# THE PILOT PROJECT ON EXHAUSTIVENESS
**including the estimation of illegal activities**

Ms Iljen Dedegkajeva (Estonia)
Mr Peeter Leetmaa (Estonia)

## 1. Introduction

This presentation gives a picture on the Estonian "case" of and evaluation on Pilot Project on Exhaustiveness (PPE) organised by Eurostat for the Candidate Countries (CCs).

The paper is built up of the two main parts: (1) the description and evaluation of the Eurostat PPE framework from Estonia's point of view together with the numerical examples; (2) description of the sources and methods of estimation of illegal activities[1].

The main purpose of the paper is to give information and feedback on the PPE from the viewpoint of a participating country. The description of the sources and methods of illegal activities was added since this work was also done in the course of the PPE and this is a challenging topic in its own right.

The PPE was one of the main non-financial national accounts (nfNA) projects organised by Eurostat in 1997-2000 in Candidate Countries followed by the request of the European Commission. The other important nfNA projects were on the S&U and input-output, private household consumption and dwelling services. The GNP and thus also implicitly GDP is the basis of the fourth, the largest own resource of European Union. The GDP in PPS is the basis for the distribution of money through structural and regional funds. The level of GDP is highly dependent on the exhaustivity of measurement and that explains the importance of the project.

The core element of the enlargement process of EU is the harmonisation of the activities (including the compilation of statistics) of the Candidate Countries with the so-called Acquis Communautaire, which is the set of EU legislation and conventions. Because of the importance of the exhaustivity of national accounts aggregates and especially GDP and GNP, there is a special legal act in EU related to the issue of exhaustiveness of GNP. This is the Commission Decision (CD) on Exhaustiveness of 22 February 1994 which provides that GNP and GDP are exhaustive when they cover not only production, primary income and expenditure which are directly observed in statistical surveys or administrative files, but include production, primary income and expenditure which are not directly observed. As the Acquis Communautaire in general, the Candidate Countries have to satisfy the CD on Exhaustiveness that was a core element of the PPE. This legal act is consistent with the "old ESA (ESA 79) and does not have the illegal activities in its scope. According to the European System of

[1] This part of the current paper was already presented at the OECD workshop on quarterly national accounts, Paris 3 - 7 July 2000

Accounts 1995 (ESA 95), also the illegal activities have to be covered together with the rest of the NOE.

The main feature of the project was that each participating country had to carry out a Pilot Study ending with the report which was basically the description of the procedures used in the countries to ensure the exhaustivity of GDP. For that purpose Mr Ralf Hein introduced the so-called tabular approach for the systematical and detailed analysis of GDP under-coverage in *ad hoc* tabular form. The PS had to provide a detailed analysis of the current situation in each country on the annual accounts what countries considered as "final". In particular, its scope was:
- the coverage of NOE and other kind of GDP under-coverage in NA using different estimation methods and verification procedures;
- all information available about NOE (including also items not yet covered in NA);
- the comparison of the different methods and their possible combination;
- the consistency of the three approaches;
- proposals for further improvements.

The project work included the workshops and the experts from the member states were involved. The role of the experts was to give technical instructions to the participating countries during the project and to put together an assessment on the system of the NA systems of the participating countries.

The staff from number of different departments of Statistical Office of Estonia (SOE) were involved in the project being both from basic statistics and national accounts statistics units of SOE. The number of people directly involved in the project was 21.

## 2. Features of the project and its framework

The set of tables were proposed to fill in the detailed information on the adjustments made (number of different transaction types, lowest classification levels possible). The main feature of the framework was the classification of the activities not observed by regular statistical observation process (=NOE) into 8 categories which are very much similar to the categories of the approach presented in the draft "Handbook on the Measurement of NOE" (please see the section 3.3 of the draft handbook).

The delimitation of NOE is not a clear-cut. In the course of the project, following conventions were taken to achieve better comparability of NOE across the CCs: exclusion of imputed rents, own account production of agriculture (calculations made with « price by volume » approach and conceptual adjustments (holding gains etc.).

These 8 categories are:

T1: statistical underground (non-response)
missing units because of non-response to statistical questionnaires. In all CC and most countries of the world, it is required by law for economic units to respond to the statistical questionnaires of the producers of official statistics;

T2: statistical underground (not updated registers)

missing units because of not up-to-date registers; problems related to out-of-date information about production units in the register. Surveys are based on the population derived from the registers. The incompleteness of registers causes also under-coverage in the measurement process;

T3: statistical underground (not registered)
non-coverage of units in the statistical registers because of thresholds for registration or non-coverage of certain activities in the register. Registers may be not exhaustive, i.e. they may not cover small businesses (threshold in terms of size of enterprises) or certain economic activities (threshold in terms of certain kind-of-activities);

T4: economic underground (underreporting)
under-reporting of output, over-reporting of intermediate consumption because of evasion of income tax, value added tax (VAT) etc. For financial reasons (e.g. tax fraud), businesses (especially small units) tend to give deliberately inadequate information on their revenues and costs. Increasing artificially the costs and decreasing the incomes results in lower tax payments. Although these activities are against the law, they are conventionally not included under illegal activities (see the type T7 below);

T5: economic underground (not registered)
missing units/production (or part of the units or production) because of intentional non-registration. In principle the same as T4 but in this particular case refers to the situation when all the activity of the units (or parts of units) are hidden;

T6: informal sector (not registered, underreporting)
missing productive units/production (especially own-account production) because the units are not required to register their activity under any kind of administrative act. This adjustment type covers the small activities, which are usually performed for own-account;

T7: illegal activities
production of goods and services whose sale, distribution or possession is prohibited by law; trade with illegally produced or smuggled goods; also smuggling of goods. These activities are usually totally hidden and are against the law of the country concerned. The law might be different in different countries, which makes the comparability of this type difficult across the countries;

T8: other GDP under-coverage
Other, e.g. wages and salaries in kind, tips. Wages and salaries in kind are the goods and services provided by employer to employee which are considered as part of remuneration. For instance, these could be meals paid by employer. Tips are also considered as part of the income of the company. They are considered as remuneration of employees if paid directly to them as compensation for their work.

We do not want to question the Estonian NOE figures here but some remarks should be made on the issue of what is the nature of that kind of figures. The size of exhaustiveness adjustments depends on two main factors. First, it depends on the extent to which the NOE has been estimated. Second, it depends on the share of economic activities covered by regular statistical observation process. Therefore, for

example, the small exhaustiveness adjustment figure may mean either that the regular surveys cover most of the activity concerned or that the NOE is not measured well enough.

## 3. The results of PPE in figures: adjustments made

Below the summary of the numerical results of the study are presented (tables 1-4). The tables are on both, the output and expenditure approach and for both approaches the adjustments are expressed as a % of GDP and industry/expenditure component.

For output approach (tables 1 and 2), the industries with remarkable exhaustiveness adjustments are trade (G), other services (O), construction (F) and real estate and business services (K). These are the activities where most of the hidden labour is involved and tax fraud occurs. The largest adjustments are made due to the undercoverage for economic reasons (T4, T5), i.e. non-registration of activities and undereporting of output and overreporting of intermediate consumption for economic reasons. Apart from T1 and T8 the adjustments are not made to a great number of activities.

**Table 1. Output approach: Exhaustiveness adjustments by industry as a % of GDP, 1997**

| | Type of NOE / other GDP undercoverage | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | |
| | Statistical underground | | | Economic underground | | | | | |
| Type of unit | non response | not updated | not regis-tered | under-report. | not regis-tered | Informal | Illegal activities | Other adjust-ments | Total % of GDP |
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| NACE A | 0,0 | | | | | | | 0,0 | 0,0 |
| NACE B | 0,0 | | | | | | | 0,0 | 0,0 |
| NACE C | 0,0 | | | | | | | 0,0 | 0,0 |
| NACE D | 0,2 | | | | | | | 0,3 | 0,5 |
| NACE E | 0,0 | | | | | | | 0,0 | 0,0 |
| NACE F | 0,1 | | | 0,6 | | 0,2 | | 0,2 | 1,0 |
| NACE G | 0,8 | | 0,8 | 3,0 | 1,7 | | 0,6 | 0,4 | 7,4 |
| NACE H | 0,0 | | | 0,0 | | | | 0,0 | 0,1 |
| NACE I | 0,1 | | | | | | | 0,3 | 0,4 |
| NACE K | 0,2 | | 0,5 | | | 0,2 | | 0,2 | 1,0 |
| NACE M | 0,0 | | | | | | | 0,0 | 0,0 |
| NACE N | 0,0 | | | | | | | 0,0 | 0,0 |
| NACE O | 0,1 | 0,0 | | 0,9 | 1,8 | 0,6 | 0,2 | 0,0 | 3,7 |
| Total % of GDP | 1,6 | 0,0 | 1,3 | 4,6 | 3,6 | 1,0 | 0,8 | 1,5 | 14,3 |

**Table 2. Output approach: Exhaustiveness adjustments by industry as a % of GVA of industry, 1997**

| | Type of NOE / other GDP undercoverage | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | |
| | Statistical underground | | | Economic underground | | | | | |
| Type of unit | non response | not updated | not regis-tered | under-report. | not regis-tered | Informal | Illegal activities | Other adjust-ments | Total % of industry |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| NACE A | 0,4 | | | | | | | 0,5 | 0,8 |
| NACE B | 0,3 | | | | | | | 1,5 | 1,9 |
| NACE C | 0,1 | | | | | | | 0,5 | 0,6 |
| NACE D | 1,3 | | | | | | | 2,4 | 3,6 |
| NACE E | 0,0 | | | | | | | 1,4 | 1,4 |
| NACE F | 1,3 | | | 11,8 | | 3,3 | | 3,4 | 19,8 |
| NACE G | 5,4 | | 5,2 | 19,8 | 11,5 | | 4,1 | 2,6 | 48,6 |
| NACE H | 2,2 | | | 4,4 | | | | 3,4 | 10,1 |
| NACE I | 1,1 | | | | | | | 2,7 | 3,8 |
| NACE K | 2,5 | | 5,4 | | | 2,2 | | 2,0 | 12,1 |
| NACE M | 0,5 | | | | | | | 0,1 | 0,6 |
| NACE N | 0,4 | | | | | | | 0,2 | 0,6 |
| NACE O | 1,5 | 0,1 | | 15,3 | 30,6 | 10,4 | 2,6 | 0,6 | 61,1 |

For expenditure approach (tables 3 and 4), the largest adjustments in terms of % of GDP are made for private household consumption. Other components are far behind that. As a % of respective expenditure component, the leadership is in the hands of NPISH final expenditure where the non-response is a serious issue.

**Table 3. Expenditure approach: Exhaustiveness adjustments by expenditure component as a % of GDP, 1997**

| | Type of NOE / other GDP under-coverage | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | |
| | Statistical underground | | | Economic underground | | | | | |
| Expenditure approach components | non res-ponse | not updated | not regis-tered | under-report. | not regis-tered | Informal sector | Illegal activities | Other adjust-ment | Total % of GDP |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Private household consumption | 2,0 | | 7,2 | | 1,9 | 1,6 | 1,2 | 0,2 | 14,0 |
| Final consumption expenditure of NPISH | 0,2 | 0,0 | | 0,0 | | 0,0 | | 0,0 | 0,3 |
| Gross fixed capital formation | 2,2 | | | | | | | | 2,2 |
| Changes in stocks | 0,5 | | | | | | | | 0,5 |
| Exports and imports of goods and services | | | | 2,6 | | | 0,1 | | 2,6 |
| Total % of GDP | 5,0 | 0,0 | 7,2 | 2,7 | 1,9 | 1,6 | 1,1 | 0,2 | 19,5 |

**Table 4. Expenditure approach: Exhaustiveness adjustments by expenditure component as a % of expenditure component, 1997**

| | Type of NOE / other GDP under-coverage | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | |
| | Statistical underground | | | Economic underground | | | | | |
| Expenditure approach components | non res-ponse | not updated | not regis-tered | under-report. | not regis-tered | Informal sector | Illegal activities | Other adjust-ment | Total % of compo-nent |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Private household consumption | 3,4 | | 12,3 | | 3,2 | 2,7 | 2,0 | 0,3 | 23,9 |
| Final consumption expenditure of NPISH | 33,9 | 3,4 | | 1,4 | | 1,5 | | 1,8 | 42,0 |
| Gross fixed capital formation | 7,9 | | | | | | | | 7,9 |
| Changes in stocks | 18,1 | | | | | | | | 18,1 |
| Exports and imports of goods and services | | | | .. | | | .. | | .. |

# 4. The estimation of illegal activities: sources and methods

## 4.1 Introduction to that part of the paper

This part of the current paper was already presented at the OECD workshop on quarterly national accounts, Paris 3 - 7 July 2000. As part of the PPE work and since it is an interesting topic in its own right, it is also included to the current paper.

In previous estimates the total figure of 500 million Kroons was calculated for the activities classified as illegal in this framework. In the course of the PPE, more comprehensive analysis of data has been done which gave information on the breakdown of different activities in above-mentioned figure.

The data on hidden economy is included into calculation of GDP since 1992. For 1992 the GDP produced in non-observed economy (NOE) was estimated fully on the basis of expert opinions. By quite rough estimate it was about 12 % without non-response of the total amount of GDP without dividing it by activities. This 12 % takes into account underreporting of all enterprises (adjustments for underreporting are made to the non-response as well), non-coverage of production units (the self-employed, sole proprietors) etc. Since 1993 SOE divide the figure of NOE by activities. Illegal activities in GDP have been measured in SOE since the beginning of introduction of SNA.

As for the classification between observed economy and NOE there is also similar problem of identifying illegal activities from legal. In the report, transactions are considered illegal when they fall into the list proposed at seminar on the illegal activities held in Voorburg 13-14 September 1999. Illegal activities measured in 1997

GDP are prostitution, illegal trade of audio-video and drugs. In 1997 the illegal activities were calculated for households sector.

Different sources were used for calculations: criminal police, customs and some small surveys to estimate the share of illegal goods in trade. Data on prostitution were collected from different sources: from Police, the overviews of the service charges have been published in newspapers (also in Finnish newspapers). Also the lists of places providing such services have been published in newspapers. There are number of expert opinions on the number of prostitutes. E.g. there have been mini-surveys of taxidrivers.

Mainly the output and value added was adjusted upwards, some adjustments were made also to intermediate consumption.

### 4.2 Estimation of drug consumption and value added

According to the statistics of police there are basically 6 types of drugs consumed in Estonia: heroin, cocaine, ecstasy, amphetamine, opium liquid, cannabis. In addition to domestic consumption Estonia is a transit country to the Nordic Countries. Almost all drugs have to be imported because there is no remarkable production of drugs in Estonia. For this reason the production in Estonia is not taken into account in GDP.
To calculate drug flows we have the following data:

- seized quantities;

- average street prices; this information is obtained from the Drugs Group of the Police who have the information on the prices. The journalists have made studies, also the addicts staying in hospitals talk about prices. These sources give approximately the same information on street prices.

- domestic consumption;

- seizure rate ( the estimates have been made by SOE).

We have estimated figures of drug consumers from the Estonian AIDS Prevention Centre, Drug Group of Police Board, officials dealing with social issues. With the information received from mentioned sources the domestic consumption has been calculated using internationally recognised consumption rates. In 1997 there were approximately 1000 persons in Estonia who consumed regularly “strong” drugs like heroin, cocaine, morphine or something else if the ones mentioned were not available to them. The number of those who consumed “softer” drugs (amphetamine, ecstasy, hashish, and marijuana) were according to estimates 9000-10000. In finding the number of addicts the people aged 17-27 have been surveyed. For 1994 the figure is 0.02% and for 1998 the figure is 0.1%.

The information on exports comes mainly from the customs of Sweden and Finland. It is also published in newspapers. From the information on seized quantities and seizure rate the exports can be calculated.

**Table 5. Calculation of commodity flows of drugs**

| Drug | Seizures | Seizures rate | Imports | Domestic consump-tion | Exports | Price (average) Kroons per gr. | | |
|---|---|---|---|---|---|---|---|---|
| | Grams | % | Grams | grams | grams | Imports | Street | Exports |
| Heroin, cocaine | 454 | 0.5 | 90,400 | 67,500 | 22,900 | 750 | 1,500 – 2,000 | 1,000 |
| Ecstasy, amphetamine | 2,400 | 0.4 | 606,400 | 64,000 | 540,000 | 120 | 750 | 150 |
| Powder of opium poppy bolls | 170,839 | 30.0 | 796,500 | 569,000 | - | 3 | 6 | - |
| Extract of opium poppy bolls | 2,051 | | - | 2,051 | - | - | 50 | - |
| Hashish, marijuana,cannabis | 7,018 | 1.6 | 436,000 | 120,000 | 417,000 | 100 | 200 | 150 |

Using the information on average street prices, imports prices, exports prices and also the information on quantities the value added in trade in drugs was 155 million Kroons in 1997. The domestic consumption of drugs was according to our calculations 199,9 Million Kroons.

### 4.3 Estimation of trade with illegal copies of software, video and audio tapes and CDs

The production of audio-video copies is insignificant in Estonia. Police has just lately found a few cases of that kind. The significant part of the activity with these goods is the imports and sales in the market places. In 1997 the confiscated number of audio-video tapes and CDs was 8055 (table 6). The illegal audio-video was and still is sold mainly to tourists. Therefore the basis for calculations are number of tourists and the estimated number of audio-video items bought by them and also the quantities confiscated by the police. The number of confiscated items constitutes small part of total sales of those items. It has to be mentioned here that police did not have many possibilities (legal issues) to confiscate “pirate copies”. Now the things have gone to better direction.

**Table 6. Confiscation of audio-video, CDs and software by police (number of items)**

| Year | Audio tapes | CDs | Videotapes | Software | Total |
|---|---|---|---|---|---|
| 1995 | 844 | 60 | 484 | - | 1,388 |
| 1996 | 1,094 | 99 | 1,621 | - | 2,814 |
| 1997 | 1,470 | 4,502 | 2,083 | - | 8,055 |
| 1998 | 5,062 | 11,485 | 22,648 | 4,661 | 44,045 |

In 1997 there were 621700 one-day Finnish visitors in Tallinn who were mainly the customers of shops and bigger market places. Almost all of the audio-video, CDs and software sold in market places were illegal copies and imported.
Using the available information on prices on imports, sales, quantities sold and intermediate costs the value added in illegal trade of audio-video tapes, CDs and

software was 118 million Kroons in 1997. The domestic consumption was 128 Million Kroons.
The average price of one illegal CD was 100 Kroons whereas the price of the legal one was between 190 and 300 Kroons.

### 4.4 Prostitution

The calculation of the transactions of prostitution is quite straightforward. According to the estimates of Estonian AIDS Prevention Centre, other medical institutions and police there are 2000 prostitutes in Estonia who are mainly providing their services through brothels, sauna and massage services providers and hotels. The average price per hour in these institutions was 1000 Kroons. The basis for calculations are the number of the institutions of that kind, their average turnover and other estimated data. Turnover is estimated using the number of prostitutes, the price and the number of clients. In 1997 the value added of prostitution carried out on private basis was 100 million Kroons. The domestic consumption was 413 Million Kroons. Part of the prostitution activity is already recorded implicitly under such service providers like saunas, hotels, etc.

The value added of the rest of the illegal activities was estimated 127 million Kroons. Illegal activities made up 0.7% of GDP in 1997.

## 5. Conclusions

In the compilation process of the national accounts statistics, the documentation of the process is an integral part. This is especially important for the part of NA statistics, which is weakly or not covered by the basic data sources. The PPE framework is one of those good tools to fulfil that aim.

Here in the conclusions an assessment is given to the Eurostat PPE framework from the user point of view. First and the most important thing to mention is that the study was very useful to arrive at a systematic picture of the NOE in Estonian national accounts statistics. On the one hand, it helps to have a global picture of the issue and on the other, also the detailed information on adjustments in a well-structured way. It helps us to see the weak points of our NA statistics system.

There are number of different approaches around which could be used to describe the exhaustivity of the accounts and the PPE approach is just one of them. An important positive feature of the framework is that it is repeatable. This means that it is possible to repeat the tabular exercise annually to have continuous overview of the developments and situation on that field. The candidate countries, which participated in the PPE and are also involved in the description of non-financial national accounts sources and methods, have done the exercise for two years (in most cases 1997, 1998) now.

The second positive feature is that the framework is logical and easy to understand and it allows making the whole business more transparent.

The T1-T8 classification has been designed to be suitable for output approach in mind. In some cases it is difficult to apply it to the expenditure approach. The T1-T8 classification follows the nature of different kinds of undercoverage from the point of view of production units.

There are three things one has to be careful with which are not necessarily highlighted as weaknesses of the model. First, the classification of adjustments between the types is not always an easy task. For example, the borderline between the T5 and T6 is not very clear. It is difficult to distinguish the economic activities hidden for economic reasons from those, which are informal.

Another aspect is the comparability of the size of T7 (illegal activities) adjustments category over the countries. It is well known that the legal systems of the countries differ which has an impact on the classification of the adjustments to T7 (not registered, economic underground) or to some other type, most probably to T5.

The third issue to be stressed here is that the standalone numerical data on adjustments do not show the undercoverage, it shows the size of adjustments made to ensure exhaustivity. The adjustments may not cover all the economic activity, which is to be covered with the measurement or estimation process. Therefore, the figures itself are not a proof of exhaustivity. Assessment of exhaustivity of accounts can be given only together with the examination of detailed description of the NA system and the adjustments made.

It was noted in the previous paragraph that the standalone numerical data on adjustments do not show the real undercoverage. Nevertheless, it shows at least the areas where the adjustments are made. The quantitative information on NOE adjustments made (by adjustment types, countries which participated in the project, industries, sectors etc.) based on that pilot project is helpful for the compilers of the NA statistics and it gives background information for the users of the NA statistics in general and on CCs in particular.

To conclude on the issues related to the discussion on the PPE framework, SOE will use the NOE description framework in the future. We intend to keep regularly an *ad hoc* database annually for our internal purposes.

In fact, SOE has been compiling the quantitative tabular descriptions of the NOE adjustments (by activity and institutional sector) also before the Eurostat project. This was done on a more aggregate level without incorporating the T1 (non-response) to the NOE. We think that it is not reasonable to calculate the standalone T1 figures annually provided that there are no changes in the procedures of tackling the non-response in the basic statistics. An important thing here is to keep an eye on the non-response rates (% of not responding units).