MEASURING THE CONTRIBUTION OF THE INFORMAL SECTOR (IS) TO THE TOTAL ECONOMY

I. Introduction

This paper presents the findings of the Informal Sector Survey (ISS) that the National Statistical Service of the Republic of Armenia (NSS RA) has conducted with financial and technical assistance from the Asian Development Bank (ADB). ADB funds has provided through Regional Technical Assistance (RETA) 6430: Measurement of the Informal Sector.

This is a unique study in the last decade for Armenia, which focused on both informal employment, as well as informal sector contribution to gross domestic product. A previous study on informal employment in Armenia conducted in 2008 and co-funded by the European Union), indicated that informal employment in Armenia is substantial and comprises 51.8% (53.9% in 2009 and 62.6% in 2010) with 35.3% of those employed working in the informal sector and, therefore, are mostly under informal employment arrangement.

In 2009, the National Statistical Service of the Republic of Armenia (NSS RA) conducted the expanded Occupation (module) of the Integrated Living Conditions Survey (ILCS), which is the expanded Labor Force Survey (LFS) version of Armenia, and the Informal Sector Survey (ISS) (Household Unincorporated Enterprises with Some Market Production [HUEM] survey), using the mixed survey approach. LFS was expanded with additional questions on (i) identifying household unincorporated enterprises with some market production (HUEMs), (ii) distinguishing informal employment from formal employment, and (iii) the extent of social protection mechanisms.

The expanded LFS had been implemented in 7,872 households in Armenia with the main objective of identifying HUEM, which, in turn, serves as the sampling frame for an ISS. Data from the expanded LFS can also be used to estimate informal employment and employment in informal economy. Subsequently, the ISS questionnaire was outlined to collect detailed information on production activities to estimate gross value added (GVA) of informal sector enterprises. A sample consisting of 548 enterprises was surveyed.

The survey period coincided with the financial and economic crisis that affected Armenia's economy starting in October–November 2008. As a response, the Government of the Republic of Armenia drafted an anti-crisis program, which involved simplification of all types of businesses, including small and medium-sized enterprises, and the new tax procedures. Those factors have been affecting economic units implementing informal activity. By this reason, the households covered by the survey had less income or some of them may had been inclined to hide their informal activities in order to avoid tax payments. The respondents reported lower incomes because of concerns of being denied poverty and unemployment benefits, among other social protection schemes.

II. Concepts and Definitions

The revised 2008 System of National Accounts (SNA) has included a chapter on the informal sector, Chapter 25: Informal Aspects of the Economy. The Organisation for Economic Co-

operation and Development (OECD) published the handbook, Measuring the Non-observed Economy, while the International Labour Organization (ILO), through the 15th International Conference of Labour Statisticians (ICLS), came out with a resolution defining the informal sector, which is harmonized with the SNA concept of informal sector. The concepts presented are mainly based on the definitions and principles recommended by the ILO, taking into account the peculiarities of their application in Armenia.

For an internationally comparable definition of informal employment in Armenia, classification of the employed population was primarily based on the Fifteenth (15th) and Seventeenth (17th) International Conference of Labor Statisticians (ICLS) guidelines. The 15th ICLS conceptualized the informal sector as

> (1) 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.
>
> (2) Production units of the informal sector have the characteristic features of household enterprises. The fixed and other assets used do not belong to the production units as such but to their owners. The units as such cannot engage in transactions or enter into contracts with other units, nor incur liabilities, on their own behalf. The owners have to raise the necessary finance at their own risk and are personally liable, without limit, for any debts or obligations incurred in the production process. Expenditure for production is often indistinguishable from household expenditure. Similarly, capital goods such as buildings or vehicles may be used indistinguishably for business and household purposes.
>
> (3) Activities performed by production units of the informal sector are not necessarily performed with the deliberate intention of evading the payment of taxes or social security contributions, or infringing labour or other legislations or administrative provisions. Accordingly, the concept of informal sector activities should be distinguished from the concept of activities of the hidden or underground economy.

According to the 17th 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 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 International Labor Organization (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.

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

(v) 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 no 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, not enforced, or not complied with for any other reason.

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

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 in formal sector enterprises 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, if considered employed according to the resolution concerning statistics of the economically active population, employment, unemployment, and underemployment adopted by the 13th ICLS;

(iv) Contributing family workers engaged in the production of goods exclusively for own final use by their household in primary job, if the produced goods comprised the significant share in the consumption of household.

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 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.

The concepts and ideas presented are the chief considerations applied in the estimation and analysis of informal employment in Armenia, using the 2009 expanded Integrated Living Conditions Survey and Informal Sector Survey or Household Unincorporated Enterprises with Some Market Production (HUEM) Survey.

III. Informal Sector Survey/Mixed Survey Approach

SNA 2008 as an approache to measuring activities undertaken in the informal economy recommended mixed household-enterprise survey.

On the basis of the definitions of the informal sector that were agreed at the 15th International Conference of Labour Statisticians (ICLS), there are two types of informal sector production units: informal own-account enterprises and enterprises of informal employers. Both these types of informal production units 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 Table below. Those household enterprises that are producing at least some goods and services for the market and belonging either in the agricultural or non-agricultural informal sectors will be the target sampling units. These are called household unincorporated enterprises with some market production (HUEMs).

Dichotomy of Household Enterprises

<table>
<tr><td colspan="5">Household Enterprises</td></tr>
<tr><td colspan="4">Producing at Least Some Goods and Services for Market</td><td colspan="2">Producing Goods and Services for Own Final Use</td></tr>
<tr><td colspan="2">Non-Agricultural</td><td colspan="2">Agricultural</td><td>Goods</td><td>Services</td></tr>
<tr><td rowspan="2">Formal sector</td><td rowspan="2">Informal sector</td><td rowspan="2">Formal sector</td><td rowspan="2">Informal sector</td><td>Agriculture, forestry, fishing</td><td>Paid domestic services</td></tr>
<tr><td>Other activities</td><td>Owner occupied dwelling services</td></tr>
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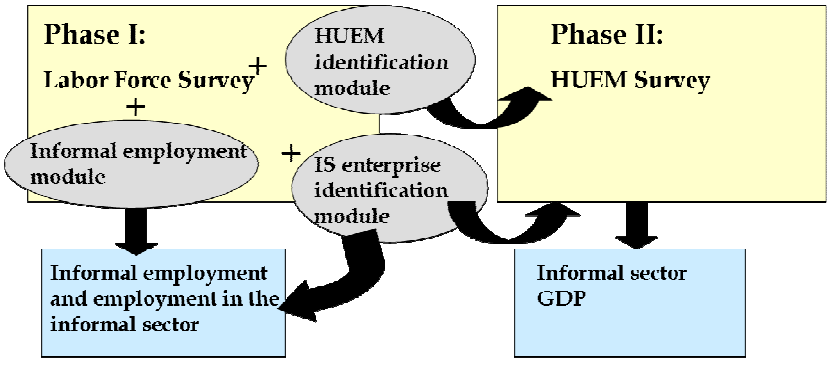
Household Unincorporated Enterprises with Some Market Production (HUEMs)

Mixed Survey Approach



Phase 1 or the expanded LFS contains additional questions that can be classified into three categories, namely, 1) informal employment module, 2) informal sector enterprise module, and 3) HUEM identification module. The informal employment module will determine the extent of informal employment by distinguishing the informal from the formal workers. The data to be collected will be used

to analyze the characteristics of the informal workers, available social protection mechanisms, and working conditions. This module, when combined with the informal enterprise module, will further enrich the examination by determining informal employment in the informal sector. The informal sector enterprise module will determine if the enterprise/establishment of a respondent worker is informal or not. 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 probable HUEM in the household and identifies the respondent in phase 2 of the survey. Meanwhile, phase 2 concentrates on the enterprise and its production, providing relevant information on the informal sector's contribution to the country's economic output or the gross domestic product.

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.

2009 ILCS Section D and the Informal Sector Survey Questionnaire

Section D of the 2009 ILCS form was modified to incorporate queries related to formal and informal employment, as well as items concerning the characteristics of enterprises. Hence, this section of the questionnaire, which deals with labor and employment, was "expanded" to gather sufficient information for identifying informal employment and the informal sector. This is considered the first phase of the mixed survey approach. Meanwhile, the ISS Form or the HUEM survey is considered the phase 2. Below are brief descriptions of each form:

Section D, ILCS (Phase 1) Questionnaire	This is the questionnaire which was used to record information about the household members who are 15–75 years old. In this form, the employed and unemployed were identified and, among the employed population, the following information were gathered: Employment Status; Terms of Employment; Benefits, such as social security contribution, paid leave, maternity/paternity leave, paid sick leave, and termination of employment; Place of Work; Industry of Enterprise; Legal Organization of Enterprise; Employment Size of Enterprise; Registration of Enterprise; Bookkeeping and Accounting Practices of Enterprise; and Market Production of Enterprise.
ISS Form or HUEM Survey (Phase 2) Questionnaire	This questionnaire records information about HUEMs, such as Identification and General Information; Organization and Status of Business; Employment and Compensation; Production and Sale; Expenditures on Raw Material and Stocks; Capital Expenditure; and Credit Information. The respondents for this form are either employers or own-account workers who are owners of the HUEM.

The objectives of the expanded Section D (Phase 1) Questionnaire are to

- Identify and construct a sampling frame of household unincorporated enterprises with some market production (HUEMs) among the enterprises in which employed persons work;
- Provide data for estimating employment in informal sector enterprises; and
- Provide data for estimating informal employment.

The primary purpose of the ISS Form (HUEM) Questionnaire is to generate data that can be a direct measure of informal production activities. The results of the HUEM Survey will provide the basis for estimating the benchmark gross value added (GVA) for the informal sector, and thus, measure its contribution to the gross domestic product (GDP) of the country. The HUEM Survey is meant to provide the data specifically for the informal sector.

The ISS Form 2 has seven (7) sections:

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

IV. Estimation of Gross Value Added of The Informal Sector/ It's Contribution To Gross Domestic Product (GDP)

Output

The production activities of the enterprises in the informal sector are generally characterized to overlap with their corresponding consumption activities. In addition, studies show that enterprises in the informal sector cannot maintain large stock 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.

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 household unincorporated enterprises with some market production (HUEMs), are available in Section C*, Production, Inventory and Sale,* of the ISS 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 producers' 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	
	+ Value of services offered	C.4	
	+ Changes in inventories (output)	C.5, C.6	

Given that the ISS Form covers 6 months of agricultural production and that this industry is highly seasonal, it is likely that the survey would have covered outputs that are considered to be *work in progress.*

Intermediate Inputs

Conceptually, intermediate inputs (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.

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 D.3.
For value of raw materials used, the data given for D.1 is assumed to be the value of raw materials used (D.1) for manufacturing; electricity, gas, and water; agriculture; mining; and construction. On the other hand, D.2 is assumed to be the value of purchases of goods for resale during the period.

Intermediate inputs at purchasers' prices *Equation 2*

=	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

Income Approach

While the HUEM survey aimed to collect detailed information on the different components needed to estimate GVA under a production approach framework, the questionnaire also collects data on income components to facilitate rough approximation of HUEMs' mixed income. In particular, wages and salaries, social insurance, bonuses and allowances, and taxes on product incurred by the HUEMs are also asked.

Operating Surplus or Mixed Income

For our purpose, the income approach adds up all incomes paid in the process of production. In general, the income measure of gross domestic product (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.

Estimating Operating Surplus from the HUEM Survey

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 3*

=	Output	Equation 1
-	Intermediate inputs	Equation 2
-	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.

Adjustments

Some sectors in Armenia are not well-represented in the ISS.
In particular, to estimate the contribution of informal sector to total GVA of fishing sector, household expenditure data from the ILCS may be used. In particular, expenditures incurred by households to buy fresh fish in the streets, markets, and other places may be used to impute output of informal economy, after adjusting for trade margin.

Armenia's 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 can be considered as assets produced for own-account and hence are a component of gross output. In turn, 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 meter) 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 activity at home. The contribution of imputed rent in the informal sector is approximated by counting the number of ISS respondents who carry out business activity 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 employment in sector K is too low - 8000 employees instead of 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 was conducted in 2001. According to this survey, 85.0% of university entrants hired tutors for on average 2.1 subjects each for $800 (this is for the last 2 years).

Further, based on ILCS data on household debts and savings, it seems that the contribution of financial intermediation services indirectly measured (FISIM) to the informal sector is nil.

Contribution of IS To Gross Domestic Product (GDP)

The estimation of the non-observed economy (NOE) in Armenia started since 1994 following the definition adopted in the Organisation for Economic Co-Operation and Development (OECD) Handbook (excluding illegal production). Estimates for latest years show that NOE in Armenia contributes almost 25% of the total gross domestic product (GDP). Valuable sources for estimating the NOE include data from enterprise surveys, labor force surveys, and household income and expenditures surveys (e.g., Integrated Living Conditions Survey (ILCS)) conducted in Armenia.

Bearing in mind the incomplete coverage and possible misreporting that exist, the calculations are based on data on output and the number of persons employed in the economy. Indirect macroeconomic methods are also employed, using all possible sources of information. The method used by Armenia is based on the analyses of the supply of labor and demand for labor. The results serve to determine the number of persons engaged in legal productive activities that

have not been recorded. Another large category of information comprises data relating to production.

Since 2001, the National Statistical Service of the Republic of Armenia (NSSRA) has been conducting a labor force survey in coordination with the integrated household survey. The 2008 Labor Force Survey (LFS) serves as a good data source in studying and estimating informal employment in Armenian labor market.

The NSSRA regularly conducts LFS but, from the point of view of the National Accounts, to estimate the NOE contribution to country GDP, a lot of problems need to be solved first. One of them is the issue of defining the exact type of economic informal activities in accordance with international classification of economic activities. The other is computation of the number of full-time workers, which is based on the total hours worked during a year, etc. The contribution of NOE is indirectly estimated by using the combination of different indicators from the existing surveys. The contribution of the informal sector is directly estimated in the survey by asking the proportion of activities, output, intermediate consumptions, fixed assets, etc. Estimates for 2008 suggest that a quarter of Armenia's GDP can be accounted to the NOE, of which 10.7% is from informal sector production and 14.3% is from underground production.

Until 2008, the construction sector remains to be the main driver of Armenia's economy over the recent years, contributing 25.3% of the total GDP. This is followed by agriculture (16.3%), wholesale and retail trade (11.6%), and manufacturing (8.8%). The financial and economic crisis in 2009 has largely affected Armenia's economy. Its economic output, measured by GDP noted a decline of as much as 14.2% in real terms. Construction was among the severely affected sectors, contracting by 42.3%. In proportion to the country's GDP, construction only contributed 17.6% in 2009. In real terms, manufacturing and wholesale and retail trade declined by 8.8% and 4.0%, respectively.

During the economic crisis, the share of the informal sector to total GDP in 2009 reached 11.2%. This is approximately the same as the estimated contribution of informal sector production based on estimates of the NOE for 2008. In this table is shown Share of Informal Sector to Total GVA by Industries (%).

Industry	Gross Value Added			
	In mln of AMD		Percent	
	Formal**	Informal	Formal**	Informal
Agriculture, hunting and forestry, fishing	399,557	115,026	77.7	22.4
Mining and quarrying	55,051	0	100.0	0.0
Manufacturing	259,491	13,577	95.0	5.0
Electricity, gas, and water supply	99,100	0	100.0	0.0
Construction	463,174	84,500	84.6	15.4
Wholesale and retail trade, repairs, etc.	338,962	58,971	85.2	14.8
Hotels and restaurants	17,124	0	100.0	0.0
Transport, storage, and communications	238,008	9,152	96.3	3.7
Financial intermediation	126,948	0	100.0	0.0
Real estate, renting, and business activities	139,480	13,351	91.3	8.7
Public administration and defense, social security	109,254	0	100.0	0.0
Education	106,807	7,981	93.1	7.0
Health and social work	108,211	5,620	95.1	4.9
Other community, social, and personal services	47,629	9,491	83.4	16.6
Private households with employed persons	878	0	100.0	0.0
Total	2,509,674	317,669	88.8	11.2

The contribution of the informal sector to total GVA was highest in the following industries: agriculture (22.4%), other services (16.6%), construction (15.4%), and wholesale and retail trade (14.8%)

In the ICLS Framework of Informal Employment devised by the ILO (see Appendix 1), there are three types of production units in which informal employment exists, namely, formal enterprises, informal enterprises, and the households. In this concept, subsistence agriculture farming falls under the household and not under the informal sector.

Production for own consumption is a significant part of agricultural production in Armenia, and this has been verified by NSSRA from data it regularly collected (in the form of statistical report forms) from all local authorities in rural areas. Data are also collected through a sample survey of 7,480 of about 340,000 farm holdings and from about 100 profit-making (commercial) organizations. The importance of the household units in agriculture is also confirmed in the results of the expanded ILCS. Of the total jobs under the activity, only 1.5% were supplied by formal enterprises, while the majority (77.5%) were provided by informal enterprises. Still, a substantial 20.9% of jobs were engaged in households.

A Snapshot on the Informal Economy Construction Sector of Armenia

Armenia is mainly driven by the construction sector. Its share to the total gross domestic product over the last years has increased. This is fueled by household's resources which, in turn, come from money transfers from abroad. In 2008, of the total construction volume, 70% of financing came from households assets from which 78.8% went to new housing construction, most of which were in Yerevan city. In other marzes of Armenia, it is typical to see small-scale construction activities financed by household's resources.

Since construction carried out by households is mostly informal activity, it is not surprising that the share of construction to the total informal gross value added in 2008 was high. But, the 2009 world financial crisis has affected the volume of money transfers, which have been reduced in 2009. The share of construction financed by households fell down (32.1% in the total construction) and has declined by 70.5% in real terms.

Households that carry out subsistence farming and do not market agricultural goods are not included among the informal sector units.

In terms of proportion to total GVA of the informal sector, the survey results suggest that informal economy in 2009 was dominated by agriculture (36.2%), construction (26.6%), and trade (18.6%). Comparing the NOE estimates of the national accounts in 2008 with the survey results, it is obvious that contribution of the construction and manufacturing sectors to the total informal economy has declined, suggesting that it may have been more affected by the crisis compared to the formal[1] sector. In particular, the share of construction in the total informal GVA fell down from 50.4% in 2008 to 26.6% in 2009, causing agriculture to take the lead such that its contribution to Armenia's total informal sector's GVA increased from 17.3% in 2008 (using NOE-based estimates) to 36.2% in 2009.

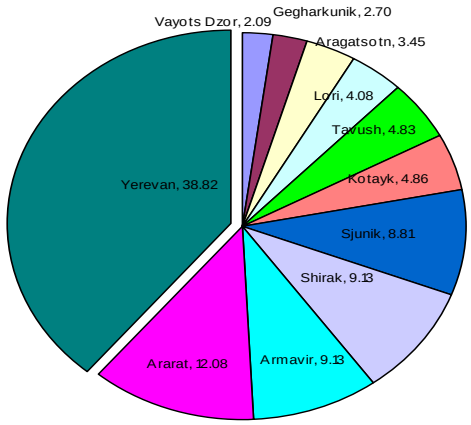
Administrative unit and urbanity

The national accounts regularly compiled by NSSRA do not have the breakdown by administrative units and urbanity, such that the country's GDP is only disaggregated by the economic sector. Under the program of state statistical works of the Republic of Armenia, compilation of national accounts by

[1] In this chapter, the GVA of formal** sector is computed as the residual of the total GVA less informal sector's GVA. Hence, the term formal** may span all non-informal sectors: formal enterprises, underground and illegal production, and subsistence (household) final consumption. In some sectors, such as agriculture, the contribution of formal** may be mostly coming from the subsistence household sector.

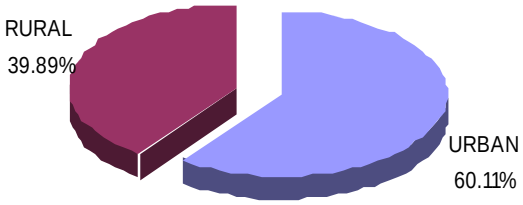
administrative unit and urbanity is not envisaged because of the shortage of financial and human resources.

However, the ISS can be used to provide estimates at the marz level. The following figure shows that 38.8% of total informal sector GVA comes from Yerevan, followed by Ararat (12.1%), Shirak (9.1%), Armavir (9.1%), Syunik (8.8%), and Kotayk (4.9%).



The informal sector's GVA is more concentrated in urban areas (60.1% of total informal sector's GVA), of which more than three quarters come from Yerevan city, and the urban areas of Shirak, and Ararat. In the rural areas, high contribution of the informal sector was noted from Armavir (20.4% of total informal sector's GVA in rural areas), Ararat (19.0%), and Syunik (16.5%). The fact that subsistence agriculture is prevalent in Armenia may have influenced the lower informal production in the rural areas.

Distribution of Informal Sector GVA by Urbanity in Armenia



Agriculture and non-agriculture sectors

Survey results show that out of the total GVA of the agriculture sector, 77.6% is formal and 22.4% is informal. While in most developing countries, the agriculture sector is perceived to be coming from mostly informal sector production, the term formal, as mentioned earlier, does not correspond to formal enterprises only. Subsistence farming, whose production output is exclusively[2] for household's own final consumption, is implicitly accounted in the formal sector. This relatively low contribution of the informal sector, compared to the agriculture sector of most developing countries, is consistent with the NOE-based estimates wherein based on 2008 estimates, only 22.5% of total GVA of Armenia's agriculture sector is considered to be non-observed. This is further motivated by the fact that NSSRA regularly collects information on agriculture/farming through regular statistical report forms from the community

[2] The own consumption of identified informal sector enterprises are still considered as part of informal sector gross value added. However, if a household is engaged in subsistence farming (i.e., no market production), its own consumption is not considered as part of informal production.

authorities in rural areas, and hence, can be considered as the observed part of the economy. Independent validation exercises using indicators from agriculture module of ILCS (which collects information on crop production and utilization, cattle breeding, food production, agricultural equipment and expenditures), reveal that the informal sector's contribution is less than 30.0%.

In the non-agriculture sector, informal sector accounts for 8.8% of its total gross value added.

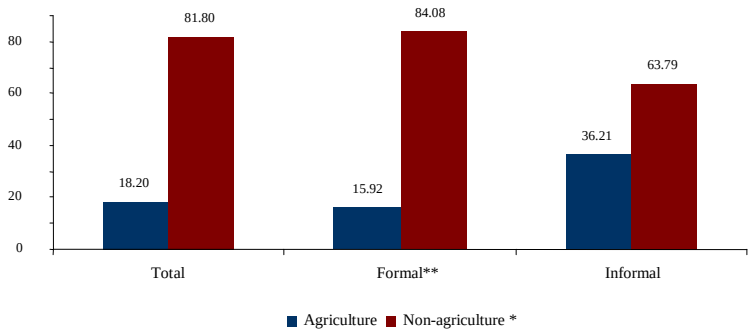
Contribution of Informal Sector to GDP, Agriculture and Non-Agriculture Sectors

Sector	Contribution to GDP (AMD million)			Percentage		
	Total	Formal**	Informal	Total	Formal**	Informal
Agriculture	514,583.1	399,556.7	115,026.4	100.0	77.6	22.4
Non-agriculture *	2,312,760.2	2,110,117.4	202,642.8	100.0	91.2	8.8
Total*	2,827,343.3	2,509,674.1	317,669.2	100.0	88.8	11.2

Notes: *Without financial intermediation services indirectly measured (FISIM).
Formal** = formal sector + households.

The shares of agriculture and non-agriculture GVAs produced in the total economy by formal and informal sector classification is shown below:

Agriculture and non-agriculture GVA in the Formal and Informal sectors** (%)



Notes: *Without financial intermediation services indirectly measured (FISIM).
Formal** = formal sector + households.

Labor Productivity

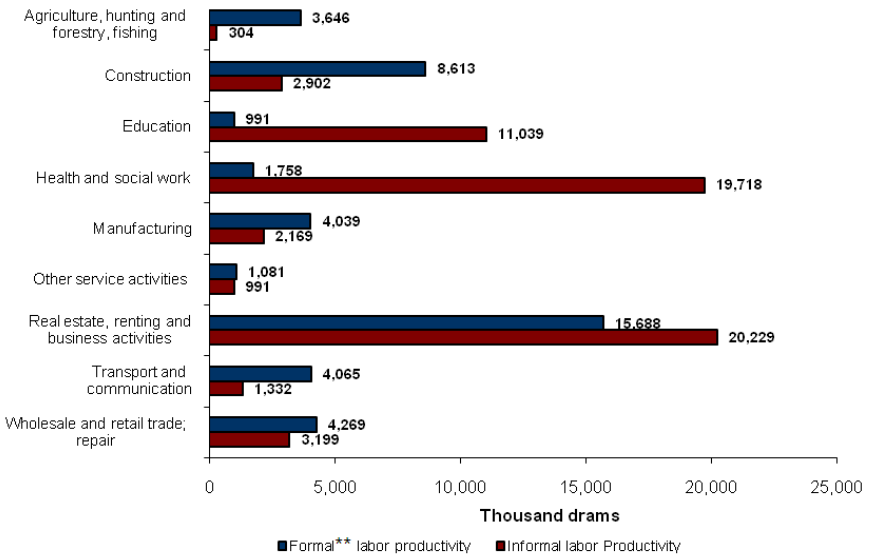
This section investigates how productively labor is used to generate economic output among informal enterprises in Armenia. Productivity measures reflect the joint influence of changes in capital, intermediate inputs, technical efficiency, and economies of scale and capacity utilization of enterprises (OECD Manual on Measuring Productivity). Productivity in the informal sector can be measured with respect to a variety of measures. For example, gross output-based labor productivity measures labor requirements per unit of output while value added-based labor productivity serves as an alternative measure that can be directly linked with existing income-based measures of living standards. This section uses value added-based measure of labor productivity.

Informal employment data collected with ISS is consistent with the data collected during first stage of survey. The denominators used in estimating labor productivity have been total employment, formal and

informal employment in formal enterprises, informal employment in informal enterprises by industry, total employment in agriculture, and total employment in non-agriculture.

The total labor productivity in 2009, measured by the ratio of GDP to total employment, is AMD2,376,000 per worker. Expectedly, labor productivity in the formal sector exceeded that of the informal sector by 4.8 times. In particular, an average worker in the formalsector contributed AMD3,397,000 in value-added terms while an average worker in the informal sector contributed AMD704,000.

Labor Productivity by Industry in the Formal and Informal Sectors



Labor productivity for formal economy in real estate, renting, and business activities (AMD15,688,000) and construction (AMD8,613,000) shows the highest figures. The lowest labor productivity within formal part of economy is in education (AMD991,000); other community, social, and personal service activities (AMD1,081,000); and agriculture, hunting, forestry, and fishing (AMD3,645,000). Meanwhile, according to the survey results and estimation made, within the informal sector, the highest labor productivity was recorded in real estate, renting, and business activities (AMD20,229,000); health and social work (AMD1,9718,000); and education (AMD11,039,000). The lowest labor productivity in informal sector was recorded in agriculture, hunting, and forestry (AMD304,000); other community, social, and personal service activities (AMD991,000); and manufacturing (AMD2,169,000).

Comparing formal and informal labor productivity within an industry from data cited in Figure 3.4, it is apparent that formal labor productivity in some industries is much higher than that in informal, e.g. in construction, labor productivity in formal sector is 3.0 times than labor productivity in informal sector, transport and communication – 3.1 times. Interestingly, labor productivity in other community, social, and personal service activities is roughly the same between the formal and informal sectors. It is also noteworthy that labor productivity in informal economy is higher than that in the formal sector, e.g., for the sectors of education (11.1 times) and health and social work (11.2 times).

In general, the survey results suggest that labor productivity of the formal sector in agriculture is 12.0 times than that of the informal sector's, while in non-agriculture, labor productivity in the formal sector is 1.2 times the productivity in informal economy.

CHARACTERISTICS OF INFORMAL SECTOR ENTERPRISES

The estimates provided in the previous sections suggest that the informal sector accounts for a significant portion of the total economy of a developing country like the Republic of Armenia. Informal enterprises also supply a notable portion of employment at 37.9% of the total, and about three-fourths of the informal employment.

To better understand the production behavior of the informal sector, this chapter examines the characteristics of these enterprises. In particular, it describes the informal sector units in terms of its (i) *type of premises where business activity is conducted,* (ii) *employment size,* (iii) *reason for choosing their respective type of entrepreneurial activities,* and (iv) *where they usually get financial resources from.*

Based on the survey results, about 84.3% of all the sampled household unincorporated enterprises with some market production (HUEMs) are carrying out their business activities at farms or agriculture / subsidiary plots, 4.3% at clients' home or workplace, and 2.6% at transport vehicle.

Type of Premises Where Business Activities are Carried Out

Location	Proportion (%)
At home with no special work space	2.25
At home with work space inside / attached to the home	1.20
Business premise with fixed location independent from home	0.38
Farm or individual agriculture / subsidiary plot	84.25
Home or workplace of the client	4.34
Construction site	0.59
Market, bazaar stall, trade fair	1.94
Street, pavement, or highway with fixed post	1.11
Employer's home	0.21
Transport vehicle	2.60
No fixed location (e.g., mobile, door-to-door, street w/o fixed post)	0.75
Others	0.38

Informal sector operators tend to choose their respective line of business activities not necessarily because they want to maximize profits, but because this is the only activity that they are more familiar with. In particular, of all the sampled HUEMs, 49.4% reported to have been motivated by either family tradition or their knowledge of the profession in choosing their respective business activities.

Distribution of Reason for Choosing the Business Activity

Reason	Proportion (%)
Family tradition	41.76
It is the profession that I know	7.59
It gives better income / higher profits than other products or services	5.94

More stable returns than other products / services	12.24
Others	32.47

From all the sampled HUEMs, 21.3% reported that to be able to manage their business activities, they avail of a loan. It is interesting to note that among those who availed of credit to finance their business activities, 77.7% reported that their sources of financing are private banks. Among HUEMs, 52.1% of those who did not apply for loan to finance their business identified high interest rate as a reason. This is followed by burdensome requirements at 30.8%. The following tables summarize the results.

Source of Financing

Source	Proportion (%)
Relative / neighbor / friends	11.23
Employer / landlord	0.00
Private moneylender / pawnshop	12.82
Private bank	77.74
Cooperative	1.30
Others	16.07

Reason for Not Availing of Any Loan to Finance Business Activity

Reason	Proportion (%)
Has other source of income	16.65
Burdensome requirements	30.76
Unaware of source	5.23
High interest rate for loans	52.11
Others	17.98

The fact that two in every three owners of HUEMs that carried loans borrowed money from the banks suggests the following scenarios: (i) they are knowledgeable that banks can provide loans to small enterprises; (ii) they know that they have access to banks; and (iii) they prefer formal financial transactions than informal arrangements, such as borrowing money from relatives, friends, and employers. In addition, given that there are no informal private moneylenders in Armenia, the results also imply that banks are more preferable source of loans than other private formal ones.

How will these information help in formulating policies or programs? For one, there is now evidence that HUEM owners are open to getting loans from banks, but relatively shy away from other private moneylenders or pawnshops. If the objective is to provide financial support to them, this information is very useful. Table 4.5 also provides valuable data, such as if the HUEM owners are to be encouraged to borrow from banks, information dissemination concerning the availability of banks as a source of loans should not be a priority. People are already adequately aware of the fact. The significant avenues to pursue are related to requirements in loan applications and the level of interest rates. A program design, therefore, can concentrate on these two items.

The survey results also provide other interesting information about perceptions of HUEM. For example, based from the opinion of HUEM operators, the average monthly income in wholesale trade (AMD463,000), mining and quarrying (AMD457,000), manufacturing (AMD404,000), and construction (AMD340,000), which exceed correspondingly 5.9, 3.9, 4.8, and 3.7 times of the same industry's average monthly compensation of employees.

In addition, approximately 24.2% of HUEMs think that only at most 20.0% of their incomes should be reported to state bodies, 25.4% think that it should be about 21–50%, 28.1% think that more than half to 80.0% of the income should be reported, while 10.8% admitted that at least 81.0% of their income should be reported to the state bodies. The remaining 11.5% think that there is no need to hide anything. This may mean that tax burden instigates the small producing units to hide their incomes and not pay taxes.

Overall, pieces of information, such as knowing the characteristics of HUEMs and those of their owners, are valuable for effective socioeconomic policies and programs. The results of the survey are valuable tools for improving the status of informal workers, as well as for developing further the production capacities of HUEMs.

V. Implementation of Eurostat Tabular approach to Exhaustiveness of GDP

Current TWINNING project from January 2011 to January 2013 with Statistics of Denmark as the core partner includes also project component for Exhaustiveness of GDP with aim to introduce Eurostat Tabular approach to Exhaustiveness into practice.
The three tables were compiled according to Eurostat ‘s Tabular Approach to Exhaustiveness Guidelines.
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- Table 1A Elements of non-exhaustiveness: Output Approach
- Table 2A Exhaustiveness adjustments: Output Approach
- Table 3A Summary of adjustments: Output Approach

In addition, a useful explanatory note to accompany the tables has been made.

Exhaustiveness adjustments: Presentation of information sources and methods used in the Republic of Armenia. GDP by Output Approach

With the purpose to evaluate non-exhaustiveness, we applied this method to NACE G (Wholesale and retail trade; repair of motor vehicles and motorcycles) in practice to test it. NACE G section is the economic activity with the one of the largest share of exhaustiveness adjustments. It is also representative since all the main types of non-exhaustiveness may be found. All possible non exhaustiveness types were defined according to economic institutional sectors by NSS RA by using each non exhaustiveness type (N1-N7) for adjustments using different sources and methods. Later, respectively the same exercise was repeated for the rest 16 NACE sections for identification of non exhaustiveness types.

Non-Exhaustiveness type N 1: Producers do not register deliberately /underground production as well as non-exhaustiveness type N3: Producers who are not obliged to register

N1 and N3 non-exhaustiveness types in Armenia refer mostly to small producers in households who do not register to keep their social benefits (since they are registered as unemployed) and/or to avoid tax or social payments. Typically, it includes the following industries such as agriculture, food production, construction working groups activities, trade, repair, taxi services, tutoring, apartment rents, health care services, individual services provision. Large share of not registered economic units in total non-exhaustiveness (41.3%) is due to high unemployment rate (6.8% in 2009.), low income level as well as not ideal tax legislation.

«Informal Employment and Informal Sector in Armenia» survey (financed by Asian Development bank) results were used as the information source for the non exhaustiveness types adjustments for 2009. This information gave an opportunity to directly evaluate informal part in GDP in lower economic activity type classification level (NACE 4 digits): Thus, it should be mentioned, that

2009 was economic meltdown year for Armenia (that equals to 14.1%) and the period for the survey matched with the financial crisis impact on Armenia. Armenian Government prepared anti recession program that included all types of economic units including small, medium enterprise's calculations simplification, new tax procedures. These factors had an impact on informal economy units. For this reason, the income of households included in the scope of the survey decreased while some of them had to hide their informal activities to avoid paying taxes. Respondents showed lower income, since they did not want to lose poverty or unemployment benefits. Accordingly, household integrated survey, labor force survey, one-time surveys as well as other statistical observations data were used to evaluate informal part of same activities.

- NACE-B –Fishing: The data from exhaustive households' survey was used: The volume of expenditures for purchasing of fresh fish by households was used.
- NACE K- calculated price of owner occupied house lease according to current expenditure method spent on housing, the basis of which is the data from State Statistical reports on housing funds as well as data from Labor Force Survey
- NACE-M The calculation of tutoring output was made according to the number of applicants of the that year as well as estimations of the survey of education for 2001, according to which 85% of applicants study with tutors for in average 2.1 subjects. The average price for one subject in 2008-2009 was 800 USD.
- NACE-N -the survey of health care companies and households expenditures on health care services for 2002 was the basis for the calculation. According to which 8.23% percent of households expenditure applies to health care services.

According to the survey results it is impossible to distinguish between producers who do not register deliberately and whose registration is not obligatory. For this reason N1 and N3 non exhaustiveness types are mentioned as N3 type in tables 1A, 2A and 3A. According to summary data the non exhaustiveness adjustment of N1 and N3 types equals to 332000,2 mln. AMD which is 42.5%- of all adjustment and 10.6%- of GDP. The largest share of non exhaustiveness types N1 and N3 of economic activity refers to NACE-A 32.5%, NACE –F 25.5%, NACE -G ` 17.8%:

Non exhaustiveness N4 type includes the activity of legal units not in the scope of statistics

The following NACE sections are included under non-exhaustiveness N4 type.

- NACE-D` the legal units involved in small production of bread and cheese products. The non exhaustiveness adjustment estimation was made according to Household survey on the basis of volume bread products and cheese consumption, as well as legal units included in the scope of statistical survey and informal producers output volumes.
- NACE-G` Small enterprises dealing with the retail trade of motor fuel that are not included in the scope of statistical observation. Their turnover volume is estimated according to the number of the enterprises received from municipalities as well as the statistical reporting forms filled by such enterprises.
- NACE-O` the activity of NPISH (social, religious companies, unions, parties, etc) for calculation of output and intermediate consumption was based on estimates from sample survey of 2001 non commercial organizations financial results.
- NACE-A` the companies with operating irrigation networks that are not included in the scope of statistical observation. The data on them is taken from the reports of Public Services Regulatory Commission posted in their web site. The report includes the volumes of irrigation water supply as well as relevant payments.

  According to summary data the adjustment of N4 non exhaustiveness type is 78419.1 mln AMD or 10%- of all adjustments and 2.5 % of GDP. The largest share of adjustments in non exhaustiveness type N4 refers to NACE –D.60.8%, NACE-G-` 25.2%, while NACE –O and NACE –A compile 7.0% and 6.9%.

Non-exhaustiveness N6 type- misreporting as a result of fake data provided by the producer

- N6 non exhaustiveness adjustment estimations for the NACE sections A, B, C, D, E, F, H, K, O were made according to formal and informal (hidden) number of employees as well as the volume of output in formal sector.
  While for the calculation of intermediate consumption the ratio of output to intermediate consumption was used. The same approach was used for the calculations of sections NACE A, B, D, E, F, H, O.

Mln. dram

NACE	OUTPUT	Intermediate Consumption	Value Added
A	5902.4	2313.6	3588.83
B	705.3	194.0	511.3
C	145.1	61.7	83.4
D	98844.9	33876.9	64968.0
E	1788.7	888.4	900.3
F	218317.8	90916.3	127401.5
H	6693.7	3240.2	3453.5
K	6164,8	1930,3	4234,5
O	315.0	117.5	197.5

- NACE G- the basis for non exhaustiveness adjustments (N6) estimates were the results from the survey implemented in 2000 on commercial companies according to which the trade turnover indicated in statistical reporting forms was 1.1-1.5 less from the real trade turnover. The same referred to the volume of trade output.
- NACE I- the basis for non exhaustiveness adjustments (N6) estimates were the results of the sample survey implemented in 2006 on interurban passenger turnover, according to which interurban passenger turnover volume is 1.55 larger than the volume indicated in the reporting forms.
- NACE N- the basis for non exhaustiveness adjustments were the results from the survey implemented in 2001 on expenditures for health care services by health companies, pharmacies and households, according to which the consumption volume of paid health care services by households is 4.48 larger than the number mentioned by health care companies. According to expert judgment this rate decreased up to 2.5-3.0.

According to summary data N6 non exhaustiveness type adjustments equals to 269804.1 mln. AMD, that is 34.6% of all adjustments and 8.6% of GDP. The largest share of N6 non exhaustiveness type refers to NACE F 47.2%, NACE -D 24.1%, NACE-N ` 16.3%:

Non exhaustiveness N7a type includes the adjustments of collected and not comprehensive statistical data the collection of which is not possible.

The following NACE sections are included under non exhaustiveness N7a type

- NACE -G the activity of outlets in shopping centers. The information on outlet number is collected while trade turnover is not collected. Their daily average turnover is defined by separate observation and the estimation is given or the whole turnover.
- NACE-E in order to get the gas production and distribution output by accrual method we add the consumer debts on delivered gas of the reference period to output volumes on which the information is collected by other statistical reporting form.

According to summary data adjustments of N7a non exhaustiveness type equals to 100306.6 mln. AMD that is 12.9% of all adjustments and 3.2% of GDP. According to activity types in adjustments of N7a non exhaustiveness type 93.8 % refers to NACE G , while 6.2% to NACE E.

N1 and N3 are non exhaustiveness intermediate consumption adjustments that are made based on informal sector survey data, calculated directly according to the survey results. N4, N6, N7 non exhaustiveness intermediate consumption is calculated on the basis of intermediate consumption share to output illustrated in national statistical reporting forms on companies financial activities.
Summing up table 3A we can see that in 2009 the exhaustiveness adjustment of GDP equals to 780530.0 mln. AMD or 24.8%, from which 6.7% refers to -NACE –F, 5.8% to NACE –G, 4.3%- to NACE -D
According to economic sectors 14.1% refers to financial organizations, 10.5% to households and , 0.2% to NPISHs.

Table 3A Summary of GVA Adjustment: Output Approach									
Value added For Referance Year 2009, in AMD millions									
Sector /NACE Groups	Type of non-exhaustiveness adjustment							Total	% of GDP
	N1	N2	N3	N4	N5	N6	N7	Absolute	
1	2	3	4	5	6	7	8	9	10
Non-financial corporations	0.0	0.0	0.0	72981.8	0.0	269804.1	100306.6	443092.5	14.1
Financial corporations	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
General Government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Households	0.0	0.0	332000.2	0.0	0.0	0.0	0.0	332000.2	10.6
NPISH	0.0	0.0	0.0	5522.3	0.0	0.0	0.0	5522.3	0.2
NACE A	0.0	0.0	107789.4	5437.3	0.0	3588.8	0.0	116815.5	3.7
NACE B	0.0	0.0	204.9	0.0	0.0	511.3	0.0	716.2	0.0
NACE C	0.0	0.0	0.0	0.0	0.0	83.4	0.0	83.4	0.0
NACE D	0.0	0.0	23180.6	47664.7	0.0	64968.0	0.0	135813.3	4.3
NACE E	0.0	0.0	0.0	0.0	0.0	900.3	6198.3	7098.6	0.2
NACE F	0.0	0.0	84500.2	0.0	0.0	127401.5	0.0	211901.7	6.7
NACE G	0.0	0.0	58970.6	19794.8	0.0	10089.4	94108.3	182963.1	5.8
NACE H	0.0	0.0	758.2	0.0	0.0	3453.5	0.0	4211.7	0.1
NACE I	0.0	0.0	20888.8	0.0	0.0	10415.2	0.0	31304.0	1.0
NACE J	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NACE K	0.0	0.0	13350.8	0.0	0.0	4234.5	0.0	17585.3	0.6
NACE L	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NACE M	0.0	0.0	7981.2	0.0	0.0	0.0	0.0	7981.2	0.3
NACE N	0.0	0.0	5619.6	0.0	0.0	43960.7	0.0	49580.3	1.6
NACE O	0.0	0.0	8755.9	5522.3	0.0	197.5	0.0	14475.7	0.5

Table 3A Summary of GVA Adjustment: Output Approach									
Value added For Referance Year 2009, in AMD millions									
Sector /NACE Groups	Type of non-exhaustiveness adjustment							Total	% of GDP
	N1	N2	N3	N4	N5	N6	N7	Absolute	
NACE P	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NACE Q	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.0	332000.2	78419.1	0.0	269804.1	100306.6	780530.0	24.8
Percentage of total adjusment	0.0	0.0	42.5	10.0	0.0	34.6	12.9	100.0	
Percentage of GDP	0.0	0.0	10.6	2.5	0.0	8.6	3.2	24.8	

At present there are no adjustments for N2 illegal activities. Sources and methods for the calculation of such estimates should be investigated. As an operational starting point, estimates for one or more of three types could be considered: prostitution, narcotics and smuggling.

N6 adjustments relate to hidden activity in the formal sector. For some industries, the value of the hidden activity is calculated using the assumption that the hidden activity has the same VA per employee and the same input-percentage as the formal activity. The number of employees is not adjusted for actual hours worked. Such adjustments will be made in the near future. It should be investigated if information from the LFS can be used to adjust the number of employees for actual hours worked.

At present there are no adjustments for tips in hotels and restaurants. Possible sources for estimating tips are investigated.

In some industries, one-off surveys are used for non-exhaustiveness adjustments. It is recommended that the one-off surveys, that are used for adjustments in some industries, in particular NACE G, I, M, N, O, should be repeated at certain intervals.

Table 1B Elements of non-exhaustiveness: Expenditure approach has already been completed. In order to get a full picture of the non-exhaustiveness adjustments table 2B Exhaustiveness adjustments: Expenditure approach and table 3B Summary of GVA Adjustments: Expenditure Approach should also be completed.

For more information: http://www.armstat.am/en/?nid=82&id=1218