Annex 4

ANALYTICAL FRAMEWORKS FOR THE NON-OBSERVED ECONOMY

Annex 4.1. Eurostat Candidate Country Exhaustiveness Project: Tabular Framework

Non-Observed Economy: Classification by Type

T1: *Statistically non-observed: non-response*

Undercoverage occurs as a result of non-response to statistical questionnaires or non-coverage of active units in administrative files. Possible methods to ensure exhaustiveness include:

- use of data from similar units (industries, size groups), former year's data or similar appropriate data;
- adjustment of sample weighting;
- use of global verification procedures such as labour input method.

T2: *Statistically non-observed: out of date registers*

Undercoverage occurs due to units being missing from statistical register when defining the survey population and selecting the survey sample, or due to problems resulting from out-of-date information about the units. Possible methods to ensure exhaustiveness include:

- detailed investigation of the register quality and expert estimates of its deficiencies;
- comparison of various statistical and administrative sources (preferably at the unit level);
- use of global verification procedures such as labour input method;
- use of information from other surveys.

T3: *Statistically non-observed: units not registered or not surveyed*

Undercoverage occurs due to:

- non-coverage of units in the statistical registers because of thresholds for registration or non-coverage of certain activities in the register;
- non-coverage of units in the survey because they were newly created or disappeared during the year.

Possible methods to ensure exhaustiveness include:

- adjustments for thresholds based on other sources or expert estimates;
- comparison of different statistical and administrative sources (preferably at the unit level);
- estimates based on the number of newly created and closed (non-active) units;
- use of global verification procedures such as labour input method.

T4: *Non-observed for economic reasons: underreporting of turnover/ income*

Undercoverage occurs due to intentional under-reporting of gross output, over-reporting of intermediate consumption in order to evade income tax, value added tax or other taxes, or social security contributions, for example. in the form of double bookkeeping, envelope salaries, without-bill-settlements. Possible methods to ensure exhaustiveness include:

- use of fiscal audit information;
- comparison of turnover in the national accounts with turnover in VAT or other tax files, taking into account differences in types of units, tax thresholds, and branch classification;
- comparison of wages and salaries and mixed income per capita by industries, preferably by size groups;

- comparison of the intermediate consumption ratios for different sub-groups of units operating in the same industry, *e.g.* different size groups, public and private enterprises, legal and unincorporated units.

T5: N*on-observed for economic reasons*: *units intentionally not registered*

Undercoverage occurs because of intentional non-registration of units or production (or parts of these). Possible methods to ensure exhaustiveness include use of global verification procedures such as labour input method.

T6: I*nformal sector* (*not registered, underreporting*)

Undercoverage occurs because of:

- missing productive units or production activities because units are not required to register their activities under any kind of administrative act, including agricultural production in non-agricultural households for own use, production of goods (other than agricultural) in households for own use, own construction of residential buildings by households, occasional and temporary activities, and work on service contracts;
- missing gross output for persons with secondary self-employed jobs;
- missing units or production even if reported to fiscal authorities.

Possible methods to ensure exhaustiveness include estimates for the important types of informal activities of households using household budget survey data, data on construction permits or other administrative information, also use of global verification procedures.

T7: I*llegal activities*

Undercoverage occurs because the producing units do not register or report their illegal activities. Possible methods to ensure exhaustiveness include special studies, use of administrative data from customs, police medical authorities, etc.

T8: O*ther types of* GDP *under-coverage*

Other types of undercoverage include:

- production for own final use;
- tips;
- wages and salaries in kind;
- valuation of NOE adjustments;
- taxes and subsidies on products;
- reliability of quantity-price methods and product balances.

Production for own final use includes:

- production of agricultural or other products in the household sector for own final consumption – this concerns unincorporated units, *e.g.* farmers or self-employed, as well as informal activities of households;
- dwellings, extensions to dwellings, capital repairs of dwellings produced by households;
- own account construction including capital repairs in agriculture (all sectors);
- own account construction including capital repairs in other industries (all sectors);
- machinery and equipment produced for own capital formation or own account capital repairs (all sectors).

Tips may occur in hotels and restaurants, repair services, personal services, hospitals and other health services, banks, and insurance companies. Possible data sources and estimation methods for tips include use of household budget survey data, special surveys and expert estimates, comparison of wages and salaries/ mixed income with other branches, and regulations for the taxation of tips.

Wages and salaries in kind include:

- goods and services produced by the employer either as main production, *e.g.* coal or free train or railway tickets, or secondary production, including the provision of sports, recreation or holiday facilities for employees and their families, and free or cheap crèches for employees' children;
- goods and services purchased or financed by the employer, including: meals and drinks, including those when travelling on business; housing or accommodation services; uniforms or other forms of special clothing; private use of business cars; sports, recreation or holiday facilities for employees and their families, and free or cheap crèches for employees' children.

Further information on these other types of GDP under-coverage is available from relevant tax and social legislation and bookkeeping practices, and another possible source of data is a labour cost survey.

***Eurostat Tabular Framework* (*Pilot Project on Exhaustiveness*)**

Table 1. **Non-observed activities by type and adjustment method**

National accounts component	NOE types	Adjustment method in national accounts			
Detailed breakdown that allows allocation of possible types of under-coverage	For each line, indicate relevant types of under-coverage	Explicit method(s) "–" if not covered "I" if implicity covered	Correspondence to Tables 2A – 2C (give cross reference to adjustment number in Tables 2A, 2B, 2C)		
			Table 2A	Table 2B	Table 2C
Table 1A : Output approach					
Public non-financial corporations					
NACE A					
large units					
medium-size units					
small units					
NACE B					
large units					
medium-size units					
small units					
(by NACE A – P, or groups with similar data sources)					
Private non-financial corporations					
NACE A					
large units					
medium-size units					
small units					
NACE B					
large units					
medium-size units					
small units					
…by NACE A – P, or groups with similar data sources					
Financial corporations					
General Government					
Central and local government units					
Extra-budgetary funds					
NPISH					
Households					
NACE A					
Unincorporated units					
Informal/Other activities/					
Market production					
Production for own use					
farmers					
non-agricultural households					

Table 1. **Non-observed activities by type and adjustment method** (*cont.*)

National accounts component	NOE types	Adjustment method in national accounts			
Detailed breakdown that allows allocation of possible types of under-coverage	For each line, indicate relevant types of under-coverage	Explicit method(s) "–" if not covered "I" if implicity covered	Correspondence to Tables 2A – 2C (give cross reference to adjustment number in Tables 2A, 2B, 2C)		
			Table 2A	Table 2B	Table 2C
NACE B Unincorporated units Informa/Other activities Market production Production for own use					
(…by NACE A – P, or groups with similar data sources)					
Taxes and subsidies on products					
Table 1B : Expenditure approach					
Household final consumption expenditure Purchases of goods and services (COICOP, 1and/or 2-digit level) Production for own final use Agricultural goods Other household productof goods Unincorporated units Other HFC-components					
Final consumption general government					
Final consumption of NPISH					
Gross Fixed Capital Formation with breakdown by Institutional sectors NACE Positions Size of units, special units/activities					
Changes in Inventories (with a breakdown similar to GFCF)					
Export and Import Export and Import of goods Export and Import of services Purchases of non-residents Purchases of residents abroad Shuttle trade					
Table 1C : Income approach					
(with breakdown similar to the output approach)					

***Eurostat Tabular Framework* (Pilot *Project on* Exhaustiveness)**

Table 1. **Non-observed activities by type and adjustment method** (*cont.*)

National accounts component	NOE types	Adjustment method in national accounts			
Detailed breakdown that allows allocation of possible types of under-coverage	For each line, indicate relevant types of under-coverage	Explicit method(s) "–" if not covered "I" if implicity covered	Correspondence to Tables 2A – 2C (give cross reference to adjustment number in Tables 2A, 2B, 2C)		
			Table 2A	Table 2B	Table 2C
Table 1D : Illegal activities					
Smuggling					
Tobacco					
Weapons					
Alcohol					
Food					
Stolen cars					
Other					
Trade and production of narcotics					
Prostitution					
Clandestine gambling					
Corruption					
Usury					
Fake brands					
Fake money					
Dealing with stolen goods					
Other					

***Eurostat Tabular Framework* (*Pilot Project on Exhaustiveness*)**

Table 2. **– Exhaustiveness adjustments**

Table 2A. Output Approach

Adjust. No.	Type of adjustment	National accounts component	NACE Code, Type of units	Data sources	Absolute size Currency unit	Relative size as % of component	Relative size as % of GDP

Table 2B. Expenditure Approach

Adjust. No.	Type of adjustment	National accounts component Type of Expenditure	NACE, COICOP, etc. Code, Type of units	Data sources	Absolute Size Currency unit	Relative size as % of component	Relative size as % of GDP

Table 2C. Income Approach

Adjust. No.	Type of adjustment	National accounts component Type of Income	NACE Code, Type of units	Data sources	Absolute size Currency unit	Relative size as % of component	Relative size as % of GDP

***Eurostat Tabular Framework* (*Pilot Project on Exhaustiveness*)**

Table 3. **– Summary of exhaustiveness adjustments**

Table 3A. Output Approach

NA component Type of unit	Type of NOE/other GDP under-coverage								Total	
Similar breakdown to Table 1A incl. illegal	T1	T2	T3	T4	T5	T6	T7	T8	Absolute	Percentage of GDP
For each: Gross output Intermediate Cons Gross Value added Total										

Table 3B. Expenditure approach

Expenditure component	Type of NOE/other GDP under-coverage								Total	
Similar breakdown to Table 1B incl illegal	T1	T2	T3	T4	T5	T6	T7	T8	Absolute	Percentage of GDP
Expenditure components Total										

Table 3C. Income approach

Type of income Type of unit	Type of NOE/other GDP under-coverage								Total	
Similar breakdown to Table 1C incl. illegal	T1	T2	T3	T4	T5	T6	T7	T8	Absolute	Percentage of GDP
Sector, industry, type of unit, For each : Compens of Employees, Gross OS, Cons Fixed Cap, NOS Total										

Annex 4.2. Unit and Labour Input Framework (developed by Statistics Netherlands)

Classification of NOE by registration of units and labour input

Labour input	Production units			
	Enterprises registered in business register	Enterprises not registered in business register		
		Other	Own account	Production for own use
Registered	C1	C3		
Not registered	C2	C4	C5	C6

N*on-Observed* E*conomy*: C*lassification by* T*ype*

NOE *types* C1 *and* C3: *activities not related to unregistered labour inputs*

NOE Type C1 represents the output of registered enterprises using registered labour. The most important reason for errors of this type is a statistical one. Here non-observed activities can occur because of an explicit constraint in selecting the sample (for example when surveying is restricted to enterprises with more than a given number of employees), errors in the sample frame, and misreporting or non-response for other reasons than tax evasion or illegal activities.

Adjustment for restrictions of the sample to larger enterprises can be made by assuming that the production, turnover, value added etc. per worker of the smaller enterprises equal those of the smallest enterprises included in the sample. This can only be done if the number of employees is the available in the sample frame. If it is not, and, the size measure is based, for example, on the reported turnover in last year's tax return, then this latter variable can be used for adjustment.

Sample frame deficiencies can be adjusted for by means of the labour force survey. Provided that the employment data from the survey is of sufficient quality, it can be used to reweight other data from business surveys, like production, intermediate consumption, operating surplus, value added, etc., and hence to correct for errors.

Underreporting of turnover and over-reporting of costs both cause a decrease in value added. Enterprises that over-report costs are not necessarily committing fraud. Over-reporting may also be caused by the differences between business accounting and national accounting standards. For example, income in kind is often correctly booked as intermediate consumption in terms of business accounting and tax laws, while in terms of national accounting it should be booked as part of the wages and salaries, and thus as part of the value added. Other reasons for misreporting are inadequate bookkeeping practices.

A special case is simultaneous over-reporting (or underreporting) of both turnover and cost. Such misreporting may not affect value added, but it does affect the confrontation of supply and use of goods and services and the estimates of the final consumption, especially if these are calculated as a residual. As this may lead to difficulties in the compilation of the sector accounts, it should be corrected if possible.

To correct for partial non-response, values can be imputed using other data in the response. For example, if an enterprise does not provide a breakdown of intermediate consumption by product, the structure can be borrowed from enterprises of similar size in the same branch of industry. A similar technique can be used to impute values for enterprises, which were not surveyed because of a size cut off in sample selection.

NOE type C3 reflects problems in the registration process. One possible reason is that enterprises are wrongly classified and hence are missed when the sample is selected. The most common errors occur in the industry code and in the size code. A wrong industry code may lead to inappropriate exclusion from the sample. A wrong code may equally lead to inappropriate inclusion in the sample frame of a survey of another branch of industry. (This is not addressed in the description of NOE type C1 as it is assumed that such errors are corrected during the normal data editing.) Keeping track of the number of enterprises inappropriately included in the sample gives some insight in the size of this problem. If this number is very small, then the problem can probably be ignored.

A second reason is that the register is not up to date. It is missing new enterprises and contains dead ones. However, the number of employees in new enterprises is not usually high, so the impact on employment, wages and salaries, operating surplus and value added is likely to be modest. The long-term solution to this problem is to put extra effort in the maintenance of the business register, while a short time solution is to use labour force survey data to re-weight the data as described in Section 5.2.3.

The third and probably most common reason in terms of the number of enterprises, is that enterprises are missing because there is no need or obligation for them to register. A labour force survey may give a first impression of the relative importance of the problem, measured in terms of number of employees of these enterprises. If the number of unregistered enterprises is low, estimation using per employee characteristics based on surveyed

enterprises may be acceptable. However, if there are reasons to assume that such enterprises differ significantly from those that register, then special investigations into their size and structure is needed, for example using city market surveys.

NOE *type* C2: *activities of registered enterprises with unregistered labour inputs*

NOE type C2 reflects the output of registered enterprises by the use of unregistered labour. If labour is concealed it is most likely that this is done to evade taxes and social contributions. Actually, it is underreporting of labour costs. If the only purpose is to evade income taxes and social contributions, it is possible that other variables are not biased. However, to decrease the risk of being caught (and to evade taxes on operating surplus), enterprises may also underreport other variables to such an extent that the reported figures suggest a normal production structure. Although, in principle, all enterprises (perhaps except governmental organisations) might commit such a fraud, the opportunities to do so are the greatest for small enterprises with a rather simple production structure and relatively high labour input, for example in the areas of trade, construction, repair, and services.

This kind of misreporting can be corrected by using data from a labour force survey to re-weight the outcomes of the business surveys in a similar way to adjusting for sample frame deficiencies and sampling restrictions, but with the additional requirement that the labour force survey results must implicitly or explicitly include the supply of unregistered labour.

Misreporting in this group of enterprises may also be due to the lack of a proper administration. This is especially the case for smaller units in the register, for example the own account enterprises.

NOE *types* C4 *and* C5: *activities by unregistered market enterprises related to unregistered labour*

The main part of NOE type C4 is production by unregistered labour in enterprises that are not included in the business register for statistical reasons, such as wrong classification, wrong size code, incorrect register update, etc., not because they have deliberately evaded registration. If the register were to improve, such enterprises might well be registered and the non-observed activities would become part of NOE type C2.

NOE type C4 also contains all enterprises that should be registered but for one reason or another want avoid government control completely, for example because they are producing illegal products or producing products illegally. Improvement of the register would not affect the registration of these enterprises. To cover such production, non-traditional estimation methods are needed.

NOE type C5 represents the production of own account enterprises. Such enterprises are typical of the informal sector. Most of the production here is not illegal, nor underground for taxation purposes.

If the number of own account enterprises (or households involved in own account work) is known from labour force or special surveys or the population census, an estimate of their activities can be made assuming that the per person characteristics are the same as for registered own account own account, or bear a fixed relationship to them. If there is no data available on registered own account enterprises, a minimum estimate can be made by assuming that the mixed income of households involved in own account work equals the minimum amount of money needed to make a living.

NOE *type* C6: *production for own use by unregistered units*

Production for own use by unregistered units, mainly households, is not very common in most Western European and North American countries. However, in many other countries these activities form a significant proportion of GDP. To measure their size, traditional business surveys and labour force surveys do not suffice. Additional observations are needed.

E*xtensions*

The framework is not only of interest as a practical approach of the NOE, it is also of interest as a tool analysing the problems in implementing various extensions of the SNA. Although there is international agreement on the current production boundary of the national accounts, it is generally accepted that macro-economic indicators like GDP are not necessarily the only or the best indicators of welfare. Thus alternative indicators have been developed, building on the SNA. Examples are the so-called *green national income* and the *total national income*. The UN women conferences in Rio de Janeiro and Beijing strongly recommended the development of satellite accounts describing total production, including not only all paid activities, but also unpaid productive activities such as do-it-yourself, household work, and volunteer work, which are currently outside the production boundary. To cope with this last mentioned case, the unit and labour input framework could be extended by adding an additional row for unpaid labour, and introducing an additional NOE type C7 in the last column.

Non-Observed Economy: Documentation Template

A possible NOE recording structure inspired by the layout of the supply and use tables is illustrated in the following table. It is essentially a three dimensional matrix with industrial branches and size groups on the rows, the key data items on the columns, and the adjustments corresponding to each NOE category in layers of the table. The branch of industry breakdown is made to correspond with the branches distinguished in enterprise surveys, with a further breakdown by size class. If the smallest enterprises are not included in a survey sample, the smallest size class sampled should be shown separately. The same applies for branches of industry with a relatively large informal sector, for example trade, construction, furniture manufacture and services.

Data by industry, size, source and NOE category

Data by NOE Categories: Layer 0: basic data Layer 1: adjustments for NOE C1 Layer 2: adjustments for NOE C2 Layer 3: ... Layer Layer: national accts final value	Total production	Intermediate consumption	Primary cost			
			Wages and salaries	Social contributions	Taxes minus subsidies	Operating surplus
Enterprise surveys						
Agriculture						
2+ employees	–	–	–	–	–	–
1 employee	–	–	–	–	–	–
0 employees	–	–	–	–	–	–
Construction						
25+ employees	–	–	–	–	–	–
10-25 employees	–	–	–	–	–	–
1-9 employees	–	–	–	–	–	–
0 employees	–	–	–	–	–	–
...	–	–	–	–	–	–
***Customs data*:**	–	–	–	–	–	–
Exports						
Imports	–	–	–	–	–	–
***Tax data*:**	–	–	–	–	–	–
Wages and salaries						
VAT	–	–	–	–	–	–

The table contains layers corresponding to the NOE types. The first layer contains the basic data outputs of the surveys and administrative files after data editing and weighting. The next layer contains the adjustments for the first NOE type. The subsequent layers contain the adjustments for each of the other NOE types. The final (national accounts) figures are entered in the last layer. Each figure is accompanied, if possible, with a qualitative indication or quantitative measure of its quality and notes on alternative potential adjustments.

Annex 5

IMF DATA QUALITY ASSESSMENT – GENERIC FRAMEWORK

(Draft as of July 2001)

Quality dimensions	Elements	Indicators
0. Prerequisites of quality *(The elements and indicators included here bring together the "pointers to quality" that are applicable across the five identified dimensions of data quality.)*	**0.1. Legal and institutional environment** – *The environment is supportive of statistics.*	0.1.1. The responsibility for collecting, processing, and disseminating statistics is clearly specified. 0.1.2. Data sharing and coordination among data producing agencies are adequate. 0.1.3. Respondents' data are to be kept confidential and used for statistical purposes only. 0.1.4. Statistical reporting is ensured through legal mandate and/or measures to encourage response.
	0.2. Resources – *Resources are commensurate with needs of statistical programs.*	0.2.1. Staff, financial, and computing resources are commensurate with institutional programs. 0.2.2. Measures to ensure efficient use of resources are implemented.
	0.3. Quality awareness – *Quality is a cornerstone of statistical work.*	0.3.1. Processes are in place to focus on quality. 0.3.2. Processes are in place to monitor the quality of the collection, processing, and dissemination of statistics. 0.3.3. Processes are in place to deal with quality considerations, including tradeoffs within quality, and to guide planning for existing and emerging needs.
1. Integrity *The principle of objectivity in the collection, processing and dissemination of statistics is firmly adhered to.*	**1.1. Professionalism** – *Statistical policies and practices are guided by professional principles.*	1.1.1. Statistics are compiled on an impartial basis. 1.1.2. Choices of sources and statistical techniques are informed solely by statistical considerations. 1.1.3. The appropriate statistical entity is entitled to comment on erroneous interpretation and misuse of statistics.
	1.2. Transparency – *Statistical policies and practices are transparent.*	1.2.1. The terms and conditions under which statistics are collected, processed, and disseminated are available to the public. 1.2.2. Internal governmental access to statistics prior to their release is publicly identified. 1.2.3. Products of statistical agencies/units are clearly identified as such. 1.2.4. Advance notice is given of major changes in methodology, source data, and statistical techniques.
	1.3. Ethical standards – *Policies and practices are guided by ethical standards.*	1.3.1. Guidelines for staff behavior are in place and are well known to the staff.