (HUEM) survey.

This chapter concentrates on the operational methodology for estimating the economic value added of HUEMs covered by the survey. It enumerates the different methods of imputations for fine-tuning the estimation process in cases of missing information or when the quality of data collected is in question. For simplicity in illustrating how to implement the

proposed imputation approaches, most examples provided here assume that one enterprise produces one product. Note that all values presented in this chapter are expressed in monetary units of a hypothetical currency. Moreover, it should be noted that the imputation approaches for data discussed in this chapter are not exhaustive. In actual data processing, it may be useful to review carefully the entire data production process of the HUEM under consideration and combine different approaches to produce a sound estimate of its GVA.

For more academic discussions of the concepts and techniques for informal sector measurement, readers may refer to the latest draft of the International Labour Organization's (ILO) *Manual on Surveys of Informal Employment and Informal Sector* and the Organisation for Economic Co-operation and Development's *Handbook on Measuring the Non-Observed Economy*. Further, Viet (2009) provides a report on the *Compilation of Output and Gross Value Added from the Data Collected for Household Unincorporated Enterprises with at least some Market Production,* which operationalizes the United Nations Economic and Social Commission for Asia and the Pacific's *Unified Data Collection Strategy for Measuring the Informal Sector and Informal Employment*.

4.3 Household Unincorporated Enterprises with at least Some Market Production

The ISS Form 2 questionnaire was administered to HUEMs, which the regular data collection system of national statistics offices (NSOs) does not cover. These households or units are characterized as having low levels of organization and technology. Moreover, they have an unclear distinction between labor and capital or between household and production operations, and thus are expected to have informal books of accounts for personal use, or none at all. They are highly mobile, seasonal, lacking in recognizable features for identification, and are usually reluctant to share information. Moreover, the turnover of these production units is quite fast (Maligalig and Guerrero 2008).

Charmes (2009) cites that HUEMs can be split up into informal and formal subsectors such that the informal subsector can be extracted following the definition of informal sector adopted by each country.[15] In the case of the ISS, HUEMs served as the starting point for data collection on informal sector enterprises. HUEMs are identified from information gathered in ISS Form 1 following the conditions presented in Chapter 2 (Table 2.9). This is similar to the approach adopted in the United Nations Interregional Cooperation on the Measurement of Informal Sector and Informal Employment. Generally, the concept of HUEMs coverage is noted to be broader and more internationally comparable for purposes of data collection. Following the operational definition of informal sector enterprises outlined in the 15th International Conference of Labour Statisticians (ICLS) resolution, informal sector enterprises are a subset of HUEMs that can be distinguished from "formal" HUEMs by adopting the criteria of registration and employment size. For detailed discussions, readers may refer to Chapter 6 of ILO's draft *Manual on Surveys of Informal Employment and Informal Sector.*

Due to these unique characteristics of the informal sector, and specifically the HUEMs, the general methodology for estimating the national accounts needs to be adjusted. Moreover, additional assumptions on the different components of GVA may be introduced in consideration of the HUEMs' short and small-scale production cycles, linkages between the household and the enterprise in terms of labor and capital, HUEM survey questionnaire design, as well as quality of data collected from the survey. These concerns will be elaborated in the succeeding discussions.

[15] Strictly speaking, if we are to follow the 2008 System of National Accounts, the coverage of HUEMs should not include subsistence households whose primary objective of production is for own consumption, but may have incidental sales during a specific accounting period.

4.4 Informal Sector's Gross Value Added under the Production Approach

4.4.1 General Guidelines and Assumptions

As a snapshot, estimating the GVA of HUEMs, as discussed in this chapter, assumes the following:

(i) For simplicity, the major economic activity shall prevail for all HUEMs covered in the survey; that is, primary and secondary outputs are all recorded under the industry of the primary activity.

(ii) The Indonesia survey questionnaire collected only ending inventory for output, while those of Armenia and Bangladesh have been modified to include both beginning and ending inventories. Treatment of inventory is further explained in Section 4.4.2.2.

(iii) Own consumption is assumed to be constant regardless of the registered business cycle for agriculture and the food-related production in the non-agriculture sector. While own consumption may be reduced by households, depending on the production levels or performance (e.g., goods consumed may be lessened when production is at the minimum), changes are assumed to be small for these sectors as the food consumption and needs of the households do not vary according to the HUEM's output. Further discussions are in Sections 4.4.2.1 and 4.6.

(iv) Value of own-produced capital assets is already annualized and can be added directly to the obtained annual value of output.

(v) Given that the production cycle of HUEMs is short, especially those in the non-agriculture sector, it can be assumed that inventories of raw materials are very small and may be approximated to be zero. In other cases, information derived from input–output tables and other administrative data may be useful to impute changes in input inventories. This is expounded in Section 4.4.3.1.

(vi) The inclusion of imputed services, such as services of owner-occupied dwellings, in the estimation of the total informal sector GVA can be performed using the data collected from the Bangladesh and Indonesia survey questionnaires. An alternative methodology is presented for Armenia whose HUEM survey questionnaire does not collect such information. On the other hand, output of moneylenders will have to be distinguished and estimated using the Bangladesh and Indonesia survey questionnaires. These are all presented in Section 4.4.2.5.

(vii) While fluctuations of output and intermediate input during an entire accounting period tend to point to the same direction, one component may move faster than the other. Hence, this general notion is incorporated in computing for annual GVA. In particular, different approaches are adopted for each component of output and intermediate inputs.

(viii) Note that the section numbers are presented in reference to Indonesia's HUEM survey questionnaire (Appendix 3).

4.4.2 Output

Informal sector enterprises have production activities and consumption activities that generally overlap. In addition, studies show that informal sector enterprises cannot maintain large stocks of goods that do not have a ready market. Hence, survival of the informal sector is anchored on the rapid turnover of goods and services.

The succeeding sections will discuss the components of output in the context of estimating the GVA from the HUEM survey. Box 4.1 provides the formula for computing HUEM's gross output using the data collected from the ISS questionnaire. Discussion on how to valuate gross output is provided in Box 4.2. Moreover, given that the ISS Form 2 covers 6 months of agricultural production and that this industry is highly seasonal, it is likely that the survey would have missed on outputs that are considered to be work-in-progress at the time of harvest. This concept will also be expounded in this section.

Box 4.1 Estimating Value of Output from the HUEM Survey

Items critical to the estimation of the total output such as records of sales, revenues, inventories, and own consumption of the HUEMs are available in *Section C, Production, Inventory and Sale* of the informal sector survey Form 2.

Section C provides the basic data to compute for the informal sector HUEM output (Equation 1). It is assumed that prior to estimation, the dataset has already been assessed and edited for item and unit non-response, sum of parts not equal to total, etc. Therefore, the totals for items C.2., C.3., C.4., C.5., C.6, and C.7., are assumed to be reliable numbers to work on.

Output at basic or producer's prices

Output	=	Total value of products sold after transformation	C.2	*Equation 1*
	+	Total value of products sold without transformation	C.3	
	+	Own-account consumption	C.7	
	+	Own-account capital formation	E	
	–	Cost of products sold for resale (trade)	D.2.2	
	+	Value of services offered	C.4	
	+	Changes in inventories (output)	C.5, C.6	

It must be noted that the values of own-produced capital assets, as recorded in Section E, will be added to output after obtaining annual estimates of output.

HUEM = household unincorporated enterprises with at least some market production.

Box 4.2 Valuation of Components of Gross Value Added

Valuation of gross output, either basic or producer's prices, depends on whether taxes on products are included.

(i) Basic and Producer's Prices

For output, two kinds of prices can be used: basic price and producer's price. Basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable by that unit as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer. Producer's price, on the other hand, is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any value-added tax (VAT) or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer (System of National Accounts 2008, Chapter 6, c6.51–c6.54).

(ii) VAT and Similar Deductible Items

VAT is a tax applied on goods and services. In some countries, the VAT may replace most other forms of taxes on products; however, VAT may also be levied as other taxes on products, such as excise duties on tobacco, alcohol drinks, or fuel oils. It is a tax on products collected in stages by enterprises. Producers are required to charge certain percentage rates of VAT on the goods or services they sell, which is shown separately on the sellers' invoices so that purchasers know the amounts that they have paid. Producers are allowed to deduct the VAT on their purchases for intermediate consumption and capital formation (deductible VAT) from the VAT on their output. Non-deductible VAT is the portion of the VAT that is paid by the producer to the government.

(iii) Purchaser's Prices

Purchaser's price is the amount paid by the purchaser, excluding any deductible VAT or similar deductible tax, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. It includes any transport charges paid separately by the purchaser to take delivery at the required time and place (System of National Accounts 2008, Chapter 6, c6.64). This is the price applied to value intermediate consumption.

Box 4.2 continued on next page

Box 4.2 Valuation of Components of Gross Value Added *(continued)*

The essential differences between basic, producer's, and purchaser's prices are as follows:

Basic Prices
+
Taxes on products excluding invoiced VAT
–
Subsidies on products
=
Producer's prices
+
VAT not deductible by the purchaser
+
Separately invoiced transport charges
+
Wholesaler's and retailer's margins
=
Purchaser's prices

(iv) Gross Value Added at Basic and Producer's Prices

Gross value added (GVA) at basic prices is defined as output valued at basic prices less intermediate consumption valued at purchaser's prices.

GVA at producer's prices is defined as output valued at producer's prices less intermediate consumption at purchaser's prices.If taxes on products are very minimal, as in the case of the informal sector, one can expect that GVA at basic prices will be roughly equal to GVA at producer's prices.

The tables below provide the descriptive statistics on taxes on product and taxes on production based on the results of the Informal Sector Surveys for Armenia and Indonesia. Here, one can observe that the reported data on taxes are very minimal.

Descriptive Statistics for Armenia's Informal Sector Survey Data on Taxes (in drams)

Industry	Number of Sampled HUEMs	Taxes				
		Minimum	Mean	Median	Maximum	Standard Deviation
Agriculture	353	0	4,715	0	95,000	11,829
Construction	40	0	0	0	0	0
Education	7	0	0	0	0	0
Health	2	0	0	0	0	0
Manufacturing	47	0	146	0	6,000	738
Other community services	27	0	0	0	0	0
Real estate	1	0	0	0	0	0
Transport, communication, and storage	26	0	0	0	0	0
Wholesale and retail trade	45	0	560	0	15,000	2,876

HUEM = household unincorporated enterprise with at least some market production, ISS = Informal Sector Survey.
Note: In the case of Armenia, the ISS questionnaire item on taxes does not clearly distinguish what type of taxes were collected during field operations.

Box 4.2 continued on next page

Box 4.2 Valuation of Components of Gross Value Added *(continued)*

Descriptive Statistics for Indonesia's (Yogyakarta and Banten) Informal Sector Survey Data on Taxes (rupiah)

Industry	Number of Sampled HUEMs	Tax on Product					Tax on Producing the Product				
		Minimum	Mean	Median	Maximum	Standard Deviation	Minimum	Mean	Median	Maximum	Standard Deviation
Agriculture	765	0	493	0	150,000	7,119	0	7,183	1,000	124,000	15,417
Construction	4	0	0	0	0	0	0	0	0	0	0
Education	8	0	0	0	0	0	0	0	0	0	0
Finance	26	0	0	0	0	0	0	0	0	0	0
Health	6	0	0	0	0	0	0	0	0	0	0
Hotels and restaurants	146	0	0	0	0	0	0	0	0	0	0
Manufacturing	150	0	0	0	0	0	0	80	0	15,000	1,095
Mining and quarrying	24	0	0	0	0	0	0	0	0	0	0
Other services	114	0	0	0	0	0	0	0	0	0	0
Transport, communication, and storage	129	0	0	0	0	0	0	0	0	0	0
Wholesale and retail trade	458	0	82	0	100,000	2,870	0	20	0	20,000	577

HUEM = household unincorporated enterprise with at least some market production, ISS = Informal Sector Survey.

The HUEM survey was designed to collect information on the primary components of output: sales, inventories, and own consumption. As presented earlier, while all ISS Form 2 of the three countries inquire about these items, they still vary on certain aspects, e.g., inventory. Approaches on how to use these sets of data, as well as adjustments to accommodate the variation in questionnaires, will be discussed here.

4.4.2.1 Own Consumption

The System of National Accounts (SNA) 1993 (Chapter 6) states that, as corporations have no final consumption, output for own final consumption is produced only by unincorporated enterprises, for example, agricultural goods produced and consumed by members of the same household. However, the output of domestic and personal services produced for own consumption within households is not included, although housing services produced for own consumption by owner-occupiers, as well as services produced on own account by employing paid domestic staff, are included under this heading.

Due to the inherent characteristics of HUEMs, that is, their unclear distinction between production and household activities, and the intertwined labor and capital assets of household and enterprise, the own-consumption component of output becomes a significant concern. Ignoring own consumption in accounting for the total output of the HUEM 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 number of HUEMs. Moreover, particularly in Asian countries, it is a normal practice in rural agricultural households to consume farm harvests or produce and/or share these with extended families.

Such is the experience in Indonesia where the sample households reported very low sales of rice during the 6-month reference period but very high levels of own consumption (even larger than the sales). Further investigation showed that aside from the HUEM owner's personal consumption of the rice produced, she also apportions some among her sons, who also have their own families. Thus, if own consumption is not accounted for in this case, the GVA of this particular HUEM will most likely be negative and would not accurately reflect the total production of the HUEM. This example also implies that due to the unique attributes of HUEMs, the social and cultural characteristics of owners influence the performance of the HUEM itself. Therefore, the HUEM's output may also be considered as a function of the needs of the households.

In this case, a simplifying assumption of constant own consumption throughout an accounting period is preferred, 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 HUEM'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, HUEMs 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 nonessential (nonfood) items is very elastic and would be the first to be adjusted depending on the production performance of the HUEM.[16]

In estimating the value of own consumption of HUEMs, records in C7 may be taken at face value (i.e., they are all assumed to be part of the output) except when they lead to negative GVAs, outliers, or other cases that would prompt the need for imputations. This would entail the methodologies discussed in Chapter 2 (Section 2.10 and Table 2.17).

The suggested processes for identifying the outliers are as follows:

Option 1: Generate tables of descriptive statistics for own consumption (C7) by industry and province, or other combinations of variables to be the neighborhood.

If the HUEM's own consumption is 3–4 standard deviations away from the mean consumption in the neighborhood, then the recorded figure has a high probability of being an outlier and would require further investigation. Based on Table 4.2, if a HUEM in agriculture registered its own consumption to be greater than 3,448,055, this HUEM should be noted and analyzed whether imputations should be applied. The same should be done when a HUEM in the manufacturing sector posted own consumption of 666,113.

Option 2: Generate box plots to graphically identify the outliers.

The first box plot generated, using the original data on own consumption, classified by industry, is presented in Figure 4.2. A box plot is a graphical representation of the distribution of a particular variable. The rectangular gray box in the graph represents the 25th (lower hinge) and the 75th (upper hinge) percentiles of the data for each category. Meanwhile, the line that cuts through the rectangle shows the median. The dots, on the other hand, show the outliers in the set, as well as the minimum and maximum values. However, given that the ISS dataset may present a substantial amount of inconsistent data, it would be good to understand the process step by step and be able to interpret the graphs extensively.

As shown, there is a lone observation, which is away from the rest of the dataset, and thus can be comfortably identified to be an outlier. This is the HUEM in the wholesale and retail trade (WRT), which registered a value of 18,700,700 (HUEM 126). Given that the average own consumption of HUEMs in the

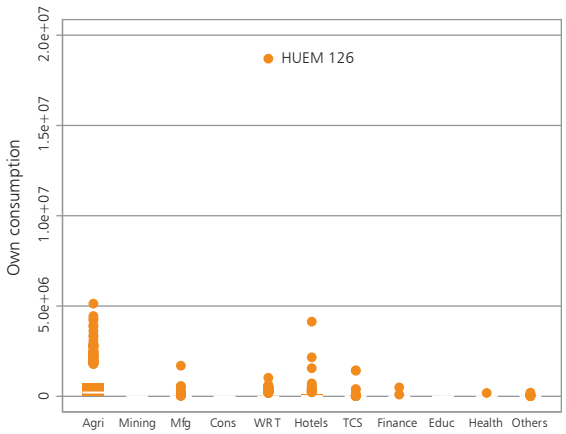
Table 4.2 Descriptive Statistics of Own Consumption in the Neighborhood

Industry	Minimum	Mean	Median	Maximum	Standard Deviation
Agriculture	0	504,855	210,750	5,120,000	735,800
Mining and quarrying	0	0	0	0	0
Manufacturing	0	35,569	0	1,689,000	157,641
Construction	0	0	0	0	0
Wholesale and retail trade	0	107,981	2,750	18,700,000	877,967
Hotels and restaurants	0	122,802	12,000	4,125,000	413,521
Transport, communication, and storage	0	30,888	0	1,440,000	182,054
Financial intermediation	0	23,077	0	500,000	99,228
Education	0	0	0	0	0
Health	0	30,000	0	180,000	73,485
Others	0	6,743	0	200,000	26,533
Total	**0**	**253,341**	**10,000**	**18,700,000**	**694,660**

[16] Discussion on how to use the business trend in the estimation process is presented in Section 4.6.

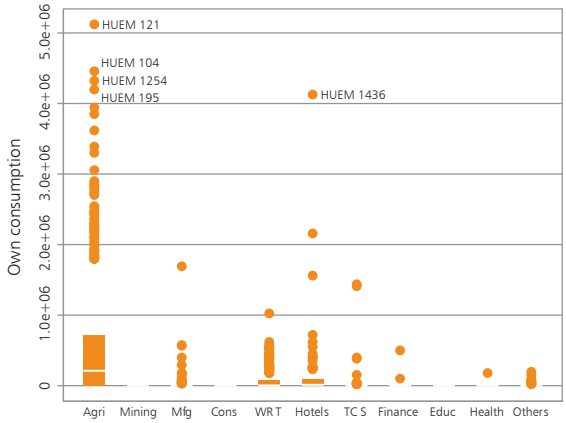
WRT sector is only 107,981, a value of 18,700,000 can be an error and should be replaced with an imputed figure.

Figure 4.2 Box Plot of Own Consumption by Industry (Maximum: 18,700,000)



Agri = agriculture; Cons = construction; Educ = education; Finance = financial intermediation; Hotels = hotels and restaurants; HUEM = household unincorporated enterprises with at least some market production; Mfg = manufacturing; Mining = mining and quarrying; TCS = transport, communications, and storage; WRT = wholesale and retail trade.

Figure 4.3 Box Plot of Own Consumption by Industry (Maximum: 5,120,000)

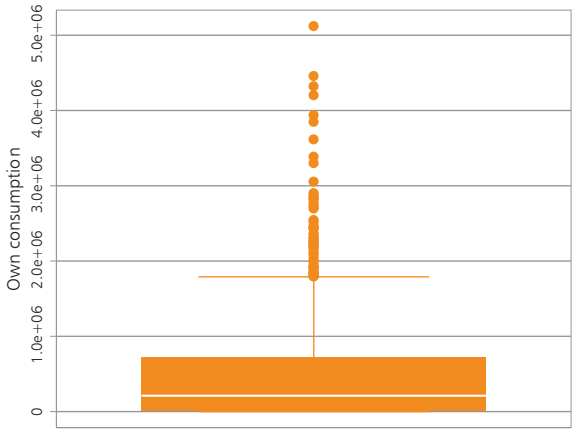


Agri = agriculture; Cons = construction; Educ = education; Finance = financial intermediation; Hotels = hotels and restaurants; HUEM = household unincorporated enterprises with at least some market production; Mfg = manufacturing; Mining = mining and quarrying; TCS = transport, communications, and storage; WRT = wholesale and retail trade.

The distribution of own consumption with an adjustment in the maximum value is presented in Figure 4.3. In the figure, HUEM 126's value was assumed to be an outlier and, hence, was excluded from the box plot. Through the better presentation of Figure 4.3, industries that have some outliers (agriculture; manufacturing; WRT; hotels and restaurants; and transport, communications, and storage) can be readily identified. Specifically, for agriculture, HUEMs 104, 121, 195, and 1254 posted more than 4,000,000 in own consumption.

The distribution of the own consumption of HUEMs in agriculture is shown in Figure 4.4. The line that cuts through the rectangular box is the median, valued at 210,750. All the dots represent the outliers, including HUEMs 104, 121, 126, 195, and 1254, which had been identified earlier. These identified outliers may then be replaced by imputed values.

Figure 4.4 Box Plot of Own Consumption, Agriculture



4.4.2.2 Sales and Inventories

Output inventories cover finished goods, work-in-progress, and goods for resale (in the case of the trade sector). In general, the HUEM survey collects data on output inventories for products sold with or without transformation. Where such data are not available or cannot be estimated through imputations, it may be assumed that beginning and/or ending output inventories are negligible. For instance, in the case of Indonesia, where only data on ending inventory were collected, one option is to assume the beginning

inventory to be zero, especially when the reported ending output inventory is minimal.[17] Another option is to supplement the survey data with administrative data to be able to estimate the change in inventory. The use of administrative data (e.g., financial statements) may be facilitated by taking the ratio of beginning inventory to sales expressed as

Inventory–Sales Ratio = Beginning Inventory/Sales *Equation 2*

This ratio has to be representative of the industry where the producing HUEM is classified. Another option, as mentioned earlier, is to assume zero beginning inventory for the previous 6 months (agriculture) or past month (non-agriculture). For agriculture, this assumption seems to be realistic since agriculture output is generally perishable and can be stored for a limited length of time. For non-agriculture output, only the past month's output inventory will be assumed to be zero. For both agriculture and non-agriculture, the next period estimates shall follow the reported ending output inventory from the past 6 months or the past month. These data are recorded in C.5 and C.6, which refer to output inventories for both products sold after transformation and without transformation.

Meanwhile, computation of the change in inventories is expected to be straightforward for Armenia and Bangladesh since both the beginning and ending inventories were inquired from the questionnaire. Thus, the change in inventory for output is simply obtained as ending less beginning inventories. The result is added to the value of sales and own consumption to obtain the value of production for the period.

However, the approaches are presented under the assumption that the datasets have already been processed, cleaned, and validated. Thus, the procedure is highly dependent on the effective application of data cleaning and imputations (Chapter 2). Procedures that may be employed in making the survey data ready for GVA estimation are presented in Box 4.3 and Box 4.4. National accountants may utilize either one of the methodologies, or a combination of both, depending on their expert evaluation of the situation.

4.2.3 Work-in-Progress

Stability of enterprise, with respect to seasonality, locational fixity, and age, is one of the dimensions that distinguish formal from informal enterprises (Vijverberg 1990). Enterprises in the informal sector are believed to operate on limited resources that may be available only during specific seasons. Hence, the seasonality of the amount of business activity being carried out by HUEMs is very visible.

In the case of the HUEM survey, it is possible to encounter cases where there was hardly any business activity during the reference period. This may be due to the seasonality of production, such as in agriculture (e.g., planting, harvesting, etc.). Similarly, it may be the case wherein outputs are generally work-in-progress, such as growing of crops, timber, or livestock raised for food, which are treated as continuous process of production. Conceptually, work-in-progress consists of inventories of goods, held by the HUEM in this case, which have been produced as output but require further processing to complete. Consequently, during a particular reference period, these may not be in a form that can be sold and are thus reported only when these are harvested. Note that in accounting for work-in-progress, they should be recorded as part of changes in inventories and of output. Work-in-progress goods may be imputed to be equal to the cost of relevant inputs used for the said goods plus some amount of compensation for the services incurred.

In addition, production may be demand driven, such as in a food catering service, where during the month of the survey, there was no demand for such service. (While there may not be any production during the survey's reference period, production may exist outside the reference period, but within the same year). Box 4.5 discusses the methodology for imputing work-in-progress estimates.

[17] In the formal economy, maintaining inventory of goods is motivated by either of the following reasons: (i) to serve as buffer to meet uncertainties in demand or supply, and (ii) to optimize economies of scale. But these reasons do not directly apply in the context of informal enterprises because they may not afford to incur the costs associated with maintaining stocks. Hence, if the survey respondents report sizeable inventories, this should merit further investigations to identify the reasons for maintaining inventories. Otherwise, imputations may be considered.

Box 4.3 Imputing the Value of Change in Inventories Using HUEM Survey Data and Other Sources

It must first be established that the HUEM does have inventories and that data were not just recorded properly. Due to the characteristics of HUEM production (small-scale with quick turnover), it is likely that HUEMs will not incur output inventories. This is especially true for HUEMs engaged in food manufacturing or processing. Therefore, determining whether inventories should be imputed would entail the national account expert's knowledge of the HUEMs' production characteristics and that of the local (country's) market. Once it has been established that inventories should be imputed, the following may be applied.

ISIC	Industry		Ending Inventory of Goods for Resale	*Ratio of Change in Inventories to Ending Inventories	Imputed Changes in Inventory of Goods for Resale
A.1.	5-Digit Code	2-Digit Code	C.6.2		
14102	Quarrying stone material industry	Mining and quarrying	180,000	0.2492	44,862
14102	Quarrying stone material industry	Mining and quarrying	35,000	0.2492	8,723
14105	Sand excavation	Mining and quarrying	120,000	0.2492	29,908
15496	Crackers, chips, and other similar manufacturing products	Manufacturing	238,000	0.2417	57,515
15499	Food industry not elsewhere classified	Manufacturing	7,838,000	0.2492	1,953,492
17114	Weaving industries (except weaving gunny sack and others)	Manufacturing	200,000	0.2056	41,126
17211	Industrial goods household textiles	Manufacturing	104,000	0.8611	89,554
18101	Garment manufacture of textiles and fittings	Manufacturing	3,804,500	0.6434	2,447,637
18101	Garment manufacture of textiles and fittings	Manufacturing	1,005,000	0.6434	646,570
24234	Herbal medicine industry	Manufacturing	78,250	0.0965	7,548
26322	Manufacture of clay bricks / ceramics	Manufacturing	500,000	0.2492	124,617
26423	Industrial goods of cement and lime construction	Manufacturing	670,000	0.1092	73,155
28939	Other equipment manufacture of metal	Manufacturing	608,000	0.2492	151,534

ISIC = International Standard Industrial Classification.
Note: Figures presented are actual data prepared by the BPS-Statistics Indonesia.

If data on either the beginning or ending inventory is not available, we can introduce imputations using administrative or other survey data on small-scale industries. In particular, for each industry, we can apply the ratio of change in inventory to sales computed from the supplementary data. The table illustrates the process of utilizing the micro and small-scale establishment survey data in estimating the change in inventories of non-agriculture HUEMs. Changes in inventories are computed as the product of the ending inventory and the ratio of change in inventory to ending inventories from other data sources.

HUEM = household unincorporated enterprise with at least some market production.

Box 4.4 Imputing the Value of Change in Inventories Using only HUEM Survey Data

In the absence of any reliable administrative data, it may be reasonable for some cases to assume that either the beginning or ending inventory is zero especially in agriculture. In general, the reason behind this is the popular notion that a significant number of HUEMs are small-scale enterprises that may have limited capacity to stock. In the case of agriculture, most goods are assumed to be perishable within a limited length of time, hence, minimal inventory may be a sound assumption. Caution should be exercised when using this assumption. For example, suppose only the data on ending inventory is available, as in the case of Indonesia. Before assuming that the beginning inventory is zero, we have to study the extent of the reported ending inventory. If it is small, then it may be reasonable to assume that the HUEM under consideration began with zero inventory at the start of the reference period, as in the following example, where the reported ending inventory is minimal in proportion to the volume of sales. Hence, change in inventory is imputed to be the value of reported ending inventory for HUEMs 1 to 9. In the case of HUEM 10, wherein the assumption of zero beginning inventory may not be applicable, ratios from administrative data may be used to impute beginning inventory. Further, if both beginning and ending inventories are not available, we may consider applying the same line of reasoning and assume that change in inventory is nil, provided its neighbors also have minimal net inventories.

Respondent	Sales	Beginning Inventory	Ending inventory	Business Fluctuation
HUEM 1	9,234,123		7,432	Minimum for 3 of the last 6 months; no activity for the other months
HUEM 2	8,237,423		10,752	Minimum for 2 of the last 6 months; no activity for the other months
HUEM 3	23,978,190		20,989	Average for 4 of the last 6 months; minimum activity for the other months
HUEM 4	35,908,701		21,589	Average for 3 of the last 6 months; minimum for the other months
HUEM 5	19,506,381		23,457	Average for 4 of the last 6 months; minimum activity for the other months
HUEM 6	43,787,432		38,475	Average for 5 of the last 6 months; minimum for the other month
HUEM 7	30,765,482		18,745	Average for 3 of the last 6 months; minimum for the other months
HUEM 8	21,091,823		11,475	Average for 3 of the last 6 months; no activity for the other months
HUEM 9	28,981,892		54,785	Average for 4 of the last 6 months; no activity for the other months
HUEM 10	75,123,456		5,501,543	Maximum for 3 of the last 6 months; average activity for the other months

HUEM = household unincorporated enterprise with at least some market production.
Note: In this case, the neighborhood consists of HUEMs engaged in similar economic activity and located within the same geographic domain.

Box 4.5 Imputing the Value of Work-in-Progress Using the HUEM Survey Data

In the case of the HUEM survey, determining a work-in-progress case may be prompted by an enterprise reporting no business activity during the reference period and hence, either missing or zero revenue and/or intermediate consumption data are reflected. This signals the need for more investigation regarding the production activities of the HUEM. First, we have to check whether these HUEMs reported any intermediate input. If both intermediate inputs and outputs are zero, it may be reasonable to assume that there was no activity during the reference period. For HUEMs with non-zero intermediate inputs, we have to check the data on the inventories to make sure that the work-in-progress goods are appropriately recorded. If the information is not available, we may just resort to imputing for output to be equal to the cost of relevant intermediate inputs plus some amount of compensation for the services rendered. Otherwise, if such information is still missing, we can compute for the annual estimate of gross value added of the neighboring units. Then, take the average GVA of the neighboring HUEMs to be the estimate of annual GVA of the HUEM under consideration. Consider the following example:

Note that most HUEMs in this neighborhood reported minimal (in proportion to sales) ending inventory. In this case, it may be reasonable to assume zero beginning inventory. HUEM 1 reported very minimal sales in comparison to the cost of its intermediate inputs while HUEM 2 did not even report any sales during the 6-month reference period. There are two possible scenarios for the "no activity" record for HUEM 2: (i) there was no production during the period; and (ii) activities are still in the middle of the production cycle hence, no sale or production of goods was recorded. The second scenario is an example of a work-in-progress. In the same manner, the 4-month "no activity" record for HUEM 1 may also be a work-in-progress case, thus, the very low sales record during the reference period compared to the intermediate inputs. This hypothesis may be confirmed by carefully examining all the components of gross value added, especially inventory and own-consumption. Moreover, a detailed analysis of the types of products produced by the HUEM can help confirm whether the reason for the no activity record in the business fluctuation is the work-in-progress stage of production. Therefore, the knowledge of the national accounts experts on the local agriculture production is critical. If there is reason to believe that these are indeed cases of work-in-progress, we can impute the output of HUEM 1 and HUEM 2 as the value of its intermediate inputs plus compensation.

HUEMs	Sales	Intermediate Inputs	Compensation	Beginning Inventory	Ending Inventory	Own Consumption
HUEM 1	10,254	9,134,154	5,115,126		6,492	28,982
HUEM 2		5,237,421	2,932,956		11,254	0
HUEM 3	25,974,121	17,402,661	7,831,197		20,687	11,168,872
HUEM 4	53,908,202	21,563,281	12,075,437		12,589	11,320,722
HUEM 5	17,506,651	7,527,860	2,107,801		25,000	875,333
HUEM 6	53,454,422	35,814,463	20,056,099		25,674	5,345,442
HUEM 7	35,765,489	17,882,745	6,133,781		18,555	2,861,239
HUEM 8	31,091,422	20,831,253	9,374,064		18,475	4,041,885
HUEM 9	48,981,592	32,817,667	9,845,300		55,985	13,225,030

HUEMs	Business Fluctuation During Reference Period					
	M1	M2	M3	M4	M5	M6
HUEM 1	no activity	no activity	no activity	no activity	minimum	minimum
HUEM 2	no activity	no activity	no activity	no activity	no activity	no activity
HUEM 3	minimum	minimum	minimum	minimum	minimum	minimum
HUEM 4	minimum	average	average	average	average	minimum
HUEM 5	minimum	minimum	minimum	minimum	minimum	minimum
HUEM 6	minimum	average	average	average	average	average
HUEM 7	no activity	no activity	minimum	minimum	minimum	average
HUEM 8	minimum	average	average	minimum	minimum	minimum
HUEM 9	minimum	minimum	average	average	average	average

HUEM = household unincorporated enterprise with at least some market production, M = month.

4.4.2.4 Gross Capital Formation

Gross capital formation is made up of the total value of the gross fixed capital formation (GFCF),[18] changes in inventories, and acquisition less disposals of valuables. Both corporate and unincorporated enterprises may produce goods used for own GFCF, which are part of the output and assets of the enterprise. These may include special machine tools produced by engineering enterprises for their own use, or dwellings or extensions to dwellings produced by households.[19] A wide range of construction activities, including communal construction activities undertaken by groups of households, may be undertaken for the

[18] This includes costs of ownership transfer on the acquisition and disposal of a fixed asset. However, this type of transaction may not be relevant to computation of the GVA of informal enterprises because most of them use own-produced assets, such as small tools or handmade equipment.

[19] Production of dwelling units for own use is considered as capital formation of owner-occupiers since they are treated as producers of housing services for own use.

purpose of own GFCF in rural areas in some countries. Acquisition of land is treated as purchase of non-produced assets and not as GFCF. Only improvements to land are counted as GFCF and thus, this activity is best presented separately. Cultivated assets, such as animals for breeding, dairy animals, and fruit trees, are capital formation.

In the HUEM survey, the questionnaire collects data on capital expenditures. Capital assets are broken down by type of asset, mode of transaction, and ownership. It also includes information on the date of acquisition, sale, or loss and the value of the asset at replacement cost. In the computation of HUEMs' output, the reported total value at replacement cost of all personal, shared, and leased assets under Section E are taken at face value on the assumption that the reported values reflect the accurate current replacement cost of the corresponding fixed asset.

Acquisition, disposals, and losses must occur within the reference accounting period. Consumption of fixed capital will have to be computed based on the estimated useful life of the asset, using the straight-line method.[20] Under this method, the purchaser's price of the fixed asset is divided by the remaining useful life of the asset (i.e., the number of years of service life) to estimate consumption of fixed capital for the period.

The treatment of repair and maintenance of fixed assets is discussed in Section 4.4.3.3.

It must be noted that the values of own-produced capital assets or assets produced for own account,[21] as recorded in Section E, will be added to output after obtaining annual estimates of output.

4.4.2.5 Treatment for Other Production Activities

This section discusses the treatment for outputs of certain production activities that are not covered or are inadequately covered by the HUEM survey.

Unincorporated Financial Intermediaries and Moneylenders

Moneylenders are part of unincorporated enterprises and who are engaged in lending their money to households or other household unincorporated enterprises at interest rates that are much higher than the legal interest rates charged by banks. These are

Box 4.6 Estimating Value of Gross Fixed Capital Formation from the HUEM Survey

To estimate gross fixed capital formation (GFCF) for the period, the following equation applies:

GFCF	=	Acquisitions	*Equation 3*
	–	Disposals	
	–	Consumption of fixed capital	
	–	Losses	
Acquisition	=	Bought new	
	+	Bought used	
	+	Major improvements	
	+	Own produced	

[20] The fixed assets purchased in previous periods and still surviving together with new acquisitions of fixed assets are valued at purchasers' price to obtain the value of stock of fixed assets during the period. This is then divided over the remaining estimated service lives of the assets covered to obtain consumption of fixed capital based on the straight-line method. The straight-line method takes into account the current market value and the effective life of the fixed asset. This approach assumes constant efficiency until the asset disintegrates and linear decline in efficiency.

[21] The reported own-produced capital assets should be carefully reviewed. For instance, there may be some misreporting on assets produced for own account. Assets, such as jewelry and land, which are not entirely used for production activities of an enterprise, should be excluded in the computation. This process should be done on a case-to-case basis by carefully studying the use of the fixed assets in the production process of the enterprise under consideration, particularly when respondents reported the entire market value of a particular own-produced asset instead of reporting only the value of that portion of the asset which was actually used for the production.

mostly loans without collateral. Considering its nature, this type of activity results in quite substantial output and GVA. Moneylenders are considered to be the significant financial units in the informal sector, and are treated as HUEMs and informal sector enterprises in the finance sector. Services of moneylenders (who operate as unincorporated enterprises) are covered by the HUEM survey. However, some respondents who are actually engaged in money lending or other types of informal financial intermediation may choose not to report any information since the interest rates they charge are much higher than legal interest rates.

Financial intermediation services indirectly measured (FISIM) is a national accounts concept used to describe the services that banks provide to their customers but which are not invoiced. These services typically include the management of current accounts, the sending out of bank statements, and the transfer of funds between accounts on the part of bank depositors; instead of directly invoicing these services, the banks reduce the interest paid to depositors. This interest is actually lower than that which depositors could have acquired by lending their money directly to borrowers. Meanwhile, in the case of bank borrowers, these services consist of (i) monitoring of their creditworthiness, (ii) financial advice, (iii) the smoothing over time of repayments, and (iv) recording of these repayments for accounting purposes. Payment for these services is part of the interest rate that the bank charges to these borrowers (Lequiller and Blades 2006).

According to the 2008 System of National Accounts (SNA), in the formal economy (such as in banking) "*the difference between the rate paid to banks by borrowers and the reference rate plus the difference between the reference rate and the rate actually paid to depositors represent charges for FISIM*" (UN 2008). The 2008 SNA also clarifies that the reference rate to be used in the calculation of national accounts is a rate that should fall between bank interest rates on deposits and loans. This should not reflect any service element; only the risk and maturity structure of deposits and loans should be reflected. In the case of informal moneylenders, interest rates significantly vary from one location to another.

The above statement is represented through the following simple equation (Lequiller and Blades 2006):

$$(rl - rr) * L + (rr - rd) * D.$$

where

- rl is the observed interest rate on loans;
- rr is the so-called reference rate;
- rd is the reference rate of deposits;
- L is the amount of loans; and
- D is the amount of deposits.

However, this formula need not be applied if data from the HUEM survey will be used since the ISS questionnaire collects data on the actual amount of interest paid and interest received instead of using rates.

To establish the benchmark estimate, the data from the HUEM survey for financial services can be used initially to measure output, intermediate inputs, and GVA. Household unincorporated enterprises engaged in financial services can be assumed to cover mostly these informal moneylenders and will register under the finance industry. Hence, the computation of FISIM, for HUEMs under the finance industry, will utilize Equation 1 (output) and Equation 9 (intermediate inputs).

However, Asian culture does not take pride in the fact that a person (or household) gets income by lending money at a very high interest rate. This is seen by many as taking advantage of another person in financial need. Given this, moneylenders will not openly admit the business he or she operates and not cooperate during the interview. Thus, capturing FISIM may be difficult, and an indirect method is necessary to estimate its value.

An alternative approach in computing FISIM is to add the aggregate interest received (D.3.b) and total value of interest paid (D.3.15.a[22]) to compute the output of moneylenders. While D.3.15 is actually

[22] This detailed query is not available in the Armenia questionnaire.

a query on expenses, the use of the item to estimate FISIM is brought about by the following assumptions:

(i) When item D.3.15.a. "Interest paid" is answered by a HUEM owner not in the finance industry, he or she has borrowed money for his or her business operations. In utilizing D.3.15a in the estimation, there may be different scenarios that may apply, and it is at the discretion of the national accountant on which will be the most appropriate approach to be used:

   (a) The borrowing transaction was not conducted through a bank since the institution will demand a complete set of book of accounts for this type of loan—a requirement that the HUEM does not have. Therefore, the HUEM is incurring expenses from borrowing money, and this interest paid will be the income of an informal sector moneylender. Given this scenario, all the interest paid will be accounted to the money-lending HUEM.

   (b) Some of the HUEMs may have borrowed from the bank or other formal finance institution and some from an informal moneylender. The kind of financial services which the HUEM employed may be identified in ISS Form 2, Section F (Banks, Micro-finance Services and Other Support Structures). In determining the bank loans, question F.2 (Have you ever applied for a bank loan for your business?) and F.2.1 (If Yes, did you succeed in obtaining a loan?) may be used. If the HUEM answered "NO" to F.2.1 and has a recorded interest payment, then the possible source of credit is the informal moneylender. However, if the answer is "YES" then the interest payment may not be included in the informal sector FISIM, provided that the HUEM also did not answer "YES" to question 4.2 (Have you applied for a loan from sources other than a bank?) and/or "YES" to question F.4.4 (If yes, did you get the loan?). Another question that may be considered for confirmation of informal money lending transaction is item F.5. (What was/were your other source/s of financing your business?). Inconsistencies in answers may also be encountered, hence, the combination of questions, choice of variables to use, and interpretation of answers will depend on the judgment of the national accountant and the common practice in his or her country.

(ii) On the other hand, an answer to the query D.3.15b "Interest received" by a HUEM owner not in the finance industry suggests that the HUEM may have had a secondary output, which is money lending, that the respondent (HUEM owner) did not declare during the interview. Hence, the interest received is the output of a lending transaction in which the respondent has engaged, but did not report.

(iii) For HUEMs that answered D.3.15 and are not in the finance industry, only either D.3.15a or D.3.15b is expected to have answers, and not both. This means that the HUEM has borrowed money for its operations or the HUEM has a secondary output, which is money lending. In cases where both items have data for a single HUEM not in the finance sector, say HUEM 1, the interest paid will be the income of a money-lending HUEM, which is HUEM 2 in this example, and the interest received will be the output of the lending activity HUEM 1 engaged in. In this sense, both items will be outputs of a financial service of different HUEMs.

Given these assumptions, the data recorded in D.3.15 can be regarded as the total interest received to obtain FISIM. Table 4.3 presents the type of data that may be collected from item D.3.15. and the interpretations of the records.

The following equation may be used:

$$\text{FISIM} = \sum_{i=1}^{n_i} (W_i * Interest\_paid_{,i})_N + \sum_{i=1}^{n_i} (W_i * Interest\_received_i)$$

where W_i is the survey weight for the ith HUEM
Interest_paid - is the interest paid to informal moneylender
Interest_received - is the interest received by informal money lender

It should be noted, however, that the values of interest paid and received reported by HUEMs in the agriculture industry are for 6 months, while the values for HUEMs in non-agriculture are only for 1 month.

Table 4.3 Interest Paid and Received by HUEMs in Non-Finance Industry

Industry	HUEM No.	Interest				Borrowed		F.5. Other Sources of Business Finance					Interpretation
		Agriculture (6 months value)		Non-Agriculture (1 month value)		F.2.1 from a Bank	F.4.2 from Other Sources	Family	Friends	Landlord	Money-lenders	Others	
		Paid	Received	Paid	Received								
Agri	1	0	15,000	0	0	No	No	No	No	No	No	No	Has money lending as a secondary activity
Agri	2	112,000	0	0	0	No	No	No	No	No	Yes	No	Has borrowed money from an informal moneylender
Agri	3	34,000	0	0	0	No	No	Yes	Yes	No	No	No	Has borrowed money from an informal moneylender
Hotels	4	0	0	4,500	0	No	Yes	Yes	No	No	No	No	Has borrowed money from an informal moneylender
Agri	5	0	2,000	0	0	No	No	Yes	No	No	No	No	Has money lending as a secondary activity
WRT	6	0	0	718,889	0	Yes	No						Has borrowed money from a bank
WRT	7	0	0	2,000	0	No	No	Yes	No	No	No	No	Has borrowed money from an informal moneylender
WRT	8	0	0	2,000	0	No		No	No	No	No	Yes	Has borrowed money from an informal moneylender
Agri	9	0	1,000	0	0	No	No	Yes	No	No	No	No	Has money lending as a secondary activity
WRT	10	0	0	40,000	0	Yes	Yes	Yes	Yes	No	No	Yes	Has borrowed money from an informal moneylender
WRT	11	0	0	950,000	0	Yes	No	Yes	No	No	No	No	Has borrowed money from a bank
WRT	12	0	0	22,500	0	No	No	Yes	No	No	Yes	No	Has money lending as a secondary activity

Agri = agriculture, Hotels = hotels and restaurants, HUEM = household unincorporated enterprise with at least some market production, WRT = wholesale and retail trade.
Notes: Actual survey results from ISS Indonesia, 2008.

Services of Owner-Occupied Dwellings[23]

Persons who own the dwellings in which they live are treated as owners of unincorporated enterprises, which produce housing services that are consumed by the same household. The housing services produced are deemed to be equal in value to the rentals that would be paid on the services for accommodation of the same size, quality, and type. These will all go to operating surplus and final consumption expenditures of the owners. Analogously, Viet (2009) emphasizes the importance of being able to differentiate between an owner-occupied dwelling (OD), which serves as shelter and location of business activities simultaneously for the enterprise owner, and business premises outside home where the unincorporated enterprise operates. In case that the business premises are outside home and the HUEM owns them, the SNA rule dictates that no rental services should be imputed as intermediate consumption.

While the SNA recommends that output of the housing services produced by owner occupiers is imputed using available information on estimated rental that a tenant would pay for the same accommodation, factoring type of location, neighborhood amenities, size and quality of the dwelling, among others (Viet 2009), the Indonesia and Bangladesh HUEM survey questionnaires contain an item that can be used to estimate the services of owner-occupied dwellings (Question A.3.1[24]): *If you were to rent an office space for your business, how much do you think will be your rental cost?* However, in the case of Armenia, this particular item was not incorporated. Although the services of owner-occupied dwellings are only indirectly part of the HUEM's activity since it is provided as a housing service exclusively for its own use, this is still considered as unincorporated enterprises; hence, this activity should be covered to maintain consistency with the coverage of the national accounts.

To operationalize the SNA recommendation using the information gathered by C.3.1, apply the weighted total of the rental value of all HUEMs in ISS Form 2. This will represent the estimated value of ownership of dwellings.

$$\text{Value of OD services} = \sum_{i=1}^{n} W_i * Rentalvalue_i \qquad \textit{Equation 5}$$

where

W_i is the survey weight for the ith HUEM.

But for those who need to impute the value due to the absence of information or because the quality of data from survey is questionable, the following variables from external sources may be used: number and size of owner-occupied dwelling units (construction value plus land value may be used as basis for estimating the rental value of the dwelling); and/or existing rental value of a square meter of dwelling. The first step is to establish a benchmark estimate of the value of housing services of owner-occupied dwellings, given the available information:

$$\text{Value of OD services} = \text{Number of OD units} \times \text{Rental value of housing units} \qquad \textit{Equation 6}$$

Alternatively, the number of OD units may also be obtained from a housing census while the rental value of residential houses may be covered by the consumer price index.

In estimating for the rental value of the housing unit component of Equation 6, regression using the hedonic method[25] with the following variables can be employed: size (number or square meters), capital value, and rental value per square meter. Thus,

$$\text{Value of OD services}_t = \text{Value of OD services}_o \times \text{Capital value}_t + \text{Rental value}_t \qquad \textit{Equation 7}$$

Note: Hedonic pricing uses a model for identifying price factors based on the premise that price is determined both by the internal characteristics of the good or service (size, quality of the house) and external factors affecting it (accessibility, market forces, etc.).

[23] Viet (2009) mentions that "some countries estimate services of owner-occupied dwellings as the sum of consumption of fixed capital and maintenance costs…A simple calculation may be based on the assumption that the dwelling is expected to survive for 50 years for instance. In such a case, the annual depreciation will be equal to 2.0% the market price of the dwelling."

[24] Item OB.7.1 in Bangladesh questionnaire.

[25] The hedonic pricing method is a useful tool to model the variation of housing prices on the basis of its local environmental attributes. The basic assumption of this approach is that the value of the marketed good is related to its characteristics or the type of services that it provides.

Table 4.4 Variables Needed to Estimate Services of Owner-Occupied Dwellings: A.3.1 (Estimated Rental Value) and Informal Sector Survey Form 2 Weight

Workplace	A.3.1 If you were to rent an office space for your business, how much do you think will be your rental cost?	ISS2 Weight	Services of Owner-Occupied Dwelling Estimate
Home with no work space	15,000	390.1	5,851,433
Home with no work space	15,000	426.5	6,397,161
Home with no work space	20,000	669.0	13,380,476
Home with no work space	15,000	669.0	10,035,357
Home with no work space	15,000	426.5	6,397,161
Home with no work space	30,000	663.5	19,904,883
Home with no work space	30,000	423.0	12,688,611
Home with work space	50,000	434.6	21,728,115
Home with work space	300,000	394.0	118,200,000
Home with no work space	50,000	432.9	21,642,975
Home with no work space	100,000	474.1	47,406,900
Home with no work space	86,000	634.7	54,581,027
Home with work space	850,000	647.3	550,212,140
Home with no work space	100,000	624.6	62,455,690
Home with work space	25,000	478.0	11,950,463
Home with no work space	300,000	425.5	127,640,040
Home with no work space	50,000	395.9	19,794,635
Home with work space	50,000	430.0	21,498,475
Home with no work space	110,000	478.0	52,582,035
Home with no work space	50,000	430.0	21,498,475
:	:	:	:
:	:	:	:
Home with work space	75,000	563.3	42,245,258
			Total

To estimate the GVA of services of owner-occupied dwellings, cost of maintenance (minor repairs[26]) is deducted from the value of output. The GVA of owner-occupied dwellings will be recorded as final consumption expenditure of households. Table 4.4 illustrates the computational procedure.

Paid Domestic Services

Paid domestic services pertain to services provided by domestic servants, cooks, gardeners, drivers, babysitters, etc. It excludes payments for household chores performed by other household members.

Imputation of paid domestic services uses the compensation of these employees and their number. Again, a benchmark value for paid domestic services has to be established using data from the Household Income and Expenditure Survey.

An alternative method for estimating the number of paid domestic services is by utilizing the ISS Form 1.[27] This questionnaire contains questions to distinguish formal from informal employment. Moreover, by applying the International Conference of Labour Statisticians (ICLS) framework on informal employment presented in Chapter 2 (Figure 2.3), those wage workers and/or employees (casual or permanent) working as domestic workers may be identified. Thus, the linkages between the Labor Force Survey (LFS), ISS Form 1, and ISS Form 2 must be strictly observed because supplementary information from one questionnaire (form) to another is a very likely possibility.

[26] This is considered part of intermediate consumption.

[27] For Armenia, Section D of the Integrated Living Conditions Survey (ILCS) can be utilized. For Bangladesh, both the Labor Force Survey (LFS) and the ISS Form 1 must be used.

Estimates on the number of paid domestic workers are those that fall in cell 10 (see Figure 2.3, Chapter 2). The weighted total, based on the ISS Form 1 survey weights, must be used.

Thus, estimates of paid domestic services is computed by

Value of paid domestics services =

$$\sum_{j=1}^{k} \left(\sum_{i=1}^{n_j} W_i * Number\_of\_domestic\_workers_i\right)_j * WageRate_j$$

Equation 8

where W_i is the survey weight for the ith employed person

Wage Rate is the prevailing rate for domestic services at jth location/ administrative unit/urbanity

n_j is the sample size falling in the jth location/administrative unit/urbanity

k is the number of location/ administrative unit/urbanity

The output of paid domestic services is the same as its GVA since the materials used to carry out these domestic services are part of the final household consumption.

Agricultural Activities

While the HUEM survey covers agricultural activities, it is possible that some supplementary goods and services produced by household units (either HUEMs or non-HUEMs) were not captured by the survey. Examples are fruits and vegetables and animals grown in backyards, hunting and trapping, and forestry and logging. These outputs may be sourced from the Household Income and Expenditure Surveys.

Other data sources include agricultural surveys, specifically on backyard farming activities.

4.4.3 Intermediate Inputs

In general, most informal sector enterprises are engaged in labor-intensive production processes. Barwa (1995) characterized the mode of operation in the informal sector as employing a variety of equipment consisting mostly of simple tools, which are either second hand or self-constructed. Further, they largely depend on cheap raw materials that are locally produced and sold as inputs for the production of goods and services.

Conceptually, intermediate inputs[28] (or intermediate consumption) consist of the value of the goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital (SNA 1993, Chapter 6). The goods and services may be either transformed or used up by the production process during an accounting period. Some inputs are transformed into new products (e.g., coconut husks are transformed into buff or coconut brush, wood into charcoal, sugarcane into refined sugar). Other inputs, such as electricity and other services, are completely used up. It also includes rentals of equipment or buildings and also fees, commissions, royalties, among others, which are payable under licensing arrangements. Further, goods and services used by ancillary activities, such as purchasing, sales, accounting, transport, storage, and maintenance, are included.

The following sections discuss each component of intermediate consumption in the context of estimating GVA from the HUEM survey.

4.4.3.1 Expenditures on Raw Materials and Stock

Usually, available data used to estimate intermediate consumption are expressed as the value of materials and supplies purchased instead of used. Thus, as in the case of valuing output to incorporate the change in output inventories, the value of material and supplier used as inputs during the period is estimated by deducting the value of changes in inventories of materials and supplies[29] from the value of materials and supplies purchased.

---

[28] Expenditures by enterprises on valuables consisting of works of art, jewelries, among others, are not considered intermediate inputs. It does not include costs incurred by the gradual using up of fixed assets owned by the enterprise, treated as consumption of fixed capital in the SNA.

[29] Changes in inventories are equal to entries less withdrawals and recurrent losses on goods held in inventory or beginning less ending inventories.

Box 4.7 Estimating Cost of Intermediate Inputs from the HUEM Survey

Items concerning the intermediate inputs are available in Section D, *Expenditures on Raw Materials and Stock*, of the HUEM survey questionnaire. Not all items under Section D can be considered as intermediate inputs. Thus, the intermediate inputs have to be drawn individually from Hem D.3.

For value of raw materials used, the data given for Hem D.1 is assumed to be the value of raw materials used (Hem D.1) for manufacturing; electricity, gas, and water; agriculture; mining; and construction. On the other hand, Hem D.2 is assumed to be the value of purchases of goods for resale during the period.

Intermediate inputs at purchasers' prices *Equation 9*

= Value of raw materials used
+ Fuel, gasoline and lubricants
+ Water
+ Electricity
+ Rental payments
+ Transport services
+ Communication expenses
+ Non-industrial services
+ Repair and maintenance of facilities and equipment
+ Other industrial services
+ Insurance
+ Packaging
+ Other costs

HUEM = household unincorporated enterprises with at least some market production.

Simply put, an enterprise may purchase materials for use as inputs. However, it is not necessarily the case that everything that the enterprise purchases corresponds to the inputs used in the production of goods and services sold during the same reference period. In particular, part of the purchases may remain in inventories that may be carried over the next reference period. Similarly, an enterprise may withdraw inputs from inventories if stock of necessary inputs is available for withdrawals. In reference to this operationalization, the HUEM survey has been designed to collect information on expenditures on raw materials and stock during a pre-specified reference period: the last 6 months for agricultural enterprises and the last month for non-agriculture. While the survey collects data on output inventories for both products sold with or without transformation, input inventories, which are part of the intermediate consumption, are ignored in the current HUEM survey questionnaire. If one assumes that inventories of raw materials are small for unincorporated enterprises, they may be approximated to be zero. In other cases, information derived from input–output tables and other administrative data may be useful to impute changes in input inventories.

4.4.3.2 Boundary between Intermediate Consumption and Employee Compensation

By definition, the computation of GVA using the production approach excludes employee compensation, which comprises *wages and salaries*, *social insurance,* and *bonuses and allowances* from the value of intermediate inputs. The 1993 SNA states that in cases when employees consume certain goods and services but did not directly enter the production process, it is necessary to distinguish whether these would be accounted under intermediate consumption or be treated as a form of employee remuneration. Theoretically, the enterprise owner should note the same value of net operating surplus whether this activity is classified under employee compensation or intermediate consumption; but the classification would affect the value of GVA.

The HUEM survey questionnaire provides different expenditure items, such as *fuel, gasoline & lubricants*, *water*, *electricity*, and *transport services,* among others. It is possible that some of these expenditure items may be consumed by both unpaid and paid members of the household unincorporated enterprises for the direct

satisfaction of their needs and wants. Conceptually, this should fall outside the boundary of intermediate consumption since such cases do not directly enter the production process. The current HUEM survey is not designed to directly capture this distinction. Instead, the type of information collected would largely depend on the ability of the survey enumerators to elicit the desired information from the respondents. For computational purposes, the reported values for each expenditure item are taken at face value (i.e., they are all assumed to enter the production process) except when they lead to negative GVA, outliers, or other cases which would prompt the need for imputations.

4.4.3.3 Boundary between Intermediate Consumption and Gross Fixed Capital Formation

Based on the definition adopted in the 1993 SNA, intermediate consumption excludes the cost of using fixed assets owned by the enterprise or expenditures incurred to acquire a particular fixed asset. Even expenditures on durable goods, such as small tools that informal sector enterprises commonly use, are not included under intermediate consumption unless such expenditures are made regularly.

Presumably, informal sector enterprises have limited capacity to acquire equipment on a frequent basis. Instead, most of them try to maximize the life cycle of the same set of equipment and tools until the point when the equipment or tool becomes totally unproductive or obsolete. On the other hand, (ordinary) regular maintenance and repairs are included under intermediate consumption. These types of expenditures must be distinguished carefully from major renovations or reconstructions, which are geared toward enhancing the efficiency of the equipment, and thus should be treated as part of gross fixed capital formation. The HUEM survey questionnaire distinguishes simple repairs from major renovations which are captured under the *Capital Expenditures* section (i.e., one of the possible responses for the mode of transaction is "made major improvements").

4.4.3.4 Taxes on Production and Taxes on Product

Carrying out activities under the informal sector is not deliberately motivated to evade payment of taxes or social security contributions. While some intend to avoid compliance and regulations that entail incurring of additional production costs, the Organisation for Economic Co-operation and Development (2002) argues that this should be contextualized within the capacity of the enterprises to comply, and the relevance of the existing regulations to conditions in the informal sector.

In general, taxes on production include taxes on payroll or workforce; recurrent taxes on land, buildings, or other structures; business and professional licenses; taxes on the use of fixed assets or other activities; stamp taxes; taxes on pollution; and taxes on international transactions. To differentiate, taxes on products are levied as a percentage of some good or service produced, sold, or imported or, in other circumstances, when a good is exported, leased, transferred, delivered, or used for own consumption or capital formation. Examples are value added tax (VAT), import duties, excise taxes, etc. The application of taxes on products produced by informal sector enterprises is assumed to be limited.

The HUEM survey questionnaire collects information on taxes on product and taxes on production. Although this information is collected under the *Expenditures on Raw Materials and Stock* section, both are excluded in the computation of intermediate consumption.

As in the other components, the quality of data collected largely depends on the ability of the survey enumerator to elicit the desired information, as well as the respondents' ability to recall the economic activities, including the relevant costs that were incurred during the reference period.[30] If entries on taxes on product are mostly zero or the quality of the reported values is questionable, we may ignore the

[30] The conduct of HUEM survey did not employ the use of the diary method.

said item and assume that output is directly valued at basic prices. Otherwise, we can use this particular information to value the output at producer's prices. For further discussion on valuation of the GVA components, see Box 4.2.[31] On the other hand, taxes on production are incorporated as a component in the computation of net operating surplus.

4.4.3.5 Expenditures for Work-in-Progress Goods

As discussed in the previous section, in the case of the HUEM survey, determining a case of work-in-progress may be prompted by an enterprise reporting "no business activity" during the reference period and, hence, either missing or zero revenue and/or intermediate consumption data are reflected. Similarly, it may be a case when the enterprise incurs intermediate consumption but does not earn any revenue. This signals the need for further investigation of the production activities of the HUEM. Discussions on imputing the value of work-in-progress in inventory of outputs are provided in the previous section.

4.4.3.6 Other Imputations for Intermediate Inputs

As mentioned earlier, intermediate consumption consists of the value of goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital. Even non-durable goods and services with very short expected life, but which are utilized in the production process, are included in the computation of intermediate consumption. Although the SNA concept of intermediate consumption should ideally cover detailed information on *cost of industrial services (e.g., payments for contract, commission, repair and maintenance work, freight charges) and cost of non-industrial services (e.g., bank and financial charges, patent and license user fees, insurance charges, storage and warehousing charges, advertising, legal accounting, consulting services, printing costs, cost of traveling, entertainment, meetings, motor-vehicle running expenses, cleaning costs, postal, telephone and telegraph charges, and elements of labour cost that cannot be considered as compensation of employees (e.g., vocational training, work clothes, workers' transport, cost of cultural, recreational services to employees),* among others (UN 1999), its application to HUEMs is generally limited. Hence, intermediate consumption of HUEMs is mostly focused on the basic inputs, such as raw materials, utilities, transport services, etc.

In the case of missing entries of intermediate consumption, the values are estimated with reference to the data provided from the business activity fluctuation of the HUEM survey questionnaire. If, during the reference period, there was at least minimum activity for the HUEM under consideration, missing intermediate consumption may be imputed using the nearest neighbor approach. Consider Example 4.3:

Example 4.3 Imputing for the Missing Intermediate Consumption Value

Respondent	Sales	Intermediate Consumption	Business Activity During Reference Period	Ratio of Intermediate Consumption to Revenue
HUEM 1	90,844,547	20,499,547	Maximum	0.2257
HUEM 2	46,565,678	46,531,113	Average	0.9993
HUEM 3	56,315,473	55,580,973	Average	0.9870
HUEM 4	14,614,563	14,548,797	Average	0.9955
HUEM 5	36,357,812	*	Average	*
HUEM 6	45,856,580	38,433,000	Average	0.8436

* = missing data, HUEM = household unincorporated enterprise with at least some market production.

Note: Ratios in the example have been rounded off but imputations will be more precise if actual values are used.

Suppose HUEMs 1 to 6 are found within the same province and are engaged in the same economic activity (or same subsector based on the 3-digit or 4-digit International Standard Industrial Classification [ISIC] code). HUEM 5 reported missing intermediate consumption during a period of average business activity. Since the six HUEMs are geographically located within the same province and are engaged in the same economic activity, we may consider them as potential neighbors. Such grouping is based on the assumption that within the same geographical location, all HUEMs face the same price levels and would have relatively similar input sources. Similarly, by being engaged in

[31] Intermediate inputs are recorded at the time when these goods or services enter the process of production, as distinct from the time these were acquired by the producer. In the case of services, the time of purchase and the time of use are the same. Intermediate inputs are normally valued at purchasers' price prevailing at the time it enters the production process.

the same small-scale activity, they would exhibit close production functions and the production trend of one will be similar to that of another.

Given the set of data available, additional conditions, such as the sales trend or cycle, may be applied. Sales performance is reflected in this cycle and, therefore, its fluctuations are significant in computing the intermediate consumption to revenue ratio. The ratio would definitely be different when the sales are at its maximum compared to when revenue is either average or at minimum levels. Thus, it is important to use the closest set of information in the imputation.

The sales data for HUEM 5 is said to be at an average level; hence, some information sets may not be useful and should be excluded from the list of neighbors. The primary candidate for this is HUEM 1 (which has maximum business activity), whose ratio is much lower than that of the other HUEMs in the neighborhood list. Clearly, the difference in sales, from maximum to average, has a vital effect on the estimated ratios. After identifying the neighbors, the average ratio of these HUEMs can then be used to impute the intermediate consumption of HUEM 5.

On the other hand, suppose we have a similar scenario except that instead of missing value, the reported intermediate consumption is zero, as presented in Example 4.4. The same methodology can be applied, though additional steps must be conducted prior to the identification of the neighbors. Using the business activity fluctuation data, determine whether there was at least minimum activity during the reference period. The primary objective is to confirm whether the zero intermediate consumption is possible given the production and economic activity of the HUEM. (*For such type of economic activity, is it possible not to incur any intermediate consumption but still earn some revenue?)* However, while it may be probable that this particular HUEM did not incur any intermediate consumption during the reference period (e.g., a HUEM in retail and trade whose sales in the last month came from inventories from 2 months prior to the reference period), some imputations may still be needed since the end purpose is to come up with annual estimates of the GVA of each HUEM. To this end, we can investigate the behavior of intermediate consumption of other HUEMs which are (i) located geographically near the HUEM under consideration, (ii) engaged in similar economic activity and (iii) have at most minimum business activity during the reference period. In the following illustration, it would seem reasonable to consider HUEM 4 as the neighbor of HUEM 5. In particular, we can multiply the revenue of HUEM 5 by the intermediate consumption–revenue ratio of HUEM 4.

Example 4.4 Imputing for Zero Intermediate Consumption Value

Respondent	Sales	Intermediate Consumption	Business Activity During Reference Period	Ratio of Intermediate Consumption to Revenue
HUEM 1	78,844,945	19,499,341	Maximum	0.2473
HUEM 2	48,556,362	46,533,111	Average	0.9583
HUEM 3	58,315,479	50,580,972	Average	0.8674
HUEM 4	14,614,563	8,097,929	Minimum	0.5541
HUEM 5	3,357,822	0	Minimum	*
HUEM 6	45,856,580	38,433,000	Average	0.8381

* = missing data, HUEM = household unincorporated enterprise with at least some market production.
Note: Ratios in the example have been rounded off but imputations will be more precise if actual values are used.

4.5 Informal Sector's Gross Value Added under the Income Approach

Gross domestic product (GDP) can be measured through three approaches: production, expenditure, and income. Under the production approach, GVA is obtained as the difference between output and intermediate input, which is equal to the sum of the incomes paid to the factors of production—compensation of employees, operating surplus, mixed income, and rental of land. In compiling national accounts, in general, data for the production approach is sourced from establishment surveys while for the income approach, data comes from administrative sources.

The HUEM survey is outlined to collect detailed information on the different components needed to estimate GVA under a production approach framework, although the questionnaire also collects data on income components to allow rough approximation of HUEMs' mixed income. In particular, wages and

salaries, social insurance, bonuses and allowances, and taxes on product incurred by HUEMs are also asked for. The income approach is independent of the two other approaches since data for this approach may come from different sources. Conceptually, however, the income and production approaches yield the same GDP. Joshi et al. (2009) emphasized that measuring profits accurately from microenterprises is crucial for understanding the success of a variety of policy and programmatic interventions. It is operationally useful in providing a complete picture of the market conditions confronting HUEMs. While the computation of operating surplus is not a prerequisite for computing the contribution of the informal sector to total economy (since the former will be computed residually from GVA), its analysis will contribute to the existing literature on measurement issues in the informal sector.

4.5.1 Operating Surplus or Mixed Income

For our purpose, the income approach adds up all incomes paid in the production process. In general, the income measure of GDP is computed as the sum of compensation of employees, indirect taxes net of subsidies (i.e., taxes on production and imports), and operating surplus. Arguably, the application of concepts, such as indirect taxes and subsidies, is limited in the case of informal sector enterprises for reasons mentioned earlier.

land is owned or rented by the enterprise).[32] As a balancing item, a HUEM's operating surplus can be computed by subtracting compensation from GVA computed from the production approach. Specifically, this is usually termed as *mixed income* in the context of unincorporated enterprises where owners of the enterprise may either receive salaries or profit from the enterprise but which may not be clearly identified. It may also include salaries paid to other workers of the enterprise. Further, operating surplus or mixed income can be computed net of consumption of fixed capital (i.e., depreciation). As mentioned earlier, consumption of fixed capital is computed by dividing the purchaser's price of the fixed asset by its remaining useful life.

The income approach provides an alternative way to estimate the GVA of the economy. Given the data collected in the current HUEM survey questionnaire, independent computations of GVA are not feasible if the operating surplus or mixed income is derived as a residual of GVA estimated from the production approach. Under this framework, $GVA_{production}$ will always be equal to GVA_{income}.

Although the HUEM survey questionnaire is perceived to collect more detailed information on the production side, it is still operationally useful to facilitate independent computations, using the income approach, when the production approach yields questionable estimates. For instance, while it is theoretically possible for an enterprise to incur negative

Box 4.8 Estimating Operating Surplus from the HUEM Survey through Residual Approach

Items concerning the operating surplus are provided from different sections. The first component is the gross value added computed using the production approach (i.e., output less intermediate inputs). Section D.3 provides the compensation and taxes on product. Depreciation of fixed assets can be computed from Section E. Capital Expenditures.

Operating Surplus			*Equation 10.1*
	=	Output	Equation 1
	–	Intermediate inputs	Equation 9
	–	Wages and salaries	D.3.1
	–	Social insurance	D.3.2
	–	Bonuses and allowances	D.3.3
	–	Tax on product	D.3.16
	–	Consumption of fixed capital	E

HUEM = household unincorporated enterprise with at least some market production.

By definition, operating surplus is a measure of the surplus accruing from processes of production before interest charges, rents, and other property incomes are deducted. Intuitively, it provides a quantitative measure of the HUEMs' profits or losses, which is invariant to the extent to which assets are financed (e.g., whether

[32] However, according to the SNA, the operating surplus/mixed income is not invariant to the extent to which the fixed assets used in production are owned or rented. In particular, rental payments are usually recorded under purchases of services, which is a component of intermediate consumption.

GVA, such observation calls for caution in subsequent analyses. Unless the negative sign can be supported by other relevant indicators, it may be more intuitive to reestimate GVA through the income approach by assuming zero mixed income.

4.6 Annualizing Outputs, Intermediate Inputs, and Gross Value Added

As mentioned earlier, the HUEM survey implements different reference periods for enterprises engaged in agricultural and non-agricultural activities. The rationale behind this is to better capture the production activities of the units. Since most agricultural activities are subject to seasonality, the use of a longer reference period, compared to when dealing with non-agricultural activities, is more efficient. The choice of using the "last 6 months" for agriculture and "last month" for non-agriculture strikes a balance between being able to cover as much information about the production activities of the HUEMs as possible, and the ability of the survey respondents to recall the required information.

In addition, the HUEM survey questionnaire also collects information about the business fluctuation of each enterprise in terms of its sales and revenues for an entire year. This information may be used to convert

Box 4.9 Estimating Gross Value Added from the HUEM Survey through Income Approach

By definition, the gross value added (GVA) under the income approach is the sum of (i) compensation (i.e., gross salaries and wages, contribution of employer to social insurance, and bonuses and allowances); (ii) indirect taxes net of subsidies; (iii) depreciation of fixed assets (e.g., land, buildings, and other structures; transport equipment; machinery and equipment; other fixed assets); and (iv) mixed income.

Equation 10.2

GVA_{income}		
=	Wages and salaries	D.3.1
+	Social insurance	D.3.2
+	Bonuses and allowances	D.3.3
+	Tax on product	D.3.16
+	Consumption of fixed capital	E.
+	Operating surplus or mixed income	Residual approach (Equation 10.1) or assumption

To reiterate, while the HUEM survey is outlined to collect detailed information of the production activities of enterprises in the informal economy, information on income components was also collected. Although the neighborhood technique, which is used in imputing for missing values and outliers, also applies in this context, there are other considerations in computing GVA_{income}.

First, it is very likely that data on compensation does not account for unpaid family workers, thus making it an implicit component of the HUEMs' mixed income. Unless one makes simplifying assumptions (e.g., zero mixed income when $GVA_{production}$ is negative), operating surplus or mixed income can be computed residually, making $GVA_{income} = GVA_{production}$.

To some extent, the application of taxes on products for informal sector is limited. As a review, taxes on products are levied as a percentage of some goods or services produced, examples of which are VAT, import duties, and excise tax. However, the type of taxes collected from the HUEM questionnaire correspond to business license tax, documentary stamps, and other fees incurred by the enterprise, except for Indonesia's questionnaire, which distinguishes between tax on the product and taxes on producing the product.

Another consideration is the difficulty associated with computing depreciation of fixed assets using the data collected. The procedure is not straightforward since the useful life of an asset, which greatly varies from one type to another, has to be estimated using other data sources. Thereafter, one can approximate consumption of fixed capital by dividing the purchaser's price of the fixed asset by its remaining useful life.

In computing an annual figure, it may not be safe to assume a constant value for compensation throughout the year due to the high turnover among informal enterprises. The same argument may also apply for the other income components. By summing up compensation, taxes on product, depreciation of fixed assets and mixed income, GVA_{income} for the reference period can be estimated (6 months for agriculture and 1 month for non-agriculture). In turn, Section 3.5 outlines an approach to estimate the annual figure.

GVA = gross value added, HUEM = household unincorporated enterprise with at least some market production

estimates of outputs, intermediate inputs, and GVA of an enterprise during a reference period to annual figures, a process which we will term *annualization* hereafter.

The corresponding item for annualization is Question C.8,[33] the HUEM production or business cycle for the whole year. The primary purpose of C.8 is to record the sales trend of the business, which can be utilized to approximate the annual level of production or verify the estimated degree of business activities (Example 4.5). Given that the reference period for agriculture is 6 months, the business trend in C.8 can confirm if the recorded values in C.2–C.7 are valid and can also explain some observed anomalies, if any.

Data from C.8 can be applied to Equation 1 to estimate the value of total annual sales. For agriculture, since the reference period is the last 6 months, the adjustment for annual estimates involves estimating only the remaining half of the year. For example, if the Informal Sector Survey was conducted in August 2009, the sales record for the last 6 months pertains to the months from February to July.

There are two options for estimating annual output and intermediate inputs for agriculture, fishery, and forestry. Option 1 makes use of the business trends as reported in C.8. The other option is to multiply the reported values for 6 months by 2 to come up with annual values for output and intermediate inputs. The use of supplementary data, such as inflation, may also be explored.

In the following discussions, we assume that output and intermediate inputs move in the same direction during the year but may not necessarily move at the same stage. Since the information on annual business fluctuation only covers the magnitude of an enterprise's sales, other components of its GVA are annualized through imputations. In particular, the imputation ratios are computed as the ratio of the GVA component under consideration to the enterprise's total sales.

In most of the succeeding examples, we assume that the reference months used in Example 4.5 are February–July for agriculture and July for non-agriculture.

4.6.1 Annualization: HUEMs Engaged in Agriculture

In the case of data collected from the HUEM survey, it is straightforward to estimate the value of total annual sales by using information for the other 6 months outside the reference period in conjunction with the minimum, average, and maximum gross revenue data. As a review, gross revenue refers to the sum of total value of products sold and services offered during the reference period. The computation is illustrated in Example 4.6:

Example 4.6 Agricultural HUEM X Min–Max Sales/Revenues

C.9.1.1. Minimum gross sale/revenue: 1,750,000
C.9.1.2. Average gross sale/revenue: 7,000,000
C.9.1.3. Maximum gross sale/revenue: 15,000,000

Suppose the business fluctuation data for the months outside the reference period are as reflected below. If the reported total sales is 29,666,000, the annual sales estimate for HUEM *X* would sum to 46,416,000 = (29,666,000 + 1,750,000 + 15,000,000).

Month	Business Performance/ Fluctuations	Estimate
August	1	1,750,000
September	0	
October	0	
November	3	15,000,000
December	0	
January	0	
Total		**16,750,000**

Example 4.5 C.8 How did your business activity fluctuate within the past 12 months?

Variable	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Activity Code	1	0	0	3	0	0	2	2	0	0	2	2

Note: An activity code of zero means no activity, 1=minimum activity, 2=average activity, and 3=maximum activity.

[33] Item PIS.10 in the Bangladesh survey questionnaire.

Under the assumption that the components of GVA do not move at the same stage, imputations are needed to be able to convert reported values of own consumption, net inventories, own-produced capital assets, and intermediate inputs to annual figures. In particular,

- Own consumption is assumed to remain constant for all levels of production and business cycle. While own consumption may be adjusted by households depending on the production performance, i.e., goods consumed may be lessened when production is at the minimum, changes are assumed to be small as the needs of the households do not vary according to the HUEM's output. Thus, the annual value of own consumption may be estimated by multiplying the recorded value by 2 (C.7 x 2).

- Value of own-produced capital assets, as provided in Equation 2, is for the whole year already and this can be added to the estimated annual output. The data is collected in Section E. Capital Expenditures.

- Changes in inventories and intermediate inputs would use imputation ratios as illustrated in the following example:

Consider a neighborhood consisting of HUEMs (i.e., in this case, we define neighbors as those HUEMs located within the same geographic domain, engaged in similar economic activities, and having approximately the same level of GVA during the reference period). Tag each HUEM based on the modal activity code during the reference period of 6 months. Sort the HUEMs based on this modal activity code. Suppose we are interested to compute the annual estimate of a component of GVA, say intermediate inputs, as provided under column (2) in Example 3.7. For each HUEM, we compute the ratio of intermediate inputs (or change in inventories) to gross sales. We take the average of these ratios per group of HUEMs with the same magnitude of business activity during the reference period. These serve as imputation ratios, which could be used to compute annual estimates of intermediate inputs (or changes in inventories).

In general, we can simply put the reported value for the component of GVA that we need to annualize under column 2. Hence, suppose we are interested to compute the annual value of a particular component of GVA, say X_{i2}, for the ith HUEM in a given neighborhood of size j.

$$X_{i2}^{annual} = (Z_{\min} * M_{\min} * Y_{i\min}) + (Z_{ave} * M_{ave} * Y_{iave}) + (Z_{\max} * M_{\max} * Y_{i\max}) + X_{i2} \qquad \textit{Equation 11}$$

where

$$Z_{\min} = \frac{\sum_{i=1}^{j} \frac{X_{i2}}{X_{i1}} I_{\{\text{mod } eactivitycode_i = \min\}}}{\sum_{i=1}^{j} I_{\{\text{mod } eactivitycode_i = \min\}}}$$

$$Z_{ave} = \frac{\sum_{i=1}^{j} \frac{X_{i2}}{X_{i1}} I_{\{\text{mod } eactivitycode_i = ave\}}}{\sum_{i=1}^{j} I_{\{\text{mod } eactivitycode_i = ave\}}}$$

$$Z_{\max} = \frac{\sum_{i=1}^{j} \frac{X_{i2}}{X_{i1}} I_{\{\text{mod } eactivitycode_i = \max\}}}{\sum_{i=1}^{j} I_{\{\text{mod } eactivitycode_i = \max\}}}; \; X_{i1} \neq 0$$

$$M_{\min} = \sum_{k=1}^{6} I_{Mo_k\{activitycode = \min\}}$$

$$M_{ave} = \sum_{k=1}^{6} I_{Mo_k\{activitycode = ave\}}$$

$$M_{ave} = \sum_{k=1}^{6} I_{Mo_k\{activitycode = \max\}}$$

$I_{\{modeactivitycode\}}$ is an indicator function to identify whether the activity code of the ith HUEM during the reference period is minimum, average, or maximum.

$I_{Mok\{activitycode\}}$ is an indicator function to identify whether the activity code of the ith HUEM during the kth month outside the reference period is minimum, average, or maximum.

Note that we can also adopt a similar approach wherein instead of converting each component to annual estimates separately, we can directly convert GVA to an annual estimate. In such case, column 2 of Example 4.7 would have GVA of each HUEM in the neighborhood.

Example 4.7 Annualization Worksheet for a Neighborhood of Agricultural HUEMs

Agriculture											
HUEM	C.2+C.3+C.4(1)	Intermediate Inputs (2)	Business Fluctuation During Reference Period (C8)						Mode	(2)/(1)	Imputation Ratio
			M1	M2	M3	M4	M5	M6			
$HUEM_1$	X_{11}	X_{12}	minimum	no activity	no activity	minimum	no activity	average	no activity	X_{12}/X_{11}	$Z_{no\ activity}$ = average(X_{12}/X_{11})
$HUEM_2$	X_{21}	X_{22}	minimum	average	no activity	minimum	minimum	average	minimum	X_{22}/X_{21}	Z_{min} = average(X_{22}/X_{21},…,X_{52}/X_{51})
$HUEM_3$	X_{31}	X_{32}	no activity	average	minimum	average	average	maximum	minimum	X_{32}/X_{31}	
$HUEM_4$	X_{41}	X_{42}	average	no activity	average	no activity	minimum	average	minimum	X_{42}/X_{41}	
$HUEM_5$	X_{51}	X_{52}	average	minimum	average	maximum	average	average	minimum	X_{52}/X_{51}	
$HUEM_6$	X_{61}	X_{62}	no activity	average	minimum	average	average	maximum	average	X_{62}/X_{61}	Z_{ave} = average(X_{62}/X_{61},…,X_{j-22}/X_{j-21})
$HUEM_7$	X_{71}	X_{72}	average	average	no activity	no activity	minimum	average	average	X_{72}/X_{71}	
:	:	:	average	average	no activity	average	average	average	average	:	
:	:	:	minimum	minimum	no activity	maximum	minimum	minimum	average	:	
:	:	:	average	average	average	no activity	maximum	average	average	:	
:	:	:	average	minimum	minimum	average	average	average	average	:	
$HUEM_{j-1}$	X_{j-11}	X_{j-12}	maximum	maximum	no activity	no activity	maximum	minimum	maximum	X_{j-12}/X_{j-11}	Z_{max} = average(X_{j-12}/X_{j-11},X_{j2}/X_{j1})
$HUEM_j$	X_{j1}	X_{j2}	average	maximum	no activity	maximum	maximum	average	maximum	X_{j2}/X_{j1}	

Example 4.7 Annualization Worksheet for a Neighborhood of Agricultural HUEMs *(continued)*

Agriculture										
HUEM	Business Fluctuation Outside Reference Period (C8)						C.9.2.1	C.9.2.2	C.9.2.3	Annual Estimates of (2)
	M7	M8	M9	M10	M11	M12				
$HUEM_1$	maximum	maximum	no activity	no activity	no activity	minimum	Y_{1min}	Y_{1ave}	Y_{1max}	$1(Y_{1min}*Z_{min})+0(Y_{1ave}*Z_{ave})+2(Y_{1max}*Z_{max})+X_{12}$
$HUEM_2$	no activity	maximum	minimum	average	average	average	Y_{2min}	Y_{2ave}	Y_{2max}	$1(Y_{2min}*Z_{min})+3(Y_{2ave}*Z_{ave})+1(Y_{2max}*Z_{max})+X_{22}$
$HUEM_3$	maximum	maximum	minimum	no activity	minimum	minimum	Y_{3min}	Y_{3ave}	Y_{3max}	:
$HUEM_4$	maximum	maximum	no activity	minimum	average	minimum	Y_{4min}	Y_{4ave}	Y_{4max}	:
$HUEM_5$	no activity	average	minimum	minimum	minimum	average	Y_{5min}	Y_{5ave}	Y_{5max}	:
$HUEM_6$	maximum	maximum	average	minimum	minimum	minimum	Y_{6min}	Y_{6ave}	Y_{6max}	:
$HUEM_7$	minimum	maximum	minimum	no activity	no activity	maximum	Y_{7min}	Y_{7ave}	Y_{7max}	:
:	maximum	average	maximum	average	average	minimum	:	:	:	:
:	average	maximum	minimum	no activity	minimum	minimum	:	:	:	:
:	maximum	maximum	minimum	no activity	no activity	average	:	:	:	:
:	maximum	average	minimum	minimum	minimum	minimum	:	:	:	:
$HUEM_{j-1}$	no activity	maximum	minimum	no activity	minimum	minimum	Y_{j-1min}	Y_{j-1ave}	Y_{j-1max}	:
$HUEM_j$	maximum	maximum	average	minimum	minimum	minimum	Y_{jmin}	Y_{jave}	Y_{jmax}	$3(Y_{jmin}*Z_{min})+1(Y_{jave}*Z_{ave})+2(Y_{jmax}*Z_{max})+X_{j2}$

HUEM = household unincorporated enterprise with at least some market production, M = month.

There are also different alternative approaches. Perhaps the simplest is to assume that seasonality is not significant and, hence, we can simply multiply GVA during the reference period by 2 (instead of doing annualization for each component of GVA separately) to get annual estimates. Alternatively, we could use available supplementary data, such as consumer price index, to convert to annual estimates.

4.6.2 Annualization: HUEMs Engaged in Non-Agriculture

A process similar to that used in agriculture HUEMs may be applied for the annualization of GVA reported by non-agriculture HUEMs. For estimating annual values, the options are to follow the business trends (as found in C.8) or to multiply the given past month's data by 12 for both output and intermediate inputs. Similarly, the use of supplementary data, such as inflation, may also be explored.

As cited earlier, data from C.9 provides information on the minimum, average, and maximum gross revenue. Gross revenue refers to the sum of total value of products sold and services offered during the reference period. It is straightforward to convert C.2, C.3, and C.4 to annual estimates as illustrated in Example 4.8.

Example 4.8 C.8 How did your business activity fluctuate within the past 12 months?

Variable	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Activity												
Code	2	0	0	3	0	0	2	2	0	0	2	2

Non-Agriculture HUEM *Y* Min–Max Sales/Revenues

C.9.2.1. Minimum gross sale/revenue: 50,000
C.9.2.2. Average gross sale/revenue: 300,000
C.9.2.3. Maximum gross sale/revenue: 900,000

Using the business trend in Example 4.8 and taking into consideration the last month's estimate from C2, the months outside the reference period are from August to June. Therefore, C.8 and C.9 data are combined such that

Month	Business Performance/Fluctuations	Estimate
August	2	50,000
September	0	
October	0	
November	3	900,000
December	0	
January	0	
February	2	300,000
March	2	300,000
April	0	
May	0	
June	2	300,000
Total		**1,850,000**

If C.2 recorded total sales amounting to 400,000, the annual sales estimate for HUEM *Y* is 2,250,000 = (400,000 + 50,000 + 900,000 + 300,000 + 300,000 + 300,000).

Similarly, imputations are needed to convert the other components of output and intermediate inputs to annual values. In particular,

- For food-related production activities in the non-agriculture sector, own consumption is assumed constant for all levels of production and business cycle. While own consumption may be adjusted by households, depending on the production performance, i.e., goods consumed may be lessened when production is at the minimum, changes are assumed to be small as the needs of the households do not vary according to the HUEM's output. Thus, the annual value of own consumption may be estimated by multiplying the recorded response by 12 (C.7 x 12).

- Value of own-produced capital assets is already annualized and can be added directly to the obtained annual value of output. Data is collected in Section E (Capital Expenditures).

- The other components of output and intermediate inputs can use imputation ratios as illustrated in the following example:

Consider a neighborhood consisting of HUEMs (i.e., in this case, we define neighbor as those HUEMs located within the same geographic domain, engaged in similar economic activities, and having approximately the same level of GVA during the reference period). Sort the HUEMs based on the activity code during

the reference period. Suppose we are interested to compute the annual estimate of a component of GVA, say intermediate inputs, as provided under column 2 in Example 4.8b. For each HUEM, we compute the ratio of intermediate inputs to gross sales. We take the average of these ratios per group of HUEMs with the same magnitude of business activity during the reference period. These serve as the imputation to be used in computing annual estimates of intermediate inputs.

To impute for the annual estimates of other components of GVA (e.g., change in inventory), we can simply put the component values of each HUEM under column 2.

In general, suppose we are interested to compute the annual value of a particular component of GVA, say X_{i2}, for the ith HUEM in a given neighborhood of size j.

$$X_{i2}^{annual} = (Z_{\min} * M_{\min} * Y_{i\min}) + (Z_{ave} * M_{ave} * Y_{iave}) + (Z_{\max} * M_{\max} * Y_{i\max}) + X_{i2} \qquad \textit{Equation12}$$

where

$$Z_{\min} = \frac{\sum_{i=1}^{j} \frac{X_{i2}}{X_{i1}} I_{\{activitycode_i = \min\}}}{\sum_{i=1}^{j} I_{\{activitycode_i = \min\}}}$$

$$Z_{ave} = \frac{\sum_{i=1}^{j} \frac{X_{i2}}{X_{i1}} I_{\{activitycode_i = ave\}}}{\sum_{i=1}^{j} I_{\{activitycode_i = ave\}}}$$

$$Z_{\max} = \frac{\sum_{i=1}^{j} \frac{X_{i2}}{X_{i1}} I_{\{activitycode_i = \max\}}}{\sum_{i=1}^{j} I_{\{activitycode_i = \max\}}} \quad ; \; X_{i1} \neq 0$$

$$M_{\min} = \sum_{k=1}^{12} I_{Mo_k\{activitycode = \min\}}$$

$$M_{ave} = \sum_{k=1}^{12} I_{Mo_k\{activitycode = ave\}}$$

$$M_{\max} = \sum_{k=1}^{12} I_{Mo_k\{activitycode = \max\}}$$

$I_{\{activitycode\}}$ is an indicator function to identify whether the activity code of the ith HUEM during the reference period is minimum, average, or maximum.

$I_{Mok\{activitycode\}}$ is an indicator function to identify whether the activity code of the ith HUEM during the kth month outside the reference period is minimum, average, or maximum.

Note that we can also adopt a similar approach in which instead of converting each component to annual estimates separately, we can directly convert GVA to annual estimate. In such case, column 2 of Example 4.8b would have the GVA of each HUEM in the neighborhood.

There are different alternative approaches. Perhaps the simplest is to assume that seasonality is not significant and, hence, we can simply multiply GVA during the reference period by 12 to get annual estimates. Alternatively, we could also use available supplementary data, such as the consumer price index, to convert to annual estimates.

4.6.3 Annualization Using Business Trend Index

The methodology presented, using the business trend index (BTI), was devised by the BPS-Statistics Indonesia national accounts team using the results of the 2008 Pilot Informal Sector Survey (ISS) in Yogyakarta and Banten provinces of Indonesia. Annualization is performed under the assumption that data cleaning, i.e., validation and imputation, has already been completed. The following are the general steps in the annualization of GVA estimates using the BTI.

1. Multiply the corresponding item of C8 over C9.

2. Sum up the monthly estimated sales/revenue to arrive at the annual sales/revenue (see Examples 4.9.a and 4.9.b).

3. Compute for the BTI using the following equation:

$$BTI_{agri} = \sum (M1 + \ldots + M6) / \sum (M7 + \ldots + M12) \qquad \textit{Equation 13}$$

$$BTI_{non\text{-}agri} = \sum (M1 + \ldots + M11) / M12 \qquad \textit{Equation 14}$$

Example 4.8 Annualization Worksheet for a Neighborhood of Non-Agricultural HUEMs

Non-Agriculture												
HUEM	C.2+C.3+C.4 (1)	Intermediate Inputs (2)	Business Fluctuation During the Reference Period (C8)	(2)/(1)	Imputation Ratio	Business Fluctuation Outside Reference Period (C8)					
						M1	M2	M3	M4	M5	M6
$HUEM_1$	X_{11}	X_{12}	no activity	X_{12}/X_{11}	$Z_{\text{no activity}} = \text{average}(X_{12}/X_{11})$	minimum	minimum	no activity	average	minimum	average
$HUEM_2$	X_{21}	X_{22}	minimum	X_{22}/X_{21}	$Z_{min} = \text{average}(X_{22}/X_{21},\ldots,X_{52}/X_{51})$	minimum	average	no activity	minimum	minimum	average
$HUEM_3$	X_{31}	X_{32}	minimum	X_{32}/X_{31}		no activity	minimum	no activity	maximum	maximum	maximum
$HUEM_4$	X_{41}	X_{42}	minimum	X_{42}/X_{41}		average	no activity	no activity	no activity	minimum	average
$HUEM_5$	X_{51}	X_{52}	minimum	X_{52}/X_{51}		minimum	minimum	no activity	maximum	maximum	average
$HUEM_6$	X_{61}	X_{62}	average	X_{62}/X_{61}	$Z_{ave} = \text{average}(X_{62}/X_{61},\ldots,X_{j-22}/X_{j-21})$	no activity	minimum	minimum	maximum	minimum	maximum
$HUEM_7$	X_{71}	X_{72}	average	X_{72}/X_{71}		minimum	minimum	no activity	no activity	minimum	average
:	:	:	average	:		maximum	no activity	no activity	no activity	minimum	average
:	:	:	average	:		minimum	minimum	no activity	maximum	minimum	minimum
:	:	:	average	:		maximum	minimum	no activity	no activity	maximum	average
:	:	:	average	:		minimum	minimum	minimum	average	minimum	average
$HUEM_{j-1}$	X_{j-11}	X_{j-12}	maximum	X_{j-12}/X_{j-11}	$Z_{max} = \text{average}(X_{j-12}/X_{j-11}, X_{j2}/X_{j1})$	minimum	minimum	no activity	no activity	minimum	minimum
$HUEM_j$	X_{j1}	X_{j2}	maximum	X_{j2}/X_{j1}		average	minimum	average	average	maximum	average

Example 4.8 Annualization Worksheet for a Neighborhood of Non-Agricultural HUEMs *(continued)*

Non-Agriculture									
HUEM	Business Fluctuation Outside Reference Period (C8)					C.9.2.1	C.9.2.2	C.9.2.3	Annual Estimates of (2)
	M7	M8	M9	M10	M11				
$HUEM_1$	maximum	maximum	no activity	no activity	minimum	Y_{1min}	Y_{1ave}	Y_{1max}	$4(Y_{1min}*Z_{min})+2(Y_{1ave}*Z_{ave})+2(Y_{1max}*Z_{max})+X_{12}$
$HUEM_2$	no activity	maximum	minimum	average	average	Y_{2min}	Y_{2ave}	Y_{2max}	$4(Y_{2min}*Z_{min})+4(Y_{2ave}*Z_{ave})+1(Y_{2max}*Z_{max})+X_{22}$
$HUEM_3$	maximum	maximum	minimum	no activity	minimum	Y_{3min}	Y_{3ave}	Y_{3max}	:
$HUEM_4$	maximum	maximum	no activity	minimum	minimum	Y_{4min}	Y_{4ave}	Y_{4max}	:
$HUEM_5$	no activity	average	minimum	minimum	average	Y_{5min}	Y_{5ave}	Y_{5max}	:
$HUEM_6$	maximum	maximum	average	minimum	minimum	Y_{6min}	Y_{6ave}	Y_{6max}	:
$HUEM_7$	minimum	maximum	minimum	no activity	maximum	Y_{7min}	Y_{7ave}	Y_{7max}	:
:	maximum	average	maximum	average	minimum	:	:	:	:
:	average	maximum	minimum	no activity	minimum	:	:	:	:
:	maximum	maximum	minimum	no activity	average	:	:	:	:
:	maximum	average	minimum	minimum	minimum	:	:	:	:
$HUEM_{j-1}$	no activity	maximum	minimum	no activity	minimum	Y_{j-1min}	Y_{j-1ave}	Y_{j-1max}	:
$HUEM_j$	maximum	maximum	average	minimum	minimum	Y_{jmin}	Y_{jave}	Y_{jmax}	$3(Y_{jmin}*Z_{min})+5(Y_{jave}*Z_{ave})+3(Y_{jmax}*Z_{max})+X_{j2}$

HUEM = household unincorporated enterprise with at least some market production, M = month.

C.8	M1	M2	M3	M4	M5	M6	M7	…	M12
Activity code									
C.9							Covered in questionnaire (Agriculture)		
sales (Rp)									
C.9									Covered in questionnaire (Non-Agriculture)
sales (Rp)									

M = month, Rp = rupiah.

Example 4.9.a Computation of Annual Output Using Business Trend and Sales/Revenue of HUEMs in Agriculture Sector ('000 rupiah)

HUEM	Business Trend												Sales/Revenue (Agriculture)		
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Minimum	Average	Maximum
HUEM 1	2	2	2	3	2	2	2	3	2	2	2	3	0	300	350
HUEM 2	1	2	2	3	3	1	2	2	2	2	3	3	216	405	540
HUEM 3	2	2	3	3	3	3	3	3	3	3	3	2	0	1,620	1,800
HUEM 4	2	2	2	2	2	2	2	2	2	2	2	2	428	856	2,200
HUEM 5	2	2	2	2	2	2	2	2	3	2	2	2	0	275	338
HUEM 6	2	2	2	3	2	2	2	2	3	2	2	2	0	240	360
HUEM 7	2	2	2	2	2	2	3	2	2	2	2	2	0	1,500	1,763
HUEM 8	2	1	3	2	1	3	2	1	3	2	1	3	450	563	657
HUEM 9	2	2	2	3	2	2	2	3	2	2	3	2	0	254	284
HUEM 10	2	2	3	2	2	2	3	2	2	2	3	2	0	675	788
HUEM 11	1	2	1	3	1	2	1	3	2	2	2	3	80	85	90
HUEM 12	2	1	3	3	2	1	3	3	2	1	3	3	272	543	815
HUEM 13	1	1	1	2	1	1	1	2	1	1	1	3	145	291	436
HUEM 14	2	2	2	2	3	3	3	2	2	3	2	2	0	150	800
HUEM 15	3	2	2	2	3	3	3	3	2	2	2	3	250	400	600
HUEM 16	3	3	2	2	3	3	3	3	2	2	2	3	300	1,600	2,200

Example 4.9.a Computation of Annual Output Using Business Trend and Sales/Revenue of HUEMs in Agriculture Sector ('000 rupiah) *(continued)*

HUEM	Business Sales/Revenue Fluctuations												Agriculture (total)
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	
HUEM 1	300	300	300	350	300	300	300	350	300	300	300	350	**3,750**
HUEM 2	216	405	405	540	540	216	405	405	405	405	540	540	**5,022**
HUEM 3	1,620	1,620	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,620	**21,060**
HUEM 4	856	856	856	856	856	856	856	856	856	856	856	856	**10,268**
HUEM 5	275	275	275	275	275	275	275	275	338	275	275	275	**3,363**
HUEM 6	240	240	240	360	240	240	240	240	360	240	240	240	**3,120**
HUEM 7	1,500	1,500	1,500	1,500	1,500	1,500	1,763	1,500	1,500	1,500	1,500	1,500	**18,263**
HUEM 8	563	450	657	563	450	657	563	450	657	563	450	657	**6,678**
HUEM 9	254	254	254	284	254	254	254	284	254	254	284	254	**3,132**
HUEM 10	675	675	788	675	675	675	788	675	675	675	788	675	**8,438**
HUEM 11	80	85	80	90	80	85	80	90	85	85	85	90	**1,015**
HUEM 12	543	272	815	815	543	272	815	815	543	272	815	815	**7,335**
HUEM 13	145	145	145	291	145	1	145	291	145	145	145	436	**2,327**
HUEM 14	150	150	150	150	800	45	800	150	150	800	150	150	**4,400**
HUEM 15	600	400	400	400	600	600	600	600	400	400	400	600	**6,000**
HUEM 16	2,200	2,200	1,600	1,600	2,200	2,200	2,200	2,200	1,600	1,600	1,600	2,200	**23,400**

HUEM = household unincorporated enterprise with at least some market production, M = month.

Example 4.9.b Computation of Annual Output Using Business Trend and Sales/Revenue of HUEMs in Non-Agriculture Sector ('000 rupiah)

HUEM	Business Trend												Sales/Revenue (Agriculture)		
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Minimum	Average	Maximum
HUEM 20	2	2	2	3	3	3	3	2	2	2	2	2	4,000	5,000	6,000
HUEM 21	2	2	1	1	2	2	2	2	2	2	2	2	3,000	3,500	4,500
HUEM 22	2	2	1	2	2	2	2	2	2	2	2	2	9,000	10,000	12,000
HUEM 23	2	2	2	2	2	2	2	2	2	2	2	2	950	950	1,200
HUEM 24	2	2	2	2	2	2	2	2	2	2	2	2	900	1,200	1,500
HUEM 25	2	2	2	2	2	2	2	2	2	2	2	2	958	658	1,300
HUEM 26	3	3	3	3	3	3	3	3	3	3	3	3	648	648	900
HUEM 27	2	1	1	2	2	2	2	3	3	2	2	2	2,000	2,250	3,000
HUEM 28	3	3	3	3	3	3	3	3	3	3	3	3	50	75	125
HUEM 29	3	3	3	3	3	3	3	3	3	3	3	3	50	75	125
HUEM 30	2	2	2	2	2	2	2	2	2	2	2	2	8,400	8,400	8,400
HUEM 31	0	0	0	0	0	0	0	3	3	3	3	3	1,350	1,350	1,350
HUEM 32	2	2	1	1	2	3	3	2	2	2	3	3	5,700	6,750	7,500
HUEM 33	2	2	3	2	2	2	2	2	1	2	2	2	3,120	3,553	3,986
HUEM 34	2	0	2	2	3	3	2	2	3	2	2	2	2,500	2,700	3,000
HUEM 35	3	3	3	3	3	3	3	3	3	3	3	3	2,700	900	4,500
HUEM 36	3	3	3	3	3	3	3	3	3	3	3	3	2,700	900	4,500

Example 4.9.b Computation of Annual Output Using Business Trend and Sales/Revenue of HUEMs in Non-Agriculture Sector ('000 rupiah) *(continued)*

HUEM	Business Sales / Revenue Fluctuations												Non-Agriculture (Total)
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	
HUEM 20	5,000	5,000	5,000	6,000	6,000	6,000	6,000	5,000	5,000	5,000	5,000	5,000	**64,000**
HUEM 21	3,500	3,500	3,000	3,000	3,500	3,500	3,500	35,000	3,500	3,500	3,500	3,500	**41,000**
HUEM 22	10,000	10,000	9,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	**119,000**
HUEM 23	950	950	950	950	950	950	950	950	950	950	950	950	**11,400**
HUEM 24	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	**14,400**
HUEM 25	958	658	958	958	958	658	958	958	958	958	958	958	**11,496**
HUEM 26	900	900	900	900	900	900	900	900	900	900	900	900	**10,800**
HUEM 27	2,250	2,000	2,000	2,250	2,250	2,250	2,250	3,000	3,000	2,250	2,250	2,250	**28,000**
HUEM 28	125	125	125	125	125	125	125	125	125	125	125	125	**1,500**
HUEM 29	125	125	125	125	125	125	125	125	125	125	125	125	**1,500**
HUEM 30	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	8,400	**100,800**
HUEM 31	0	0	0	0	0	0	0	1,350	1,350	1,350	1,350	1,350	**6,750**
HUEM 32	6,750	6,750	5,700	5,700	6,750	7,500	7,500	6,750	6,750	6,750	7,500	7,500	**81,900**
HUEM 33	3,553	3,553	3,986	3,553	3,553	3,553	3,553	3,553	3,120	3,553	3,553	3,553	**42,636**
HUEM 34	2,700	0	2,700	2,700	3,000	3,000	2,700	2,700	3,000	2,700	2,700	2,700	**30,600**
HUEM 35	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	45,000	4,500	4,500	4,500	**54,000**
HUEM 36	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	**54,000**

HUEM = household unincorporated enterprise with at least some market production, M = month.

where

BTI_{agri}, M1–M6 are the estimated sales/revenue from the business trend and M7–M12 are the actual data collected using the agriculture reference period of 6 months

$BTI_{non\text{-}agri}$, M1–M11 are the estimated sales/revenue from the business trend and M12 is the actual figure collected using the non-agriculture reference period of 1 month

4. Annualize the outputs and intermediate inputs based on Equation 15.

$$\text{Annual value of GVA} = GVAq + (GVAq * BTI) = (1 + BTI) * GVA_q \quad \textit{Equation 15}$$

where

GVA_q = actual data collected from the ISS2 questionnaire

BTI = business trend index

4.6.4 Annualization for Other Production Activities

Services of Owner-Occupied Dwellings

As discussed in Section 4.4.2.5, the Indonesia survey questionnaire contains a proxy item that can be used to estimate benchmark value for the services of owner-occupied dwellings—C.3.1. The annual value of OD services using this item can be estimated by multiplying the resulting value of Equation 5 by 12 (months).

If this information has not been collected from the questionnaire, the benchmark estimate must first be computed using Equation 6. For the succeeding years, on an annual or periodic basis, the benchmark estimate can be regressed using the hedonic method with the following variables: size (percent increase in the size of residential units [if possible, owner-occupied]) capital value, and rental value per square meter. Thus, Equation 7 will be applied.

Paid Domestic Services

Based on Equation 8, the annualization of the paid domestic services estimates will depend on the kind of prevailing "wage rate" data acquired. If the wage is a monthly rate, then the resulting total will have to be multiplied by 12 (months). This methodology is working under the assumption that all the number of domestic workers is constant throughout the year. On the other hand, if the wage applied is an annual figure, no additional adjustment to the resulting estimate from Equation 8 is needed.

Chapter 5
Supplementing Informal Sector Survey Data with Other Relevant Indicators

The limitations identified in the different aspects of the Informal Sector Survey (ISS) operation revealed that while the direct estimation of gross value added (GVA) of the informal sector poses some difficulties, these can be minimized through further improvements to the data collection. However, due to these limitations, the use of the ISS2 or household unincorporated enterprise with at least some market production (HUEM) survey data alone to generate reliable estimates of the contribution of the informal sector to total economy may still require supplementary data sources.

This chapter discusses the observed difficulties encountered in the various processes involved in generating the informal sector data, and how these limitations led to the use of other data sources. It also outlines the methodologies that will generate sound informal sector statistics, using information from existing supplementary information. The choice of which type of supplementary data to be used should be contextualized on the availability and reliability of relevant information for each country. The points addressed in this chapter are gathered from the collective experiences of Armenia, Bangladesh, and Indonesia in conducting the HUEM survey and in estimating informal sector GVA.

5.1 Limitations of the HUEM Survey

While the HUEM survey was able to attain its objectives and generate useful datasets, data quality can still benefit significantly from improvements in the questionnaire design, field operations, interview process, and data interpretation and processing. The HUEM survey is still in its stages of development and has not been previously carried out in Armenia, Bangladesh, and Indonesia. As a pilot survey, difficulties in the survey process are expected even if efforts to prevent them were implemented. However, not all problems can be foreseen, and some may only be realized during the field operation itself. Moreover, the limitations of the data gathered are discovered only during the estimation process. Thus, like all surveys, the efficient and effective conduct of the HUEM survey will be achieved through time and experience.

In the event that the data limitations have affected the informal sector GVA estimates, supplementary administrative or survey data can be utilized to improve the reliability of the statistics. This practice is not unusual in national accounts estimation since there is no single data source that can be used to generate the different sectoral estimates. In fact, the methodology even requires the use of different data sources that will complement each other and verify the reliability of the resulting estimates. For instance, data for the agriculture sector may come from an agriculture household survey, a microenterprise survey, or from another establishment survey. These surveys can either be individually used to estimate the agricultural output or be combined if the estimates derived from a single source do not reflect the economic condition of the sector. Administrative data on crop volume and prices of goods are also applied to generate estimates not covered by the surveys. Similarly, while data for the manufacturing sector can be drawn from establishment surveys, the estimation process makes use of supplementary data to validate the results. Such are the financial statements of the major players in the sector, which provide an indication of the sector's performance. Box 5.1 provides other examples of the use of other data sources to estimate gross value added.

Here, we will review the areas for improvement that were identified in the previous chapters. While these can be addressed in the succeeding HUEM surveys for better data collection, the discussions in this chapter explain why there is a need to supplement the survey results with other relevant indicators. Discussion of these points also illustrates the advantages of using additional sets of data to validate estimates and arrive at figures that best reflect the economic performance of the informal sector.

Box 5.1 Utilization of Various Data Sources: Estimation Methodology of Hidden and Informal Activities in the National Accounts

Austria: Estimating Gross Value Added of Construction Sector, Production Approach

Estimation process that is involved in distinguishing the construction sector between civil engineering, and building construction, maintenance, and repair. Hidden and informal activities are assumed to occur in building construction, while formal activities are associated with civil engineering due to the big sizes of the firms and projects involved in this subsector. Estimation methodology included the following statistical sources:

(a) Output statistics
- yearly census-type surveys of building construction;
- monthly building activity statistics (sample survey);
- yearly sample surveys of small-scale units; the sample frame is maintained within the general business register regularly updated based on the information provided by the Chamber of Commerce.

(b) Statistics on house construction
- statistics on building construction permits and buildings completed (physical data);
- statistics on total costs of buildings completed.

(c) Additional sources of information, such as production of building materials and sales of structures, components, and tools, are used to make specific estimates and checks (for example, regarding repairs).

(d) Housing census (decennial)

(e) Household surveys

Finland: Final Consumption Expenditures of Household, Expenditure Approach

Value of food produced and consumed by farm households

Main data source in estimating the value of food produced and consumed by farm households are sample surveys generated by the National Board of Agriculture. These surveys provide the information on the quantities of food used for farm consumption. The value of food consumed by farm households at current prices is computed by multiplying the quantities by basic prices.

Specifically, to estimate own consumption of vegetables, fruit, and berries, the following equation is used:

Quantity of own consumption = (total yield - industrial consumption) x proportion of farm consumption

The data sources are horticultural enterprise registers for data on total yield, industrial statistics for data on industrial consumption, and the household budget survey for data on the proportion of farm consumption.

Source: United Nations. 1993. *Inventory of National Practices in Estimating Hidden and Informal Economic Activities for National Accounts*.

5.1.1 Questionnaire Design

Linkages between the expanded LFS/ISS1 and ISS2/HUEM survey

Issues on the questionnaire design do not only involve the ISS2 (or HUEM) form itself but also include the framework of the expanded Labor Force Survey (eLFS) (or ISS Form 1). Because of the 1-2 approach of the survey, the eLFS plays a critical role in screening the respondents for the HUEM survey. Consequently, it also determines the number of respondents to be interviewed for phase 2, as well as classifying the HUEMs to the industries to which they belong.

These two points have significant effects on the computation of the HUEM survey weights. In terms of the questionnaire design, the correct classification of HUEMs, by industry, is a concern in Armenia's Section D of the Integrated Living Conditions Survey (ILCS).[34] Question/column item 5 of Section D, "*The main type*

[34] Recall that this is Armenia's version of the eLFS.

of economic activity in your workplace or business," which should be equivalent to question A.1 "*What is the main activity of your business?*" in the HUEM questionnaire, is the issue at hand. Unfortunately, the industry classification codes provided in Section D of the ILCS are only expressed at the 1-digit level, while in the ISS, the exact classification (according to 4-digit code of the International Standard Industrial Classification [ISIC]) has been collected. Consequently, survey weight adjustments for non-coverage, which ensure that the weighted count of HUEMs identified in phase 1 is equal to the weighted count of sampled HUEMs in phase 2, can only be implemented at the 1-digit level. In most cases, this would not pose a big problem unless GVAs of the different economic activities within the same sector are largely heterogeneous.

Missing items

As suggested in Section 2.5, an important missing item that can affect the estimate of GVA in agriculture is the value of "*land improvement*" in Section E (Capital Expenditures). Only the item "*land*" was identified among the assets in the questionnaire. Land, as observed based on the results of the ISS2, includes some land improvements that cannot be separated from land, such as construction of irrigation and storage facilities. Land is a non-produced asset and not part of capital formation. Thus, in the questionnaire, land improvement should be separated from land. This can be significant at the time of acquisition and will definitely affect the value of the agricultural output. Underestimation of the GVA of agricultural HUEMs is a possibility if only the ISS data is used; additional information is needed to compensate for the missing items.

Meanwhile, Indonesia's section on production, inventory, and sale differs from that of Armenia and Bangladesh (Table 2.10, Chapter 2); this part of the Indonesia survey questionnaire lacks the beginning inventory as it only inquires about the ending figures. In this case, the required change in inventory information for computing the total output is not possible without applying strong assumptions and/or incorporating supplementary data. Both approaches were implemented, and estimation was adjusted on an industry basis. For agriculture, it was assumed that inventory is not available at the beginning of the 6-month reference period due to the perishable nature of products in the sector. In the non-agriculture sectors, which used a reference period of 1 month, administrative data were utilized to estimate the change in inventory. The ISS2 (HUEM) questionnaire can be modified to qualify this data, including a note on what are covered under the inventories. If this is difficult to obtain, an inventory ratio will serve the purpose.

The absence of query A.3.1 "*If you were to rent an office space for your business, how much do you think will be your rental cost?*" in Armenia's questionnaire posed a problem in estimating the services of owner-occupied dwellings. With no other item in the ISS questionnaire to serve as a proxy indicator, other sources of information need to be explored. The same is the case in the items used to estimate financial intermediation services indirectly measured (FISIM), as discussed in Section 4.4.2.5. Section D of Armenia's ISS form did not carry the "*interest received*" item, while it lacks the whole section on banks, microfinance services, and other support structures that may provide additional information on the finance sector.

Question items and format

All three countries experienced difficulty in using the data collected in Section E (Capital Expenditures) in estimating the GVA either using the production approach or the income approach. Recall that Section E can be used to provide data for computing own-account capital formation when the production approach is used (Box 4.1, Chapter 4). Similarly, the section is also utilized for estimating the consumption of fixed capital, using the income approach (Box 4.7, Chapter 4). While most of the problems in this section deal with how the questionnaire was administered, some problems concerning the format of the table also surfaced. Primarily, the enumerators struggled in the classification of capital assets (which is the first step in filling-out the section) due to numerous possible ways by which the assets can be grouped. Besides, coverage of each item was not well defined. The enumerators, who were not national accountants, were not very knowledgeable on what to cover. It would have been better if a template on the asset groupings was available in the questionnaire to guide the enumerators on the appropriate data to be collected.

5.1.2 Survey Operation

Linkages between the expanded LFS/ISS1 and ISS2/ HUEM survey

Recall that the following questionnaire items from the eLFS were used to identify the potential HUEMs, whose owners were interviewed in the next phase: (i) employment status, (ii) legal status, (iii) marketed production, and (iv) business records or accounts. An incorrect entry in one of the items may cause a HUEM respondent to be identified incorrectly, or worse, not to be identified at all. Experience in the ISS showed that the latter case was more common. Thus, information from these HUEMs was not gathered, creating underestimation of GVA in industries to which the potential HUEM belongs. The issue was only addressed by adjusting the survey weights for non-response.

The chief cause of such cases is the misinterpretation by either the enumerator or the respondent, or both, of the market production query in the eLFS (*"Does the enterprise you own/where you work sell or barter some of its goods and/or services?"*). This created confusion, specifically among the self-employed in the construction industry and services sectors. This is because in these activities, no tangible goods are exchanged; thus, an ordinary respondent may interpret this as a non-market transaction and answer "NO" to the question. This occurrence was discovered when the different variables in the eLFS were cross-tabulated, and it was noticed that some observations that manifested characteristics of a market production were not interviewed in the HUEM survey.

Misinterpretation of HUEM question items

Misinterpretations of the questionnaire items and/or the incorrect type of data inquired are also areas of concern in the ISS data collection. In Armenia, data in the following items suggested a possible confusion in interpretations: questionnaire item A.4. *"In addition to the main activity described above, do you carry out other activities in this place of business?"* and A.9. *"Do you run a business in other locations which is different from this main activity?"* The Indonesia enumerator's manual indicated that the purpose of item A.4. is to confirm the viewed characteristics of a HUEM.[35]

> "One distinguishing characteristic of the HUEMs is that the place of business is also used by the household in other non-marketable activities, such as lodging or for performing other household chores. This question will help determine if the enterprise manifests this activity."

Meanwhile, both the Bangladesh and Indonesia manuals state the following instructions for item A.9:

> "This question verifies if the owner has another HUEM, in which case, a separate questionnaire should be administered."

Unfortunately, in Armenia, some respondents either interchanged the two questions or thought that these two questions pertained to the same information. To illustrate, there were some samples, which recorded farming and growing of crops in item A.4, indicating that they thought the query to be similar to A.9. This may have been of no consequence if another HUEM questionnaire was administered, assuming that the other agricultural activities indicate the existence of another HUEM. However, together with the misinterpretation of the query, there was no evidence of additional forms being handed out. Meanwhile, data also suggest that some respondents, who correctly understood item A.9 and replied positively to the question, were not administered another HUEM questionnaire. Both cases caused the survey to lose information from a number of HUEMs, specifically in the agriculture sector.

System of national accounts: knowledge and training

It should be noted that while the HUEM survey enumerators may be knowledgeable in carrying out household and/or establishment surveys, their understanding of the national accounts estimation process is limited. The training they underwent only introduced the concepts. It was later realized that deeper understanding of the national accounts estimation process is an advantage during field operations for the efficient collection of information.

One component of GVA (by the production approach) whose data could have been better collected is the work-in-progress. While the shortcoming on this aspect was compensated by an exhaustive estimation methodology, specifically in Sections 4.4.2.3 (Work-in-progress) and 4.4.3.5 (Expenditures

[35] The Bangladesh HUEM survey questionnaire did not include this query.

for Work-in-Progress Goods) in Chapter 4, the computation process involved numerous imputations and assumptions.

Theoretically, the work-in-progress can be captured by the section on inventories (beginning and ending), that is, the values of the inventories, say of a basket weaving HUEM in the manufacturing sector, will also include the values of the unfinished products. However, the concept of work-in-progress was incorporated neither in the enumerator's manual nor in training. It can only be assumed that the section on inventories was able to cover the work-in-progress; but without additional emphasis on the subject during the survey interview, this assumption cannot be assured.

It would have been useful if the format of the inventory item in the questionnaire explicitly identified the work-in-progress, or if the concept was highlighted during the data collection process. Estimates would have been more reliable if it could be confirmed that raw data from the survey included the work-in-progress. This uncertainty affects the estimates, especially in agriculture, where the existence of work-in-progress is very likely due to the seasonality of production, i.e., in the form of planted crops. The theory that work-in-progress was accounted in the HUEM survey acquired less ground when the resulting GVA estimates seemed to be low in areas where agriculture was expected to have a large share in the economy.

Better understanding of the national accounts would have also been helpful in identifying the primary and secondary activities of the HUEM and classifying them into industries accordingly. During the estimation process, it was realized that while the HUEM's primary activity corresponds to the HUEM's industry classification, this is not usually the case with regard to the secondary activity. Thus, if the output in the secondary activity is quite significant, the single industry classification of all the HUEM's production may cause some industry outputs to be overestimated while others are underestimated.

5.1.3 Others: Country-Specific Cases

Countries covered by regional technical assistance (RETA) 6430 differed in social and economic characteristics, as well as historical backgrounds. It was earlier recognized that question items and answer choices in both the eLFS and HUEM survey questionnaires should be phrased according to the norms and local knowledge in each country. It was also realized that the conduct of the interviews and administration of the questionnaires should take into account the country practices and norms. For instance, adjustments should be made in the HUEM interview process in Armenia, especially regarding queries on production activities of the business, such as sales, revenues, costs, etc. Respondents, who may be receiving poverty benefits from the government, were hesitant to provide the true figures. They were concerned that the information may be used to verify whether they are eligible for the benefits they receive. Thus, the general tendency was to give undervalued figures.

5.2 Adjustments for Bias

The imputation procedures described in Chapter 4 were outlined to minimize most of the observed inconsistencies in the ISS2 data. The key assumption behind the use of the "*neighborhood approach*" is that within a given neighborhood, there exists a group of records that can provide reliable data sufficient to correct inconsistencies observed from other records within the same neighborhood. However, some problems tend to affect the entire neighborhood system; in which case, the use of this approach is not optimal. Section 5.1 identified some limitations of the survey operation that may have led to some form of unaccounted bias. In such cases, the primary step is to identify the cause of the problem and analyze whether this can be addressed by the procedures discussed in the previous chapter. Note that it is not necessarily the case that all counterintuitive results should lead to the implementation of the procedures described in this chapter. For instance, unexpected results, which can be explained by existing supplementary indicators and prior information, need not be subjected to further adjustments. Thus, it is useful to carefully examine the preliminary estimates and compare them with all other existing information before implementing the procedures provided in the succeeding sections of this chapter. This section outlines the general framework of the proposed approach in addressing the observed bias.

For simplicity, let us consider two forms of bias. If the sample is well represented but the reported information from each sampled unit tends to be uniformly affected by a bias, it is said to be multiplicative in form. Here, we can use procedures analogous to reweighting to correct the bias.

Suppose that α is the parameter of interest, and we wish to estimate it using $\hat{\alpha}$ computed from the survey. In addition, suppose also that based on prior information, there is sufficient reason to believe that a systematic bias, which is multiplicative in form, had been induced in the survey process:

$$\ell * E(\hat{\alpha} \mid \ell) = \alpha ,$$

where ℓ is a measure of bias, $\sum_i a_i * \omega_i$, a_i denotes the observed survey data, and ω_i is its corresponding survey weight.

For $\ell > 1$, it means that we are systematically underestimating α if we use the survey data alone without further adjustments to estimate the parameter of interest. On the other hand, there is a systematic overestimation when $\ell < 1$.

The key question is how to derive a better estimator for α. To do so, we need to estimate ℓ, a parameter that may be estimated using supplementary data other than what the survey provides. A process analogous to reweighting adjustment may be adopted to be able to derive a better estimator for α when the bias is multiplicative in form. Through such adjustments, the structural distribution of the reported ISS data is preserved but, at the same time, it also addresses the bias.

Suppose that we have evaluated $\hat{\ell}$ to be an "adequate" estimator for ℓ. In turn, a better estimator for α is $\hat{\alpha}'$ such that

$$\begin{aligned} \hat{\alpha}' &= \hat{\ell} * \hat{\alpha} \\ &= \hat{\ell} * \sum_i a_i * \omega_i \\ &= \sum_i a_i * \omega_i' \end{aligned} \quad \text{, where } \omega_i' = \hat{\ell} * \omega_i$$

$\hat{\alpha}'$ is a better estimator in the sense that if we assume that (i) $\hat{\ell}$ to be conditionally independent of $\hat{\alpha}$ and (ii) $\hat{\ell}$ to be an unbiased estimator of ℓ,

$$\begin{aligned} E(\hat{\alpha}' \mid \ell) &= E(\hat{\ell} * \hat{\alpha}) \\ &= E(\hat{\ell}) * E(\hat{\alpha}) \\ &= \ell * \frac{\alpha}{\ell} \\ &= \alpha \end{aligned}$$

The second form of bias is the additive form. This is mainly applicable when the reported information from the sampled units are not affected by the bias individually; but collectively, these units do not provide an adequate representation of the underlying population. Following similar notations, we can denote this such that

$$\ell + E(\hat{\alpha}) = \alpha$$

Here, $\ell > 0$ implies that we are systematically underestimating α if we use the survey data alone without further adjustments to estimate the parameter of interest. On the other hand, there is a systematic overestimation when $\ell < 0$.

Again, suppose we have evaluated $\hat{\ell}$ to be an adequate estimator for ℓ. It implies that a better estimator for α is $\hat{\alpha}'$ where,

$$\begin{aligned} \hat{\alpha}' &= \hat{\ell} + \hat{\alpha} \\ &= \hat{\ell} + \sum_i a_i * \omega_i \end{aligned}$$

Technically, it is hard to evaluate the statistical properties of $\hat{\alpha}'$ as an estimator for α. However, the performance of $\hat{\alpha}'$ is anchored on the soundness of the two assumptions above. When the bias is multiplicative in form, the two assumptions would ensure that $\hat{\alpha}'$ is an unbiased estimator for α. For instances when the bias is additive, only the second assumption is needed to ensure the unbiasedness of $\hat{\alpha}'$.

Up to some extent, we can argue that the first assumption is approximated when the source of the supplementary data is independent from the main survey from which $\hat{\alpha}$ is derived. On the other hand, ensuring the high quality of supplementary data is a key step in mimicking the second assumption.

5.3 Country Cases

Initial computations, following the methodology described in Chapter 4, resulted in "satisfactory" estimates for most of the non-agriculture sectors in both Banten and Yogyakarta. However, in the case of Banten, the preliminary estimated 12% contribution of the informal economy in the non-agricultural sector was considered to be very low. Existing literature suggests that agriculture in most developing countries is mostly informal. Thus, a very low estimate would indicate the presence of large corporate farms and/or a significant underground economy in the provinces of Banten and Yogyakarta. However, if this premise cannot be supported by other existing indicators, one should consider the possibility of an unaddressed bias. In the case of Armenia, sectors, such as construction, manufacturing, trade, and transport, posted preliminary informal sector contribution of less than 5%—far below the expected values. This section outlines specific procedures to address the observed bias in the estimates, which may have been caused by a combination of the problems and limitations of the survey operations (as identified previously in Section 5.1).

For convenience, most of the discussions here are anchored on the assumption that one has already established the existence of bias in the survey estimates.[36]

5.3.1 Armenia

After implementing the imputations discussed in Chapter 4, the computed contribution of the informal sector for Armenia was still unexpectedly low. This seems to suggest a multiplicative form of bias that has to be estimated.

Recall the representation $\ell * E(\hat{\alpha}) = \alpha$. Earlier, we derived an unbiased estimator for α to be $\hat{\alpha}^{'} = \hat{\ell} * \hat{\alpha}$ assuming that $\hat{\ell}$ is independent of $\hat{\alpha}$ and $\hat{\ell}$ is an unbiased estimator of ℓ. The following discussions outline the procedures in computing $\hat{\ell}$ by exploring the relationships between labor productivity in the total economy, in the non-observed economy,[37] and in the informal sector. The motivation behind using labor productivity as the basis for adjusting the estimates is discussed in Box 5.3.

Here, the goal is to estimate the true gross value added (GVA) of the informal economy for a fixed sector *i.* Let

α_{IS} – true GVA of the informal economy in the ith sector

$\hat{\alpha}_{ISS}$ – preliminary estimated GVA of the informal economy in the ith sector using ISS data

LP_{Total} – true labor productivity in total economy of the ith sector

$\hat{LP}_{Total}$ – estimated labor productivity in total economy of the ith sector using national accounts data and total employment from Section D

LP_{NOE} – true labor productivity in non-observed economy of the ith sector

$\hat{LP}_{NOE}$ – estimated labor productivity in non-observed economy of the ith sector approximated by dividing GVA_{NOE} by total informal employment from Section D of the Integrated Living Conditions Survey (ILCS). Note that total employment in non-observed economy is expected to be much larger than total informal employment from Section D.

$$LP_{NOE}^{2009} \approx \frac{GVA_{Total}^{2009} * \frac{GVA_{NOE}^{2008}}{GVA_{Total}^{2008}}}{InformalEmployment_{2009}}$$

LP_{IS} – true labor productivity in the informal economy of the ith sector

$\hat{LP}_{ISS}$ – estimated labor productivity in the informal economy of the ith sector using ISS only

Here we can treat the source of the bias to be such that $\ell = \frac{LP_{IS}}{\hat{LP}_{ISS}}$. The next step is to derive $\hat{\ell}$.

[36] As mentioned in Section 5.2, not all unexpected results from the ISS can be considered as biased estimates. A comprehensive examination of all existing relevant information, including experts' knowledge, is needed before concluding the presence of bias.

[37] We chose the non-observed economy since the National Statistical Service of the Republic of Armenia regularly estimates the contribution of non-observed economy to the total economy. In the next section, the concept of microenterprises is used to address the bias in the estimates of the contribution of the agricultural informal sector in the two pilot provinces of Indonesia. Box 5.2 discusses the link between the non-observed economy and the informal sector.

Box 5.2 Non-Observed Economy and the Informal Sector

Non-observed (or unrecorded) economic activities are considered to be particularly significant to transition economies that experienced shifts in economic systems, from planned to market oriented, such as Armenia, Kazakhstan, and the Kyrgyz Republic, and other Central and West Asian countries. Some of them have also carried out vital changes in statistical practices, like converting from the Material Product System of accounting to the System of National Accounts (SNA) accounting standard (Feige and Urban 2003).

The non-observed economy is generally defined to include the following activities: (i) *underground production*, defined as those activities that are productive and legal but are deliberately concealed from the public authorities to avoid payment of taxes or complying with regulations; (ii) *illegal production*, defined as those productive activities that generate goods and services forbidden by law or that are unlawful when carried out by unauthorized producers; (iii) *informal sector production*, defined as those productive activities conducted by unincorporated enterprises in the household sector that are unregistered and/or are less than a specified size in terms of employment, and that have some market production; and (iv) *production of households for own final use*, defined as those productive activities that result in goods or services consumed or capitalized by the households that produced them (OECD 2002); and (v) statistical underreporting. Thus, the informal sector is just a part of the bigger concept of the non-observed economy.

It should be noted, however, that the four groups of productive activities (items (i)–(iv)) identified under the non-observed economy are not mutually exclusive and thus can overlap each other. Generally, informal sector activities provide goods and services, and their production and distribution are perfectly legal—a very identifiable characteristic that differentiates informal sector production activities from illegal production. While there is also a distinction between informal sector activities and underground activities, this difference is usually unclear. The SNA defines the underground economy as all legal production activities that are deliberately concealed from public authorities for reasons such as avoiding the payment of income, value-added, or other taxes, and avoiding payment of social security contributions, among others. On the other hand, informal sector activities are not actually carried out with the intent of tax evasion or infringing labor legislation or other regulations. But, there can be some overlap between the two sectors, as some informal enterprises may prefer to remain unregistered or unlicensed in aversion to following regulations and also to reduce production costs. Hence, there are cases in which production may be considered to be both in the informal sector and underground (OECD 2002).

While one can perceive the non-observed economy and informal sector to be sharing similar characteristics in terms of production scale and productivity, an average worker in the non-observed economy tends to have higher productivity than his or her counterpart in the informal sector. A possible reason is that some underground and illegal enterprises have the capacity to operate with large sources of capital, pushing up the average labor productivity in the non-observed economy.

Suppose we can assume that $\frac{LP_{Total}}{LP_{NOE}} \approx \frac{LP_{NOE}}{LP_{IS}}$. This assumption is intuitive if $\frac{LP_{Total}}{LP_{NOE}} > 1$ (i.e., $LP_{Total} > LP_{NOE} > LP_{IS}$) and when the share of non-observed economy to total economy is almost the same as the share of informal economy to non-observed economy.

$$--> LP_{IS} \approx \frac{(LP_{NOE})^2}{LP_{Total}}$$

$$--> \ell \approx \frac{(LP_{NOE})^2}{(LP_{Total})(L\hat{P}_{ISS})}$$

$$--> \hat{\ell} = \frac{(L\hat{P}_{NOE})^2}{(L\hat{P}_{Total})(L\hat{P}_{ISS})}$$

It follows that a better estimator for α_{IS} is $\hat{\alpha}'_{ISS+other}$ where

$$\hat{\alpha}'_{ISS+other} = \hat{\ell} * \hat{\alpha}_{ISS}$$

$$\hat{\alpha}'_{ISS+other} = \frac{(L\hat{P}_{NOE})^2}{(L\hat{P}_{Total})(L\hat{P}_{ISS})} * \hat{\alpha}_{ISS}$$

Otherwise, if $\frac{LP_{Total}}{LP_{NOE}} < 1$, it is still intuitive to assume that $\frac{LP_{Total}}{LP_{NOE}} = \frac{LP_{IS}}{LP_{Total}}$. In this case,

$$\hat{\alpha}'_{ISS+other} = \frac{(L\hat{P}_{Total})^2}{(L\hat{P}_{NOE})(L\hat{P}_{ISS})} * \hat{\alpha}_{ISS}$$

Box 5.3 Labor Productivity

Labor has always been the single most significant input to a number of production activities, and labor productivity has been one of the useful production measures. Labor productivity reflects how efficiently labor is combined with other factors of production, and how many of these other inputs are available per worker. Labor input is assessed to be most appropriately measured as the total number of hours worked. The straightforward headcounts of employed persons indicator does not reflect the changes in average hours worked brought about by part-time work, variations in overtime, absence from work, or shifts in normal hours. Meanwhile, productivity is typically defined as a ratio of a volume measure of output to a volume measure of input use. Thus, labor productivity, can be estimated using the following formula:

$$\text{(i) Based on gross output} = \frac{\text{Quantity index of gross output}}{\text{Quantity of labor input}}$$

$$\text{(ii) Based on value added} = \frac{\text{Quantity index of value added}}{\text{Quantity of labor input}}$$

The gross output-based labor productivity traces the labor requirements per unit of (physical) output. It reflects the change in the input coefficient or labor by industry and can help in the analysis of labor requirements by industry. On the other hand, the value-added-based labor productivity is generally used on the analysis of micro–macro links, such as industry contribution to economy-wide labor productivity and economic growth (OECD 2001).

Employment, productivity, and aggregate output are significantly linked together and it is difficult to consider them as independently determined variables. And if productivity is measured as either output per person or output per hour worked, i.e., as the productivity of labor input, the three variables are linked, as a matter of pure arithmetic, by the so-called "fundamental identity" (Landmann 2004):

Output = employment x productivity

which, for small rates of change, can approximately translate into

Output growth = employment growth + productivity growth

The equations above imply that any given rate of output can be achieved either with high productivity growth and high employment growth, in which case the employment intensity. Detailed discussions are provided in Chapter 6.

On the other hand, some sectors in Armenia are not well represented in the ISS. We may contextualize this as an underestimation of the contribution of the informal sector using an additive form of bias such that $\ell + E(\hat{\alpha}) = \alpha$ where $\ell > 0$. To estimate ℓ, we can use other data sources.

Sectors with few sampled data from ISS2

Sector	ISS Sample Size
Fishing	0
Hotels and restaurants	0
Real estate and business activities	1
Health and social work	2
Education	7

ISS = Informal Sector Survey.

Household expenditure data from the ILCS may be used to estimate the contribution of the informal sector to total GVA of the fishing sector. In particular, expenditures incurred by households to buy fresh fish in the streets, markets, and other places may be used to impute output of the informal economy, after adjusting for trade margin.

Armenia's survey questionnaire does not collect data on services of owner-occupied dwellings or imputed rent. Following the System of National Accounts (SNA) rule, the services of owner-occupied dwellings and the corresponding assets produced for own-account are counted as a component of gross output. Hence, imputed rent in Armenia was estimated using information from the ILCS. In particular, Section C of the ILCS collects data on the floor area (in square meters) of each respondent's household dwelling, including the type of ownership. If rented, the

amount of monthly rent is also asked from the survey respondents. From this set of information, one can estimate the average monthly rent per square meter. On the other hand, the ISS respondents are asked about the type of premises in which their business activities are carried out. Since the two surveys are linked, one can estimate the average floor area of the dwellings of informal sector operators who conduct business activities at home. The contribution of imputed rent in the informal sector is approximated by counting the number of ISS respondents who carry out business activities at home and multiplying it by the average monthly rent per square meter (with an assumed floor area). However, this procedure did not result in negligible estimates. Consequently, a simpler procedure was adopted to improve the estimates for the real estate sector. In particular, labor productivity data was examined, taking into account employment data in 2008 (for 2009, total employment in this sector is too low—8,000 workers compared to 18,500 in 2008, and no non-formal employment in 2009).

For education, informal tutorial services are imputed based on the number of university entrances, subject matters, and cost of subject. The last survey for education has been conducted in 2001. According to the survey data, 85% of university entrants hired tutors for an average of 2.1 subjects each (for $800) (this is for the last 2 years).

Estimates in the health sector have been done based on data gathered from a health survey conducted in 2002. According to survey data, household expenditure on health services exceeded the reported data of the health organization 4.48 times. Of the household expenditure data, 8.23% goes to private health services.

Further, based on the ILCS data on household debts and savings, it seems that the contribution of financial intermediation services indirectly measured (FISIM) in the informal sector is nil.

5.3.2 Indonesia: Using the Microenterprise survey

For Banten and Yogyakarta, it seems that the bias in estimating the GVA of the informal agriculture sector, which was caused by problems encountered during the survey operations, was not adequately addressed by the imputations described in Chapter 4.

Recall the steps undertaken in the case of Armenia to derive the estimator $\hat{\alpha}'_{ISS+other}$

$$\hat{\alpha}'_{ISS+other} = \frac{(L\hat{P}_{NOE})^2}{(L\hat{P}_{Total})(L\hat{P}_{ISS})} * \hat{\alpha}_{ISS}$$

Here, the concept of the non-observed economy was used. To estimate the informal sector contribution in Indonesia, where statistics on the non-observed economy are not compiled, an analogous approach was applied using the concept of microenterprises wherein a time series of its GVA (and labor productivity) is available for Indonesia. Note that data from these sources provide GVA by size of enterprise (which is defined based on capitalization). Box 5.4 discusses the link between the informal sector and the size of an enterprise.

Assuming that the true labor productivity in the informal sector is approximately equal to the true labor productivity in microenterprises, $LP_{IS} \approx LP_{Micro}$, and since we defined the multiplicative form of bias to be $\ell = \frac{LP_{IS}}{L\hat{P}_{ISS}}$, it follows that

$$\text{--> } \ell \approx \frac{LP_{Micro}}{L\hat{P}_{ISS}}$$

$$\text{--> } \hat{\ell} = \frac{L\hat{P}_{Micro}}{L\hat{P}_{ISS}}$$

Therefore, a better estimator for α_{IS} is $\hat{\alpha}'_{ISS+other}$

where

$$\hat{\alpha}'_{ISS+other} = \hat{\ell} * \hat{\alpha}_{ISS}$$

$$\hat{\alpha}'_{ISS+other} = \frac{L\hat{P}_{Micro}}{L\hat{P}_{ISS}} * \hat{\alpha}_{ISS}$$

Box 5.4 Micro-, Small, and Medium-Sized Enterprises and the Informal Sector

One of the criteria recommended by the 15th International Conference of Labour Statisticians (ICLS) to distinguish informal sector enterprises from other unincorporated enterprises owned by households is the firm's small size in terms of employment. According to Hussmanns and Mehran (2001),

> this criterion can be formulated in terms of the number of employees employed by the enterprise on a continuous basis, the number of all employees (including those employed on an occasional basis), or the total number of persons engaged during a specific reference period (including the entrepreneur, business partners and contributing family workers in addition to the employees). Recognizing that the size limit for informal sector enterprises might have to vary among countries and different economic activities, the 15th ICLS did not specify any precise cut-off point. In the case of enterprises composed of more than one establishment, it was recommended to consider them as informal if none of their establishments exceeded the size limit.

The informal sector has generally been linked to the micro- and small enterprises, though the extent of the relationship is actually dependent on how the concepts are defined. With regard to micro-, small, and medium-sized enterprises, a common accepted definition is yet to be provided since no single description can reflect the differences between firms, sectors, or economies of different size and at different levels of development. While most international organizations have adopted a non-definitional policy, many also use a working definition. In the Philippines, micro-, small, and medium-sized enterprises are defined based on capitalization. Basically, the distinction between the micro-, small, and informal sectors is often unclear (Riba et al., undated). However, it is a stylized fact that both share the same characteristics, such as having small-scale production and low labor productivity. Arboleda and Kow (2000) cited that operational characteristics of smaller enterprises are more akin to those among the informal sector.

In fact, due to these similar properties, data gathered for micro- and small enterprises are often used in computing for informal sector statistics. In the Philippines, one of the methodologies applied in estimating the informal sector gross value added (GVA) makes use of the labor productivity of small establishments, such that (Buenaventura 1993):

$$GVA_{IS} = (Emp_{ISH} - Emp_{o}) * (GVA / Emp)_{s}$$

where

GVA_{IS}	=	GVA in the informal sector
Emp_{ISH}	=	global employment from the labor force survey module of the Integrated Survey of Households
Emp_{o}	=	employment in the organized sector as provided by the establishment based data
GVA / Emp_{s}	=	labor productivity or productivity per employee in small establishments with the assumption that this approximates the productivity per employee in the informal sector.

Chapter 6
Continuing the Informal Employment and Informal Sector Gross Value Added Series

In-depth study of the sampling design and operations of surveys from which informal employment and informal sector can be measured showed that a mixed survey approach is very cost effective (Maligalig 2010). This is primarily attributed to the fact that an expanded labor force survey (eLFS), which includes questions to identify household unincorporated enterprises with at least some market production (HUEMs), can serve as a sampling frame for an Informal Sector Survey (ISS),[38] moving away from the need for a fresh listing operation that entails substantial resources. By simultaneously implementing phase 1 (eLFS) and phase 2 (ISS) and subsampling primary sampling units (PSUs) for phase 2, costs of survey operations can be further minimized.

Still, conducting the ISS (the HUEM survey) frequently may not be feasible for national statistics offices of some developing countries. Perhaps a more sustainable approach is to institutionalize the eLFS such that formal and informal employment, and related statistics, may be generated regularly. The linkages between employment and output can be explored and applied in analyzing the informal statistics computed during the benchmark year when both the eLFS and ISS are conducted. These pieces of information can be used to devise an informal employment-based methodology that would be helpful in updating the informal sector gross value added (GVA) estimates using the eLFS.

This chapter presents talking points on how to move forward in terms of regularly generating informal sector statistics. It identifies the simple approaches that make use of benchmark estimates and results from the eLFS. While there may be other techniques, which are founded on more sophisticated economic theories, these are outside the scope of the chapter. Sections in this chapter discuss concerns related to informal employment statistics first, and then developments in the informal sector GVA estimation methodology. The initial efforts toward the latter involve examination of the role of labor as a factor of production. It also analyzes the interrelationships between and among employment, labor productivity, and economic output. These linkages are then used as foundations in the proposed methodology for updating the informal sector GVA statistics. In addition, it also collates other approaches that may be considered for updating the estimates of HUEMs' contribution to total economy, depending on the availability of additional information.

6.1 Institutionalization of the Expanded Labor Force Survey

Regular generation of informal employment statistics is possible if the eLFS is institutionalized. Given the various designs by which phase 1 of the 1-2 mixed survey was carried out in Armenia, Bangladesh, and Indonesia, it is best if the chosen approach would be analogous to the most efficient design.

In Chapter 2, the various designs by which the 1-2 mixed survey was conducted in each country were presented. Specifically, the summary in Table 2.4 showed that Indonesia's ISS1 is dependent on the *Sakernas* (Labor Force Survey) for screening respondents and, based on experience, problems in linking the two surveys risks the reliability of the ISS and, consequently, the HUEM survey. Meanwhile, the Bangladesh design magnifies this risk since not only is the ISS1 dependent on the eLFS, but their version of the Form 1 is not capable of generating complete informal estimates without the eLFS results, and vice versa. Thus, the most efficient design is the one implemented in Armenia wherein the LFS, that is, Section D of the Integrated Living Conditions Survey (ILCS), was expanded by adding queries that can identify formal and informal employment; only one survey comprised phase 1.

[38] HUEMs served as the starting point for data collection on informal sector enterprises.

To minimize the costs, financial and otherwise, associated with additional queries, it is ideal if the items that would provide the maximum usefulness are incorporated in the questionnaire. Recall that in Chapter 2, additional queries to be incorporated in the eLFS were discussed. Table 6.1 expounds on these recommended items based on the experiences in the implementation of the 1-2 mixed survey in the three countries. The table presents the items with their corresponding perceived significance and advantages. It must be noted that employment status—one of the most important items in both the informal employment and informal enterprises decision matrices—is not included in the list since it is assumed that all LFSs collect this information.

With the institutionalization of the eLFS, regular estimation of informal employment statistics can be guaranteed. Moreover, this assumption is a vital component in the proposed methodology in continuing the informal GVA series during the years by which the HUEM survey will not be conducted. As in the relationship between Phase 1 and Phase 2 of the mixed survey, the generation of informal sector statistics is dependent on the availability of informal employment estimates.

Hence, the succeeding sections, which present the methodology for estimating the informal sector GVA, assume that eLFS has been institutionalized and that informal employment statistics are regularly available.

6.2 Labor: Input, Productivity, and Share in Income

Labor has always been the single most significant input to a number of production activities (Box 5.3, Chapter 5). Thus, changes in labor and employment indicators are often monitored as they directly affect production and, consequently, the potential output or income.

Labor input indicates the time, effort, and skills of the workforce. Number of hours worked is often viewed as the best measure of the quantity of labor input in production, while the simplest measure is employee headcount. However, the head count indicator does not reflect the (i) changes in the average work time per employee, (ii) changes in multiple job holdings; and (iii) role of self-employed persons (and the quality of labor). Moreover, the rates of change of the number of persons employed vary from the rates of change of total hours worked when the number of average hours worked per person shifts over time. These shifts may be caused by changes in leave patterns, that is, a move toward more paid vacations, shorter "work period" (in hours) for full-time workers, and greater use of part-time work. Given that a number of countries have experienced one or more of these cases, the use of "*number of hours actually worked*" becomes a more significant labor input variable, especially in measuring productivity. It is assessed that productivity, based on the number of hours, better represents the amount of productive services provided by workers than a simple head count (OECD 2001).

Productivity is a measure of economic efficiency, which shows how effectively inputs are converted into output. Labor productivity is simply defined as a ratio of a volume measure of output to a volume measure of labor input used:

$$\text{Labor productivity} = \text{output} / \text{employment}$$

Labor productivity is a useful measure of how efficiently labor is combined with other factors of production and how many of these other inputs are available per worker. Changes in labor productivity, on the other hand, reflect the joint influence of changes in capital, intermediate inputs, as well as technical, organizational, and efficiency change within and between firms, the influence of economies of scale, the varying degrees of capacity utilization, and measurement errors (OECD 2001).

Given that the number of hours worked is deemed a good indicator of labor input, labor productivity is often computed by various economic studies as the ratio between output and total hours worked (Zoghi 2007, McConnel and Brue 2008, Stiroh 2001). Still, other researches use the ratio between output and employment head count to represent the indicator (Bauer and Lee 2006). However, the use of employed population as the labor input is often decided by the availability of data.

How would the choice of labor input affect the productivity analysis? This is best illustrated by the following example, as reproduced from

Table 6.1 Recommended Items to Incorporate in the Expanded Labor Force Survey

Subject Area	Significance	Benefits
1. Bookkeeping practices	• **Screening question for the HUEM survey** • Classification of formal and informal employment among the self-employed • Classification of production units into: formal enterprises, informal enterprises, and households	Existence of a complete bookkeeping record signifies the formality of the production unit and the separation of the household's labor and capital inputs from those of the enterprise. Given that the self-employed worker assumes the characteristics of the unit that he or she owns, both the nature of employment and the type of production unit to which the job is engaged can be identified. It can also be used to validate the data of the registration item, and vice versa, when the two variables are cross tabulated.
2. Market production	• **Screening question for the HUEM survey** • Variable used to distinguish informal enterprises from household production unit	The distinction between producing a good to be sold (in the market) and solely for own consumption is an important fact that distinguishes households from informal enterprises. Collection of such information allows this delineation.
3. Legal status	• **Screening question for the HUEM survey** • Classification of formal and informal employment among the self-employed • Classification of production units into formal enterprises, informal enterprises, and households	Depending on the categories to be used for this item, it can be used as a variable in determining formal and informal employment, as well as the types of production units, as in the case of Armenia.
4. Registration	• Classification of formal and informal employment among the self-employed • Classification of production units into formal enterprises, informal enterprises, and households	Depending on the norms and practices in the country, the item on registration can be a vital variable in determining the nature of employment and the type of production unit to which the self-employed belongs. It can also be used to validate the reliability of results under the bookkeeping item and vice versa. The relationships that can be observed based on the cross tabulations of the variables are significant in determining the characteristics of dataset itself, and in describing the kind of system that exist in the country, i.e., if there is a strict implementation of the regulation policy or law.
5. Contracts	• Classification of formal and informal employment among the employees or wage workers • In some countries, this can also be used to classify production units in which employees work	A written contract signifies a formal agreement between an employer and an employee. This relationship is bound by legal arrangement supported by law and with the government as the implementing authority. A verbal contract is generally governed by de facto arrangements in which the norms and practices of society or other institutional arrangements determine the authority that binds it. It is linked with informal employment since its existence is usually based on casual employment, kinship, or personal and social relations. Non-existence of a contract, whether written or verbal, suggests vague labor arrangements between the employer and employees and cannot be associated with formal employment.
6. Pay slips	• Classification of production units in which employees or wage workers work	Issuance of pay slips to the employees is an indication of the formal accounting practice of establishments. Employees and wage workers who receive pay slips with complete information suggest that they are engaged in a formal enterprise.
7. Type of enterprise	• Classification of production units in which employees or wage workers work	Depending on the answer choices of the query, the item can be used as a variable in determining the types of production units to which wage workers belong. This item is very helpful especially if choices identifying the government are available.
8. Place of work	• Identification of household as the production unit of employees or wage workers	In the absence of any variable that can identify the domestic workers in private households, the place of work can be used as an alternative indicator to apply in the decision matrix, as in the case of Indonesia.
9. Benefits received	• Determining the extent of social protection among wage workers	One of the generalizations established by analyzing the results of the Phase 1 is the better social protection experienced by formal wage workers compared to their informal counterparts. Inclusion of benefits received would enable continued monitoring of the level of social protection among wage workers.

HUEM = household unincorporated enterprise with at least some market production, LFS = Labor Force Survey.

the Organisation for Economic Co-operation and Development (OECD) Manual on the *Measurement of Aggregate and Industry-level Productivity Growth* (2001, p. 40).

The impact of choosing different indicators for employment on labor productivity measures is given in Figure 6.1. It shows the labor productivity indices computed using four labor inputs: total hours, number of full-time equivalent persons, number of employed persons (head count), and number of employees (head count), for France from 1987 to 1998. Productivities were estimated for the mining, manufacturing, and construction industries, and for market services. Results illustrate that the productivity measures based on total hours climbed significantly faster than those based on other employment measures. In industry, correcting for part-time employment hardly changes the productivity series, contrary to the condition in the service sector where part-time employment plays a more important role. Even more distinct are the effects of including or excluding the self-employed in the service sector, as suggested by the variations in productivity estimates based on total employment and based on the number of employees only.

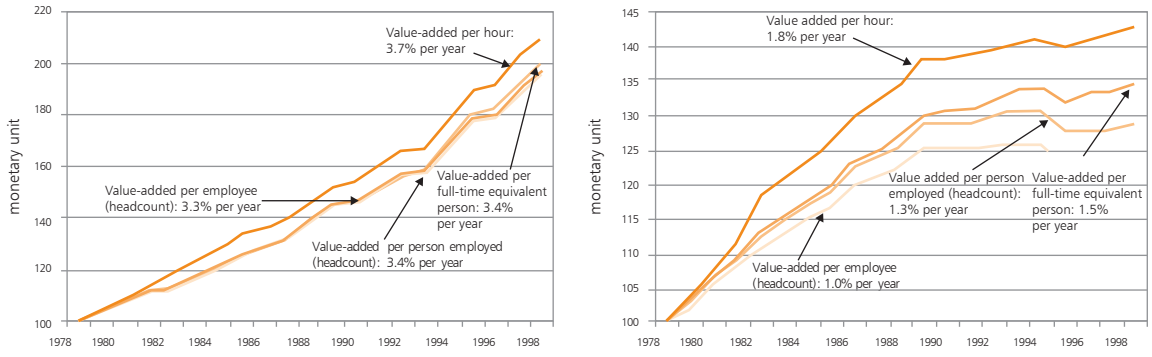
The full-time equivalent jobs (or persons) variable is also sometimes used as a measure for labor input. Full-time equivalent employment is defined as the number of total hours worked divided by the average annual hours actually worked in full-time jobs. Given this, part-time employed persons are counted with a smaller weight than are persons working full time (i.e., concept of full-time equivalent measures). Hence, in using the full-time equivalent measure, one should be careful of the bias arising from a shift in the share of part-time employment in the workforce but should not adjust for changes in the number of hours that constitutes a full-time job, e.g., as a consequence of changes in legislation or collective agreements. Another concern regarding this indicator is the general non-transparency of methodologies in computing for full-time equivalent persons (or jobs) and the non-consistency between countries.

In discussing the share of labor in income or output, an understanding of the production process is needed. Box 6 introduces the concept of production function, while this section continues to cover labor's contribution to production. Discussion will be oriented toward the macroeconomy, with output represented by gross domestic product (GDP).

Labor share basically reflects how much of the national income is attributed to labor, both skilled and unskilled. It is normally estimated as the ratio of total compensation of employees (wages and salaries before taxes, as well as employer's social contribution) over a product or aggregate income, such as GDP. Such measurement was applied by Finoff and Jayadev (2006) in their study of the relationship between the feminization of the labor force and the share of labor in national income:

> *"We define the labor of national income as the ratio of compensation of employees to GDP from the table of cost components of GDP. Compensation as defined includes both wages to employees as well as other benefits such as pension payments and so the measure is a broader measure than often used in other work."*

Figure 6.1 Labor Productivity Based on Different Measures of Employment in France



a. Mining, manufacturing, and construction industry

b. Market services

Note: Output in the labor productivity is measured as a quantity index of value added.
Source: Organisation for Economic Co-operation and Development. 2001.

Box 6 Production Function

A brief discussion on the relationship between labor and output is a good starting point in establishing labor's share in gross domestic product (GDP). Basically, the economy's output of goods and services, its GDP, depends on the quantity of inputs, referred to as the factors of production; and its ability to transform inputs into outputs, as signified by the production function. In economics, there are two significant factors of production, which are labor (*L*), and capital, (*K*). Meanwhile, the available production technology determines how much output is produced, given the amounts of capital and labor. Given Y = output, the production function can be expressed as

$$Y = F(L, K)$$

The above equation denotes that output is a function of the amount of capital and the amount of labor. The Cobb-Douglas production function can describe economies turn capital and labor to GDP.

$$F(K, L) = AK^{\alpha} L^{1-\alpha}$$

where

A is a parameter greater than zero that measures the productivity of the available technology.

And,

$$\text{Capital Income} = MPKxK = \alpha Y$$

$$\text{Labor Income} = MPLxL = (1-\alpha)\, Y$$

where

α is a constant between zero and one, and which measures capital's share of income. That is, α determines what share of income goes to capital and what share goes to labor.

Other properties of the Cobb-Douglas production function is that it exhibits constant returns to scale. That is, if capital and labor are increased by the same proportion, then output increases by that proportion as well. Numerous studies on economic production have been based on this production function.

Source: Mankiw. 2007.

However, this definition is believed to underestimate the share of labor since the national accounts do not incorporate incomes generated from self-employment under total compensation, but record them as "mixed income."

Recall that in using the income approach in computing GVA, the following equation applies:

GVA = Compensation of employees
+ Corporate profits
+ Rental income
+ Net interest income
+ Proprietor's income (mixed income)
+ Indirect taxes less subsidies
+ Depreciation

Thus, in measuring output, all the incomes in the economy are added up, and every one of these incomes must be earned either by the factors of production (labor and capital) or be taken by the government.

Of the listed income sources, compensation of employees represents labor income, while corporate profits, rental income, net interest income, and depreciation represent the capital income. However, the proprietor's income poses a more complicated treatment since it includes both labor and capital income components (Gomme and Rupert 2004). Therefore, only a part of the incomes of the self-employed is attributed to labor. Given these, many believe that the proprietor's income should be divided between labor and capital; however, they differ on how to compute for or determine how the allocation should be (Gollin 2002, 2008; Gomme and Rupert 2004; Kabaca 2009).

Some address the issue on the income of the self-employed by computing an implicit wage for a sector. This is accomplished by dividing compensation by the number of hours worked. Working on the assumption that the self-employed would pay themselves with the same wage in an equivalent work in this sector, the implied labor income, therefore, is this wage times the number of hours of work by the self-employed (Gomme and Rupert 2004). Similar to this is the use of the number of employees, self-employed, and total employment, resulting in the following equation (Kabaca 2009):

Labor income = (Labor Compensation/total employees) * total employment

Another simple adjustment approach in the computation of labor income, taking into consideration the labor–capital ratio of the income of self-employed workers, is represented as (OECD 2001):

$$\text{Adjusted labor share} = \text{initial labor share} * \frac{\text{(Employees + Self-employed)}}{\text{Employees}}$$

Both formulas rely on the assumption that compensation per employee is equal to labor income from the self-employed, or that the average compensation per hour of the self-employed equals that of a wage earner.

Meanwhile, since the extensive study of Johnson (1954) of the functional distribution of income and his assumption that the share of entrepreneurial income attributable to labor is 65%, researchers have practiced allocating two-thirds of mixed incomes to labor and only one-third to capital (Krueger 1999, Guscina 2006, Lübker 2007, NTA website). Gomme and Rupert (2004), on the other hand, proposed a different approach in incorporating the appropriate income of the self-employed in computing for the total labor income.

Given that

Y^L = total labor income
Y^{UL} = unambiguous labor income (compensation of employees)
Y^A = ambiguous income (proprietors' income plus indirect taxes less subsidies)
Y^{UK} = unambiguous capital income (corporate profits, rental income, net interest income, and depreciation)

$$Y^L = Y^{UL} + \alpha Y^A$$

Where

α is labor's share of income, as yet undetermined. Since α is labor's share of GVA, Y, it follows that

$$Y^L = \alpha Y = \alpha (Y^{UL} + Y^{UK} + Y^A)$$

These two equations can be solved for labor's share:

$$\alpha = Y^{UL}/(Y^{UL} + Y^{UK})$$

Also a more complicated methodology than those presented earlier is the procedure applied by Jorgenson (1990) and his collaborators and by Young (1995), using the idea that remuneration of the self-employed is equivalent to the opportunity cost of their work. In computing the labor income, they constructed the hourly incomes of employees by industry, sex, age, and educational attainment. The compensation data and hours of work by industry, sex, age, education, and class of worker are used to estimate the incomes of employees. Afterwards, assuming that employers, unpaid family workers, and the self-employed earn an implicit wage equal to the hourly wage of employees with similar sex, age, educational, and industrial characteristics, the implicit labor incomes of these three employment statuses were estimated in the same manner (de la Escosura and Roses 2003).

The treatments of these different researchers in computing for the labor's share in income may differ from one another, but the significant idea gleaned from these studies is that compensations of employees alone underestimate this share. Still, while the income received by the self-employed should be incorporated together with wages, the labor–capital allocation of this income must be taken into consideration to avoid overestimation of labor's share.

6.3 Employment, Productivity, and Output

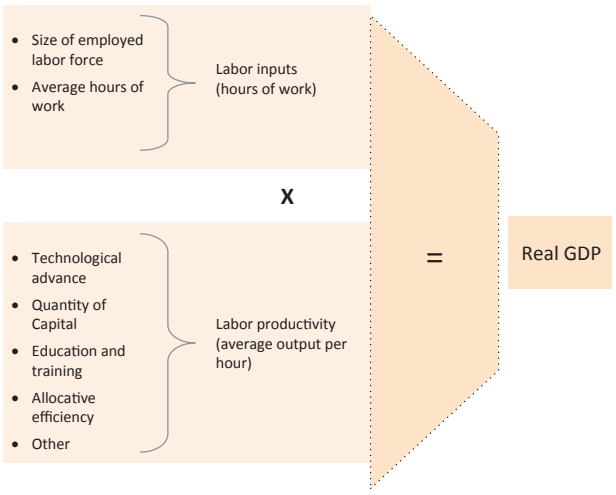
Real output and income growth can be achieved through increasing the inputs of resources and raising the productivity of those inputs. With regard to the labor input, this can be best represented by

$$\text{Real GDP} = \text{hours of work} \times \text{labor productivity}$$

Recall that labor productivity was introduced in Chapter 5, and additional information was provided in Section 6.1, with the concept as part of the discussion on labor as input to production and the type of indicators to use in estimating for it. In this section, discussion of labor productivity will be expounded and its relationship with the economic output will be emphasized.

Thus, based on the above equation, GDP can be increased by increasing the labor and labor productivity. Figure 6.2 further illustrates this relationship.

Figure 6.2 The Supply Determinants of Real Output



GDP = gross domestic product.
Note: Real GDP is usually viewed as the product of the quantity of labor inputs (hours of work) multiplied by labor productivity.
Source: McConnel and Brue. 2008.

Hence, labor productivity not only reflects the changes in the labor input, but also shows the interaction of the other inputs to production. Box 4.3 in Chapter 4 presented the following equation for labor productivity:

$$\text{LP based on value added} = \frac{\text{Quantity index of value added}}{\text{Quantity index of labor input}}$$

Further explanation of this type of measurement is provided in Table 6.2, which is reproduced from OECD (2001, p.15).

6.4 Exploring the Relationship of Output and Labor to Estimate Informal Sector Gross Value Added during Non-ISS Years

With the growing importance of the informal sector in economic development, current monitoring of the trends and structure of the informal sector and informal employment is ideal. However, not all countries have the capacity or resources to undertake annual monitoring.

The Informal Sector Survey (ISS) was developed to collect information on the informal sector and informal employment. The results of the survey provide the initial baseline data for measuring directly the contribution of the informal sector to GDP. In addition, by combining information from the expanded Labor Force Survey (eLFS) and the ISS, different indicators for the informal sector can be directly estimated (e.g., labor productivity and share of labor [measured by compensation] to total economic output).

The ideal direction in moving forward is to institutionalize an eLFS which incorporates a relatively small set of additional indicators that may be used to infer the size of informal employment, number of household unincorporated enterprises with at least some market production (HUEMs), number of informal enterprises, and magnitude of employment in the informal sector on a regular basis. This section explores methodologies to update the contribution of the informal sector when only an eLFS is conducted. For sustainability in implementation, the proposed approaches employ simplifying assumptions that exploit the interrelationship between output and labor within the context of the informal sector.

Table 6.2 Labor Productivity Based on Value Added

Interpretation	Shows the time profile of how productively labor is used to generate value added. ***Labor productivity changes reflect the joint influence of changes in capital, as well as technical, organizational and efficiency change within and between firms, the influence of economies of scale, varying degrees of capacity utilization and measurement errors.*** Labor productivity only partially reflects the productivity of labor in terms of the personal capacities of workers or the intensity of their effort. ***The ratio between output and labor input depends to a large degree on the presence of other inputs***, as mentioned above. In comparison with labor productivity based on gross output, the growth rate of value added productivity is less dependent on any change in the ratio between intermediate inputs and labor, or the degree of vertical integration. For example, when outsourcing takes place, labor is replaced by intermediate inputs. This leads to a fall in value added as well as a fall in labor input. The first effect raises measured labor productivity; the second effect reduces it. Thus, value-added based labor productivity measures tend to be less sensitive to processes of substitution between materials plus services and labor than gross-output based measures. Because ***labor productivity measures reflect the combined effects of changes in capital inputs, intermediate inputs and overall productivity***, they do not leave out any direct effects of technical change, be they embodied or disembodied. The latter operates via capital goods and intermediate inputs and so affects labor productivity; the former generally enhances production possibilities for a given set of inputs and so also affects labor productivity.
Purpose	Analysis of micro–macro links, such as the industry contribution to economy-wide labor productivity and economic growth. At the aggregate level, value-added based labor productivity forms a direct link to a widely used measure of living standards, income per capita. Productivity translates directly into living standards, by adjusting for changing working hours, unemployment, labor force participation rates, and demographic changes. From a policy perspective, value-added based labor productivity is important as a reference statistic in wage bargaining.
Advantages	Ease of measurement and readability.
Drawbacks and limitations	Labor productivity is a partial productivity measure and reflects the joint influence of a host of factors. It is easily misinterpreted as technical change or as the productivity of the individuals in the labor force. Also, value-added measures based on a double-deflation procedure with fixed-weight Laspeyres indices suffer from several theoretical and practical drawbacks.

Source: Organisation for Economic Co-operation and Development. 2001.

6.4.1 Labor Share and Productivity Measure

Estimating the annual GVA of the informal sector, using the eLFS,[39] will make use of the variables presented in Table 6.3. This table also indicates the availability of the indicators in the survey forms of the Armenia, Bangladesh, and Indonesia.

This methodology works under the following premise:

(i) formal and informal employment have already been successfully classified and distinguished using the eLFS,

(ii) benchmark estimates from the ISS or the HUEM survey have been computed,

(iii) eLFS has been institutionalized and will be regularly conducted, and

(iv) HUEM survey will be conducted at regular intervals.

There are several approaches that may be considered when interpolating GVA of the informal sector during non-ISS years. As mentioned earlier, this chapter covers simple techniques that do not directly require data other than those available from the eLFS and the benchmark year. Certainly, there are more sophisticated techniques that may be used, which may entail combining different indicators, but these are beyond the scope of the chapter.

[39] Recall that this is represented by expanded Section D of the Integrated Living Conditions Survey for Armenia, the eLFS plus ISS Form 1 in Bangladesh, and ISS Form 1 in Indonesia.

Table 6.3 Variables for Estimating Gross Value Added in the Informal Sector

Indicator	Armenia	Bangladesh	Indonesia
Number of hours worked	How many hours did you actually work during the surveyed week, *hours*? (Item/Column 26 in Section D ILCS)	How many days/hours did you actually work during the last week? (Items 4.22, Section 4, expanded LFS)	What is total number of hours worked of a main job during the previous week? (Item 9, *Sakernas* [LFS])
Wage	Did you receive any payment/income in drams and/or in kind? (Item/Column 17 and 19 in Section D ILCS)	Did you receive any payment/income in taka and/or in equivalent to money in the last week? (Items 4.13 and 4.14, Section 4, expanded LFS)	How much do you usually earn as salary/wage of a main job per month? (Items 12a and 12b, *Sakernas* [LFS])
Income received, self-employment	Did you receive any payment/ income in drams and/or in kind? (Item/Column 17 and 19 in Section D ILCS)	Did you receive any payment/income in taka and/or in equivalent to money in the last week? (Items 4.13 and 4.14, Section 4, expanded LFS)	How much did you get as income a month ago of main job? (Item 11a, *Sakernas* [LFS])

GVA = gross value added, ILCS = Integrated Living Standards Survey, ISS = Informal Sector Survey, LFS = Labor Force Survey.
Note: The number of hours and income information for Indonesia is only available in the *Sakernas* or the LFS and not in the ISS Phase 1. This poses a problem in the estimation since *Sakernas* only gathers information on the primary job. As evidenced by the ISS results, a large proportion of second jobs are own-account workers in household unincorporated enterprises with at least some market production, as well as informal employees in informal enterprises.

First, in the short run, it may be possible that relative to the total value added of a particular economic sector, the contribution of the informal economy is constant. Thus, the GVA of the informal sector during a non-ISS year can be computed such that

$$GVA^{IS}_{non-ISSyear} = \left(\frac{GVA^{IS}_{Benchmark}}{GVA^{Total}_{Benchmark}}\right) * GVA^{Total}_{non-ISSyear}$$

Here, we implicitly assume that the growth of the economic sector under consideration is uniformly distributed among formal and informal enterprises. While the approach is simple to implement, the assumption is relatively strong and it ignores updated information from the eLFS. In that sense, the interpolated GVA of the informal sector may become inconsistent with the magnitude of employment in the informal sector estimated from the eLFS.

An alternative approach is analogous to a one-factor Ricardian model wherein one assumes that labor productivity (in real terms) is constant through time. If we extend this to the case of informal sector, then GVA of the informal sector during a non-ISS year can be interpolated by multiplying the constant labor productivity by the magnitude of employment in the informal sector derived from the regularly conducted eLFS. Implicitly, it assumes that the growth of the informal sector is only dependent on the growth of labor inputs.

$$GVA^{IS}_{non-ISSyear} = LP^{IS}_{Benchmark} * Employment^{IS}_{non-ISSyear}$$

$$GVA^{IS}_{non-ISSyear} = \left(\frac{GVA^{IS}_{Benchmark}}{Employment^{IS}_{Benchmark}}\right) * Employment^{IS}_{non-ISSyear}$$

Relative to the first approach presented, the constant labor productivity technique is more attractive in the sense that it uses a weaker assumption. However, it does not reflect changes in technology and the capital flow within the informal economy.

The next strategy, which is simple to implement, entails assuming that labor share is constant within the short run. Whereas, labor productivity is expressed as value added per worker, labor share is computed as total employment income over total value added. As mentioned earlier, labor share reflects how much of the national income is attributed to labor, both skilled and unskilled. Among the three, this approach is the most attractive because only the structure of the factors of production is held constant; labor productivity is free to move.

Given that labor share is

$$Laborshare_b^{IS_i} = EI_b^{IS_i} / GVA_b^{IS_i}$$

$$GVA_b^{IS_i} = EI_{IS_i}^{b} / Laborshare_b^{IS_i}$$

where

$Laborshare_b^{IS_i}$ - share of labor in informal sector production in industry *i* during the benchmark year

$GVA_b^{IS_i}$ - informal sector GVA in industry *i* during the benchmark year

$EI_b^{IS_i} = \sum Wage + \sum Income_{self}$ - employment income is the overall income of workers composed of wages and salaries of employees (cash and in-kind payments) and payment received by self-employed workers in the informal sector in industry *i* during the benchmark year

The employment income variable includes the total wages of employees and all of the incomes of the self-employed. While it was presented in Section 6.1 that the proprietor's incomes are treated as mixed income, where only a part is attributed to labor and the rest to capital, this type of relationship may actually not apply to the informal sector. Self-employment income, according to the National Transfer Accounts Project,[40] is generally reported for households rather than individuals, of course, with a few exceptions. In cases where values are reported for individuals, bulk of it is accrued to the household head. Linked with this notion is the composition of the enterprise's workforce, which is usually composed of the children or the spouse of the household head and classified as unpaid family workers. Both instances, whether incomes are that of the household or of an individual, suggest that self-employment incomes are generally received from the household unincorporated enterprises. Therefore, self-employment incomes should be allocated to all members of the family working in the enterprise.

Note that the characteristics described above are a good fit with those of the informal enterprises. While it is acknowledged that self-employed incomes do accrue only a part to labor and the rest to capital, the attributes of informal enterprises, which transcend to the self-employed, prompted a reevaluation on how to treat the self-employed incomes. It is hypothesized that if the labor–capital ratio on self-employed income is to be applied, labor share in informal sector production is likely to be underestimated because the contribution of the unpaid family workers will not be accounted for. Results of the informal employment analysis showed that unpaid family workers play a significant role in the informal sector, especially in agriculture. And since by virtue of its identity as unpaid, the inputs of these workers can only be estimated through imputations. Thus, to address this concern, the complete payment received by self-employed workers will be used in estimating for overall labor income, with the assumption that these incomes incorporate the labor input of unpaid family workers.

The wages and income data will be provided by the eLFS (Table 6.2). This is also applicable in computing for the labor share in income during the benchmark year, though the same indicators are available in the HUEM survey (Section B. Employment and Compensation). This is due to the greater coverage of the LFS of employed persons, making it a more reliable data source than the HUEM survey. Recall that the respondents in the HUEM survey are just samples from the eLFS and, thus, basically covers only the informal employment in the informal enterprises. Results of the informal employment analysis showed that informal employment exists in all three production units—formal enterprises, informal enterprises, and households.

Labor productivity

$$LP_t^{IS_i} = GVA_t^{IS_i} / Laborinput_t^{IS_i}$$

$$= (EI_t^{IS_i} / Laborshare_b^{IS_i}) / Laborinput_t^{IS_i}$$
$$= EI_t^{IS_i} / (Laborshare_b^{IS_i} * Laborinput_t^{IS_i})$$

where

$LP_t^{IS_i}$ = labor productivity in the informal sector in industry *i* at time *t*

$Laborshare_b^{IS_i}$ = share of labor in informal sector production in industry *i* during the benchmark year

[40] Information is available at National Transfer Account Project's website: www.ntaccounts.org/web/nta/show/Documents/Self-employment%20Income

$Laborinput_t^{IS_i}$ = labor input (number of hours worked or level of informal employment[41]) in the informal sector in industry *i* at time *t*

$EI_t^{IS_i} = \sum Wage + \sum Income_{self}$ = employment income is the overall compensation of workers composed of wages and salaries of employees (cash and in-kind payments) and payment received by self-employed workers in the informal sector in industry *i* at time *t*

Since,

$$\ln GVA_t^{IS_i} \approx GVA_t^{IS_i} / GVA_{t-1}^{IS_i}$$

$$\ln Laborinput_t^{IS_i} \approx Laborinput_t^{IS_i} / Laborinput_{t-1}^{IS_i}$$

$$\ln LP_t^{IS_i} \approx LP_t^{IS_i} / LP_{t-1}^{IS_i}$$

Therefore,

$$GVA_t^{IS_i} = LP_t^{IS_i} * Laborinput_t^{IS_i}$$

$$\ln GVA_t^{IS_i} = \ln(LP_t^{IS_i} * Laborinput_t^{IS_i})$$

$$= \ln LP_t^{IS_i} + \ln Laborinput_t^{IS_i}$$

$$GVA_t^{IS_i}\ growth \approx Laborinput_t^{IS_i}\ growth + LP_t^{IS_i}\ growth$$

and

$$GVA_t^{IS_i} = (GVA_{t-1}^{IS_i} * GVA_t^{IS_i}\ growth) + GVA_{t-1}^{IS_i}$$

This methodology is primarily founded on the assumption that labor share in income or GDP is constant, at least in the short run. This consistency in the labor share has been a notable economic theory and was well-represented by the Cobb-Douglas production function (Box 6). Gollin (2008) provides a historical account of how labour share developed as an indicator of income according to factors of production in the literature.

Still, the likelihood exists that the performance of the informal sector may well be different from that of the formal sector in terms of production function. Provided that the HUEM survey will be conducted at regular intervals, the share of labor can be recomputed or revised based on the new set of data, which will be treated as the new benchmark year.

6.4.2 Other Considerations

The previous section outlined three simple approaches that could be used to update the informal sector's GVA by exploiting the mathematical relationship existing between employment income, labor input, labor productivity, and labor share. Each has its own advantages and limitations. The third technique made a simplifying assumption that labor share is constant in the short run. On the other hand, both employment income and labor input can be derived from the results of the most recent eLFS. Under this approach, although the labor share is treated as constant within the short run, or until a new ISS is conducted, labor productivity is flexible to move. Under a multifactor productivity framework, a change in labor productivity is, possibly, a reflection of either an increase or decrease in capital and/or technological efficiency. For the purpose of updating the data series on the informal sector's GVA, it would have been more straightforward to use the second approach, i.e., assume that labor productivity is constant, in real terms, instead of a fixed labor share. However, labor productivity is more sensitive to short-run shocks than labor share is. For instance, Albrecht et al. (2006) pointed out that changes in labor market policies (e.g., severance tax and payroll tax) may have significant effect on the size of the informal sector and, in turn, labor productivity. In general, labor distortions, although its possibility to happen within the short run is remote, may immediately affect labor productivity. In this context, a constant labor share is a more flexible assumption.

The application of the third approach is very useful especially during the period when eLFS is conducted, immediately following the benchmark period. This is because the relevant information that may be available is still limited at that point. When there is more available information during the subsequent periods, one can avail of simple statistical tools using ratio and proportions or regression models to test the soundness of the constant labor share assumption.

---

41 The ideal indicator for labor input is the number of hours worked. But in cases where the indicator is not available, the total informal employment based on the number of jobs can be the best substitute. This variable takes into consideration the additional jobs or part-time works of each employed individual.

In some cases, it may be more practical to discontinue using a fixed labor share in updating the estimates of the informal sector's GVA. This poses an issue if the conduct of the next ISS is not imminent. The first order of business in addressing this problem is to have an indicator that would alert us of a possible shift in terms of labor share. Suppose that during the benchmark year, we have identified indicators that are significantly correlated with the labor share through the model,

$$Laborshare_b^{IS_i} = X_b \beta_b + \varepsilon_b$$

Ideally, X should correspond to variables or indicators that are regularly compiled or published. Hence, sharp changes in the levels of these indicators, exceeding a specified threshold (i.e., $| X_t - X_b | \geq \lambda$), hint that labor share may have also changed during this period. This should prompt us to carry out in-depth analyses and validate if there is a need to deviate from the assumption of constant labor share. Alternatively, one can consider conducting a HUEM survey with a smaller sample size that can provide reliable estimates for priority sectors (e.g., agriculture and non-agriculture) in times of shocks.

Further investigations using microsimulation exercises under different scenarios (that can be reflected through the use of different statistical distributions) may be carried out to evaluate the performance of approaches presented in this chapter. Moreover, as additional ISS are conducted and more data are collected, one can further examine the interrelationships of relevant indicators that may be used to estimate the contribution of the informal sector. Doing so may entail the use of more sophisticated econometric tools that are beyond the scope of this handbook.

Appendix 1

Table A1 Proposed Subject Areas to be Added to Labor Force Survey

Subject Area	Benefits
1. Existence of written contracts	A worker with a written contract enters a formal agreement with a unit, another person, or an institution, and thus will most likely be engaged in formal employment. This information will strengthen the detection of employees and employers (27.5% and 24.3%, respectively, in Indonesia) who are formally employed. Meanwhile, informal employment is based on casual employment, kinship or personal, and social relations rather than formal or contractual arrangements. Thus, this subject area will also improve the possibility of correctly identifying informally employed workers.
2. Place of work	This item may help separate workers, especially the own-account workers, employers, and employees, by marking those that work in places associated with either formal or informal sector and employment. Own-account workers working in the streets and wet markets increase the probability that they may be mobile vendors; thus, they may be classified to be informally employed. On the other hand, employees working in the government or an institution may most likely be formally employed.
3. Mode of payment	Informal workers tend to be paid on a daily basis, as they are engaged in a shorter period of time, while formal workers are usually paid on a longer basis since they are engaged under long-term contracts. This item may help filter the workers based on the length of work engagement or the job "seasonality".
4. Benefits received	One of the distinguishing features between formal and informal employment is the existence of worker benefits. That is, formal workers are expected to receive benefits or are more likely to be given better benefits. Hence, this may also be considered as one of the items that may help sort the formally employed from the informal ones.
5. Registration of the enterprise	Informal enterprises are normally not registered. This additional criterion is to be asked to restrict the scope of informal sector enterprises from among the HUEMs to two subsets of enterprises: the own-account enterprises and enterprises of the employers. It is also recommended that this question will be asked with choices other than "Yes" or "No" in order to distinguish between registration mandated by law for ALL enterprises and those that are only for specific types of activities (e.g., related to licensing, health inspections).
6. Existence of financial accounting method	Informal enterprises are characterized with little or no division between labor and capital as factors of production. Existence of a financial accounting method signifies a structured business venture and separation of household and enterprise expenditures. Hence, this item will help set apart the own-account workers (19.4% in Indonesia) working in informal enterprises and engaged in informal employment.

HUEMs = household unincorporated enterprises with at least some market production
Source: Maligalig et al. 2009.

Appendix 2
Armenia's Questionnaire

VISIT 2

Section D. OCCUPATION

(for members aged 15-75)

The main occupation is considered to be the occupation where the respondent spent the most part of time or received the most income during the last 7 days. (Main job or occupation is Job Number 1).

Table 1

HH member's ID number (Copy from Section A)	Did you have any paid work or profitable occupation with monetary and/or in-kind payment during the last 7 days, even if you worked only for one hour (include the work in a farm, family enterprise)? 1. Yes, → Column **4** 2. No	Did you have any work or business from which you were absent during the last 7 days? 1. Yes 2. No → Table 3	Please specify the main reason of absence 1. Annual leave, additional vacation, personal leave of absence 2. Illness, injury ,care for a sick person 3. Forced administrative vacation[1] 4. Maternity leave 5. Child-care leave (up to 3 years)[1] 6. Specifics of work / seasonality (including work in the farm)[2] 7. Education or training vacation[1] 8. Lack of clients, customers, suppliers, etc.[1] 9. Other reasons *(specify)*	JOB NUMBER ***For interviewer*** If the HH member has more than one job, each job, please, record by separate row. *Main job specify "1" → 7, the second one "2"*	The main type of economic activity in your workplace or business ***For interviewer*** *Record the code according to the list of economic activities provided in Annex 1* If col. 4=1→7 If col. 4=2→6	Why did you have another job/activity? 1. Main employment does not provide enough income to meet daily needs 2. Need additional money for special purposes 3. Want to work more hours or full-time 4. Main employment does not correspond to my qualification/speciality 5. Need to help in a relative's household 6. Others, specify	Where do you mainly undertake your work? ***Fixed premises*** • **Home of employed person** 1. At my home with no special work space 2. At my home with work space inside/ attached to the home • **Outside of the home of employed person** 3. Factory, office, workshop, shop, kiosk, etc 4. Farm or individual agricultural/subsidiary plot 5. Home or workplace of client 6. Construction site 7. Market, bazaar stall, trade fair 8. Street pavement or highway with fixed post • **Employer's home (e.g., domestic help)** 9. Employer's home ***No fixed premises*** 10. Transport vehicle 11. No fixed location (e.g., mobile; door-to-door; street without fixed post) 90. Other, specify
	1	2	3	4	5	6	7

[1] *In case an assurance of a return to the same work* ➔ ***4, otherwise*** ➔ *Table 3*

[2] *If the total duration of absence from a work does not exceed 6 months* ➔ ***4, otherwise*** ➔ *Table 3*

VISIT 2

Section D. OCCUPATION

(for members aged 15-75)

MAIN AND SECOND JOBS

Table 1

HH member's ID number	JOB NUMBER (specify 1, 2)	What is your employment status 1. Employee with a written contract for long-term employment 2. Employee with a written contract for short-term employment 3. Employee with verbal agreement 4. Employer *(owner with involvement of permanent employees)* 5. Own-account workers in farm 6. Other own-account workers 7. Unpaid worker/ family member 8. Member of the production cooperative 9. Other, specify	What is the type of ownership of the enterprise in which you work? 1. State-owned (fully or partly) enterprise →**16-19** 2. Municipals →**16-19** 3. Non profit institutions, NGOs (e.g.,development organizations), associations, international agencies→**16-19** 4. Privately owned enterprise (also farms) 5. Private employer (this point can record only for employees: *col. 8=1, 2, 3*)	What is the legal status/ organization of the private enterprise where you work? 1. Joint stock company/ corporation, Limited liability → **11** 2. Registered cooperative → **11** 3. Condominium → **11** 4. Individual business →**11** 5. Partnership →**11** 6. Private household employing domestic staff→**11** 7. Farm→**11** 90. Other, specify 98. Do not know	How many persons (including yourself) usually work in your enterprise/ household/ the enterprise where you are employed? 1. less than 5 2. 6 -15 3. 16 - 30→ **15** 4. 31- 49→ **15** 5. 50 - 99→ **15** 6. 100 and more→**15**	Please give the exact number of workers (including yourself)		
						total	**women**	**men**
	4	8	9	10	11	12	13	14

VISIT 2

Section D. OCCUPATION
(for members aged 15 -75)
MAIN AND SECOND JOBS

Table 1

HH member's ID number	JOB NUMBER (specify 1, 2)	Does the enterprise you own/ where you work (including work in the farm) sell or barter its goods and/or services? 1. Yes, at least some part of it on a regular basis 2. Yes, at least some part of it from time-to-time 3. No 4. Don't know	Did you receive any payment/ income in drams and/or in kind? ***(possible 2 answers)***				Does this work comply with your qualification? 1. Yes 2. No, it is below my qualification 3. No, it is above my qualification	What kind of job, activity did you have? 1. Permanent →23 2. Temporary 3. Seasonal 4. Occasional or one-time	What is the main reason for not having a permanent job? 1. Did not want to have a permanent job 2. Could not find a permanent job 3. Unable to take a permanent job 4. Other	At your work/ activity you worked:[1] 1. Full time→**25** 2. Part time[2] 3. Overtime→**26**	Why did you work part time? 1. Unwilling to take a full-time work →26 2. Unable to take a full-time work 3. Unable to find a full-time work 4. Because of the employer's initiative 5. Depended on the nature of the job, seasonality	Can you work more than you are working now, if you have the option? 1. Yes 2. No
			In Drams		**In kind**							
			1. yes 2. no		1. yes 2. no							
	4	15	16	17	18	19	20	21	22	23	24	25

[1] This question should be answered also by people who are on vacation.
[2] Not counting the cases envisioned by Law (part-time workday for employees under 18 and women using additional breaks for breastfeeding).

Section D. OCCUPATION
(for members aged 15-75)
MAIN AND SECOND JOBS

Table 1

HH member's ID number (Copy from Section A)	JOB NUMBER (specify 1, 2)	How many hours did you actually work during the surveyed week, *hours*? ***For interviewer:*** *If column 3 in Table 1 have been filled in, worked hours should be marked "0."*	Did you look for another job during the last 4 weeks? 1. Yes, I looked for an additional job 2. Yes, I looked for a new job 3. No, → ***For interviewer:*** If col. 8= 1, 2, 3 → 29, If col. 8 = 4, 5, 6, 8→ 35 If col. 8 = 7, 8, 90→ the next h/h member	Why did you look for additional or new job? 1. Liquidation of the enterprise or reduction of work places 2. End of the contract 3. Inconsistency of the current work with the profession (qualification) 4. Unsatisfactory work conditions 5. On a state of health 6. low salary 7. Other ***For interviewer:*** If col. 8= 1, 2, 3 → 29, If col. 8 = 4, 5, 6, 8→ 35 If col. 8 = 7, 8, 90→ the next HH member	These questions should be asked only if column 8 = 1, 2, 3					
					Does your employer pay contributions to the legislated pension fund for you? 1. Yes 2. No 3. Do not know	Do you benefit from paid annual leave/holiday leave or from compensation instead of it? 1. Yes 2. No 3. Do not know	In case of incapacity to work due to health reasons, would you benefit from paid sick leave? 1. Yes 2. No 3. Do not know	In case of birth of a child, would you be given the opportunity to benefit from maternity leave? 1. Yes 2. No 3. Do not know 4. Not applicable	Unless there is due cause, could your employment be terminated by your employer without advance notice? 1. Yes 2. No 3. Do not know	Do you get a pay slip? 1. Yes, complete with information on withholding tax payments, regular and overtime pay, deductions for social security, employer's contribution to social security, insurance, etc 2. Yes, simple pay slip 3. No ***For interviewer:*** If col. 4= 1 → **49** If col. 4= 2 → the next h/h member
	4	26	27	28	29	30	31	32	33	34

VISIT 2 **Section D. OCCUPATION**

SELF-EMPLOYMENT
(for Own-account workers and employers aged 15 -75**)**

Table 1

ID of selfemp-loyed or employer member of h/h (Copy from Section A)	JOB NUMBER (see col. 4 in Table 1) ***For interviewer*** If the h/h member has more than one business, each job, please, record by separate row.	How long have you been conducting this activity? 1. Up to 6 months 2. 7-12 months 3. 1-3 years 4. More than 3 years	For how many months has this enterprise been operating during the past 12 months?	How many people usually work for this enterprise including yourself ?	Including				How does your enterprise/business maintain its records or accounts? 1. Complete bookkeeping (balance sheet and operating statements)→ 46 2. Simplified legal accounts→ 44 3. Only through informal records of orders, sales, purchases→ 44 4. No written records are kept→ 44 90. Others, specify→ 44
					Owner	Paid workers with a written contract (order)	Paid workers working under verbal agreement	Unpaid working members of the household	
35	4	36	37	38	39	40	41	42	43

VISIT 2

Section D. OCCUPATION

SELF-EMPLOYMENT
(for Own-account workers and employers aged 15 -75**)**

Table 1

ID of selfemp-loyed or employer member of h/h (Copy from Section A)	JOB NUMBER (see col. 4 in Table 1)	Did you try to get a credit during the past 12 months? 1. Yes, successfully 2. Yes, but failed 3. No	Is the your business registered in any national/state or local government agency? 1. Yes 2. Is in the process of being registered 3. No 4. Do not want to answer 5. Do not know 6. The activity has been implemented in farm	What was the main difficulty in setting up the enterprise? 1. Acquisition of capital / credit 2. Lack of knowledge 3. Registration 4. Imperfection of the legal field 5. Acquisition of new technologies 6. Finding qualified workers 7. Acquisition or rent of a place 8. Other 9. No difficulties	What proportion of this money is spent for current expenses of the household? *(please, specify %)* ***For interviewer***: If Table 1 col. 4=1→49 If Table 1 col. 4=2→ the next h/h member	Did you have any additional job or an income-generating activity in parallel to your main job during the last 7 days even if you were absent? ***For interviewer***: 1. Yes → Table 1 col. 4 2. No → the next h/h member
44	4	45	46	47	48	49

VISIT 2

Section D. OCCUPATION

TO BE FILLED BY THE ENUMERATOR

Table 2

ID of selfemp-loyed or emplo-yer member of h/h	JOB NUMBER (see col 4 in Table 1)	If the entry in Table 1 Column 8 is either code 4, 5, or 6, enter "O".	If the entry in Table 1 Column 10 is either code 4, 5, 7, 90 or 98, enter "O", otherwise enter "X".	If the entry in Table 1 Column 16 is either code 1 or 2 enter "O", otherwise, enter "X".	If entry in Table 2 Column 43 is either code 2, 3, 4 or 90 enter "O", otherwise enter "X".	Put a check mark (√) if the entries in Table 2 Columns 2 to 5 are all "O".
1	4	2	3	4	5	6

Section D. UNEMPLOYMENT

(for members aged 15-75)

Table 3

HH member's ID numbers	Please, record the reason why you didn't work during the last 7 days 1. Pupil, student (stationary) 2. Housekeeper 3. Pensioner (by age, health, privileged conditions) *4.* Hasn't work 5. Others, *specify*	Have you ever had a paid or a profitable work? 1. Yes 2. No→ 5	The main reason for interrupting the work: 1. Dismissal or reduction of work places 2. Liquidation of the enterprise 3. End of temporary activity 4. Retirement 5. Illness or disability study 6. Education 7. Mandatory military service 8. Family circumstances 9. Forced administrative vacation 10. Others, specify	For how long have you not been working? 1. Up to 1 month 2. 1 to 3 month 3. 4 to 6 month 4. 7 to 12 month 5. 1 to 2 years 6. 2 to 4 years 7. Over 4 years	Did you look for a paid job or try to start your own business (including the 7 days of the survey) during the last 4 weeks? 1. Yes, I looked for a paid job →7, 8 2. Yes, I tried to start my own business→ 9, 10 3. No	Why haven't you looked for a job during the last 4 weeks (including 7 days of the survey? 1.I have already found a job and will start to work within 2 weeks 2. I have applied for job and am waiting for a reply 3. I have been sent to training 4. I am waiting for an offer from my last employment place 5. Because of overload in household 6. Because of sickness, injury 7. Hopeless to find a job 8. Don't know where or how to look for a job 9. Don't want to work 10. other, *specify* **→ 11**	What did you undertake to get a job (possible 2 answers)? 1. applied to the state employment service 2. applied to the private employment agency 3. read announcements on a regular basis 4. issued announcements on a regular basis 5. looked for a job with the help of friends, relatives 6. applied directly to the employer 7. other, *specify* **→ 11**	
1.	1	2	3	4	5	6	7	8
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								

Section D. UNEMPLOYMENT
(for members aged 15-75)

Table 3 *(continuation)*

HH member's ID numbers	What steps did you undertake to start your own business? 1. Looked for location, inputs, equipment 2. Attempted to raise funds/get credit 3. Applied to state authorized bodies for permits		If it was possible to work during the surveyed week, would you be able and ready to start your work? 1. Yes →**16** 2. No	If it was possible to work within the 2 weeks, would you be able and ready to start your work? 1. Yes 2. No	How long are you looking for a job, trying to start own business? 1. Up to 1 month 2. 1 to 3 month 3. 4 to 6 month 4. 7 to 12 month 5. 1 to 2 years 6. 2 to 4 years 7. Over 4 years	Do you need training to be more competitive in the employment market? 1. Yes →**16** 2. No	If yes, then what kind of training or skills would you like to have? 1. Additional education, new proffesion 2. Crafts 3. Technical skills 4. Other, *specify*	Are you registered with the state employment services? 1. Yes 2. No ***For interviewer***: → **Section E**
	9	10	11	12	13	14	15	16
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

Confidentiality of the provided information is guaranteed by the RA Law "On State Statistics". According to the RA Law "On State Statistics", information received during the interview will be published only in the summarized form for statistical analysis on employment.

National Statistical Service of the Republic of Armenia

Approved by State Council on Statistics
on 5 Dec 2008, No 43-A decision

The Informal Sector Survey

Number of Questionnaire ☐☐☐

Number of Household ☐

Number of Household Head

(form 1-HH, section A, table 1 or section D, table 2, column 1) ☐☐

Survey period ☐☐ *month* ***2009 year***

Country _____ ☐☐☐
name *code*

City _____ ☐☐
name *code*

Number of Interviewer ☐☐

Interview Date ☐☐☐☐☐

I visit *I I visit* *I I I visit* *IV visit* *V visit*

_____ _____
Name of Interviewer *(signature)*

SECTION A. ORGANIZATION OF BUSINESS

A1. What is the main activity (product made and/or sold/ service provided for pay) of your business? *see 1- HH , page 11 column 5)*

_____ NACE | | | | | |

A2. In what year was this business established? | | | | |

A3. In which type of premises do you conduct this business activity? *(see 1- HH , page 11 column 7)*

Fixed premises

01 At home with no special work space
02 At home with work space inside/attached to the home
03 Business premises with fixed location independent from home
04 Farm or individual agriculture/subsidiary plot
05 Home or workplace of the client
06 Construction site
07 Market, bazaar stall, trade fair
08 Street, pavement or highway with fixed post
09 Employer's home

No fixed premises

10 Transport vehicle
11 No fixed location (e.g. mobile, door-to-door, street w/o fixed post)
90 Others (specify) _____

| |

A4. In addition to the main activity you described above, do you carry out other activities in this place of business? |

1 Yes, specify _____ 2 No

NACE | | | | | |

A5. Do you have other places of business where you also conduct your main activity? |

1 Yes 2 No ➔ ***Skip to A6***

A5.1. How many other places? | | |

A6. Is your business registered in any local or national government agency?

	Yes	No	In the process of being registered
A6.1 Tax agency	1	2	3
A6.2 State redister	1	2	3
A6. 3 Social security agency	1	2	3

A7. Do you have a bank account in the name of this business?

1 Yes 2 No

A8. What type of bookkeeping and account practices do you keep for this business? |

1 No written records are kept
2 Informal records for personal use
3 Simplified accounting format required for tax payment
4 Detailed formal accounts (balance sheets)
5 Others (specify) _____

A9. Do you run a business in other locations which is different from this main activity? |

1 Yes 2 No ➔ ***Skip to section B***

A9.1. How many other places? | |

SECTION B. EMPLOYMENT AND COMPENSATION

B1. How many persons, including yourself, worked in your business even for just an hour during the last month of operation?

Total number of employees ☐☐

How many paid workers? ☐☐

B2. Characteristics of those who worked regularly during the last month your business operated (including yourself)

No.	Name (1)	Sex (2)	Age (yrs) (3)	Status (4)	Contract (5)	Total working hours (6)	Basis of Payment (7)	Wages and salaries (thousand dram) (8)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

B2.1 Total for the month (Thousand Dram) ☐☐☐☐☐☐☐☐

Codes for Sex

1 – Male
2 – Female

Codes for Status

1 – Boss/employer
2 – Own-account worker/ Self employed
3 – Wage earner
4 – Paid family worker
5 – Unpaid family worker

Codes for Contract

1 – Written contract without fixed duration
2 – Written contract with fixed duration
3 – Verbal agreement
4 – On trial/probation
5 – No contract

Codes for Basis of Payment

0- In kind, imputed (received as wage/salary)
1- Per piece
2- Per hour
3- Per day
4- Monthly
5- Other salaries/wages (specify)
6- Not salaries/wages (specify e.g. commission basis)
7– Unpaid farm worker

B3. Allowances and bonuses paid to workers (last month of operation)

B3.1. Total social insurance paid by employer (Thousand Dram) ☐☐☐☐☐☐☐☐

B3.2. Total of all other allowances/bonuses paid by employer (Thousand Dram) ☐☐☐☐☐☐☐☐

B3.3. Total for the month (Total of B3.1 and B3.2) (Thousand Dram) ☐☐☐☐☐☐☐☐

SECTION C. PRODUCTION AND SALE (last month of operation)

C1. What was the total amount of your gross sale/revenue (including barter)? **(Thousand Dram)** ☐☐☐☐☐☐☐☐

C1.1. FOR AGRICULTURE: What was the total amount of your gross sale/ revenue for the last 6 months of operation?

(Thousand Dram) ☐☐☐☐☐☐☐☐

C1.2. **FOR NON-AGRICULTURE: What was the total amount of your gross sale/ revenue for the last month of operation?**

(Thousand Dram) ☐☐☐☐☐☐☐☐

C2. Products sold after transformation

AGRICULTURE					NON-AGRICULTURE				
N	Kind of product	Qty	Unit	Total value (Thousand Dram)	N	Kind of product	Qty	Unit	Total value (Thousand Dram)
1					1				
2					2				
3					3				
4					4				
5					5				
C2.1. TOTAL (for the last 6 months)					C2.2. TOTAL (for the last month)				

C3. Products sold without transformation (sales of products bougth for trade)

AGRICULTURE					NON-AGRICULTURE				
N	Kind of product	Qty	Unit	Total value (Thousand Dram)	N	Kind of product	Qty	Unit	Total value (Thousand Dram)
1					1				
2					2				
3					3				
4					4				
5					5				
C3.1. TOTAL (for the last 6 months)					C.3.2. TOTAL (for the last month)				

C.4 Services offered

AGRICULTURE			NON-AGRICULTURE		
No.	Type of service	Total value (Thousand Dram)	No.	Type of service	Total value (Thousand Dram)
1			1		
2			2		
3			3		
4			4		
5			5		
C.4.1. TOTAL (for the last 6 months)			C4.2. TOTAL (for the last month)		

C.5. Changes in inventories of products (including semi-products) after transformation

AGRICULTURE					NON-AGRICULTURE				
	Kind of product	Qty	Unit	Total value (Thousand Dram)		Kind of product	Qty	Unit	Total value (Thousand Dram)
1					1				
2					2				
3					3				
4					4				
5					5				
C.5.1 TOTAL (for the last 6 months)					C.5.1 TOTAL (for the last month)				

C.6. Changes in inventories of products without transformation

AGRICULTURE					NON-AGRICULTURE				
	Kind of product	Qty	Unit	Total value (Thousand Dram)		Kind of product	Qty	Unit	Total value (Thousand Dram)
1					1				
2					2				
3					3				
4					4				
5					5				
C.6.1 TOTAL (for the last 6 months)					C.6.1 TOTAL (for the last month)				

C.7 Products (after transformation) used for own consumption

AGRICULTURE					NON-AGRICULTURE				
	Kind of product	Qty	Unit	Total Total value (Thousand Dram)		Kind of product	Qty	Unit	Total value (Thousand Dram)
1					1				
2					2				
3					3				
4					4				
5					5				
C.7.1 TOTAL (for the last 6 months)					C.7.1 TOTAL (for the last month)				

C. 8 How did your business activity fluctuate within the past 12 months?

Month	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Activity												

Activity codes: 0 – No activity 1 – Minimum 2 – Average 3 – Maximum

C9 Maximum monthly gross sale/revenue, average gross sale/revenue, and minimum monthly gross sale/revenue (the past 12 months)

C9.1. Minimum gross sale/revenue **(Thousand Dram)**
C9.2. Average gross sale/revenue
C9.3. Maximum gross sale/revenue

C10. Did you employ temporary workers within the past 12 months?

1 Yes 2 No ➔ ***Skip to section D***

C10.1 How many temporary workers were there in the month wherein there was a maximum gross sale?

SECTION D. EXPENDITURES ON RAW MATERIALS AND STOCK (last month of operation)

D1. How much did you spend on raw materials used for your business?

	AGRICULTURE					NON-AGRICULTURE			
	Kind of product	Qty	Unit	Total value (Thousand Dram)		Kind of product	Qty	Unit	Total value (Thousand Dram)
1					1				
2					2				
3					3				
4					4				
5					5				
D1.1. TOTAL (for the last 6 months)					**D.1.2. TOTAL (for the last month)**				

D2. How much was the purchase cost for products (without transformation) for sale

	AGRICULTURE					NON-AGRICULTURE			
	Kind of product	Qty	Unit	Total value (Thousand Dram)		Kind of product	Qty	Unit	Total value (Thousand Dram)
1					1				
2					2				
3					3				
4					4				
5					5				
D.2.1. TOTAL (for the last 6 months)					**D 2.2. TOTAL (for the last month)**				

D3. What were your business expenses during the operation?

Expenses/Cost	Value (Thousand Dram)	
	Agriculture (Last 6 months)	Non-agriculture (Last month)
1. Wages and salaries (from B.2.1)		
2. Social insurance (from B.3.1)		
3. Bonuses & allowances (from B.3.2)		

SECTION D. EXPENDITURES ON RAW MATERIALS AND STOCK (last month of operation)		
4. Raw materials (from D1.1, D1.2)		
5. Purchase cost of products sold (from D2.1, D2.2)		
6. Fuel, gasoline & lubricants		
7. Water		
8. Electricity		
9. Rental payments *(space, machinery, structures)*		
10. Transport services		
11. Post, communication, internet		
12. Other non-industrial services *(bank charges excluding interest, professional, business and other service fees, representation and entertainment expense, storage and warehousing fees, stevedoring, forwarding and other freight charges)*		
13. Repair & maintenance of facilities & equipment		
14. Other industrial services		
15. Paid interests		
16. Taxes		
17. Insurance		
18. Other charges (specify)		
D3.1 Total for the month (Thousand Dram)		

SECTION E. CAPITAL EXPENDITURES					
E1. What are the capital assets you used for your business activity during the past 12 months?					
Type	**Characteristics (Short Description)**	**Mode of trans-action**	**Owner-ship**	**Date of acquisition/ sale/lost (month / year)**	**Value (replacement cost) (Thousand Dram)**
1. Land	a)				
	b)				
	c)				
2. Buildings	a)				
	b)				
	c)				
3. Other structures	a)				
	b)				
	c)				
4. Transport equipment	a)				
	b)				
	c)				
5. Other machinery	a)				
	b)				

and equipment	c)				
6. Furniture and office equipment	a)				
	b)				
	c)				
7. Small tools	a)				
	b)				
	c)				
8. Other agricultural assets	a)				
	b)				
	c)				
9. Livestock and poultry	a)				
	b)				
	c)				
10. Others	a)				
	b)				
	c)				
	d)				
	e)				
	f)				

Mode codes: 1 – Bought new 2 – Bought used 3 – Made major improvements 4 – Own-produced 5 – Sold 6 – Loss

Ownership codes: 1 – Personal property 2 – Rent 3 – Lease 4 - Share property

SECTION F. CREDIT INFORMATION

F1. What is the main reason you chose this business activity? ☐

1 Family tradition
2 It is the profession that I know
3 It gives better income/higher profits than other products or services
4 More stable returns than other products/services
5 Other (specify) _____

F2. During the last 12 months of operation, did you avail of any credit to finance your business? ☐

1 Yes 2 No ➔ ***Skip to F4***

F3. What was/were your source(s) of financing your business?

(Enter "1" for YES; "2" for NO)

1 Relative/neighbor/friends ☐
2 Employer/landlord ☐
3 Private money lender/pawnshop ☐
4 Private bank ☐
5 Cooperative ☐
6 Others, specify _____ ☐

F4. Why did you not avail of any loan to finance your business?

(Enter "1" for YES; "2" for NO)

1	Has other source of income	1 ☐
2	Burdensome requirements	2 ☐
3	Unaware of source	3 ☐
4	High interest rate for loans	4 ☐
5	Others, specify _____	5 ☐

SECTION G .OTHER INFORMATION

G1. In your opinion, how much is the average real income of small producing unit (organisation or person) in Armenia by the following industries

(Fill only those raws where you have estimates)

(Thousand dram)

1	**Mining and Quarrying**	
2	**Manufacturing**	
3	**Construction**	
4	**Wholesale trade**	
5	**Retial trade**	
6	**Transportation**	
7	**Education**	
8	**Health**	
9	**Other services**	

G2. In your opinion, what share of their real income should small producing units report to state bodies, to be able to receive at least minimal profit. ☐

1 up to 20%
2 21-50 %
3 51-80 %
4 81 and more
5 totally (no need to hide anything)

End Interview

Thank You!!!

Appendix 3
Indonesia's Questionnaire

ISS Form 1

BPS Statistics Indonesia

THE INFORMAL SECTOR SURVEY

(LISTING OF EMPLOYED PERSONS 10 YEARS OLD AND OVER)

CONFIDENTIAL

SECTION I. LOCATION IDENTIFICATION			
1	Province		☐☐
2	Regency/Municipality *)		☐☐
3	Sub-Regency		
4	Village *)		
5	Village Category	*Urban - 1 Rural - 2*	☐
6	a. Census Block Code		
	b. Sub-Census Block Code		
7	Serial Number of Sampled Sakernas		☐☐☐☐☐
8	Serial Number of Sampled Household		☐☐
9	Name of Household Head		

SECTION II. ENUMERATORS AND SUPERVISORS			
1	ID Number of Enumerator :	☐☐☐☐	
2	Name of Enumerator : _____	Enumeration Date : _____	Signature of Enumerator: _____
3	Name of Supervisor: _____	Supervision Date : _____	Signature of Supervisor: _____

SECTION III: INFORMAL SECTOR AND EMPLOYMENT

Serial No. (Copy from Section III, Column 1 of SAKERNAS)	Name of employed person (Copy from Section III, Column 2 of SAKERNAS)	Job Number	What is your occupation?	ISOC Codes	What is your employment status last week? (Enter code)	What is the nature of your employment? If Column 05= 1, 2, 3, and 7 go to column 14 (Enter code)	Ask column 07-13 if column 05 = 4, 5, and 6						
							Are the terms of your employment covered by a written contract? (Enter code)	Does your employer pay for your contribution to the pension fund? 1 – Yes 2 – No 3 – Don't know (Enter code)	Do you benefit from paid leave/ or from compensation instead of leave? 1 – Yes 2 – No 3 – Don't know (Enter code)	In case of incapacity to work due to health reasons, would you benefit from paid sick leave? 1 – Yes 2 – No 3 – Don't know (Enter code)	In case of a birth of a child, would you be given the opportunity to benefit from paid maternity/paternity leave? 1 – Yes 2 – No 3 – Don't know (Enter code)	If there is due cause, could your employment be terminated by your employer without advance notice? 1 – Yes 2 – No 3 – Don't know (Enter code)	In case of termination of employment (either initiated by you or your employer) would you receive the benefits and compensation specified in the existing labor laws? 1 – Yes 2 – No 3 – Don't know (Enter code)
(01)	(02)	(03)	(04)	(04a)	(05)	(06)	(07)	(08)	(09)	(10)	(11)	(12)	(13)

Codes for Column 05 (Employment Status)

1 – Own account worker
2 – Employer assisted by temporary workers/unpaid worker
3 – Employer assisted by permanent workers
4 – Employee
5 – Casual employee in agriculture
6 – Casual employee not in agriculture
7 – Unpaid workers

Codes for Column 06 (Nature of Employment)

1 - Permanent job/business
2 - Short-term or seasonal or casual work
3 - Worked for different employer on day-to-day or week-to-week

Codes for Column 07 (Contract)

1 - Yes, I have a written contract for long-term employment
2 – Yes, I have a written contract for short-term employment
3 – No, I only have a verbal contract
4 – No, I do not have a contract

Serial No. (Copy from Section III, Column 1 of SAKERNAS)	Job Number	Place of Work	Industry Enterprise		Legal Organization		Employment Size				Registration					Production
		Where do you mainly undertake your work? (Enter code)	What is the kind of business/ industry of this work?	ISIC Codes	What is the legal status/ organization of the enterprise where you work? (Enter code)	Type of Enterprise: In which type of enterprise do you work? (Enter code)	How many persons (including yourself) usually work in the place where you work/your business/your production unit? Total	Male	Female	How many are paid employees? Enter the total number	Under which form is the enterprise, in which you work, registered? Tax agency 1 – Yes 2 – No 3 – Don't know (Enter code)	Business Registration, local govt 1 – Yes 2 – No 3 – Don't know (Enter code)	Business Registration, national govt 1 – Yes 2 – No 3 – Don't know (Enter code)	Social security agency 1 – Yes 2 – No 3 – Don't know (Enter code)	What is the type of tax payment by the enterprise? (Enter code)	Does the enterprise you own/where you work sell or barter some of its goods and/or services? 1 – Yes 2 – No (Enter code)
(01)	(03)	(14)	(15)	(15a)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)

Codes for Column 14 (Place of work)

Fixed Premises
1 - At home with no special work space
2- At home with work space inside/attached to the home
3 - Business premises with fixed location independent from home
4 - Farm or individual agricultural /subsidiary plot
5 - Home or workplace of the client
6 - Construction site
7 - Market, bazaar stall, trade fair
8 - Street pavement or highway with fixed post
9 - Employer's home
10 - Others (specify) _____
No fixed premises
11 - Transport vehicle
12 - No fixed location e.g. mobile, door-to-door; street w/o fixed post)

Codes for Column 16 (Legal Status/ Organization)
1 - Single proprietorship/individual business or farm
2 – Partnership
3 - Corporation (stock or non-stock; non-profit)
4 – Cooperative
5 - Others (specify) _____
6 – Don't know

Codes for Column 17 (Type of Enterprise)
1 – Factory or plantation
2- Bank or insurance company
3 – Commercial/ restaurant/ service chain
4 – Construction company
5 – Hospital or school
6 – Engineering firm
7 – Farm, small workshop/ garage/shop, mobile
8 – Others (specify) _____

Codes for Column 26 (Type of Tax Payment)
1 - No tax payment
2 - Corporate tax
3 - Other tyeps of taxes (e.g. lump-sum tax, special regime tax, petente, retribution)
4 – Don't know

Serial No. (Copy from Section III, Column 1 of SAKERNAS)	Name of employed person (Copy from Section III, Column 2 of SAKERNAS)	Job Number	Bookkeeping and Accounting Practices		Do you have other jobs?	TO BE FILLED-UP BY THE ENUMERATOR					What is the full name and address/location of your enterprise?
			Ask Column 28 if Column 05 = 1, 2, 3, and 7 How does your enterprise/ business maintain its records or account? (Enter code)	**Ask Column 29 if Column 05 = 4, 5, and 6** Do you get a payslip? (Enter code)	If "YES" enter the number, go to page 2 Column 03 If "NO" enter "0", go to next employed person/ HH (Enter code)	If the entry in Column 05 is either code 1, 2, or 3 enter "O". Otherwise enter "X".	If the entry in Column 16 is either code 1, 5, or 6, enter "O". Otherwise , enter "X".	If entry in Column 27 is code 1, enter "O". Otherwise enter "X".	If entry in Column 28 is either code 1, 2, or 3, enter "O". Otherwise enter "X".	Put a check mark (√) if the entries in Columns 31 to 34 are all "O" and go to Column 36.	***If place of work is in fixed business premise outside of housing unit, write complete name and address.*** ***Otherwise, write "Housing Unit".*** ***Go to next job of employed person/next employed person. If this is the last person or job, proceed to Section IV. After completing ISS Form 1, continue with ISS Form 2 interviews for each IS identified and marked in Column 35.*** ***(Write the name of the business (if applicable)/Name of operator)***
(01)	(02)	(03)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
											Name: Address:
											Name: Address:
											Name: Address:
											Name: Address:
											Name: Address:
											Name: Address:
											Name: Address:
											Name: Address:
											Name: Address:
											Name: Address:

Codes for Column 28 (Bookkeeping)

1 - No written accounts kept
2 - Informal records for personal use
3 - Simplified accounting format required for tax payment
4 - Detailed formal accounts (balance sheet)
5 - Others (specify)

Codes for Column 29 (Payslip)

1 – Yes, with complete information
2 – Yes, simple pay slip
3 - No

SECTION IV. HOUSEHOLD EXPENDITURE			
I.A. FOOD EXPENDITURE (1)	**Last Week (Rp) (2)**	**Last Month (Rp) (3)**	**12 Months Ago (Rp) (4)**
1. **Cereals**			
a. Rice			
b. Other (corn, white flour, rice flour, corn flour, etc)			
2. **Tuber** (cassava, sweet potato, potato, dried cassava chip, taro, sago, etc)			
3. **Fish/Shrimp**			
a. Fresh fish			
b. Salted/preserved fish			
4. **Meat** (beef/buffalo/lamb/mutton/ham/chicken, entrails, liver, spleen, shredded dried meat, dried meat, etc)			
5. **Egg And Milk**			
a. Chicken/duck/quail egg			
b. Fresh milk, sweetened condensed milk, powdered milk, etc			
6. **Vegetables** (spinach, swamp cabbage, cucumber, carrot, string bean, green bean, union, Chili, tomato, etc)			
7. **Pulses** (peanut/mungbean/ soybean/ kidney bean/ lima bean/ cashew nut, tofu, fermented soybean sauce, peanut expeller cake, etc)			
8. **Fruits** (orange, mango, apple, durian, rambutan, snakefruit, lanzon, pineapple, water melon, banana, papaya, etc)			
9. **Oil and Fat** (coconut oil,/frying oil, coconut butter, etc)			
10. **Beverage Flavour** (granulated sugar, palm sugar, tea, coffee, cocoa, syrup, etc)			
11. **Spices** (salt, candle nut, coriander, pepper, fish paste, soybean sauce, monosodium glutamate, etc)			
12. **Other consumption**			
a. Noodle, dry/wet noodle, white noodle, macaroni			
b. Other (crisp, crisp chip, etc)			
13. **Prepared food and beverages**			
a. **Prepare food** (bread, biscuits, wet cake, porridge, meat ball, mix vegetables, plate of rice and side dish, etc)			
b. **Non alcoholic beverages** (soft drink, syrup ice, lemonade, mineral water, etc),			
c. **Alcoholic beverages** (beer, wine, and other alcoholic drink)			
14. **Tobacco and betel**			
a. Cigarette (clove cigarette, menthol cigarette, cigar)			
b. Other (betel, tobacco, areca nut, etc)			
15. **Total food (Item 1 to Item 14)**			
I.B. NON FOOD EXPENDITURE			
16. **Housing and household facility**			
a. Rent, value of imputed rent, house rent estimate (own-home, free, official property, etc)			
b. Electricity bill, water, gas, kerosene, wood, etc			
c. Handphone pulse, public telephone, house telecommunication, post materials, etc			
17. **Miscellaneous goods and services**			
a. Soaps, cosmetics, hair treatment/face care, Kleenex, etc			
b. Transportation, gasoline, diesel fuel, lubricating oil			
c. Other services (sopir, housekeeping, hotel, etc)			
18. **House maintenance and repairs**			
19. **Health expenses** (hospital, puskesmas, practice doctor, traditional healer, medicines, etc)			
20. **Education expenses** (entry/registration fee, tuition, 'uang daftar ulang, scouts, handicraft, course fee, etc)			
21. **Clothing, footwear, head gear** (ready-made clothes, material clothes, shoes, hat, etc)			
22. **Durable goods** (household appliance, tools, kitchen ware, amusement tools, sport equipment, expensive jewellery/imitation jewellery, vehicles, umbrellas, watches, cameras, telephone installment expenses)			
23. **Taxes, retribution, and insurance**			
a. Taxes (building and land tax, vehicle tax)			
b. Retribution			
c. Health insurance			
d. Others (another insurance, traffic ticket, income tax, etc)			
24. **Festivities and ceremonies without food** (wedding,circumsion,b-day,religious festival,trad'l ceremony,etc)			
ITEMS 25 TO 29 ARE FOR ENUMERATORS ONLY			
25. **Total Non Food (Last Month) (Item 16 – Item 17)**			
26. **Total Non Food (Last 12 Months) (Item 18 – Item 24)**			
27. **Average of monthly food expenditure (Item 15 x 30/7)**			
28. **Average of monthly non food expenditure (Last 12 months) (Item 26 column 4/ 12)**			
29. **Average of monthly household expenditure (Item 25 + Item 27 + Item 28)**			
30. **The largest income of household** (from household member with the largest income)			
a. Main industry			
b. Status of worker 0. receiver income 1. employer 2. entrepreneur 3. Other			

ISS Form 2

Time Started

Time Ended

BPS Statistics Indonesia

THE INFORMAL SECTOR SURVEY (ISS)

CONFIDENTIAL

I. LOCATION IDENTIFICATION			
1	Province		
2	Regency/Municipality *)		
3	Sub-Regency		
4	Village *)		
5	Village Category	*Urban - 1 Rural - 2*	
6	a. Census Block Code		
	b. Sub-Census Block Code		
7	Serial Number of Sampled Sakernas		
8	Serial Number of Sampled Household		
9	Name of HUEM Owner		

II. ENUMERATORS AND SUPERVISORS			
1	ID Number of Enumerator :		
2	Name of Enumerator : _____	Enumeration Date : _____	Signature of Enumerator: _____
3	Name of Supervisor: _____	Supervision Date : _____	Signature of Supervisor: _____

SECTION A. ORGANIZATION OF BUSINESS

A.1. What is the main industry (NAME) (product made and/or sold/ service provided for pay) of your business? (Copy from ISS-1 column 15)

_____ **ISIC** ☐☐☐☐

A.2. In what year was this business established? ☐☐☐☐

A.3. In which type of premises do you conduct this business activity? (Copy from ISS-1 Column 14)

Fixed premises

At home with no special work space	1	***Proceed to OB.3.1***
At home with work space inside/attached to the home	2	
Business premises with fixed location independent from home	3	
Farm or individual agriculture/subsidiary plot	4	
Home or workplace of the client	5	
Construction site	6	
Market, bazaar stall, trade fair	7	
Street, pavement or highway with fixed post	8	***Proceed to OB.4***
Employer's home	9	

No fixed premises

Transport vehicle	10
No fixed location (e.g. mobile, door-to-door, street w/o fixed post)	11
Others (specify) _____	12

A.3.1 If you were to rent an office space for your business, how much do you think will be your rental cost?

(Rupiah) ☐☐☐☐☐☐☐☐

A.4. In addition to the main activity you described above, do you carry out other activities in this place of business?

Yes, specify _____ 1 No 2

A.5. Do you have other places of business where you also conduct your main activity?

Yes 1 No 2 → ***Skip to OB6***

E.5.1. How many other places? ☐☐

A.6. Is your business registered in any of the following? (Copy from ISS-1 Columns 22-25)

	YES	NO	NOT KNOW
OB.6.1. Tax agency	1	2	3
OB.6.2. Business registration, local gov't	1	2	3
OB.6.3. Business registration, nat'l gov't	1	2	3
OB.6.4. Social security agency	1	2	3

A.7. Do you have a bank account in the name of this business?

Yes 1 No 2

A.8. What type of bookkeeping and account practices do you keep for this business? (Copy from ISS-1 Column 28)

No written records are kept	1
Informal records for personal use	2
Simplified accounting format required for tax payment	3
Detailed formal accounts (balance sheets)	4
Others (specify) _____	5

A.9. Do you run a business here or in other locations which is different from this main activity?

Yes 1 No 2 → ***Skip to section B***

A.9.1. How many other places? ☐☐

SECTION B. EMPLOYMENT AND COMPENSATION

B.1. How many persons, including yourself, worked in your business even for just an hour during the <u>last week of operation</u>?

Total number of employees ☐☐

How many paid workers? ☐☐

B.2.1. How many days did they work in the last month? ☐☐

B2.2. How many days did your business operated in the last month? ☐☐

B.3. Including yourself, list the characteristics of those who worked regularly in the business you operated. (last 6 months of operation for agriculture; last month of operation for non-agriculture)

No.	Name	Sex	Age (yrs)	Status	Contract	Total working hours	Total working days	Payment	Wages and salaries (In Rupiah)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

B.3.1 Total for the last month/last 6 months (Rupiah) ☐☐☐☐☐☐☐☐

<u>Codes for Sex</u>

1 – Male
2 – Female

<u>Codes for Status</u>

1 – Own account worker
2 – Employer assisted by temporary workers/ unpaid worker
3 – Employer assisted by permanent workers
4 – Employee
5 – Casual employee in agriculture
6 – Casual employee not in agriculture
7 – Unpaid workers

<u>Codes for Contract</u>

1 – Operator
2 – Written contract without fixed duration
3 – Written contract with fixed duration
4 – Verbal agreement
5 – On trial/probation
6 – No contract

<u>Codes for Payment</u>

1- Fixed weekly salary
2- Fixed weekly salary
3- Daily or per hour of work
4- Per job/task based
5- Commission
6- Profit share
7- In kind payment
8- No payment

B.4. Worker's Benefits (**last 6 months of operation for agriculture; last month of operation for non-agriculture)**

B.4.1. Social insurance contributed by employer	**(Rupiah)**	
B.4.2.Total of all other allowances/bonuses paid by employer	**(Rupiah)**	
B.4.3.Total for the reference period (Total of EC.3.1 and EC.3.2)	**(Rupiah)**	

SECTION C. PRODUCTION, INVENTORY AND SALE

(Last SIX MONTHS of operation for agriculture and last MONTH for non-agriculture)

C.1.1. FOR AGRICULTURE: What was the total amount of your gross sale/ revenue for the last 6 months of operation?	**C.1.2. FOR NON-AGRICULTURE: What was the total amount of your gross sale/ revenue for the last month of operation?**
(Rupiah)	**(Rupiah)**

C.2. Products sold after transformation

AGRICULTURE					**NON-AGRICULTURE**				
No.	**Kind of product**	**Qty**	**Unit**	**Total value (Rupiah)**	**No.**	**Kind of product**	**Qty**	**Unit**	**Total value (Rupiah)**
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
10					10				
C.2.1. TOTAL (for the last 6 months)					**C.2.2. TOTAL (for the last month)**				

C.3. Products sold without transformation

AGRICULTURE					**NON-AGRICULTURE**				
No.	**Kind of product**	**Qty**	**Unit**	**Total value (Rupiah)**	**No.**	**Kind of product**	**Qty**	**Unit**	**Total value (Rupiah)**
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
10					10				
C.3.1. TOTAL (for the last 6 months)					**C.3.2. TOTAL (for the last month)**				

C.4. Services offered

AGRICULTURE			NON-AGRICULTURE		
No.	**Type of service**	**Total value (Rupiah)**	**No.**	**Type of service**	**Total value (Rupiah)**
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
10			10		
C.4.1. TOTAL (for the last 6 months)			**C.4.2.TOTAL (for the last month)**		

C.5. Inventory of Products with transformation

AGRICULTURE					NON-AGRICULTURE				
No.	**Kind of product**	**Qty**	**Unit**	**Total value (Rupiah)**	**No.**	**Kind of product**	**Qty**	**Unit**	**Total value (Rupiah)**
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
10					10				
C.5.1. TOTAL (for the last 6 months)					**C.5.2.TOTAL (for the last month)**				

C.6. Inventory of Products without transformation

AGRICULTURE					NON-AGRICULTURE				
No.	Kind of product	Qty	Unit	Total value (Rupiah)	No.	Kind of product	Qty	Unit	Total value (Rupiah)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
10					10				
C.6.1. TOTAL (for the last 6 months)					**C.6.2.TOTAL (for the last month)**				

C.7. Value of Production for Own Consumption

AGRICULTURE					NON-AGRICULTURE				
No.	Kind of product	Qty	Unit	Total value (Rupiah)	No.	Kind of product	Qty	Unit	Total value (Rupiah)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
10					10				
C.7.1. TOTAL (for the last 6 months)					**C.7.2.TOTAL (for the last month)**				

C.8. How did your business activity fluctuate within the past 12 months?

Variable	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Activity code												

Activity codes: 0 – No activity 1 – Minimum 2 – Average 3 – Maximum

C.9. Maximum gross sale/revenue, average gross sale/revenue, and minimum gross sale/revenue

AGRICULTURE	(RUPIAH)	NON-AGRICULTURE	(RUPIAH)
C.9.1.1. Minimum gross sale/ revenue		C.9.2.1 Minimum gross sale/ revenue	
C.9.1.2. Average gross sale/revenue		C.9.2.2.Average gross sale/revenue	
C.9.1.3. Maximum gross sale/ revenue		C.9.2.3. Maximum gross sale/ revenue	

C.10. Did you employ temporary workers within the past 12 months?

Yes 1 No 2 → *Skip to section D*

C.10.1. How many temporary workers were there in the month wherein there was a maximum gross sale?

C.10.1.1. How many are male? **C.9.10.2. How many are female?**

SECTION D. EXPENDITURES ON RAW MATERIALS AND STOCK

(Last SIX MONTHS of operation for agriculture and last MONTH for non-agriculture)

D.1. How much did you spend on raw materials used for your business over the specified period?

AGRICULTURE					NON-AGRICULTURE				
No.	Kind of product	Qty	Unit	Total value (Rupiah)	No.	Kind of product	Qty	Unit	Total value (Rupiah)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
10					10				
D.1.1. TOTAL (for the last 6 months)					D.1.2. TOTAL (for the last month)				

D.2. For products sold without transformation, how much did you spend to buy your stocks?

AGRICULTURE					NON-AGRICULTURE				
	Kind of product	Qty	Unit	Total value (Rupiah)	No.	Kind of product	Qty	Unit	Total value (Rupiah)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
10					10				
D.2.1. TOTAL (for the last 6 months)					**D.2.2. TOTAL (for the last month)**				

D.3. What were your business expenses during the operation?

Expenses/Cost	Value (In Rupiah)	
	Agriculture (Last 6 months)	Non-agriculture (Last month)
1. Wages and salaries		
2. Social insurance		
3. Bonuses & allowances		
4. Raw materials (from D.1.1)		
5. Purchase cost of products sold (from D.2.1)		
6. Fuel, gasoline & lubricants		
7. Water		
8. Electricity		
9. Rental payments *(space, machinery, structures)*		
10. Transport services		
11. Post, communication, internet		
12. Other non-industrial services *(bank charges excluding interest, professional, business and other service fees, representation and entertainment expense, storage and warehousing fees, stevedoring, forwarding and other freight charges)*		
13. Repair & maintenance of facilities & equipment		
14. Other industrial services *(maintenance and installation work, drydocking)*		
15. Interests		
a. Paid		
b. Received		
16. Taxes *(business license, documentary stamps and other fees)*		
a. Tax on product		
b. Tax on producing the product		
17. Insurance		
18. Other charges (specify)		
a. ATK		
b. Land		
c. Packaging		
d. Gifts, contribution and the like		
e. Other costs		
TOTAL		

SECTION E. CAPITAL EXPENDITURES

E.1. What are the capital assets you used for your business activity during the past 12 months?

Type	Characteristics (Short Description)	Mode of transaction	Owner-ship	Date of acquisition/ sale/lost (month / year)	Value (replacement cost) (In Rupiah)
1. Land	a)				
	b)				
	c)				
2. Buildings	a)				
	b)				
	c)				
3. Other structures	a)				
	b)				
	c)				
4. Transport equipment	a)				
	b)				
	c)				
5. Other machinery and equipment	a)				
	b)				
	c)				
6. Furniture and office equipment	a)				
	b)				
	c)				
7. Small tools	a)				
	b)				
	c)				
8. Other agricultural assets	a)				
	b)				
	c)				
9. Livestock and poultry	a)				
	b)				
	c)				
10. Others	a)				
	b)				
	c)				

Mode codes: 1 – Bought new 2 – Bought used 3 – Made major improvements 4 – Own-produced 5 – Sold 6 – Loss 7 – Not Applicable

Ownership codes: 1 – Personal property 2 – Rent 3 – Lease 4 - Share property 5 - Borrow, free of charge

SECTION F. BANKS, MICRO-FINANCE SERVICES & OTHER SUPPORT STRUCTURES

F.1. What is the main reason you chose this business activity?

Family tradition	1
It is the profession that I know	2
It gives better income/higher profits than other products or services	3
More stable returns than other products/services	4
Other (specify) _____	5

F.2. Have you ever applied for a bank loan for your business?

Yes 1 No 2 → ***Skip to F3***

F.2.1 *IF YES,* Did you succeed in obtaining a loan?

Yes 1 → ***Skip to F4*** No 2

F.3. *If you never applied for a bank loan,* what is the main reason**?**

Procedures are too complicated	1
Interest rates are too high	2
Guarantee/collateral asked for is too much	3
Available loans do not correspond to my needs	4
I am not interested in getting a loan	5
Did not need it	6
Other (specify) _____	7

F.4. Other than bank services, do you know of any microfinance services?

Yes 1 No 2 → ***Skip to F4.2***

F.4.1. *If yes,* how did you come to know them?

Through 'word-of-mouth' (family, friends, neighbours, etc.)	1
Through professional milieu/environment	2
Through an association of my village	3
Through a visit to one of the institutions	4
Through an advertisement (mass media, internet, poster)	5
Other (specify) _____	6

F.4.2. Have you applied for a loan from sources other than a bank?

Yes 1 → ***Skip to F4.4*** No 2

F.4.3. *If you did not apply for a loan,* what was the main reason?

Amount of loan offered is insufficient	1
Procedures are too complicated	2
Interest rate is too high	3
Maturity period is too short	4
Guarantees/collateral required is too much	5
Do not need a loan	6
I do not believe in paying interest	7
Other (specify) _____	8

F.4.4. *If YES*, did you get a loan?

Yes 1 → ***Skip to F4.6*** No 2

F.4.5. What was the main reason your application was rejected?

Incomplete documents	1
Complete but not convincing documents	2
Insufficient guarantees/collateral	3
Insufficient initial capital	4
Activity/enterprise was deemed not viable	5
Other (specify) _____	6

F.4.6. If you ever obtained a loan from any other sources, what was the impact of the loan on your business activity?

		YES	NO
1	Increase in the volume of production	1	2
2	Diversification of production	3	4
3	Increase of the volume of sales	1	2
4	Improvement of competitiveness/profitability	3	4
5	Recruitment of additional staff	1	2
6	Working less time	3	4
7	Utilisation of less staff	1	2
8	Financial difficulties	3	4
9	Other (specify)	1	2

F.5. What was/were your other source(s) of financing your business?

	YES	NO
1 Family/relative	1	2
2 Neighbor/friends	3	4
3 Employer/landlord	1	2
4 Private money lender/pawnshop	3	4
5 Others, specify _____	1	2

F.6. Apart from the institutions previously mentioned (banks, micro credit institutions), do you know of other support structures to small businesses like yours?

Yes 1 No 2 → ***Skip to Section G***

F.6.1. Did you have contact with any one of these support institutions?

Yes 1 No 2 → ***Skip to F.6.3***

F.6.2. *IF YES,* Results of contact with support institutions:

Institution	Contacted?	If contacted	
		Type of Assistance Requested	Outcome
1 International program/project	Yes 1 No 2	☐	Granted 1 Not Granted 2
2 National government program/project	Yes 1 No 2	☐	Granted 1 Not Granted 2
3 Local government	Yes 1 No 2	☐	Granted 1 Not Granted 2
4 Professional Associations/NGO	Yes 1 No 2	☐	Granted 1 Not Granted 2
5 Government Finance Institutions	Yes 1 No 2	☐	Granted 1 Not Granted 2
6 Cooperative	Yes 1 No 2	☐	Granted 1 Not Granted 2

F.6.3. Were you contacted by any one of these support institutions?

Yes 1 No 2 → ***Skip to Section G***

F.6.4. *IF YES,* Results of contact with support institutions:

Institution	Were you contacted?	If contacted	
		Type of Assistance Offered	Outcome
1 International program/project	Yes 1 No 2	☐	Accepted 1 Rejected 2
2 National government program/project	Yes 1 No 2	☐	Accepted 1 Rejected 2
3 Local government	Yes 1 No 2	☐	Accepted 1 Rejected 2
4 Professional Associations/NGO	Yes 1 No 2	☐	Accepted 1 Rejected 2
5 Government Finance Institutions	Yes 1 No 2	☐	Accepted 1 Rejected 2
6 Cooperative	Yes 1 No 2	☐	Accepted 1 Rejected 2

Codes for Type of Assistance Requested: 1- Technical training 2- Training in organizational and financial management 3- Assistance in obtaining supplies 4- Access to modern machines 5- Access to information on the markets 6- Access to large business orders 7- Registration of business 8- Advertising of new products/services 9- Other (specify)

SECTION G. PROBLEMS AND PROSPECTS

G.1. Do you have problems/difficulties related to the following aspects of your business?

	YES	NO
1 Supply of raw materials (quantity or quality)	1	2
2 Sale of products- lack of customers	3	4
3 Sale of products- too much competition	1	2
4 Financial difficulties (e.g., difficult to get loan)	3	4
5 Lack of space, adapted premises	1	2
6 Lack of machines or equipment	3	4
7 Organization, management difficulty	1	2
8 Too much control, taxes	3	4
9 Too little revenue	1	2
10 Other (specify) _____	3	4

G.2. To solve your present problems, do you wish to have help in the following areas?

		YES	NO
1	Technical training	1	2
2	Training in organizational and financial management	3	4
3	Assistance in obtaining supplies	1	2
4	Access to modern machines	3	4
5	Access to loans	1	2
6	Access to information on the market	3	4
7	Access to large business orders	1	2
8	Registration of business	3	4
9	Advertising of new products/services	1	2
10	Other (specify) _____	3	4

G.3. Do you belong to a professional organization in your domain of business activity?

Yes 1 No 2 → ***END***

***G3.1 IF YES,* For which type of difficulties does this organization help you?**

		YES	NO
1	Technical training	1	2
2	Training in organizational and financial management	3	4
3	Assistance in obtaining supplies	1	2
4	Access to modern machines	3	4
5	Access to loans	1	2
6	Access to information on the market	3	4
7	Access to large business orders	1	2
8	Problems/linkages with government	3	4
9	Litigation with the competitors	1	2
10	Security problems	3	4
11	Interactions with employees	1	2
12	Other (specify) _____	3	4

END

Thank You!!!

Appendix 4
Bangladesh's Questionnaire

ISS FORM 1

Team: ☐☐

Quarter: ☐☐
Round: ☐☐

Govt of the People's Republic of Bangladesh
Bangladesh Bureau of Statistics, Industry and Labour Wing
Parisankhyan Bhaban, E-27/A, Agargaon, Dhaka-1207

Confidential
(Personal information will not be disclosed)

DPC No. ☐☐☐☐☐

Time Started ☐☐☐☐

Time Ended ☐☐☐☐

(For official use only)

INFORMAL SECTOR SURVEY, 2009-2010

SECTION-1: IDENTIFICATION OF THE SAMPLE AREA		
Sample Area Particulars	**Name**	**Code No.**
Region		☐☐
Zila		☐☐
Upzila/Thana		☐☐
Union/Ward		☐☐
Mouza/Mohalla		☐☐☐
Area (Rural-1, Urban-2)		☐
PSU No.		☐☐☐☐
Sample Household No.		☐☐☐
Head of the Household		
Respondent's Name		

DESCRIPTION OF THE VISIT

Visit	Date	Progress of the collected data (encircle the appropriate answer)		
1st visit		1 - Complete	2 - Incomplete	3 - Refused
2nd visit		1 - Complete	2 - Incomplete	3 - Refused

INVESTIGATOR & EDITOR/CODER	NAME	Signature	Date	Code	
Name of the Interviewer					
Name of the Supervising Officer					
Name of the Editor/Coder					

SECTION-2 : HUEM IDENTIFICATION			**Ask Column 2.2 – 2.4 if Column 2.1 = 2, 3, and 4**		
HH member's ID numbers	JOB NUMBER	What is your employment status? 1. Employee 2. Employer 3.Self-employed in agriculture 4. Self-employed in non-agriculture 5. Unpaid worker/ family member 6. Casual/Irregular paid worker 7. Day labor in agriculture 8. Day labor in non-agriculture 9 .Domestic worker in a private household (copy from LFS 4.9) If 4.9 = 1, 5, 6, 7, 8, and 9 –> Section 3	What is the legal status/ organization of the private enterprise where you work? 1. Single proprietorship/ individual business/farm 2. Partnership 3. Corporation (stock or nonstock; non-profit) 4. Registered cooperative 5. Others, specify 6. Do not know	Does the enterprise you own/ where you work (including work in the farm) sell or barter its goods and/or services? 1. Yes, at least some part of it on a regular basis 2. Yes, at least some part of it from time-to-time 3. No 4. Don't know	How does your enterprise/ business maintain its records or accounts? 1. Complete bookkeeping (balance sheet and operating statements) 2. Simplified legal accounts 3. Only through informal records of orders, sales, purchases 4. No written records are kept 5. Others, specify
		2.1	**2.2**	**2.3**	**2.4**

SECTION – 2 : HUEM IDENTIFICATION (TO BE FILLED BY ENUMERATOR)								
HH member's ID numbers	JOB NUMBER	If the entry in Column 2.1 is either code 2, 3, or 4, enter "O". Otherwise enter "X".	If the entry in Column 2.2 is either code 1, 2, 5, or 6, enter "O". Otherwise, enter "X".	If entry in 2.3 is either code 1 or 2, enter "O". Otherwise enter "X".	If entry in Column 2.4 is either code 2, 3, or 4 enter "O". Otherwise enter "X".	Put a check mark (√) if the entries in Columns 2.5 to 2.8 are all "O" and go to Column 2.10.	What is the full name and address/location of your enterprise? ***If place of work is in fixed business premise outside of housing unit, write complete name and address.*** ***Otherwise, write "Housing Unit".*** ***If this is the last person or job, proceed with ISS Form 2 interviews for each IS identified and marked in Column 2.9.*** ***(Write the name of the business (if applicable)/Name of operator)***
		2.5	**2.6**	**2.7**	**2.8**	**2.9**	**2.10**
							Name:
							Address:
							Name:
							Address:
							Name:
							Address:
							Name:
							Address:
							Name:
							Address:
							Name:
							Address:
							Name:
							Address:
							Name:
							Address:
							Name:
							Address:
							Name:
							Address:
							Name:
							Address:
							Name:
							Address:

SECTION-3 : HOUSEHOLD EXPENDITURES				
Item		**Previous Week (taka) (a)**	**Previous Month (taka) (b)**	**12 Months Ago (taka) (c)**
1.	Food and beverages			
2.	Fuel and lighting (firewood, cow dung, jute stick, kerosene, agriculture products fuel, gas, electricity, pit coal, etc)			
3.	Clothing and Footwear (ready-made garments, clothing material and tailoring, footwear, household-use textiles – quilt, bedsheets, curtains,etc)			
4.	Transport/Travel and other miscellaneous charges (transport fare, vehicle maintenance, salaries of drivers/guards/ gardeners, communication bills, etc)			
5.	Housing related expenses (rent, imputed rent, water, home improvements, maintenance and repair, municipal tax, other related services/expenses)			
6.	Miscellaneous expenses			
7.	Medical treatment (doctor's/practitioner's fees, medicines and medical items, tests, ayurvedic, hospitalization, dental expenses, health-related travel/incidental expenses)			
8.	Educational expenses (fees for registration,examination, school, annual; personal teaching expenses, textbook, notebook, stationery, hostel expenses, etc)			
9.	Furniture, Cooking Equipment, Miscellaneous Household Durable (khat, chai, table, trunks, furniture repair, glass, dishes, refrigerator, stove, kitchenware, radio, two-in-one, television, washing machine, guitar, electric fans, etc)			
10.	**Total monthly expenditure ((sum of column a X 4) + (sum of column b) + (sum of column c / 12))**			
11.	Festival and special occasion expenses (Annual expenditure)			

The People's Republic of Bangladesh
Bangladesh Bureau of Statistics
Industry & Labour Wing
Parishankhyan Bhahan
E-27/A, Agargaon, Dhaka-1207.

ISS FORM 2

Time Started ☐☐☐☐

Time Ended ☐☐☐☐

THE INFORMAL SECTOR SURVEY (ISS)
Household Unincorporated Enterprises with at least some Market Production (HUEM)

CONFIDENTIAL

I. IDENTIFICATION OF THE SAMPLE AREA		
Sample Area Particulars	**Name**	**Code No.**
Region		☐☐
Zila		☐☐
Upzila/Thana		☐☐
Union/Ward		☐☐
Mouza/Mohalla		☐☐☐
Area (Rural-1, Urban-2)		☐
PSU No.		☐☐☐☐
Sample Household No.		☐☐☐
HUEM Owner		

II. DESCRIPTION OF THE VISIT				
Visit	**Date**	**Progress of the collected data (*encircle the appropriate code*)**		
1st visit		1 - Complete	2 - Incomplete	3 - Refused
2nd visit		1 - Complete	2 - Incomplete	3 - Refused

III. ENUMERATOR / SUPERVISOR / EDITOR / CODER				
Enumerator / Supervisor / Edotor / Coder	**Name & Designation**	**Signature**	**Date**	**Code**
Enumerator				
Supervising Officer				
Editor / Coder				

SECTION A. ORGANIZATION OF BUSINESS

OB.1. What is the main activity (NAME) (product made and/or sold/ service provided for pay) of your business? (*Copy from LFS Section 4, Question 4.6*)

_____ **ISIC** ☐☐☐☐

OB.2. In what year was this business established? ☐☐☐☐

OB.3. Is your business registered?

1. Yes 2. No **If NO, Skip to OB.5.**

OB.4. If yes, your business is registered with which of the following? *Put a Tick Mark in the appropriate box.*

OB.4.1. City Corporation ☐
OB.4.2 Union Parishad ☐
OB.4.3 Pourashava ☐
OB.4.4. NGO/Co-operatives ☐
OB.4.5. Others (Specify)…….

OB.5. Do you have a bank account in the name of this business?

1.Yes 2.No ☐

OB.6. What type of bookkeeping and account practices do you keep for this business? (*Copy from ISS Form 1, Question 2.4)*

1. Complete bookkeeping (balance sheet and operating statements)
2. Simplified legal accounts
3. Only through informal records of orders, sales, purchases
4. No written records are kept
5. Others, specify

☐

OB.7. In which type of premises do you conduct this business activity? (*Copy from ELFS-1 Section 4, Question. 4.8*)

Fixed premises

1. At home with no special workplace
2. At my homeworh space inside/attached to the the home

Proceed to OB.7.1 ☐☐

3. Business premises with fixed location independent from home
4. Farm or individual agriculture/subsidiary plot
5. Home or workplace of the client
6. Construction site
7. Market, bazaar stall, trade fair
8. Street, pavement or highway with fixed post
9. Office building
10. Employer's home

Proceed to OB.8.

No fixed premises

11. Transport vehicle
12. No fixed location (e.g. mobile, door-to-door, street w/o fixed post)
13. Others (specify) _____

OB.7.1. If you were to rent an office space for your business, how much do you think will be your monthly rental cost?

Taka ☐☐☐☐☐☐☐☐

OB.8. Do you have other places of business where you also conduct your main activity? ☐

1.Yes 2.No ***If NO, skip to OB.9***

OB.8.1. How many other places? ☐☐

OB.9. Do you have any other business activity aside from this business activity? ☐

1.Yes 2.No ***If NO, skip to Section B***

OB.9.1. Where is the other business activity located? ☐

1.In the same location as main business activity (see **OB.7.**)

2.In a location different from that of main business

SECTION B. EMPLOYMENT AND COMPENSATION

EC.1. How many persons, including yourself, worked in your business even for just an hour during the last week of operation (For all business activities and for all part-timers & full-timers)?

EC.1.1 Total number of workers? ☐☐

EC.1.2 How many paid workers? ☐☐

EC.2. Including yourself, list the characteristics of those who worked regularly in the business you operated. (last 6 months of operation for agriculture; last month of operation for non-agriculture) *(below 15 years old are not included)*

No.	Name	Sex (Code)	Age (yrs)	Status (Code)	Contract (Code)	Total working hours	Payment (Code)	Wages / salaries (In Taka)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1								
2								
3								
4								
5								
6								
7								
8								
9								

EC.2.1 Total for last 6 months of operation for agriculture; last month of operation for non-agriculture) (Taka) ☐☐☐☐☐☐☐☐

Codes for Sex	Codes for Status	Codes for Contract	Codes for Payment
1 – Male 2 – Female	1. Employee 2. Employer 3. Self-employed in agriculture 4. Self-employed in non-agriculture 5. Unpaid worker/ family member 6. Casual/Irregular paid worker 7. Day labor in agriculture 8. Day labor in non-agriculture 9 . Others (specify)	1 – Operator/Owner 2 – Written contract without fixed duration 3 – Written contract with fixed duration 4 – Verbal agreement 5 – On trial/probation 6 – No contract 7 – Others (specify)	1- Fixed monthly salary 2- Fixed weekly salary 3- Daily or per hour of work 4- Per job/task based 5- In kind payment 6- No payment 7- Others, includes profit income

EC.3. Worker's Benefits (last 6 months of operation for agriculture; last month of operation for non-agriculture)

EC.3.1. Total social insurance contributed by employer	**(Taka)**	☐☐☐☐☐☐☐☐
EC.3.2.Total of all other allowances/bonuses paid by employer	**(Taka)**	☐☐☐☐☐☐☐☐
EC.3.3. Total of EC.3.1 and EC.3.2	**(Taka)**	☐☐☐☐☐☐☐☐

SECTION C. EXPENDITURE, PRODUCTION, INVENTORY AND SALE

(Last SIX MONTHS of operation for agriculture and last MONTH for non-agriculture)

EXPENDITURES ON RAW MATERIALS AND STOCK

Industry Activity (copy from OB.1) _____

EX.1. How much did you spend on raw materials used for your business over the specified reference period?

AGRICULTURE					NON-AGRICULTURE				
No.	Kind/Name of raw materials	Qty	Unit	Total value (Taka)	No.	Kind/Name of raw materials	Qty	Unit	Total value (Taka)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
EX.1.1 Total (last 6 months)					EX.1.2 Total (last month)				

EX.2. For products sold without transformation, how much did you spend to buy your stocks?

AGRICULTURE					NON-AGRICULTURE				
No.	Kind/Name of item	Qty	Unit	Total value (Taka)	No.	Kind/Name of item	Qty	Unit	Total value (Taka)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
EX.2.1 Total (last 6 months)					EX.2.2 Total (last month)				

EX.3. What were your business expenses during the operation?

Expenses/Cost	Value (In Taka)	
	AGRICULTURE (Last 6 months)	**NON- AGRICULTURE (Last month)**
1. Wages and salaries (from E.C. 2.1)		
2. Social insurance		
3. Bonuses & allowances		
4. Raw materials (from EX.1.1)		
5. Purchase cost of products sold without transformation (from EX.2.1)		
6. Fuel, gasoline & lubricants		
7. Water		
8. Electricity		
9. Rental payments (space, machinery, structures)		
10. Transport services		
11. Post, communication, internet		
12. Other non-industrial services (bank charges excluding interest, professional, business and other service fees, representation and entertainment		
13. Repair & maintenance of facilities & equipment		
14. Other industrial services (maintenance and installation work,		
15. Paid interests a. Paid b. Received		
16. Taxes (business license, documentary stamps and other fees)		
17. Insurance		
18. Other charges (specify)		
TOTAL		

PRODUCTION

PIS.1 What was the total amount of your gross sale/ revenue for the last 6 months of operation if agriculture; last month of opernation if non-agriculture? (Calculate as PIS1 = PIS2+PIS3+PIS4)

(Taka) ☐☐☐☐☐☐☐☐

PIS.2. Products sold after transformation

AGRICULTURE					NON-AGRICULTURE				
No.	Name of product	Qty	Unit	Total value (Taka)	No.	Name of product	Qty	Unit	Total value (Taka)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				

PIS.2.1. Total (last 6 months)		PIS.2.2. Total (last month)	

PIS.3. Products sold without transformation

AGRICULTURE					NON-AGRICULTURE				
No.	Name of item	Qty	Unit	Total value (Taka)	No.	Name of item	Qty	Unit	Total value (Taka)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
PIS.3.1. Total (last 6 months)					PIS.3.2. Total (last month)				

PIS.4. Services offered

AGRICULTURE				NON-AGRICULTURE			
No.	Kind of services	Qty	Total value (Taka)	No.	Kind of services	Qty	Total value (Taka)
1				1			
2				2			
3				3			
4				4			
5				5			
6				6			
7				7			
8				8			
PIS.4.1. Total (last 6 months)				PIS.4.2. Total (last month)			

PIS.5. Beginning Inventory of Products with transformation

AGRICULTURE					NON-AGRICULTURE				
No.	Name of product	Qty	Unit	Total value (Taka)	No.	Name of product	Qty	Unit	Total value (Taka)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				

PIS.5.1. Total (last 6 months)		PIS.5.2. Total (last month)	

PIS.6. Ending Inventory of Products with transformation

AGRICULTURE					NON-AGRICULTURE				
No.	Name of product	Qty	Unit	Total value (Taka)	No.	Name of product	Qty	Unit	Total value (Taka)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
PIS.6.1. Total (last 6 months)					PIS.6.2. Total (last month)				

PIS.7. Beginning Inventory of Products without transformation

AGRICULTURE					NON-AGRICULTURE				
No.	Name of product	Qty	Unit	Total value (Taka)	No.	Name of product	Qty	Unit	Total value (Taka)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
PIS.7.1. Total (last 6 months)					PIS.7.2. Total (last month)				

PIS.8. Ending Inventory of Products without transformation

AGRICULTURE					NON-AGRICULTURE				
No.	Name of product	Qty	Unit	Total value (Taka)	No.	Name of product	Qty	Unit	Total value (Taka)
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
PIS.8.1. Total (last 6 months)					PIS.8.2. Total (last month)				

PIS.9. Value of Production for Own Consumption

AGRICULTURE					NON-AGRICULTURE				
No.	Name of product / raw materials	Qty	Unit	Total value (Taka)	No.	Name of product / raw materials	Qty	Unit	Total value (Taka)
1					1				
2					2				
3					3				
4					4				
6					6				
7					7				
8					8				
PIS.9.1. Total (last 6 months)					PIS.9.2. Total (last month)				

PIS.10. How did your business activity fluctuate within the past 12 months?

Month	JAN (a)	FEB (b)	MAR (c)	APR (d)	MAY (e)	JUN (f)	JUL (g)	AUG (h)	SEP (i)	OCT (j)	NOV (k)	DEC (l)
Activity code												

Activity codes: 0 – No activity 1 – Minimum 2 – Average 3 – Maximum

PIS.10.1 Minimum gross sale/revenue (Per Month) **(TAKA)** ☐☐☐☐☐☐☐☐

PIS.10.2 Average gross sale/revenue (Per Month) **(TAKA)** ☐☐☐☐☐☐☐☐

PIS.10. Maximum gross sale/revenue (Per Month) **(TAKA)** ☐☐☐☐☐☐☐☐

SECTION D. CAPITAL EXPENDITURES

CE.1. What are the capital assets you used for your business activity during the past 12 months?

Type	Characteristics (Short Description)	Mode of transaction	Owner-ship	Date of acquisition/ sale/lost (month / year)	Value (replacement cost) (In Taka)
1. Land	a)				
	b)				
	c)				
2. Land development	a)				
	b)				

	c)				
3. Buildings and Other consturciton s	a)				
	b)				
	c)				
4. Transport equipment	a)				
	b)				
	c)				
5. Other machinery and equipment	a)				
	b)				
	c)				
6. Furniture and office equipment	a)				
	b)				
	c)				
7. Small tools	a)				
	b)				
	c)				
8. Other agricultural assets	a)				
	b)				
	c)				
9. Livestock and poultry	a)				
	b)				
	c)				
10. Others	a)				
	b)				
	c)				

Mode codes: 1 – Bought new 2 – Bought used 3 – Made major improvements 4 – Own-produced 5 – Sold 6 – Loss 7 – Not Applicable

Ownership codes: 1 – Personal property 2 – Rent 3 – Lease 4 - Share property 5 - Borrow, free of charge

SECTION E. BANKS, MICRO-FINANCE SERVICES & OTHER SUPPORT STRUCTURES

BMF.1. What is the main reason you chose this business activity? ☐

1. Family tradition
2. It is the profession that I know
3. It gives better income/higher profits than other products or services
4. More stable returns than other products/services
5. Others (specify) _____

BMF.2. What is the source of your business activity's the initial capital? ☐

1. Banks
2. Microlending facility

3. Cooperatives
4. NGO
5. National/Local government project
6. Family/relative
7. Neighbor/friends
8. Employer/landlord
9. Private money lender/pawnshop
10. Ownsource / savings
11. Others, specify

BMF.3. If you need financing for your business activity, what is the source of the financing?

1. Banks
2. Microlending facility
3. Cooperatives
4. NGO
5. National/Local government project
6. Family/relative
7. Neighbor/friends
8. Employer/landlord
9. Private money lender/pawnshop
10. Ownsource / savings
11. Others (specify) ……

BMF.4. Have you ever applied for a bank loan for your business? ☐

1.Yes 2.No ***If YES, skip to BMF4.2***

BMF.4.1 ***If you never applied for a loan,*** what is the main reason**?** ☐

1. Amount of loan offered is insufficient
2. Procedures are too complicated
3. Interest rates are too high
4. Guarantee/collateral required is too much
5. Maturity period is too short
6. I am not interested in getting a loan
7. I do not believe in paying interest
8. Did not need a loan

Others (specify) _____

BMF.4.2*. If YES*, did you get a loan? ☐

1.Yes 2.No ***If YES, skip to BMF4.4***

BMF.4.3. What was the main reason your application was rejected? ☐

1. Incomplete documents
2. Complete but not convincing documents
3. Insufficient guarantees/collateral
4. Insufficient initial capital
5. Activity/enterprise was deemed not viable
6. Others (specify) _____

BMF.4.4. What was the impact of the loan on your business activity? ***Enter "1" if YES, enter "2" if NO. (Multiple answers are allowed)***

BMF.4.4.1 Increase in the volume of production ☐
BMF.4.4.2 Diversification of production ☐
BMF.4.4.3 Increase of the volume of sales ☐
BMF.4.4.4 Improvement of competitiveness/profitability ☐
BMF.4.4.5 Recruitment of additional staff ☐
BMF.4.4.6 Working less time ☐
BMF.4.4.7 Utilization of less staff ☐

BMF.4.4.8 Financial difficulties
BMF.4.4.9 Others (specify) _____

SECTION F. PROBLEMS AND PROSPECTS

PP.1. Do you have problems/difficulties related to the following aspects of your business?
Enter "1" if YES, enter "2" if NO. (Multiple answers are allowed)

PP.1.1	Supply of raw materials (quantity or quality)	☐
PP.1.2	Sale of products- lack of customers	☐
PP.1.3	Sale of products- too much competition	☐
PP.1.4	Financial difficulties (e.g., difficult to get loan)	☐
PP.1.5	Lack of space, adapted premises	☐
PP.1.6	Lack of machines or equipment	☐
PP.1.7	Organization, management difficulty	☐
PP.1.8	Too much control, taxes	☐
PP.1.9	Others (specify) _____	☐

PP.2. To solve your present problems, do you wish to have help in the following areas?
Enter "1" if YES, enter "2" if NO. (Multiple answers are allowed)

1.	Technical training	☐
2.	Training in organizational and financial management	☐
3.	Assistance in obtaining supplies	☐
4.	Access to modern machines	☐
5.	Access to loans	☐
6.	Access to information on the market	☐
7.	Access to large business orders	☐
8.	Registration of business	☐
9.	Advertising of new products/services	☐
10.	Others (specify) _____	☐

PP.3. Do you belong to an association in your domain of business activity?

1.Yes 2.No

If NO, END

***PP3.1 IF YES,* For which type of difficulties does this organization help you?**
Enter "1" if YES, enter "2" if NO. (Multiple answers are allowed)

1.	Technical training	☐
2.	Training in organizational and financial management	☐
3.	Assistance in obtaining supplies	☐
4.	Access to modern machines	☐
5.	Access to loans	☐
6.	Access to information on the market	☐
7.	Access to large business orders	☐
8.	Problems/linkages with government	☐
9.	Litigation with the competitors	☐
10.	Security problems	☐
11.	Interactions with employees	☐
12.	Others (specify) _____	☐

END

Thank You!!!

References

Albrecht, J., L. Navarro, and S. Vroman. 2006. The Effects of Labor Market Policies in an Economy with Informal Sector. *IZA Discussion Papers* No. 2141. Institute for the Study of Labor, Bonn, Germany.

Arboleda, H. and M. Kow. 2000. Estimation of Contribution of Informal Sector to GDP on Regular Basis. Paper presented during the Fourth Meeting of the Expert (Delhi) Group on Informal Sector Statistics, Geneva.

Barwa, S. 1995. Structural Adjustment Programmes and the Urban Informal Sector in Ghana. *Issues in Development, Discussion Paper.* No. 3.

Bauer, P. and Y. Lee. 2006. Estimating GSP and Labor Productivity by State. *Policy Discussion Paper*. Federal Reserve Bank of Cleveland.

BPS-Statistics Indonesia and Asian Development Bank. 2010. The Informal Sector and Informal Employment in Indonesia, Country Report 2010.

Brooks, D., R. Hasan, J. W. Lee, H. Son, and J. Zhuang. 2010. Closing Development Gaps: Challenges and Policy Options. *ADB Economics Working Paper Series.* No. 209. Manila: Asian Development Bank.

Buenaventura, C. 1993. Methodology for the Quantification of the Contribution of the Informal Sector. Paper presented during the Sixth SRTC Annual Conference. Quezon City, Philippines.

Carr, M and M. Chen. 2004. Globalization, Social Exclusion and Work: With Special Reference to Informal Employment and Gender. *Working Paper.* No. 20. World Commission on the Social Dimension of Globalization International Labour Office.

Charmes, J. 2000. The Contribution of Informal Sector to GDP in Developing Countries: Assessment, Estimates, Methods, Orientations for the Future. Paper presented during the 4th Meeting of the Delhi Group on Informal Sector Statistics. Geneva, Switzerland.

_____. 2006. *Estimation and Survey Methods for the Informal Sector.* University of Versailles–St Quentin en Yvelines, Centre of Economics and Ethics for Environment and Development (C3ED).

_____. 2009. *Concepts, measurement and trends*. In *Is Informal Normal? towards more and better jobs in developing countries.* J.P. Jütting and J. R. Laiglesia, Eds. Paris: OECD.

Chen, M. 2007. Rethinking the Informal Economy: Linkages with the Formal Economy and the Formal Regulatory Environment. *DESA Working Paper.* No. 46. ST/ESA/2007/DWP/46.

Cuevas, S., C. Mina, M. Barcenas, and A. Rosario. 2009. Informal Employment in Indonesia. *ADB Economics Working Paper Series.* No. 156. Manila: Asian Development Bank.

De la Escosura, L. and J. Roses. 2003. Wages and Labor Income in History: A Survey. Universidad Carlos III De Madrid, *Working Paper.* 03–10. Economic History and Institutions Series 06.

Delhi Group and International Labour Office. Forthcoming. *Manual on Surveys of Informal Employment and Informal Sector.*

Feige, E. and I. Urban. 2003. Estimating the Size and Growth of Unrecorded Economic Activity in Transition Countries: A Re-evaluation of Electric Consumption Method Estimates and their Implications. *William Davidson Institute Working Paper.* No. 636. Michigan. Available: http://129.3.20.41/eps/mac/papers/0311/0311010.pdf

Finnoff, K. and A. Jayadev. 2006. Feminization and the Labor Share of Income. *GEM-IWG Working Paper*. 06–4. Available: www.econ.utah.edu/genmac/WP/06-4.pdf

Gennari, P., Guerrero, M., and Orhun, Z. 2009. "The "1-2" Survey: A data collection strategy for informal sector and informal employment statistics." *UN ICMISIE Working Paper. No. 1.*

Gollin, D. 2002. Getting income shares right. *The Journal of Political Economy*, Vol. 110, No. 2 (April), pp. 458-474.

_____ 2008. Labor's Share in Income. *Williams College Economics Department Working Paper Series*. Available: www.williams.edu/Economics/wp/gollinarticle-1.pdf

Gomme, P. and P. Rupert. 2004. Measuring Labor's Share of Income. *Policy Discussion Papers.* No. 7. November 2004. Federal Reserves of Cleveland. Available: www.clevelandfed.org/research/PolicyDis/No7Nov04.pdf

Guscina, A. 2006. Effects of Globalization on Labor's Share in National Income. *IMF Working Paper.* WP/06/294.

Hussmanns, R. 2009. *Informal Sector Surveys: Advantages and Limitations of Different Survey Methods and Survey Designs for the Data*

Collection. Available: www.unescap.org/stat/isie/ws-isie5/Informal-sector-surveys-methods-ILO.pdf

_____. 2004a. Defining and Measuring Informal Employment. Paper presented in the ESCAP Subcommittee on Statistics Meeting entitled *Economic Statistics: Statistics on the Informal Sector and the Non-observed Economy*, First Session. 18–20 February 2004. Bangkok, Thailand.

_____. 2004b. Statistical definition of informal employment: Guidelines endorsed by the Seventeenth International Conference of Labour Statisticians (2003). Paper presented in the 7th Meeting of the Expert Group on Informal Sector Statistics (Delhi Group). 2–4 February 2004. New Delhi, India.

Hussmanns, R. and F. Mehran. 2001. *Statistical Definition of the Informal Sector - International Standards and National Practices.* International Labour Organization. Geneva. Available: www.gdrc.org/informal/huss0772.pdf

International Labour Organization. 2010. 2010 Global Employment Trends. Geneva, Switzerland.

_____. *Global Wage Report* 2008–2009. Geneva.

_____. 2004. Report on the 17th International Conference of Labour Statisticians. Geneva. Available: www.ilo.org/global/What_we_do/Statistics/events/icls/lang--en/docName--WCMS_087568/index.htm

_____. 2002. *Women and Men in the Informal Economy: A Statistical Picture*. Geneva, Switzerland.

_____. 1993. Report on the 15th International Conference of Labour Statisticians. Geneva.

_____. 1982. Report on the 13th International Conference of Labour Statisticians. Geneva.

Johnson, D. G. 1954. The Functional Distribution of Income in the United States, 1850–1952. *The Review of Economics and Statistics.* 36 (2). (May 1954). pp. 175–182. The MIT Press.

Jorgenson, D. 1990. Productivity and Economic Growth. In *Fifty Years of Economic Measurement*. E.R. Berndt and J.E. Triplett, eds. Chicago: NBER/University of Chicago Press. pp. 19–118.

Joshi, K., R. Hasan, and G. Amoranto. 2009. Surveys of Informal Sector Enterprises – Some Measurement Issues. *ADB Economics Working Paper Series.* No. 183. Manila: Asian Development Bank.

Kabaca, S. 2009. *The Volatility of Labor Income Share in Emerging Markets.* Department of Economics, University of British Columbia. Available: https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=CEA2010&paper_id=996

Kalton, G. and D. Maligalig. 1991. A Comparison of Methods of Weighting Adjustment for Non-Response. Paper presented at the 1991 Census Research Conference.

Kantor, P. 2009. Women's Exclusion and Unfavorable Inclusion in Informal Employment in Lucknow, India: Barriers to Voice and Livelihood Security. *World Development.* 37 (1). pp. 194–207.

Kish, L. 1992. Weighting for Unequal Pi. *Journal of Official Statistics.* 8 (2). pp. 183–200.

Krueger, A.B. 1999. Measuring Labor's Share. *NBER Working Paper Series* No. 7006. National Bureau of Economic Research. Available: www.nber.org/papers/w7006.pdf

Landmann, O. 2004. Employment, Productivity and Output Growth. *Employment Strategy Paper*. 2004/17. Employment Strategy Department, International Labour Organization. Available: www.ilo.org/empelm/what/pubs/lang--en/docName--WCMS_114299/index.htm

Lequiller, F. and D. Blades. 2006. *Understanding National Accounts.* Organisation for Economic Co-operation and Development (OECD), France.

Loewenson, R. 1998. Health Impact of Occupational Risks in the Informal Sector in Zimbabwe. *International Journal of Occupational and Environmental Health.* 4 (4). pp. 264–274.

Lübker, M. 2007. Labour Shares. *ILO Technical Brief*. No. 01. Geneva, Switzerland. Available: www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/documents/publication/wcms_086237.pdf

Maligalig, D. 2008. Measuring the Informal Sector: Current Practices. Paper presented during the Inception Workshop for RETA 6430: Measuring the Informal Sector. Asian Development Bank (ADB) Headquarters, Manila.

_____. 2010. Towards a Reliable and Cost-Effective Data Collection Strategy for the Informal Sector and Informal Employment. Paper presented during the International Conference on Measuring the Informal Sector and Informal Employment. Viet Nam.

Maligalig, D. and M. Barcenas. 2008. Examining Bangladesh's Integrated Multi-Purpose Sample Design. Paper presented to the Bangladesh

Bureau of Statistics as part of the Inception Mission of RETA 6430: Measuring the Informal Sector, Dhaka, Bangladesh.

Maligalig, D. and M. Guerrero. 2008. How Can We Measure the Informal Sector? Paper presented at the Philippine Statistical Association 2008 Conference.

Maligalig, D., S. Cuevas, and A. Rosario. 2009. Informal Employment in Bangladesh. *ADB Economics Working Paper Series.* No. 155. Manila: Asian Development Bank.

Mankiw, G. N. 2007. *Macroeconomics.* Sixth edition. New York: Worth Publishers.

McConnel, C. and S. Brue. 2008. *Macroeconomics: Principles, Problems, and Policies.* 7th edition. New York: McGraw-Hill/Irwin.

Mishel, L. and G. Burtless. 1995. *Recent Wage Trends: The Implications for Low Wage Workers.* Washington, D.C.: Economic Policy Institute. Available: http://epn.org/epi/epwage.html

Moretti, E. 2010. *Real Wage Inequality.* UC Berkeley, NBER, CEPR, and IZA. National Transfer Income website. Available: www.ntaccounts.org/ web/ nta/show/Documents/Labor%20Income

National Statistical Service of the Republic of Armenia and Asian Development Bank. 2010. The Informal Sector and Informal Employment in Armenia, Country Report 2010.

National Transfer Account Project's website. Available: www. ntaccounts.org/web/nta/show/ Documents/ Self-employment%20Income

Organisation for Economic Co-operation and Development. 2001. *Measuring Productivity: Measurement of Aggregate and Industry-Level Productivity Growth.* OECD Manual. Paris, France. Available: www.oecd.org/ LongAbstract/0,342 5,en_2649_34245_2352 452_1_1_1_1,00.html

_____. 2002. *Handbook on Measuring the Non-Observed Economy.* OECD. Paris, France.

Owen, A. L. and B. Yu. 2003. *Wage Inequality between Skilled and Unskilled Workers in China.* Hamilton College.

Rakotormanana, F., R. Ravelosoa, and F. Roubaud. 2003, "The 1-2-3 Survey of the Informal Sector and the Satisfaction of Household Needs in the Antananarivo Conurbation." *Inter-Stat.* 27. 59–88.

Riba, M., S. Ouédrago, B. Pyakuryal, J. Stanley, B. Kazilimani, and S. Phillips. Undated. *Growing Micro and Small Enterprises in LDCs. The "Missing Middle" in LDCs: Why Micro and Small Enterprises Are Not Growing.* UNCTAD/ ITE/ TEB/5. Available: www.unctad.org/en/docs/ poitetebd5.en.pdf

Stiroh, K. 2001. What Drives Productivity Growth? *RBNY Economic Policy Review*. pp. 37–59. Available: www2.fiu.edu/~cartonj/_ fpclass/ Productivity%20Growth.pdf

Todaro, M. and S. Smith. 2009. *Economic Development.* Essex, England: Addison-Wesley Publication; Pearson Education Limited.

United Nations. 1982. *Survey Data Processing: A Review of Issues and Procedures*. National Household Survey Capability Programme.

_____. 1993. *Inventory of National Practices in Estimating Hidden and Informal Economic Activities for National Accounts*. Statistical Division, Economi c Commission for Europe. Available: www.unece.org/stats/ archive/02.02.e.htm

_____. 1999. Studies in Methods, Handbook of National Accounting, Series F, No. 74, 1999, Department for Economic and Social Affairs, Statistics Division, United Nations, New York.

_____. 2001. *System of National Accounts 1993*. United Nations Statistics Division.

_____. 2008. *System of National Accounts 2008.* United Nations Statistics Division.

Viet, V. 2009. Compilation of Output and Gross Value Added from the Data Collected for Household Unincorporated Enterprises with at least some Market Production. Report under the Unified Data Collection Strategy for Measuring the Informal Sector and Informal Employment.

Vijverberg, W. 1990. Nonfarm Self-Employment and the Informal Sector in Cote d'Ivoire: A Test of Categorical Identity. *The Journal of Developing Areas.* pp. 523–542.

Young, A. 1995. The Tyranny of Numbers: Confronting the Statistical Realities of East Asian Growth Experiences. *Quarterly Journal of Economics.* 110 (3). pp. 641–680.

Zoghi, C. 2007. Measuring Labor Composition: A Comparison of Alternate Methodologies. Paper presented to the Federal Economic Statistics Advisory Committee. Available: www.bls.gov/ bls/ fesacp1121407.pdf

A Handbook on Using the Mixed Survey for Measuring Informal Employment and the Informal Sector

This Handbook presents a cost-effective and reliable data collection strategy for measuring and analyzing informal employment and the informal sector. The cornerstone of this methodology is a version of the mixed survey that is anchored to the Labor Force Survey conducted regularly by developing countries. The Handbook draws from experience in the implementation of the mixed survey in Armenia, Bangladesh, and Indonesia under regional technical assistance 6430: Measuring the Informal Sector. It discusses viable methodologies and processes by which data collected from the mixed survey can be utilized to generate statistics on informal employment and the informal sector. The empirical evidence that will be produced can solidify the efforts on these topics, from research to policy making.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than $2 a day, with 903 million struggling on less than $1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

Asian Development Bank
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
www.adb.org/Statistics
ISBN 978-92-9092-267-4
Publication Stock No. TIM102862

Printed on recycled paper

Printed in the Philippines