

Candidate Country Exhaustiveness Project, 2002

Guidelines Annex C: Non-Exhaustiveness Types¹

1. Introduction

At the core of comprehensive and systematic assessment of exhaustiveness is the division of all productive activities according to their potential for non-exhaustiveness. For ease of analysis and interpretation, the division is based on a standard set of *non-exhaustiveness types*. The original basis was the set of types T1-T8 defined for the PPE, where they were referred to as *GDP undercoverage* types. However, there have been some significant changes from T1-T8, aimed at clarifying the boundaries between the types and better reflecting the underlying economic behaviour patterns and the measurement methods. The types are labelled N1-N7 rather than T1-T8 to ensure there is no confusion between them and those defined for the PPE.

The starting point is to look at non-exhaustiveness from the perspective of the compilation by the output approach for which most data are obtained from surveys or administrative collections of enterprises. In this context *enterprises* are referred to as *producers* to ensure that it is understood that all possible types of enterprise are involved, including non-market household enterprises.

In order to ensure the types are mutually exclusive, the logic underlying their formulation is to divide productive activities according to their potential to be non-observed, using readily observable characteristics of producers, each characteristic being divided into a mutually exclusive, exhaustive set of categories. The characteristics used are:

- producer institutional type: legal person/ entrepreneurship/ non-market household producer;
- producer registration status: registered/ unregistered;
- producer status in statistical business register: included in register/ omitted from register;
- source of basic data about producer: producer survey or administrative collection / other source;
- producer responding status: non-response/ response;
- producer reporting status: reported normally/ misreported;
- data collection status: all the required data collected/ not all the required data collected.

There are too many characteristics and categories to define non-exhaustiveness types simply by using each characteristic as a separate dimension. However, in combination and suppressing logically null cells, these characteristics underpin the definitions of types N1-N7 and provide a comprehensive breakdown of potential non-exhaustiveness.

The derivation of types N1-N7 and their relationships are indicated in the diagram appended to these notes. The logic of the construction is to consider first whether or not a producer is subject

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to survey or administrative collection. A producer may not be subject to survey or administrative collection because:

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

If the producer is subject to survey then the data obtained may not provide exhaustive coverage because:

- the producer deliberately misreports (N6);
- or the required data are not collected or properly processed (statistical deficiency) (N7).

Evidently, by construction, types N1 to N7 are geared to the situation where data are obtained from surveys of producers. Thus their main application is in analysis of exhaustiveness in the context of compilation by the production approach. They can also be applied to analysis by the expenditure approach, but only in so far as these data are obtained from producer surveys.

The following table indicates the approximate equivalence between types N1-N7 and the PPE types. It should be born in mind that the PPE types were not mutually exclusive so a given element of non-exhaustiveness could be allocated to more than one type.

N1	N2	N3	N4	N5	N6	N7
T5	T7(part)	T8(part)	T2, T3	T6	T4, T6(part)	T8(part)

The primary reason for defining a set of non-exhaustiveness types is as a diagnosis tool – the types facilitate the process of ensuring that every possible type of non-exhaustiveness is considered. In addition, they facilitate cross-country comparisons of adjustments and adjustment methods. Thus it is useful to associate types and adjustment methods, as in the following sections. However, it should be noted that some adjustments, in particular those arising from application of the labour input method, cannot be uniquely associated with a single non-exhaustiveness type.

2. Non-Exhaustiveness Types: Output Approach

N1. Producers Deliberately Not Registering –Underground

- *Producer deliberately fails to register as legal entity or as entrepreneurship in order to avoid tax and social security obligations*

The types are based on a division of producers into mutually exclusive groups. Thus, type N1 refers to the production of those producers that are not registered because they are involved in underground activities. Type N1 does **not** include **all** underground activities, some of which are associated with type N6.

Typically type N1 involves small producers that have turnovers exceeding the thresholds above which they should register business income to the taxation authorities.

Type N1 does not include producers that deliberately fail to register because they are involved in illegal activities (type N2).

Identification and adjustment methods

Labour input method.

Other supply-based methods, e.g. using household budget survey.

Demand based methods.

Commodity flow methods.

N2. Producers Deliberately Not Registering - Illegal

- *Producer deliberately fails to register as legal entity or as entrepreneurship because it is involved in illegal activities*

Some producers involved in illegal activities may be quite large.

The main problem with type N2 does not arise from its definition but from its measurement. There is absolutely no possibility that producers engaged in illegal activities will admit to doing so. Such producers may avoid registration entirely, or they may register as legal entities or entrepreneurs and report their activities under different (legal) activity codes. N2 refers to the activities of those producers that avoid registration entirely. It excludes activities that are reported (including underreported) under legal activity codes. Thus N2 does **not** include **all** illegal production.

Identification and adjustment methods

The fact that N2 does not include all illegal production must be taken into account in compiling appropriate adjustments. Typically, the an estimate of illegal production is obtained by observing inputs and/or uses and using average price by quantity approach, for example, the number of drug addicts multiplied by their average consumption. The adjustment required for illegal production estimated in this way must be reduced by the production that is already included within the legal economy, being reported under different activity codes.

N3. Producers Not Required to Register

- *Producer is not required to register because it has no market output;*
- *Producer has market output but at such small scale that it is below the level at which it is expected to register as an entrepreneur*

Non-market household producers comprise one of the five problem areas defined by the NOE Handbook. They may be involved in:

- production of goods for own final consumption and for own fixed capital formation;
- construction of dwellings, extensions to dwellings, and capital repairs of dwellings.

N3 also includes unincorporated household enterprises that have very small-scale market output.

Logically speaking, N3 should also include enterprises that are providing owner-occupied dwelling services but, by convention originally adopted for the PPE, it does not.

Production associated with paid domestic services is also included in N3 to the extent that data for them are not included in the basic statistics available to the national accounts and adjustments are thus required.

In the case of agricultural production where total output is obtained using commodity by price methods there is no need to include an N3adjustment for the agricultural output of households if such output is already included in the total. This should be explained in the description of N3.

The separation of economic accounts for agriculture from the rest of the economy is quite common practice. On the other hand, non-agricultural productive activities of households should be included, together with productive activities of other households, including secondary activities, in types N3 or N7, as appropriate:

- in N3 for household producers that are not registered;
- in N7 for household producers that are registered and included within a producer survey or administrative collection, but for which data on secondary activities are not obtained. An example might be a registered farmer who, during the winter, engaged in snow removal activities that were not subject to data collection.

Identification and adjustment methods

Household income and expenditure surveys.

Time use surveys.

Building permits.

Commodity flow methods.

For more details, see the NOE Handbook Chapter 11.

N4. Legal Persons Not Surveyed

- a) the legal person is of type that is systematically excluded from the business register;*
- b) the legal person should in principle be included in business register but is not actually included;*
- c) the legal person is in the business register but not subject to survey because classification data (activity code, size code, geographic code) are incorrect;*
- d) a part of legal person is not subject to survey because profiling data concerning producing units into which the legal person is divided (e.g., establishments) are incorrect;*
- e) the legal person is in the business register with correct classification and profiling data but excluded from survey frame.*

A producer can be a legal person and thus registered with an administrative source accessible by the statistical office and yet, for some reason, not included in the (statistical) business register maintained by the statistical office. All such producers should be covered by means of a survey or administrative collection conducted without use of the register. In so far as they are not, adjustments should be made.

A producer that is a legal person and in scope for the statistical register may not be included because:

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

The producer classification data may be incorrect because:

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

A legal person may be excluded from the survey frame because its size is below the threshold for the survey, or due to an error in the construction of the survey frame.

The circumstances in which incorrect activity or size codes of producers result in systematic undercoverage is where the statistical office collects data are obtained from a *suite* of surveys, each of which covers a particular set of activities and/or sizes, and where data for any producers that are found to have been misclassified in one survey are not transferred to the particular survey where they belong.

Identification and adjustment methods

- register data quality surveys and investigations:
 - measurements of the birth rates of new producers and estimates of the time lag in producers being placed on the register;
 - measurement of register misclassification rates for activity and size codes;
 - comparison of register population with other statistical and administrative sources;
- adjustments based on other sources or expert estimates for producers excluded from surveys as a result of size thresholds

See NOE Handbook Section 6.6 for more details.

N5. Registered Entrepreneurs Not Surveyed

- a) *the statistical office does not conduct a survey of registered entrepreneurs;*
- b) *the registered entrepreneur is not in the list of registered entrepreneurs available to the statistical office;*
- c) *the registered entrepreneur is in a list of registered entrepreneurs available to the statistical office but is systematically excluded from any survey of entrepreneurs;*
- d) *the entrepreneur is in principle in scope for a survey of entrepreneurs but in practice is excluded from the survey frame because the classification data (activity code, size code, geographic code) are incorrect;*

An entrepreneur may be registered with an administrative source that is not accessible by the statistical office, or is accessible but, for some reason, not included in the statistical business register or other list of producers maintained by the statistical office.

A list of registered entrepreneurs may be maintained by the statistical office as part of the business register or as a separate list. EU Regulations require all such producers to be in the business register. However, many countries do not include such units in their business register, and with good reason because such producers go in and out of business and change activity very fast and thus the administrative lists from which they can be obtained are often out of date.

Registered entrepreneurs may be covered by means of a producer survey or administrative collection conducted with or without use of the register. In so far as they are not covered, adjustments must be made.

A registered entrepreneur may not be included in the business register because:

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

The entrepreneur classification data may be incorrect because:

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

Identification and adjustment methods

- data quality surveys and investigations of registered entrepreneurs:
 - measurements of the birth rates of new entrepreneurs and estimates of the time lag in entrepreneurs being placed on the list;
 - measurement of list misclassification rates for activity and size codes;
 - comparison of list population with other statistical and administrative sources;
- adjustments based on other sources or expert estimates for entrepreneurs excluded from surveys.

See NOE Handbook Section 6.6 for more details.

N6. Producers Deliberately Misreporting

- *Gross output is under-reported and/or intermediate consumption is over-reported in order to evade income tax, value added tax (VAT) or other taxes, or social security contributions*

Mechanisms associated with under-reporting mechanisms include:

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

Identification and adjustment methods

Comparison of wages and salaries per capita with norms, by sector, public and private, industry and size groups.

Comparison of the intermediate consumption/gross output with norms, by sector, public and private, industry and size groups.

(The difficulties are in establishing appropriate norms.)

Comparison of theoretical VAT with actual VAT for appropriate groups of producers.

Comparison of theoretical income tax with actual tax for appropriate groups of producers.

Use of tax audit data.

Conducting and using the results of special surveys – providing the basis for norms.

Expert judgement/ Delphi method, based on opinions of accountants, auditors, etc.

N7. Other Statistical Deficiencies

- *As a minimum, data sources and compilation methods in the following areas should be investigated for possible non-exhaustiveness:*
 - *handling of non-response;*
 - *production for own final use by market producers;*
 - *tips;*
 - *wages and salaries in kind;*
 - *secondary activities.*

The treatment of these items in the basis data should be described. If they are appropriately handled in the basic data then no adjustments are required, otherwise adjustments are needed.

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

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

However, errors that do not *systematically* lead to non-exhaustiveness should be the subject of a general quality programme rather than being included here.

Non-response

In referring to non-response, the presumption is that data have been obtained by one or more surveys of producers or from administrative sources containing producer data.

It is common practice for survey statisticians to make adjustments for non-response in the data that they publish and that serve as input to the national accounts. Thus, whilst it is important to verify that such adjustments are made, the economic activities to which they correspond are not non-observed as defined here. They are similar to activities of producers that are in the survey frame but not actually selected in the survey sample and thus covered by the survey weighting (grossing up) procedures. Thus, adjustments for non-response made by survey statisticians should **not** be included.

The activities that should be covered here are those for which appropriate non-response adjustments have **not** been made by the survey statisticians and thus need to be made during the compilation of the national accounts. The most common example of this is when all producers that are non-respondents to the survey are assigned zero data values. De facto, this is assuming that the producers have no output. Another case where a non-response adjustment needs to be made in compiling the accounts is when there is reason to believe that non-respondents are significantly different from respondents and this has not been taken into account in producing the basic statistics.

The more correct approach is to impute data for each such producer on a case by case basis, based on the actual or most probable reason for the non-response (e.g., refusal, out of business, cannot locate, etc). Imputation may be based on data for the previous year, data from similar units (industries, size groups), or industry by size group averages. Non-respondents about which there

is no information can be accounted for by reweighting the survey sample to reflect the probability that an appropriate proportion of them are active.

Production for own final use by market producers

Special note should be taken of:

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

The corresponding tax, bookkeeping and reporting rules should be checked against ESA95 rules for each type of producer. In some cases, expert estimates may be necessary.

Tips

The basic data required to include tips are often not available and, therefore, no estimates for tips are made. Thus, all activities where tips usually appear should be identified, e.g., in relation to hotels and restaurants, repair services, personal services, hospitals and other health services, banks, insurance companies. Possible data sources and estimation methods are:

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

Wages and salaries in kind

As noted in a paper written for the Candidate Countries (R. Clare, April 1998), there are two distinct types of income in kind:

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

- free or cheap crèches for the children of employees.

For CCs using financial statements or other statistical surveys for calculating income in kind, a description of the relevant tax and social legislation as well as the bookkeeping rules should be provided.

Another possible source of income in kind data is a labour cost survey. Countries should describe such a survey with particular reference to income in kind.

Secondary activities

The coverage of all kind of secondary activities (sales of produced secondary products and of goods for resale, production for own GFCF and own final consumption) has to be examined.

Valuation of exhaustiveness adjustments

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

Taxes and subsidies on products

Another valuation problem with possible impact on the level of GDP may appear when using data on gross output from producers valued at basic prices and data on taxes and subsidies on products from the budget. Thus, a description of the sources used, and how compliance with ESA95 rules is achieved, should be provided.

Reliability of quantity-price methods and product balances

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

3. Non-Exhaustiveness Types: Income Approach

As compilation by the income approach depends upon essentially the same data sources as for the output approach, the same types N1-N7 are appropriate. However, as no countries compile independent estimates of GDP by the income approach, assessment of non-exhaustiveness for the income approach does not provide much additional information and is not considered necessary.

4. Non-Exhaustiveness Types: Expenditure Approach

Types N1-N7 can be applied to analysis by the expenditure approach but only in so far as the basic data are obtained from producer surveys. For other data, it is not so clear what are to be regarded as basic data and what are regarded as adjustments. Thus, in most cases it is recommended that the non-exhaustiveness adjustments be recorded as N7.

In particular, in the case of private household consumption, different sources are appropriate for different commodities and it is difficult to define precisely what constitutes non-exhaustiveness. One approach is to identify the principal source and to define the use of any other source as an exhaustiveness adjustment. Another approach is to identify the best source for each commodity

and to state that the use of any other source implies that an exhaustiveness adjustment is required. The Project on Private Household Consumption will be asked to consider the best approach.

