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OVERVIEW OF THE METHODS USED TO ENSURE EXHAUSTIVENESS IN THE NATIONAL ACCOUNTS OF LITHUANIA

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Overview of the allowances for exhaustiveness

The efforts to ensure exhaustiveness of National Accounts (NA) are determined by the existing data collection and processing system in the basic statistics divisions of Statistics Lithuania and the additional information obtained in special surveys in which other institutions are involved. The Pilot Project on exhaustiveness (PPE) of NA conducted by Eurostat encouraged national accountants to summarize the methods used for adjusting of different NA indicators and to make them consistent. Besides, first time different types of adjustment were classified according the types distinguished in the Council Decision (94/168). During the Project the state of exhaustiveness in NA in 1997 was investigated and the results of it relates only to this particular year.

 The last decade was the period of significant changes in Statistics Lithuania. The notable improvements were introduced concerning the Registers, data collection methods in basic statistics, sampling methods, methodological compliance with EU standards of micro and macro indicators, and data dissemination system, too. That imply, that the results of PPE for 1997 (the share of overall adjustment to GDP or share of different types of adjustment) are not constant and the process of improvements in NA continue. The recommendations of expert (Mr. Robert van Eck, his work and proposals are highly appreciated) were followed and the efforts to explore some week parts of NA and to investigate illegal activities were made.

The approach to assess the share of non-observed economy in the Pilot Study was slightly different from that used previously in the Lithuanian NA. Before the Pilot Study the analysis of types of adjustment was not so detailed and was not fully in line with Council Decision. In the course of PPE national accountants were familiarized with the requirements of the Document and tried to distinguish all available types of corrections for grossing up of initial data.

The first estimates of non-observed economy before the PPE were based on results of special survey, which is described below. Some of them only with insignificant corrections are used until now.

In 1996, a pilot survey on assessment of the non-observed economy was carried out in Lithuania. It was financed by the World Bank and influenced by the methodological support of other international organizations. The results of the survey were incorporated into the National Accounts estimates together with other improvements when the revision of the NA time series took place. The publication on the results of special observations was released: "Non-observed economy: concepts, surveys, problems", Vilnius 1998. The report provided wide explanation of economic phenomena's such an unrecorded turnover of enterprises, "envelop" salary, rendering of services without checks, unofficial labour, some particular types of illegal activities. The results of the surveys were based mostly on opinion of specially invited experts from Tax authorities and Social Security system and also on additional questionnaires to the HBS.

A need of further investigations and wider generalization becomes more obvious because of rapid changes in economy and development of the statistical methods of data collection and processing.

Adjustments proposed in the frame of the above mentioned survey were not directly in line with the requirements of the Pilot Study on exhaustiveness, therefore the additional calculations were made with the aim to distinguish different types of adjustments for PPE in 1997 GDP estimates.

Exhaustiveness adjustments and the exhaustiveness achieved

Adjustments made to the production approach

The main method used in Lithuania to estimate the GDP level is production approach, while GDP by expenditure and income approaches is compared with the first one and the discrepancy is included in the appropriate items. Consequently, the main attention was paid for determination of adjustments made compiling GDP by production approach. The estimates of expenditure and income components of GDP are not sufficiently investigated in respect of exhaustiveness, yet. This is the main reason, why this presentation does not include explanation of efforts to measure non-observed transactions in this part of National Accounts.

The overall adjustment by production approach accounted for 21.0 per cent of GDP in 1997. The GDP estimates for 1998 shows slightly different results of exhaustiveness adjustments (17.9 per cent of GDP). This is why the essential changes in data collection and processing in business statistics were introduced. First of all, those changes relate to application of new sampling methods used for survey of non-financial corporations. Secondly, the efforts of the work with the Register of enterprises in the stage of preparation of sampling frame should be mentioned.

In the course of ensuring exhaustiveness in GDP calculations by output side the following types of adjustments are available to distinguish presently:

    T1   non- response
    T2+T3 not updated register, not registered
    T4   underreporting
    T6   informal sector
    T8   other GDP undercoverage

All those adjustments mainly are related to the sector of non-financial corporations (S.11) and the sector of households (S.14).

The type of adjustment differs according the institutional sector as well as kind of activity. The table bellow presents main information concerning data sources and the

adjustment types used for calculations of Gross Output, Intermediate Consumption and Gross Value Added by kind of activity.

Data sources and exhaustiveness adjustments used for GDP calculations by production approach

NACE code	Data sources for GDP calculations	Adjustments made
A	Census type survey of agricultural partnerships, sample surveys of private farms and non-financial enterprises (F-01)	Adjustments made for non-response, underreporting and other;
B	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;
C	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;
D	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;
E	Sample survey of non-financial enterprises (F-01), special survey on non-observed economy	Adjustments made for underreporting and other;
F	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, quantity data, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;
G	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;
H	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;

I	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;
J	Complete information from Banks Supervision Authorities, insurance companies and other fin. intermediaries	No adjustments made
K	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, quantity data, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;
L	Budgetary data	No adjustments made
M	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, budgetary data, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;
N	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, budgetary data, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;
O	Sample survey of non-financial enterprises (F-01), data from tax declarations, labour force survey, registers information, special survey on non-observed economy	Adjustments made for non-response, non-registration, underreporting and other;

The description of exhaustiveness adjustments is presented below.

T1: Statistical underground (non-response)

In the process of estimation of GDP by production approach the adjustment type T1 (non-response) is distinguished only in the sector of non-financial corporations, where the information from observable units was gathered applying the sample survey method in 1998. The information from other units engaged in production process was obtained from administrative data sources (Central and Local government, Tax authorities, Social Security system), and the complete observations of financial intermediaries (information from all banks is received through the Supervisor authority, all insurance companies provides reports to Statistics Lithuania).

The development and improvement of the central business register in Statistics Lithuania should be mentioned, when the conditions of the statistical surveys in 1998

against 1997 are compared. The improved Register served as a basis for most of the surveys carried out by basic statistics divisions in 1998.

According the Register 20546 non-financial enterprises (excluding unincorporated) were operating during 1998. The survey coverage totaled 15257 enterprises out of all operating enterprises. The response rate was about 86 per cent in respect to the number of persons employed. The non-response was negligible in the large public owned enterprises and most important in the small units engaged in manufacturing and service activities.

In cases when a company did not respond but was known to be operating, the data of the previous period were entered instead of the non-reported data. If possible, contacts by phone were used also.
In cases when enterprises were registered but the attempts to obtain data about them yielded no result, the indicators were assessed taking into account the productivity of the reported enterprises in appropriate activity. The ratio of the intermediate consumption per output in similar units has been obtained from financial reports and has been used for estimating the intermediate consumption in the non-responding units. The Value Added has been calculated as the difference between output and intermediate consumption.

Better results could be achieved, if the analysis by the size classes of enterprises was available. The week point of the sampling method introduced for the 1998 survey is that the grouping by the size classes of enterprises in the grossing up procedure was not foreseen. Since 1998 the adjustment for non-response is a subject dealt with business statistics division that collects the reports from enterprises.
The non-response adjustment also refers to the sector of NPISH, but their size and the effect to GDP is negligible.
The adjustment coefficients for non-response differ according the activity.

T2+T3: Statistical underground (not updated registers; not registered, not surveyed)

The responsibility of updating the enterprise Register is under Statistical profile register unit of Statistics Lihuania. The significant efforts were made during the last year to prepare the statistical register, which could be plausible for all statistical surveys. The newly created units are surveyed after half a year with a special questionnaire, and the information about units, which closed their activity, comes into register every day. The updating of register allowed improving of all surveys carried out by Statistics Lithuania.

Since the enterprise Register does not include lawyers, advocates offices, all kind of natural persons who work on service contracts, license holders, farmers, information about them is received from other special registers (Social security tax payers register, tax offices, Farmers' farms register). On the basis of information from those sources the estimates of output, intermediate consumption and value added are made. Those estimates are not treated as adjustment for exhaustiveness and normally are included into GDP calculations.

The numerical size of adjustments for T2+T3 is defined on the basis of indirect estimates –using employment method. It is attributed only to the sector of non-financial corporations. It is assumed that part of non-registered employees could be related to private small and medium units that are registered but not identified as active in statistical register. Small active and statistically observed units could also employ the unofficial non-registered employees.

Assuming that the difference between data from labour force survey and those obtained from the survey of enterprises is due non-registration and not updated register, the adjustment coefficients by kind of activity were calculated. Thus, the coefficients covered both types (T2+T3) of statistical underground. Of course, some doubts could appear concerning labour force data by kind of activity, because they rely on survey of households. The national accountants are aware of this problem, and the future plans include deeper investigations of the supply of labour.

T4: Economic underground (underreporting)

According to the results of the above-mentioned special survey on non-observed economy, the conclusion could be drawn that even the reports provided by large enterprises could include significant part of underreporting. The non-financial enterprises are intended to hide income from sales and wages and salaries. The opinion of the experts (tax inspectors) served like a basis for measuring of the magnitude of the mentioned indicators. The adjustment coefficients for underreporting from the above-mentioned survey are used until now with the small corrections. They differ according the type of activity, type of ownership and the size of observable unit.

 It is assumed that the adjustment coefficients for underreporting of incomes include the adjustment for **tips** in the particular activities such hotels and restaurants, taxi drivers, postmen's, health care and so on.

The intermediate consumption is an item, which is overestimated quite often in the reports of enterprises with an aim to hide the real surplus and to reduce the taxes due. Investigations of the share of intermediate consumption to output in non-financial enterprises and in the households sector seems to be an important part for the revealing of hidden flows. The calculations concerning intermediate consumption ratio have been compared to the results of interviews and of received from enterprises financial reports.

Under the item "other cost" in the statistical reports of enterprises often are included expenses of the units on behalf of their employees, wages and salaries in kind. This type of adjustment is distinguished from the T4 for intermediate consumption and it is shown under the type T8 (W&S in kind), the value of which is estimated together with all adjustments made to the compensation of employees.

The output estimates for households sector, which are based on the tax declarations, refer to the significant undervaluation. Comparison of the productivity in small non-financial corporations and unincorporated enterprises of the same kind of activity allow reveal the underreported income. Reported wages and salaries usually do not exceed minimum determined by the legislation. Therefore, average wages and salaries

per employee in appropriate kind of activity were taken into account, in order to measure generated Value Added.

T6: Informal activities

The estimates of production in the not registered informal activities are one of the most difficult parts of the assessment because of the lack of plausible data sources and special investigations. The calculations are based on analysis and combination of all available data sources related to employment. The Labour Force Survey is the main but insufficient source to capture hidden, not registered labour. Non-registered self-employed persons (without a license) are considered as working in the sector of households. Therefore, adjustments related to the intentional non-registration of small businesses that made to the output, intermediate consumption and value added by kind of activity were included in adjustment of households sector.

Additional investigations have been made in the frame of the earlier mentioned survey on non-observed economy. The households were asked to show expenditures for goods and services provided by private persons or enterprises without bills or other documents. It concerns natural persons engaged in non-registered work, mainly in the service sector. The number of them and the activities, in which they are involved, could change rapidly, and therefore the measurement of value of produced output seems to be complicated.

T8. Other GDP under-coverage

The estimates of **wages and salaries in kind** (W&S) are included under this item. As was stated above the data on intermediate costs from the reports of enterprises usually are overestimated and include expenditure on some goods and services provided to employees. Those should be treated as W&S in kind. All data sources, which are available in Statistics Lithuania on this item presently, have some shortcomings:

Labour cost survey does not include information on private use of business cars, phones or other durables by employees;
Households budget survey data shows above mentioned types of W&S in kind as most significant, but relying on them is impossible to measure the level.

Nevertheless, the combination of both those sources was used for estimates in 1998. The results were included in compensation of employees from income side and, consequently, the intermediate consumption and value added from production side was adjusted with appropriate value.

Further investigations, which should be implemented in the nearest future in order to meet the requirements of Council Decision, have to be directed to development and improvement of employment method, assessment of illegal activities and elaboration of input-output tables.

Illegal activities

According the requirement of Council Decision on exhaustiveness in National accounts the share of illegal activities in economy has to be assessed. The first estimates of illegal activities were made for 1998 in Statistics Lithuania. The estimates covered the following illegal activities:

Prostitution
Consumption of drugs
Fencing of stolen cars

The absolute size of the each type was measured on the base of information received from the Ministry of Interior Affaires and other institutions. The estimates concern only the use side, while the supply side was not investigated yet.

Prostitution

According the Police Department information there were 2,68 thousand persons in 1998 engaged in this activity. Taking into account the assumed average earnings per hour and minimum number of "working days" per year the possible earnings were assessed.

It is known that significant part of non-resident persons is active on territory of Lithuania. Nevertheless, the current estimates do not represent all possible aspects of this phenomenon and further investigations are needed.

Consumption of drugs

On the basis of information from the Health ministry and Police Department the estimates of total expenditure on drugs were made. Different types of drug were distinguished and the specification of consumption by regions was taken into account. According the opinion of experts prices on drugs are decreasing presently, while the number of consumers increase rapidly.

The failure of the estimate should be noticed, since not all flows like production, imports and exports were measured. Those considered to be estimated in the future.

Fencing of stolen cars

Relying on the Police Department information on the registered events of stolen cars, and the possible average prices of selling of stolen cars (experts opinion by different models of cars) the estimates of income received were made.

It is assumed that all stolen cars were sold on the territory of Lithuania, so, the value above should be a part of consumption. According the Police only negligible numbers of imports and exports of stolen cars were noticed and, therefore, were not taken into account.

As was mentioned above the illegal activities were not included in the official published GDP figures, yet. In order to meet the requirement of Council Decision the estimates should cover all existing types and to measure all possible flows of illegal activities.