Lithuania:
Report on the National Accounts

The Report is Financed by the World Bank IDF Grant for Building of Institutional Capacity of the Department of Statistics of the Republic of Lithuania in the Area of National Accounts

May 1998
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Foreword

This report is part of a comprehensive effort to build the institutional capacity of the Department of Statistics of the Republic of Lithuania in the area of national accounts, and has been financed by a World Bank IDF grant.

In addition to presenting a consistent set of macroeconomic statistics for Lithuania, the report deals with important technical issues related to the restructuring of a statistical system in transition, especially in the areas of data collection and estimation of basic macroaggregates in an environment where data collection methods are changing from complete enumeration to sample surveys.

Based on this analysis, it also delivers revisions to Lithuania’s GDP for the period 1990-1996, the years when the most substantial structural changes took place.

The Department of Statistics of Lithuania believes that this report will be useful to policy makers, the local and international business community, academics, and all who are interested in economic developments in Lithuania. It can also be of use to statisticians in other transitional economies that are striving to introduce System of National Accounts (SNA) in the statistical practice.

Petras Adlys
Director
Department of Statistics
of the Republic of Lithuania
Preface

This study was initiated by the Government of Lithuania, with support from the World Bank, to examine critical technical issues on the estimation of macroeconomic aggregates based on modern SNA concepts during the transition from a planned to a market oriented economy.

The study is part of a project financed by the World Bank Institutional Development Fund (IDF) Grant for “Building of Institutional Capacity of the Department of Statistics of the Republic of Lithuania in the Area of National Accounts.” At the Department of Statistics, the project was managed by the former Director Mr. K. Zaborskas and is currently supervised by the Director Mr. P. Adlys and Deputy Director Mr. J. Markelevicius. The World Bank task manager for the project was Mr. M. Belkindas.

The project has several components. It has financed training for staff of the Department of Statistics in such important areas as national accounts, price statistics and sample surveys. It has also financed technical assistance in the area of organizational restructuring of the statistical system of Lithuania and input-output analysis. The project also financed a pilot survey to gather information on the hidden economy; the main findings of the survey are presented in this report.

The principal contributors to this study were I. Tvarijonavichiute, V. Lapeniene, S. Bakshiene, S. Grishina, G. Jushkiene, I. Kamienas, A. Kvaukiene, A. Lazarevichiene, R. Meshcheriakova, L. Muravskaja, T. Rumianceva, V. Shurikova, and D. Zhygiene, all of them staff of Lithuania’s Department of Statistics. The World Bank staff and consultants who contributed to this project are M. Belkindas, and O. Ivanova (WB, DECDG), and S. Fassler, S. Kuzmichich, S. Girijotiene, A. Van den Boss (consultants). Co-operation received from several other Department of Statistics staff namely N. Grebinskaya, V. Kasperiuniene, V. Motiekaitiene, L. Rimkiene, O. Sedleckaya, Z. Shniukshtiene, and others -- is also acknowledged.

The estimates and the first English draft of the report were prepared in Vilnius during 1997. The report was finalized and edited in Washington by M. Belkindas and O. Ivanova. The report was translated into Lithuanian by D. Bartkute-Barnard and edited by I. Tvarijonavichiute.

The draft report was discussed at the methodological commission of the Department of Statistics, comprising of representatives of the several related Ministries and the Bank of Lithuania with participation of the World Bank staff.
and consultants. The main findings and estimates were also discussed with staff at the Office of the Prime Minister of Lithuania. Thanks are due to all of them for their insightful comments and suggestions.
Executive Summary

A comprehensive review and evaluation of the sources and methods of the current national accounts compilation in the Republic of Lithuania allowed to develop a framework and recommendations for the further implementation of the 1993 System of National Accounts (1993 SNA). On the basis of this study, additional new data sources, and alternative techniques revisions to the official national accounts aggregates for the years 1990 through 1996 were proposed.

1. The Lithuanian Government has been pursuing a policy of converting the former centrally-planned economy to a market-oriented economy in which enterprises, whether state-owned, privately-owned or of mixed state-private ownership, have general control over their investment, production and distribution decisions. Such decisions should be essentially related to the operation of the markets in which enterprises are engaged, where the price mechanism will dictate buying and selling decisions. The main economic policy tools (fiscal, monetary and exchange rate) - of a market economy cannot be applied on a sound basis to promote growth with stability unless a good set of national accounts and data on other macroeconomic variables are available. It is therefore very important that the Department of Statistics (DOS) gets the cooperation and support needed in its pursuit of improvements in the national accounts of Lithuania.

2. The ongoing economic transition has made significant progress over the past years. It is resulting in extensive privatization of enterprises, a more balanced industrial structure, an increase in the number of medium and small enterprises, introduction of new technology, greater diversity in local manufacturing, an increase in foreign trade (both exports and imports), and the encouragement of foreign investment. All of these developments are impacting directly or indirectly upon the pattern of redevelopment in official statistics, both economic and social. They also have been accompanied by loosening government controls over enterprises and other entities generating basic data, resulting in the deterioration in the responses used in the development of statistics by the authorities. New enterprises avoid statistical reporting or report inadequately. This particularly affects key macro-economic aggregates in the SNA and confuses the assessment of the trend in these series.

3. Despite the difficulties and challenges of the transition period and the disruptions in the traditional data sources, the DOS has initiated several measures to adjust to the data needs of the market economy and to compile GDP estimates through the production and expenditure approaches based on the 1993 SNA. The DOS is fully aware of the limitations of the current estimates. Expansion in the basic data sets (customs statistics, BOP, etc.) as well as improvements in the methods used to compile national accounts, especially in the last two years, have resulted in higher quality national accounts that brought about the need to revise the estimates for the previous periods.
4. The objectives of this report are: (i) review the currently utilized data sources and methods in developing national accounts estimates and the relevant organizational issues; (ii) identify and apply alternative data sources and techniques to adjust and revise the officially published production aggregates; and (iii) develop and document procedures for data adjustments and recommendations concerning new data sources, methods and organization, to facilitate the improvement of national accounts in the medium and long-term.

5. The authors followed a systematic and comprehensive approach in addressing the issues with a short, as well as, longer term perspective. They reviewed systematically SNA concepts with a special reference to their current application to Lithuania, current organization of macroeconomic statistics, basic data collection and methods employed, information technology, compilation of current set of GDP estimates, and their dissemination. They assessed the current compilation methods and estimates, and prepared proposals for their modification in the short-term based on the available range of data. They also reviewed basic data sources and their methodologies and suggested improvements to be carried out in the long-term. They also dealt with the institutional, organizational, resource, and training implications of the proposed short and long term measures.

6. Since 1991, the Lithuanian Department of Statistics has initiated measures to improve price statistics particularly the consumer price and industrial producer price indices, the national business register, data collection forms for enterprises and household surveys. Sample surveys have been recently introduced to collect data on certain services. The foreign trade data are now collected by the Customs authorities in accordance with international guidelines, and in collaboration with the DOS, the Bank of Lithuania (BOL) compiles the balance of payments. The Government Finance data improved with the implementation of the economic classification of government accounts. Moreover, the DOS with the World Bank assistance has introduced a nation-wide comprehensive household survey in 1996. All these positive initiatives taken by the Lithuanian authorities in the short span of years will certainly contribute towards the enhancement of the coverage, quality and reliability of the national accounts. On the other hand, traditional data sources have become weaker, and many new emerging enterprises remain un-surveyed.

7. Until recently, most of the dependable data sources in Lithuania are related to the production of goods and market services. Regarding the estimates by source of income, only data on wages of those employed in the state sector are reliable enough. Reliable information on profits and mixed income is absent and can be estimated currently only as a residual. Data on income utilization for consumption and investment were dependent on surveys with insufficient coverage and inaccurate sampling, and hence were based on implicit adjustments and indirect estimates. Therefore, national accounts compilation basically follows the production approach in estimating GDP. The proposed proposed National Accounts revisions
(see below) are also based mainly on data on production of goods and services. Even then the extrapolators and deflators used for the compilation of the GDP in constant prices need to be improved substantially in terms of the methods of calculation and basic data. However, after introduction of a new household survey and enhancement in Government Finance and External Trade Statistics, GDP by final use estimate tends to be more reliable and can be considered, in near future, to become more accurate than that by industrial origin. The need for improvements in basic data collection and estimation of income remains.

8. The report presents the following main conclusions and recommendations:

(i) Taking into consideration the fact that the current state of basic information sources is such that it does not permit to compile the national accounts of Lithuania in full, the DOS should focus on improving compilation of GDP using the production approach, and gradually switch to the method of final expenditures as the basic method. Hence it should be recommended to expedite import and export price indices calculation to make possible the estimation of GDP by final use in constant prices.

(ii) The DOS together with other ministries and the BOL should aspire to create a data base that in the future will support the computation of the full set of accounts in accordance with the 1993 SNA standards.

(iii) The provision of reliable, consistent and comprehensive macroeconomic financial and economic data to the Government of Lithuania depends to a significant extent upon whether or not the DOS receives such information from other government entities. The government should therefore assist the DOS in establishing close ties and strong collaboration among the main data collection, compilation, and user agencies.

(iv) It is extremely important to accept and acknowledge the fact that as more reliable data and new sources of information become available, the ongoing statistical estimates of the GDP and other national accounts estimates should be revised. In view of this, the DOS should carefully explain the reasons for revisions in the mass media and to main users of these data.

(v) Upon conducting an in-depth analysis of the available information sources and the methods used in computing the SNA indicators for Lithuania, alternative revised national accounts estimates were developed and it is strongly recommended that the official GDP indicators for 1990-1996 are revised accordingly.
9. The results of the study and the recommendations are set out in more detail below under the following main headings of the executive summary: (a) framework, (b) institutional issues, (c) staff and training, (d) data sources, (e) methods, (f) compilation, (g) revised estimates, (h) dissemination.

**Framework**

10. The DOS should develop a framework consisting of accounts that: (i) are fully integrated and consistently linked with the sub-systems; (ii) meet the current needs of policy-makers and analysts; and (iii) provide, in the long-term, a full set based on the 1993 SNA. Within this framework, all the work programs, priorities, and allocation of resources should be decided. The DOS should therefore lay down the framework, sectoral accounts, and the set of accounts under each sector which it aims to compile together with a time table and then assess the available data sources and prepare the work objectives for the improvement of existing data sources and the development of new data sources.

11. The success on the implementation of an integrated framework program would depend on the:

   a) Strong collaboration among the main compiling and user agencies of economic statistics;

   b) Effective coordination of the National Accounts Division (NAD) needs with the priorities and work programs of the sectoral departments in the DOS;

   c) Use of analytical approach and the broad macroeconomic perspective by NAD staff in the compilation of national accounts;

   d) Provision of sufficient number of competent and well-equipped staff to NAD to analyze, adjust, reconcile, and aggregate data available from various data sources. The DOS should take steps to ensure that NAD and supporting departments are fully staffed and equipped at adequate levels and trained to fulfill all the current and development goals and that the turnover is held to acceptable levels through provision of competitive salaries;

   e) Detailed documentation of the methodology of the current compilation discussing inter alia its strengths and weaknesses and listing the major technical issues. Technical notes should be prepared describing the methodology of the issues that have been resolved and outlining the status and the problems being encountered in resolving the outstanding issues; and
f) Most importantly, on the development and improvement in the coverage and quality of the basic data sources through the application of the techniques and data collection methods applicable to the economies in transition to the market economies.

12. The national authorities in general and the DOS in particular have to strategically and systematically commit themselves to the implementation of the program in view of the central role of the national accounts not only as a framework on macroeconomic statistics but also as an instrument of great importance in economic policy making, analysis and monitoring.

Institutional Issues

13. The institutional environment, organization, and the mode of cooperation and support should promote efficiency and confidence in the compilers of national accounts.

Legislation

14. When the Law on Statistics is next reviewed, the incorporation of a provision protecting the professional independence of the Director of the Department to decide on the concepts and methodology of particular statistics should be incorporated, while recognizing the right of the Government to decide on what statistics should be produced and the purposes they should serve. Whatever political impediments there may be, the Department should consider judicious prosecution in the courts of selective and blatant cases of survey non-response without justifiable cause, to create publicity on the need for community cooperation in official surveys and the penalties in which non-response can result. At the same time the DOS should gain the trust of the respondents in the matters of confidentiality and demonstrate through an active dissemination policy the usefulness of the data being submitted by them.

Organization

15. In accordance with the World Bank consultant’s recommendations on statistical organization certain allied functions should be consolidated for reporting to a common vice-chairman so that better data collection and consistency can be obtained. Moreover, the staff recruitment policy needs to be modified to recruit staff with education in a variety of disciplines that are relevant to economic and social statistics. In addition, the information technology (IT) needs to be modernized and expanded to support the DOS in pursuing its statistical objectives in the national accounts and other areas of statistics.
Regional Statistical Offices

16. In the interests of improving the productivity of the Department and freeing up resources needed to make the extensions to statistical data and services that is the objective of the Department's redevelopment, the present decentralized system of ten provincial offices and 44 regional offices should be considerably reduced. If carried out appropriately this rationalization will also improve the overall quality of statistics. The district and regional offices should assist in data collection, entry, and transmission but the data processing should be centralized at the head office with an advanced information technology.

17. At the same time, the Lithuanian DOS should provide guidance to the regional authorities on the compilation of summary economic indicators that are needed for regional economic policy decisions and monitoring. A review should first be conducted as to what provincial and municipality statistics are needed by the emerging market-oriented economy in Lithuania and what among existing statistics are more relevant to the previous economic system. Local governments currently receive statistics free, contrary to law, and should be required to pay a share of the cost of producing the revised range of statistics, which may include new statistics. Periodic, rather than regular statistics, as in developed countries, may only be needed.

Revision Policy

18. It is essential to accept the fact and adopt the convention, common in the other countries, that data sets and estimates become better in quality and coverage over time with the availability of firmer results and accounting records. In order to meet the urgent data needs of policy makers, the statistical agencies should produce preliminary estimates that have to be revised as firmer data become available. The government should assure that users do not confuse revisions as corrections of mistakes or to be politically-oriented. The DOS should therefore design and implement an enlightened and transparent dissemination program to the public media and users which explains properly the revision policy on national accounts estimates.

Integration of work within the DOS

19. In view of the NAD's interest in a wide range of economic and social data, its input on concepts and data needs should be taken into consideration by the DOS in the methodology, data collection forms, and analysis of various censuses and surveys. In view of the concerns expressed about the conceptual relevance of some survey data being provided to the NAD and the apparent lack of awareness about this outside the Division, an appropriate corrective technical coordination action is needed. All the censuses and surveys should possibly be planned and prioritized within the framework for the compilation of national accounts. Other ministries and agencies should also consult
the DOS to coordinate the data needs prior to initiating major nationwide data collection or surveys.

20. The vital need for technical coordination of survey data produced by the Enterprise Statistics Division and the data requirements of the NAD would be served by moving the former division to the control of the Deputy Director responsible for the NAD and the active promotion of close cooperation and coordination between the two divisions.

Staff and Training

Staff

21. A modern governmental statistical organization needs a balanced mix of staff with tertiary educational qualifications in economics, mathematical statisticians, accounting, computer science, sociology, and demography. It is important that the NAD staff uses analytical skills, broader perspective, and methodological standards in the compilation of national accounts. The DOS should therefore take urgent steps to ensure that NAD and supporting departments are fully staffed with competent and well-trained personnel at adequate levels to fulfill all the current and developmental goals and that turnover is held to acceptable levels. If necessary, the personnel recruitment policy of the Department should be reviewed to achieve this outcome.

22. If not already in place, a system of job rotation should be introduced for middle level and more junior staff to generate greater versatility of staff and also, on occasions, maintain career ambitions. Such rotation should be limited to selected staff and only with their agreement.

Training

23. The DOS should reorganize its current efforts into a special training program which is objective oriented and takes into account specific training needs of officials at various levels in the DOS and other agencies. It is highly advisable that a Training Coordinator is appointed to provide professional guidance to divisional heads and other line staff engaged in training Departmental staff in the principles and practice of market-economy statistics. Systematic reviewing of training needs and the overall response to these needs will benefit the pace at which staff redevelop their skills.

24. First, the training of the NAD staff should be distinguished between: (i) theoretical, methodological, and technical issues; and (ii) data collection, scrutiny, compilation methods, and liaison with other data collecting agencies. Second, NAD contact officials with other DOS departments should be trained on the overall data needs for national accounts and on how their data fit into them. Third, the staff of data supplier agencies should be appraised of the importance of their data sets in national accounts compilation, forward and backward linkages, and the common concepts on valuation, classifications and aggregations. Fourth, trainers for the
field staff in the regions should be trained at the headquarters and feedback should be received on their effectiveness. Finally, senior policy makers and officials as well as senior representatives of ministries, public media, and trade unions should be invited for seminars or briefing sessions whenever any major modification or extension to the methodology or data sets on national accounts are to be released.

**Data Sources**

25. The authors carried out a review of the current major external and internal data sources consisting of (i) enterprises register (ii) enterprise accounts (iii) administrative sources and (iv) censuses and surveys. It noted that the distortions and disruptions in the data sources have arisen because of the structural, institutional and market changes. Therefore, the DOS as well as the other data generating agencies have to (i) modify current data collection and compilation procedures and methods and/or (ii) initiate and develop new data sources with new or revised techniques and sample surveys.

*External Data Sources*

26. The DOS cannot function in isolation to compile and cater statistics for sound economic and social analysis and for well-informed policymaking and decisions. Unless all the major data producers and feeders in the government collaborate fully in harmonizing the concepts, valuation and accounting methods, and design data collection programs, forms, and analysis that meet the needs of the DOS as well as their own, full and effective SNA compilation can not be achieved. Computerized forward and backward linkages should be established with the data bases of those organizations. Moreover, Joint Task forces or steering committees should be established where necessary to identify and review on a regular basis the conceptual and data inconsistencies and to carry out the required reconciliation and modifications in the methodology and data sets.

27. **Balance of Payments Statistics.** The balance of payments (BOP) statistics is an important source for the compilation of the Rest of the World (ROW) account of the national accounts. All the domestic sectors contribute to the export of goods and services and benefit from the import of goods and services and are therefore linked to the ROW account. The balance of exports and imports of goods and services has impact on the total savings and the disposable income of the economy. Moreover, there are transfers and capital transactions between the domestic economy and the ROW which altogether with the current balance have impact on the international reserves of the economy. Lithuania's current BOP estimates have certain weaknesses because of shortcomings in the basic data sources such as on the informal trade in goods and services. Improvements in BOP compilation would contribute to the strengthening of the National Accounts compilation provided there
is harmonization of concepts, classifications, and compilation with respect to the BOP and the ROW account. Currently, there is a great deal of collaboration between the DOS and the BOL in improving this area and efforts should be made to foster it further.

28. **Customs.** Since 1994 the customs has become the sole source for the statistics on trade in goods. The DOS needs trade statistics for the ROW accounts, input/output tables, commodity flow analysis, and for the calculation of constant and current price data. Moreover, the unit values calculated from trade statistics could be an important source for deflation, cross-checking and verifying the levels of domestic prices and calculating the terms of trade. The Lithuanian DOS and the customs authority should continue to collaborate with the technical assistance from international organizations in developing together the trade concepts and definitions, improving the coverage, quality and valuation of trade statistics and compilation of the export and import volume and unit value indices.

29. **Tax Records.** These records are utilized in some countries for obtaining aggregate data by branches of economic activity, the income flows in terms of compensation of employees, interest incomes, profits and other operating surplus, and mixed income. These data are utilized to estimate GDP through the income approach. Currently, in Lithuania reliable data on labor remuneration are available from SODRA (State Social Security Agency) records and from the returns of the enterprises presumably calculated on an accrual basis. It is commonly believed that the enterprises currently underreport their profits on tax returns to save on taxes. As tax administration and collection gets better, the data are likely to improve, the DOS should therefore maintain close liaison with the tax office to ensure that aggregated data on each income flow are made accessible to them for the purpose of estimation of national accounts. The DOS uses some of the tax returns data for estimating value added for certain services. To safeguard the confidentiality of individual tax returns and to retain trust of the business community the DOS should insure that only aggregate data are used and published, and inform the community about its approach.

30. **SODRA Records.** These records provides information on enterprises reporting to SODRA, the number of the employees under work and labor contracts, their wages and salaries. It also supplies information on the number of the retired persons and pensions paid, temporary disability and maternity benefits. The employment data provided by SODRA is extremely important for the national accounts compilation, since this data is used as the major component of adjustment procedures. Thus it is crucial that the data coming from this source are of the same format (e.g. regarding the classification matters) that is used by DOS.

*Macro-economic Consistencies*
31. Monetary Statistics, BOP Statistics, and Government Finance Statistics are not only linked to the National Accounts but also among themselves. For example, the government deficit is financed in part by the credit from the banking system, therefore deficits in the government accounts should be consistent with the related financing from the banking statistics. In order to verify macroeconomic consistencies, it is essential that information on all sub-data sets is accessible online to the DOS. The compilers of national accounts statistics frequently get criticized for macroeconomic inconsistencies for which they may not have full control. Therefore, if the government objective is to provide a fully consistent set of statistics to the policy-makers for sound decisions, then it should assure that there is full statistical collaboration among all agencies.

Data Sources of the DOS

32. Household Surveys. In view of the importance of private consumption as a significant flow in the national accounts and of income as an important source of savings to finance capital accumulation, it is essential that comprehensive, timely and appropriately analyzed data on household income, consumption, capital expenditure and savings are available. The sampling frame based on employees (households) selected from the establishments proved to be inadequate. The recent improvement of household surveys which was initiated under the technical assistance from the World Bank on Living Standard Measurement study, and contributed to significant increase in accuracy and reliability of private consumption estimates. Further improvement in the household sector data collection and analysis could explain a lot of activities which go unrecorded on the production side as well as in retail sales and imports. For example, if the households report everything they consume or accumulate, data coverage on the domestically produced as well as imported goods can be improved. It is recommended that the DOS should continue to give the highest priority to the household surveys in its data collection programs.

33. Input-Output Tables. The construction of input-output tables for a recent year should also be given priority by the DOS because the current framework and benchmark data for the base year as well as several coefficients utilized in the compilation of national accounts are not only outdated but also distorted. The availability of input-output tables could facilitate commodity flow analysis, and the study of inter-branch relationships as well as provide benchmark data for estimating various flows in the compilation of national accounts. It is therefore recommended that one of the coming years with the largest amount of data based on censuses and surveys should be utilized for the compilation of an input-output table.

34. National Register. The Lithuanian Enterprises register was established by the Register Law in 1990. From August 1, 1990 to February 1, 1995, the Enterprises register was maintained
by the Ministry of Economy. On February 1, 1995, the management of the Enterprises Register was transferred to the Lithuanian DOS. Besides, the DOS maintains the Statistical Profile of Enterprises Register, containing not only information on enterprises identical to this of the Lithuanian Enterprise register, but also information on institutions and organizations, and additional statistical information on enterprises and institutions from various sources. The close cooperation established with SODRA and other government agencies in updating the registers is appreciated and sustained efforts to improve them so that they could provide a framework for sampling as well as for communication with the respondents are encouraged.

35. **Enterprise Reports.** Enterprises supply information on many indicators e.g. employment, gross sales and the cost of output. Information on capital accumulation is also collected through separate returns. Although certain appropriate changes were made to the statistical forms to meet the needs of national accounts estimation, only starting from 1996 the data on intermediate consumption is detailed enough to be used for NA compilation purposes. It is recommended that additional efforts should be taken in the area of statistical form designing to ensure the conceptual correctness of the reported data. The improvement of the financial statistics, tailored to serve the needs of the National Accounts compilation, should be given high priority as they constitute the main data source for the estimates of GDP by industrial origin. These returns should be interrelated and, where possible, consolidated for the purpose of estimation of national accounts so that it can become more clear how capital accumulation is financed and changes in inventories take place. Moreover, if the returns are tied to the banking returns, changes in net financial assets could be related to enterprise activities. The DOS and the BOL should collaborate in the development of these forms and the analysis of the data collected through them.

36. **Price Statistics.** As price statistics serve as the main data source for the deflators to compile the national accounts in constant prices, the needs of NAD are taken into account by the compilers of price statistics. The DOS has made substantive progress in the compilation of consumer prices and industrial producer price indices according to international standards. Efforts should now be made to give due priority to the compilation of price indices on exports and imports.

**Methods of Data Collection**

37. The authors reviewed the mode of data collection, progress made in the implementation of economic classifications, the method of various censuses and surveys, and the forms used for national accounts data collection.
Mode of Data Collection

38. The DOS’ resources used to be committed to the collection of the vast amount of data through complete enumeration. There is a recognition of the fact that such an approach is no longer feasible and sample surveys have been initiated in certain areas e.g. labor, price and household surveys.

Censuses and Surveys

39. In addition to data collection through complete enumeration, the DOS is conducting a number of sample surveys to cover various economic activities. These censuses and surveys are expected to take into consideration the data needs and priorities for improving the compilation of national accounts. However, it’s not always the case due to lack of a detailed understanding of SNA data needs by survey divisions and a bias to output rather than financial indicators in data collection. It is strongly recommended that in the near future some pilot surveys of private farmers’ agricultural production is initiated to provide information on farming activities, expenses, productivity, and use of labor force. The report appreciates the recent improvement of household surveys which was initiated under the technical assistance from the World Bank and is to improve private consumption and capital formation estimates as well as to capture unrecorded production and imports.

Compilation of National Accounts

40. The current efforts made by the DOS for improving the coverage of production components of GDP, particularly on the production activities of smaller enterprises and certain service industries need to be sustained. Moreover, the results of pilot survey on the unobserved economy need to be incorporated in the current practice of NA compilation, and the survey should be conducted on a periodic basis to provide the bench-mark ratios at least once in three years.

41. The authors examined the available sources on expenditure approach and concluded that substantial improvement in the coverage and quality of data was achieved and more extensive use of commodity flow analysis, especially to estimate the gross domestic capital formation, could contribute to the improved estimation of GDP, making eventually the final use estimate the primary one.

42. When GDP is estimated through more than one approach on the basis of different data sources, there is bound to be a discrepancy among the estimates whose magnitude might be sizable. The DOS should have an established policy on which GDP estimate to treat as primary and where to show the discrepancy in GDP.
43. The authors reviewed extrapolators, deflators, methods of deflation, and ratios utilized to estimate value-added in constant prices. Recommendations were made on revising the methodology of some indicators, introducing new extrapolators, and substituting certain deflators as new physical measures of production and improved price indices are now available.

**Alternative Revised Estimates**

44. After reviewing the available data sources and the current methods of national accounts compilation, adjustments of the production estimates which would revise the officially published aggregates for 1990 through 1996 were recommended. These adjustments led to the revision of GDP and its components both in current and constant prices. These revised estimates show the change in cumulative rate of decline of the GDP in constant prices from 60 to about 44% for 1990-1994. (See attached tables). The main revisions are related to: (i) the adjustment of growth rates for personal services on the basis of updated employment data; (ii) the use of recalculated Producer Price Indices; (iii) the revision of the value added of Agriculture due to adjusted share of intermediate consumption in private farming; (iv) the revised calculations of value added for Trade on the basis of more appropriate methodology; (v) the profound changes in the estimates for real agricultural output arising from using volume index rather than deflation to derive constant price estimates; (vi) the use of more appropriate procedures for estimating taxes and subsidies in constant prices; and (vii) inclusion of previously unrecorded flows estimated on the base of the pilot survey of unobserved economy.

45. It is believed that the revised GDP estimates are technically sounder and better in quality and coverage than the former official estimates, and puts the results before the authorities for consideration as the revised official estimates. Even though the revised estimates introduced some new methods and took into account new as well as revised basic data, they do not address all the existing deficiencies in the compilation of main SNA aggregates and should not be regarded as final estimates. The availability of better data through new censuses and sample surveys, improvement of volume and price indicators, and well compiled subsets on balance of payments and monetary statistics would enhance the quality of GDP estimates for Lithuania in the future. Moreover, the compilation of GDP by three approaches and of the sectoral and sub-sets of accounts within the integrated framework would improve internal consistency. Until then, the approaches used and the proposed estimates could serve the current needs of the users.
Dissemination

46. The Lithuanian DOS should have an objective, transparent, efficient and progressive dissemination policy on national accounts to cater to the needs of policy makers and users both in the government and the private sector. The statistics to be disseminated should be of good quality, timely, and in a convenient format to enable the users to make well informed decisions at the right time. In order to develop the trust and credibility in the data to be disseminated, the DOS should be transparent and open in publicizing the methodology underlying the national accounts statistics, in pointing out the strengths and weaknesses of data, and in explaining changes or inconsistencies in the time series. Publication of a document explaining sources and methods of national accounts for the Republic of Lithuania, similar to that published by the industrial countries should be considered by the DOS.

47. Whenever there are significant changes in the methodologies or the contents of national accounts data, appropriate public relations work should be carried out to brief and educate the public media (TV, radio, and newspapers) and guide the users. Most of the statistics offices get seriously criticized mainly because they fail to communicate, in the right manner and on a timely basis, with the media, policymakers, and users.
### Official and Revised GDP Estimates

#### Table 1
**Gross Domestic Product: Official and Revised Estimates**

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<tbody>
<tr>
<td><strong>GDP at market prices, mln. Litas</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Official data</td>
<td>129.0</td>
<td>422.8</td>
<td>3,386.7</td>
<td>11,107.0</td>
<td>16,980.7</td>
<td>23,829.0</td>
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<tr>
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<td>3,405.8</td>
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<td>24,102.8</td>
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<tr>
<td><strong>GDP real growth rate (percent)</strong></td>
<td>..</td>
<td>-13.1</td>
<td>-34.0</td>
<td>-30.4</td>
<td>1.0</td>
<td>3.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Official data</td>
<td>..</td>
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<td>-21.3</td>
<td>-16.2</td>
<td>-9.8</td>
<td>3.3</td>
<td>4.7</td>
</tr>
<tr>
<td>Revised data</td>
<td></td>
<td></td>
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<tr>
<td><strong>GDP deflator change (percent)</strong></td>
<td>277.3</td>
<td>1113.6</td>
<td>371.0</td>
<td>51.4</td>
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<tr>
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#### Table 2
**Gross Domestic Product: Official and Revised Volume Index, 1990 = 100**

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<tr>
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<tr>
<td>Revised data</td>
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<td>74.3</td>
<td>62.2</td>
<td>56.1</td>
<td>58.0</td>
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#### Table 3
**Gross Domestic Product by Industrial Origin: Official and Revised Real Growth Rates (%)**

<table>
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<th></th>
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<td><strong>Industry</strong></td>
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<tr>
<td>Official</td>
<td>-42.8</td>
<td>-6.1</td>
<td>5.9</td>
<td>4.5</td>
</tr>
<tr>
<td>Revised</td>
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<td>-18.1</td>
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<td><strong>Agriculture</strong></td>
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<td></td>
</tr>
<tr>
<td>Official</td>
<td>-6.8</td>
<td>-5.5</td>
<td>25.7</td>
<td>9.6</td>
</tr>
<tr>
<td>Revised</td>
<td>3.3</td>
<td>-18.5</td>
<td>9.7</td>
<td>12.1</td>
</tr>
<tr>
<td><strong>Other</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Official</td>
<td>-25.4</td>
<td>6.0</td>
<td>-2.3</td>
<td>2.9</td>
</tr>
<tr>
<td>Revised</td>
<td>-10.2</td>
<td>-2.2</td>
<td>1.8</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>GDP, total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Official</td>
<td>-30.4</td>
<td>1.0</td>
<td>3.0</td>
<td>4.2</td>
</tr>
<tr>
<td>Revised</td>
<td>-16.2</td>
<td>-9.8</td>
<td>3.3</td>
<td>4.7</td>
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</tbody>
</table>
Introduction

The Lithuanian Government has been pursuing a policy of converting the former centrally-planned economy to a market-oriented economy in which enterprises, whether state-owned, privately-owned or of mixed state-private ownership, have general control over their investment, production and distribution decisions. Such decisions should be essentially related to the operation of the markets in which enterprises are engaged, where the price mechanism will dictate buying and selling decisions.

This ongoing economic transition has made significant progress over the past five to six years. It is resulting in extensive privatization of enterprises, a more balanced industrial structure, an increase in the number of medium and small enterprises, introduction of new technology, greater diversity in local manufacturing, an increase in foreign trade (both exports and imports), and the encouragement of foreign investment. All of these developments are impacting directly or indirectly upon the pattern of redevelopment in official statistics, both economic and social.

The changes in data collection and processing methods, as well as the introduction of the 1993 System of National Accounts (1993 SNA), involving new macro-economic aggregates, is bringing about changes in the organizational structure of the Department of Statistics (DOS) at both the head office and regional office levels.

Lithuania has a statistical law whose provisions, in the light of international experience, contain all the essential measures for the operation of a successful official statistical system. In the present circumstance, however, certain key provisions are beyond the enforcement capability of the DOS. In particular, some enterprises fail to meet their legal obligations by not supplying accurate data in surveys, or by not responding at all. This particularly affects key macro-economic aggregates in the SNA and confuses the assessment of the trend in these series.

Despite the difficulties and challenges of the transition period and the disruptions in the traditional data sources, the DOS has initiated several measures to adjust to the data needs of the market economy and to compile GDP estimates through the production and expenditure approaches based on the 1993 SNA. The DOS is fully aware of the limitations of the current estimates. Expansion in the basic data sets (customs statistics, BOP, etc.) as well as improvements in the methods used to compile national accounts, especially in the last two years, have resulted in higher quality national accounts that brought about the need to revise the estimates for the previous periods.

The authors followed a comprehensive approach addressing issues of basic data collection, statistical organization and its implications to compilation of national accounts. It assessed the current state of the macrostatistics in Lithuania and made recommendation for improvement in short term (interim measures) as well as in the long term. They also dealt with institutional issues and issues of interagency relations related to data collection, sharing and
dissemination. The authors assessed the methods of GDP compilation employed by DOS staff and made recommendations for improvements in short and long term.

The report presents the following main conclusions and recommendations:

(i) Taking into consideration the fact that the current state of basic information sources is such that it does not permit to compile the national accounts of Lithuania in full, the DOS should focus on improving compilation of GDP using the production approach, and gradually switch to the method of final expenditures as the basic method. Hence it should be recommended to expedite import and export price indices calculation to make possible the estimation of GDP by final use in constant prices.

(ii) The DOS together with other ministries and the BOL should aspire to create a data base that in the future will support the computation of the full set of accounts in accordance with the 1993 SNA standards.

(iii) The provision of reliable, consistent and comprehensive macroeconomic financial and economic data to the Government of Lithuania depends to a significant extent upon whether or not the DOS receives such information from other government entities. The government should therefore assist the DOS in establishing close ties and strong collaboration among the main data collection, compilation, and user agencies.

(iv) It is extremely important to accept and acknowledge the fact that as more reliable data and new sources of information become available, the ongoing statistical estimates of the GDP and other national accounts estimates should be revised. In view of this, the DOS should carefully explain the reasons for revisions in the mass media and to main users of these data.

(v) Upon conducting an in-depth analysis of the available information sources and the methods used in computing the SNA indicators for Lithuania, alternative revised national accounts estimates were developed and it is strongly recommended that the official GDP indicators for 1990-1996 are revised accordingly.

The report which basically describes sources and methods for national accounts compilation in Lithuania during transition and beyond is comprised of five chapters, annex, and statistical appendix.

Chapter 1 deals with issues of organizational structure of the statistical system in Lithuania and mainly with the issues which have direct bearing on compilation of national accounts. It also addresses important issues of staff and training as well as use of information technology.
The second chapter discusses main information used to compile national accounts. It describes the business register, which has to be used as frame for sampling, it deals with data from statistical reporting and administrative sources. It discusses at certain lengths the household survey which is an important data source for GDP estimates by end use, income, and by industrial origin. It also discuss issues related to price indices, employment statistics and assesses the quality of the data and its utilization for national accounts.

The third chapter describes the current practice of the DOS in compiling national accounts by sector of origin and end use. It discusses estimates by industry, while compiling GDP by origin, and by category of final use.

Chapter four discusses the main revisions proposed in compiling GDP by industrial origin in current and constant prices. The main results of the revision are also provided there.

The final chapter deals with the recommendations on data dissemination and presentation of the macroaggregates. The issues of revision policy are presented there as well as suggestions how to present the revisions to the Government, general public and mass media.

The materials presented in the annex describe the main results of the survey on the hidden economy in Lithuania for 1995 and basic adjustments to GDP performed using the survey data.

The statistical appendix presents detailed official and revised estimates for the years 1990-1996 as well as some underlying information used for GDP compilations.
Chapter I: Organizational Structure of the Statistical System, its Development and Recommendations

1.1 Legislative Basis

The legal basis for the establishment and functioning of the Department of Statistics is provided by the current Republic of Lithuania Statistical Law, adopted in 1993. The law also validates the activity of statistical institutions and organizations, and gives the Department authority to coordinate all forms of public statistics.

The law goes beyond official statistics, both state and departmental, and confers legal status upon the statistics of local governments, political parties, and other political and public organizations, trade unions, and specifies the requirement for their coordination. In addition, it recognizes statistics of private statistical organizations, provided this activity is registered. Internationally, recognition of these various levels of statistics is not customary, nor is the requirement for such wide coordination. However, State and Departmental statistics should be integrated, and the Department appears to have the authority, from the Statistical Law, to initiate the preparation of a common plan for both areas of statistics. Common international practice is to not attempt wider integration as, in fact, such a course runs counter to the philosophy of a market economy, where concerned organizations would generally oppose any form of central government statistical supervision, in the last three of the five levels identified in article 3 of the Law.

The Statistical Law is comprehensive and provides the Department with the essential powers required to collect statistics in surveys, to influence statistical standards in other governmental and public organizations, and to maintain the coordination of all official statistics. It also explicitly mentions Departmental collection of statistics by postal methods—the only data collection method so recognized. This gives legal sanction to the recommended programme to adopt this relatively cheap method more extensively.

In order to avoid political manipulation of official statistics in a democratic country, it is widely accepted that the Government of the country should have the right to decide what official statistics should be produced, but that decisions on the concepts and methodology of approved statistics should be the prerogative of the professional head of the official statistical organization, given the stated purpose of the statistics. Furthermore, the head should have the right to decide on the timing of the release of official statistics. The Lithuanian Law conforms with the first principle, in that in Article 10 it states that “State statistical surveys shall be conducted pursuant to the statistical work programme or at the behest of the Government of the Republic of Lithuania”. The annual and three-year work programme of the Department is subject to Government approval. Article 6 states that the Department has the authority to “approve the forms of statistical reporting, establish the procedure and time of provision of data”. However, it does not appear to
Another aspect of the Law requiring comment is the ability of the Department to enforce the compulsory supply of data in surveys by respondents formally requested to do so. The writer understands that very little prosecution of non-respondents, either legal or natural persons, takes place. International practice in this regard varies. In some countries, businesses and households which fail to respond, without any reasonable explanation, are prosecuted on a selective basis in order to get general publicity in the news media on the possible consequences of such non-response, including the penalty imposed by the court. This publicity, subsequently, can have a good motivational impact on non-respondents in the survey concerned. In some countries, however, there is organized political opposition to such prosecution and the official statistical organization does not consider it prudent to attempt to enforce the law in this way. This is perhaps the situation in Lithuania, because the Department undoubtedly experiences significant non-response in some of its surveys, although this may be in part a problem of incomplete registers. Under-reporting, rather than non-response, particularly with financial data, may also be the more serious problem. In all countries, of course, achieving cooperation from survey respondents can never be just a matter of compulsory legal obligation. The longer-term solution is generating a climate of cooperation based on the respondents’ understanding of the value of official surveys.

The final comments on the Law relate to the confidentiality provisions. First, it is unusual in international practice to allow the exemption stated in Article 13 of the Law, whereby confidential data relating to legal and natural persons is permitted to be supplied to “legal and law-enforcement institutions when a criminal prosecution has been brought against such person”. This would seem to provide a clear-cut reason why much illegal and/or black-market activity is not included in the Department's survey registers. Any relaxation of the principle that compulsory collection of data in official surveys is for statistical purposes only is undesirable in the writer's judgment. There are countries where absolute confidentiality is guaranteed and illegal activity is able to be at least partly included in relevant surveys.

The second comment on confidentiality is that the Department, particularly as market-based economic activity progressively develops, must itself obey the Law. However, there are cases when other organizations, such as the local government, are permitted to collect completed questionnaires from non-enterprise farmers on the Department’s behalf. This would seem to be both illegal and likely, particularly when financial data are collected from such farmers, to lead to significant misreporting.

When the Law on Statistics is next reviewed, the incorporation of a provision protecting the professional independence of the Director of the Department to decide on the concepts and methodology of particular statistics should be incorporated, while recognizing the right of the Government to decide on what statistics should be produced and the purposes they should serve.

Whatever political impediments there may be, the Department should consider judicious prosecution in the courts of selective and blatant cases of survey non-response without justifiable
cause, to create publicity on the need for community cooperation in official surveys and the penalties in which non-response can result.

A review of practices in regional offices should be conducted to eliminate any undesirable and illegal reliance on the use of other unauthorized organizations for collection of completed questionnaires in Departmental surveys, particularly agricultural surveys, so undermining Departmental guarantees on confidentiality.

1.2 Headquarters and Regional Statistical Offices

While the Department’s operation can be described as a fairly centralized system when viewed in relation to the whole statistical operation of the Lithuanian Government, the Department is a significantly decentralized organization when viewed internally. Of the total of approximately 640 staff engaged in statistical work in the Department, including those engaged in computer processing and other services needed for statistical purposes, 300 are located in the 10 provincial (including the Vilnius city) offices and the 44 regional offices located in groups attached to the provincial offices (excluding the Vilnius city office).

The headquarters in Vilnius (as of May 1997) are comprised of the following main divisions which are directly involved in collecting and/or processing data:

- Legal units register service
- Population register service
- National accounts
- Financial statistics
- Labor statistics
- Price statistics
- Demographic statistics
- Household surveys
- Social statistics
- Enterprise statistics
- Agriculture and environment statistics
- Production and research & development statistics
- Foreign trade statistics
- Trade, transport, and service statistics
- Stock company “Data Processing Center” of the Department of Statistics

Each provincial office has its own provincial register of enterprises and prepares statistical data for its provincial government, as well as assists in the initial processing of many of the Department’s national surveys. Nine of the provincial offices have a number of sub-provincial offices, or “regional offices,” under their control, the number varying with provincial size. The territorial responsibilities of both provincial and regional offices are defined in terms of the boundaries of the provincial and regional governmental system.
This highly dispersed organization of the Department across the provincial and regional government areas of Lithuania is designed to provide a range of provincial and regional statistics for local government use. The dispersed location of Departmental offices gives the Department a breadth of physical presence throughout the country. However, the benefits from this system, in a market economy, are greatly below the costs, as there is a large degree of functionally unnecessary duplication of overhead resources. Maintenance of methodological and processing standards in the statistical work of the various provinces and regions, compared with those in the head office of the Department, is likely a problem. Meeting the needs of the provincial and municipality governments for statistics can be achieved by a more centralized and less expensive means.

At the same time, Lithuania, while still lacking the full range of national economic and social statistics which are considered essential in developed market-oriented countries, is continuing to produce a range of sub-national subject-matter, (mostly non-financial statistics) and with a frequency which is not considered necessary in developed market-oriented countries. It has to be accepted, in the writer's view, that, with the demise of central economic planning, the need for such a range of sub-national statistics, particularly in a relatively small country like Lithuania, is no longer justified, particularly when viewed as a national government responsibility.

The Department should adopt a policy of examining what reductions in the range and frequency of preparation of current provincial and sub-provincial economic and social statistics are possible. A review needs to be undertaken, in association with local governments, the national government and other users of these statistics, to assess what reduced, essential range of statistics should be prepared, and how frequently, based on demonstrated justifiable needs. One way of demonstrating need is to determine what the consequences would be of particular statistics not being available or not being prepared as frequently. Would there be any reduction in the quality of local government decision-making or planning? Of course, this review should examine what, if any, new regional statistics are needed for market-oriented purposes--particularly, financial statistics. The Department will then be able to shift the resultant expenditure savings into funding for priority developments in nationally needed statistics.

This process of conducting an up-to-date assessment of needs should come before any measures are implemented, in the interests of improved efficiency and cost-saving, to rationalize the number and location of the Department's provincial and regional offices. However, a study is necessary to determine the benefits and disadvantages of the current dispersed system of 10 provincial and 44 regional offices. There appears to be little doubt that they should eventually be greatly reduced in number, as regional statistics can be processed in central offices at significantly reduced cost.

In the interests of improving the productivity of the Department and freeing up resources needed to make the extensions to statistical data and services that is the objective of the Department's redevelopment, the present decentralized system of ten provincial offices and 44 regional offices should be drastically reduced. If carried out appropriately this rationalization will also improve the overall quality of statistics. Procedural measures required by this reorganization are the following:
A review should first be conducted as to what provincial and municipality statistics are needed by the emerging market-oriented economy in Lithuania and what among existing statistics are more relevant to the previous economic system. Local governments currently receive statistics free, contrary to law, and should be required to pay a share of the cost of producing the revised range of statistics, which may include new statistics. Periodic, rather than regular statistics, as in developed countries, may only be needed.

An analysis should be undertaken of the costs involved in maintaining the current ten provincial offices and how these costs relate to the benefits derived from their operation.

Assuming the foregoing analysis demonstrates that retaining all of the provincial offices is not cost-efficient, the senior management could consider the option of retaining only offices in the major cities, among the various options. Besides generally paralleling the arrangement existing in some equivalent developed countries which are not decentralized, but have a dispersed head office, this compromise affords some remaining geographical spread of the Department which could assist in its campaign to win greater support from suppliers and users of statistics.

### 1.3 NAD and Other DOS Divisions

The effectiveness of any governmental statistical organization is highly dependent on the coordination measures which are in place. The preparation of practically all subject-matter statistics, whether survey-based or derived from survey analysis, involves a complex range of operations which require the combined contribution of many parts of the total organization. Such a need for coordination may not involve only centralized servicing units like the computer processing division, but may involve cooperation between various subject-matter divisions. The preparation of the national accounts is one of these cases. Appropriate close positioning of the National Accounts Division in relation to the key data support divisions is essential.

While there are currently measures in place to ensure that the National Accounts Division in the Department obtains the required survey data with the correct concepts, classifications, and coverage and all properly integrated, the assessment is that avoidable mistakes and inadequacies occur. The approval of relevant survey questionnaires by the Head of the National Accounts Division before their final approval and printing is one such measure. Among the causes of the problem are the lack of a detailed understanding of SNA data needs by survey divisions; the inability of survey respondents to always provide data which conform with SNA needs, due to enterprise accounting systems which are not compatible with the SNA model (the differing treatment of “interest” in arriving at “operating surplus/profit” is one example); and the conflicting needs of users of micro-economic statistics compared with SNA needs.1

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1 This comment is not made solely in relation to the situation in the Department, as the problem exists in many of the Department’s counterparts around the world.
While support data from at least ten Departmental Divisions must be needed for a comprehensive range of Lithuanian National Accounts, covering the production, expenditure (disposal), income, capital formation, funding of capital formation, rest-of-the-world and flow-of-funds accounts (with key accounts expressed in both current and constant prices), the Enterprise Statistics Division's data is of over-riding importance and can thus be the cause of major problems. For this reason it is common practice to put the National Accounts Division under the same controlling officer as this survey division. The association can engender a degree of joint-consultation and technical cooperation not otherwise possible. This organizational change is recommended to the Department.

Turning now to organizational issues affecting the quality of the current SNA statistics, it is essential that the survey data used in the calculations be conceptually correct, as well as accurate. This can be achieved only by adequate coordination between the survey divisions and the National Accounts Division at the survey planning stage. Thus, survey questionnaires must be approved by the latter division before use. However, this problem is not fully recognized. It is a not uncommon problem around the world because derived statistics from enterprise surveys are multi-purpose and do not necessarily only serve SNA purposes. Without limiting the use of these survey statistics for non-SNA purposes, it is nevertheless true that the SNA provides the only available integrating framework for the concepts of across-the-board micro-production and related statistics. However, SNA concepts are not always well understood by survey statisticians. This apparent communication problem, in the first instance, appears to need attention at a level higher than the divisional head.

It appears that there is a significant lack of detailed understanding of the data support role of survey data in preparing macroeconomic statistics. Knowledge of the SNA use of enterprise and production survey data appeared deficient in some subject-matter areas. This presumes both a training problem and inadequate coordination between the NA Division and some survey divisions. It is suspected that the problem is more acute in provincial and regional offices.

In view of the concerns expressed about the conceptual relevance of some survey data being provided to the National Accounts Division and the apparent lack of awareness about this outside the Division, an appropriate corrective technical coordination action is needed.

The vital need for technical coordination of survey data produced by the Enterprise Statistics Division and the data requirements of the National Accounts Division would be served by moving the former division to the control of the Deputy Director responsible for the National Accounts Division and the active promotion of close cooperation and coordination between the two divisions.

1.4 Links with data providers

As a part of the wider organization of the Department, a Statistical Council was established in 1994, with membership comprised of representatives from various government ministries and other institutions. At present, the Department's Director is the president of the
Council. Its terms of reference encompass a wide range of policy and technical statistical matters, its function being basically advisory. Many official statistical organizations have such councils and derive benefit from the mainly statistical-user perspective they bring to bear.

It is interesting to note that the trend internationally, on balance, is for central statistical organizations to handle an increasing share of total governmental statistical work. Major administrative ministries and other official organizations often want their own statistical units because of the scope for closer control of, and access to, the statistics relating to their own activity. However, experience often indicates that such ministries/organizations are incapable of maintaining adequate professional standards in their statistical work and do not offer their statistical staff the same career opportunities as their mainstream staff. The Department's organizational chart indicates that balance of payments, money and banking, health, and education statistics, for example, are not handled within the Department. Our view is that the Department's management should resist any policy to reduce the present degree of governmental centralization of statistical work and to promote further centralization if the opportunity arises and, of course, resources are provided.

1.5 Staff and Training

The over-riding importance of the managerial and statistical competence of the Department's staff to the success of the redevelopment exercise cannot be over-emphasized. The education, training and experience of the staff influences their overall capability to cope with the challenges involved.

a. Staff

The first point on staffing relates to the educational qualifications of the Department's staff. At present there seems to be an educational imbalance in the Department's divisional and divisions' sectional staff, and perhaps lower levels as well, in relation to the needs of market-economy statistics. The overwhelming proportion of professional statistical staff at these levels have a tertiary education in economics, usually economics as taught under the Soviet system, which gave very little attention to methods of economic statistics, at least at the first-degree level.

International experience indicates that a modern central statistical organization needs a balanced mix of staff, particularly at the middle management levels, with a tertiary education in economics, mathematics, mathematical statistics, computer science, sociology and accounting; geography is also a useful subject. Mathematicians should not be employed only in specialist mathematical statistical research positions or as part-time advisers or contract workers. They should be placed throughout the organization where analytical quantitative methods are applied to statistics and where sample surveys are conducted. Such staff do not require a Ph.D. degree, a first (bachelor's) or second (master) degree is fully adequate. Accountants, also, are of great value in the statistical operation of the statistical registers and in economic survey work, as well as national accounts and input-output studies. Geographers are very useful in population census work. Hence, a change to a broader educational base is suggested.
Retention of quality staff, when the Government's personnel authority does not allow the Department to provide salary scales which match those being paid in the private sector, the Central Bank or in other Ministries and governmental organizations, is not an uncommon problem in central statistical organization. No easy solutions can be advanced. However, among the “difficult” solutions is to persuade the central controlling Ministry to agree to limit their control of so-called “bulk-funding” of total salary expenditure, with the senior management of the Department setting the salary scales for their own staff. Such scales need to have a broad banding of salary steps for each level of position. This allows for significant differentiation in setting individual salaries based on quality of work performance. Some countries have managed to do this.

Barring this, improvement of the Department’s image and public recognition, and the provision of challenging and interesting work, with maximum delegation of responsibility, are the only retention measures which might be at least partially successful. While the authors are sure the statement is unnecessary, continued pressure by the Department’s senior management at the Ministerial and other influential levels to gain improved recognition of the professional skills and the market demand for good quality economic statisticians in financial institutions and other organizations in the private sector might yield some success. Some countries have made progress in eliminating discriminatory attitudes towards the worth of official statistical staff by this means.

b. Training

The Department has had to face a major problem of retraining of staff who have had lengthy experience with the methodology of the Soviet system of statistics for a centrally planned economy. Imparting a full understanding of the changed concepts and practices for statistics applicable to a market economy, especially in the areas of accounting concepts for economic surveys and the conduct of sample surveys, has of course been essential and at the divisional/head level, as would be expected, this retraining has been fully successful. However, it seems that at a lower level the staff sometimes still have a somewhat traditional understanding of production statistics and the needs of the SNA.

Since 1992, divisional heads have been responsible for training not only of their own staff, but other staff, either in other head office divisions or in provincial and regional offices, affected by new methods and concepts involved in revised or new statistical projects. In general they have been doing a good job of conducting lectures, seminars and practical demonstrations. However, this retraining task is so important, that international experience strongly suggests the need for a Departmental Training Coordinator who can monitor overall training programs, their completeness and the standard of delivery of training exercises. Divisional heads and other senior staff concerned would submit training programs to the Training Coordinator, who would consolidate them into a Departmental programme. This would, on a comparative needs basis, help to ensure that retraining programs are adequate and balanced. The Coordinator would assess needs, but only after consulting with lower level head office staff and controlling officers in the provincial and regional offices. In addition, he or she should give assistance in planning training exercises and impacting knowledge or training techniques. Such a person does not need to be a
statistician (although it is preferable) and can most usually be found in the education sector. One such Training Coordinator can have a large impact on the effectiveness of Departmental training in general.

Another common training measure in use is the job rotation of staff. It is recommended it be applied in a judicious and careful way, with the full agreement of any staff member involved. Waiting for promotion to a higher level position to widen a statistician’s subject-matter or methodological experience is not entirely satisfactory. Switching between appropriate jobs in different divisions or even sections of divisions leads to more versatile and, in some cases, better motivated staff.

A modern governmental statistical organization needs a balanced mix of staff with tertiary educational qualifications in economics, mathematical statistics, accounting, computer science, sociology, and demography. If necessary, the personnel recruitment policy of the Department should be reviewed to achieve this outcome.

A Training Coordinator should be appointed to provide professional guidance to divisional heads and other line staff engaged in training Departmental staff in the principles and practice of market-economy statistics. Systematic reviewing of training needs and the overall response to these needs will benefit the pace at which staff redevelop their skills.

If not already in place, a system of job rotation should be introduced for middle level and more junior staff to generate greater versatility of staff and also, on occasions, maintain career ambitions. Such rotation should be limited to selected staff and only with their agreement.

1.6 Use of Information Technology (IT)

The Department’s combined Data Processing Center and Systems Development Division facility, with their systems design and programming staff and computer hardware, plays a vital role in the overall statistical redevelopment exercise. The essential reason for this is the potential of IT to greatly increase the productivity of the Department. Achieving the full redevelopment objectives with a static or even possible declining real volume of financial resources can only be possible if existing work programs’ budgets can be cut, leaving funding available for development and production of the needed new or modified statistical products and services.

IT is not a stand-alone function and its purpose is to service statistical needs. For this reason the senior management of the Department must continue to give careful attention to the IT development strategy within the Data Processing Center and the priority given to various alternative development and redevelopment projects. Such priorities must be assessed on statistical, not IT, considerations. Furthermore, programmer productivity is highly important and software selection policies can influence progress with statistical developments.

Along with reduced survey sizes and costs through the use of samples, the senior management should embark on a concerted campaign to reduce the overall costs of its surveys by
maximum use of IT methods, so reducing the impact of budget restraints and freeing up resources for development projects needed by the restructuring. If necessary, international and regional organizations which arrange technical assistance programs for the Department should be invited to arrange for training of statistical and computer staff to acquire the expertise needed to achieve these productivity gains. Substitution of technology for routine labor-intensive operations in a central statistical organization, if pursued in an informed manner by Departmental senior management, with the technical assistance of survey statisticians and data processing systems analysts, has proved to not only maintain existing statistical outputs but to release resources for extensions to those outputs.

Such a course of action must be pursued from a statistical management perspective, as this approach may not concur with the priorities of the data processing management. The more “glamorous” computer projects, such as the development of data bases and the establishment of networks, can appear to have higher priority from the perspective of the computer professional. Both of these latter types of project are relevant to the needs of the Department, but should not be allowed to overshadow the importance of labor substitution projects.

The introduction of computerized networks in the Department is another desirable development. Transmission of data between the head office and provincial offices can proceed in a much more efficient manner, of course, once the network is in place. How far such inter-office networks have been developed could not be explored by the writer in this assessment period. There is one other development that does not yet appear to have been widely accepted within the Data Processing Center, although the Director is certainly aware of it. It is also, perhaps, premature because of cost and IT training considerations, although it is now common practice in the Department's counterparts in developed countries for statistical staff, both those engaged in survey work and in analytical estimation and mathematical statistical work. This development is the introduction to statistical sections of local area networks (LANs) which provide an IT service completely independent of the central data processing service in the organization. The argument which has led to this development is that statistical staff understand their data and the details of the required processing of their data much better than central, non-statistical IT staff. If suitable software packages are available (like SAS, a proprietary package, but which is currently too expensive for the Department to acquire and use extensively) statistical processing can proceed with fewer problems and less delays because of competing application systems development projects in the central IT organization.

Senior management, if they are not aware of the widespread adoption of this approach, will need to at least consider a timetable for its gradual introduction at some future period. This “distributed processing” philosophy of IT utilization does not eliminate the central IT function. Even large mainframe computers remain in organizations which have adopted the approach for large file processing such as the Population and Housing Census and maintenance of large registers. There is still also a need for centrally located professional systems analysts and systems and applications programmers.
The Department should give top priority to the continued introduction of computerized methods to replace, as much as possible, the routine labor-intensive aspects of survey and other standard statistical work, as a chief means of coping with budget cuts. Statistical coding of survey unit-record data should be included in this development.

Maximum possible use of standard statistical program packages, particularly those available at little cost from other central statistical organizations, as well as cheaper proprietary packages, be made by the Data Processing Center to improve programmer productivity, even if statistical output specifications have to be marginally modified.

The data base philosophy in processing statistical unit-record data be used, progressing to more sophisticated distributed and relational data bases. However, the need for extensive preliminary statistical work on the standardization of unit-data structures and classifications throughout the Department, if the data base approach is to be successful, must be realized.

The introduction of an economic time series data base, with data manipulation features and on-line access for key users in Government Ministries be planned.

When finance permits and suitable statistical software can be acquired, the Department should progressively give statistical divisions Local Area Network facilities, which will allow them to have full control and scheduling of their IT work.
Chapter II: Basic Statistical Information for GDP Compilation

The 1993 SNA is a complex structure of economic accounts whose accuracy is highly dependent on supporting data which is not usually primarily processed for SNA purposes. The sequence of accounts making up the SNA needs financial data variously and suitably classified into institutional units and sectors; type of transaction and other flows; assets and liabilities; activities; and purpose.

Data from statistical survey and administrative sources are required to support the preparation of the current and accumulation accounts and the balance sheets. Most of these data are not primarily prepared for SNA purposes and conceptual coverage, and other deficiencies have to be corrected, if practicable, before data use.

The totality of data should be integrated, so that classification is consistent and collectively the data should not display omissions or duplications of industry coverage over the whole defined economy relevant to the SNA concept. So far as survey data are concerned, such integration can only be obtained if the range of surveys concerned are conducted using an integrated register of all enterprises, incorporated and unincorporated, in the defined economy. All enterprise structures, involving activity units, ancillary units, etc. must be recorded in the register, along with the level of accounting and production data available at each organizational unit level. Only then can survey data coverage be controlled.

2.1 Registers of Enterprises in Lithuania

The Department of Statistics of Lithuania currently maintains two registers of enterprises: (i) the Enterprises Register, conceived to record all enterprises and their establishments founded and operating on the territory of Lithuania; and (ii) the Statistical Profile of Enterprises Register, containing not only information on enterprises identical to this of the Lithuanian Enterprise register, but also information on institutions and organizations, and additional statistical information on enterprises and institutions from various sources.

The Lithuanian Enterprises register was established by the Register Law in 1990. From August 1, 1990 to February 1, 1995, the Enterprises register was maintained by the Ministry of Economy. On February 1, 1995, the management of the Enterprises Register was transferred to the Lithuanian Department of Statistics.

The number of units recorded in the Register as of January 1, 1997 is 129,885. Out of these enterprises, 50% are actually functioning enterprises. Out of all enterprises, activities of approximately 70% are indicated according to the level of 2 digits, while the rest are indicated
according to the level of 4 digits of the European classification of economic activities (NACE, Rev.1). Only Lithuanian enterprises and their establishments are currently recorded in the Enterprise register. Enterprise register data includes 93 positions about each enterprise or establishment.

The statistical profile is only used for statistical purposes. It was established by the decree of the Director of the Lithuanian Department of Statistics at the end of 1992. The number of recorded units in the statistical register is respectively larger (139,817 as of 01.01.1997). In arranging the statistical register of legal entities, the emphasis is on the accuracy of the data it contains. The data are updated using internal and external sources. However, there is no proper register of establishments. The Law on enterprises does not require enterprises to register their establishments. Only about 30% of existing establishments are recorded in the statistical profile or enterprises register.

External sources not always can provide proper assistance with updating the register, because they themselves do not possess centralized data bases or registers. For instance, the Register of Tax Payers which is managed by Tax Inspection, was established as late as the second half of 1996. The centralized data base does not exist yet.

The most important external source is SODRA, with which data are exchanged on a permanent basis; data on enterprises reporting to SODRA are received quarterly. Most often the updating involves verifying the addresses of enterprises and the number of employees. SODRA uses the same enterprise identification code in its communications with the DOS. However, SODRA information does not help to update other important indicators, such as the type of activity or the number and activities of subsidiaries, since SODRA does not collect them.

The Customs Department does not have a separate register, but submits export-import declarations to the Department of Statistics; these can only partially be applied to the updating of the register, since the declarants often make mistakes in filling in the identification codes.

The Bank of Lithuania is one of the regulators of enterprise registration which provides data on all banks, their subsidiaries and representations established in Lithuania.

Internal sources used for registers updating include sample surveys of enterprises conducted by the service of the register of legal entities and data from reports collected by other divisions of the DOS, supplementary data bases managed at the Department of Statistics of: 1) enterprises with restricted economic-commercial activity, and 2) enterprises which have not renewed registration in conformity with law requirements.

Sample surveys to update the register have been conducted since 1995. In 1997, attempts were made to survey 36,000 enterprises, by sending out questionnaires through local tax inspections. The response was about 25%. In 1996, with the assistance of tax inspections 6,000 questionnaires were forwarded to the enterprises which did not return questionnaires in 1995.

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2 SODRA does not have an officially legitimated register, but it has regional data bases whose data are transmitted to the center.
About 1,500 answers were returned this time. About 5,000 enterprises will be surveyed by mail in 1997, for which a new questionnaire has been created. In addition, the register is updated quarterly with data from statistical reports of the enterprises. The data include changes in the enterprises’ addresses, types of activities, and the number of employees. Statistical reports are the main source for the updating the type of activity.

Information from the Department’s supplementary data bases on enterprises whose economic-commercial activity is restricted due to either violation of laws or to failure to renew their registration, is useful to the register since the enterprises entered into these databases very often do not function, and are marked in the statistical register as such.

At present, both the Enterprises and Statistical Profile registers are not updated accurately. As mentioned above, although Tax Inspection, Social Fund, and the DOS are doing their best to update register information, the quality of the Statistical profile register still is not good enough; as it often fails to reflect enterprises’ changes of address, activities, etc.

There are also difficulties in specifying the main activities. Often, it is permitted to indicate unlimited number of activities in statutes. On the other hand, European classification of economic activities (NACE, Rev.1) in Lithuanian on higher (four) digit level was introduced only as of June 1, 1995.

Due to the poor quality of the Enterprise Register, it is rather difficult to conduct surveys on its basis. There is no possibility to include all actually functioning enterprises of a particular population into the sampling frame. For Lithuania, the present distribution of enterprises by economic activities is too detailed from the point of view of effectiveness of sample survey.

It is also necessary to improve the quality of the Statistical register by compiling a unified register which could be used by all departments (at present each department is using its own list of enterprises).

Presently, the Lithuanian Department of Statistics is preparing a Draft Law on the Unified Legal Units Register which could solve the main problems related to the enterprises and statistical profile registers. By this law, all types of Lithuanian enterprises, governmental and public institutions, farmers, banks, physical persons conducting economic activity and other national economic subjects will be registered in Legal Units Register. This Law will make it mandatory for the enterprises and institutions to register establishments and representative offices.

The Legal Units Register will have one- and two-way interaction with other Lithuanian registers, e.g., tax payers, social insurance tax payers, the exporters and importers register, the license register, bank accounts, the addresses register and others. The Lithuanian DOS will manage the Legal Units Register, as they would like to have a registry system in which would be easier to obtain good updated information about all registered units.
2.2 Statistical and Administrative Data sources

For the compilation of macroeconomic aggregates the following main consolidated statistical reports of enterprises and institutions are used:

- the main financial statements and accounting balance sheets of state owned enterprises and public corporations;
- the reports of private enterprises and foreign controlled corporations;
- income tax declarations of unincorporated enterprises;
- the reports of agriculture enterprises;
- Ministry of Finance reports;
- household budget surveys;
- Social Security Fund (SODRA) and extrabudgetary funds reports;
- the reports of Central Bank, commercial banks, and insurance companies;
- customs declarations.

The main statistical sources for the estimates of GDP by industrial origin are the financial data of enterprises collected by the DOS using the form F-01 and the financial data of unincorporated enterprises collected from tax files using the form F-04. These data in aggregated form are provided to the National Accounts Division (NAD) by other divisions of the Department of Statistics, and will be described in detail in the next chapter. Other data from statistical sources for national accounts compilation by sectoral divisions of DOS are capital investment surveys, household budget surveys, price indices, and employment statistics (the last three are described in detail below).

External sources providing data for macroeconomic indicators compilation are the following:

The Ministry of Finance provides the reports on revenues and outlays of the state and local budgets. It reflects budget revenue; expenditure by government functions and economic classification; budget surplus/deficit; and quarterly information on extra-budgetary funds. The report on the budget execution of the State social insurance fund presents information on its revenue and expenditure by type, as well as on the surplus/deficit. Information is received quarterly on a cumulative basis;

Close cooperation is being maintained with the Bank of Lithuania. Every quarter the Bank presents the Balance of Payments compiled in the Bank, while the Department of Statistics provides the necessary information for its compilation. The Bank of Lithuania also presents a monthly bulletin on the activity indicators (loan structure, interest rates, etc.) of the central and deposit (commercial) banks. It also forwards a monthly monetary review;

Insurance agencies’ supervision service supplies quarterly information on insurance contributions and payments by type of insurance;
The Customs Department supplies data on export and import of goods. The primary source of information used for compiling foreign trade statistics is the customs declaration. The General Document (SAD), conforming with the requirements of the European Union, came into use in 1995. The declaration used before 1995 did not conform with these requirements. Information is supplied monthly, on magnetic disks; the file structure is agreed upon with DOS in advance. They also provide information on charity contributions in kind;

The Ministry of Agriculture and Forestry supplies information on the total land area and land usage, the forest stock, hunting, and provide an annual report on financial-economic indicators of agricultural partnerships and enterprises;

The Tax Inspection supplies data on the income of unincorporated enterprises (consolidated income declarations classified by economic activity) and on the number of acquired licenses.

SODRA provides information on the number of the employees under work and labor contracts, their wages and salaries. It also supplies information on the number of the retired persons and pensions paid, temporary disability and maternity benefits.

The Ministry of Communications supplies information on the volume indicators of its activities.

The Ministry of Social Welfare and Labor provides information on benefits paid to families.

External data sources for the compilation of the national accounts, such as the balance of payments compiled by the Bank of Lithuania (BOL), accounting data of the central and local governments provided by the Ministry of Finance, and accounting data provided by the SODRA are provided by administrative sources directly to NAD and are processed by NAD staff. Data on foreign trade, as well as financial reports of the banks and insurance companies, are used in the National accounts compilation after being processed, respectively, by the Foreign Trade Statistics and the Financial Statistics divisions of the DOS.

2.3 Household Budget Survey

The household budget survey is the principal source of data for compiling not only estimates of the household final expenditure - one of the most important components of the GDP, but also for gross output estimates for some kinds of activity, as well as for CPI compilation.
The Household Budget Survey (HBS), or the so called Family Budget Survey (FBS), was first done in Lithuania in 1936-37 and was the first sample survey in the history of Lithuanian statistics.3

Starting from 1952, the FBS was regularly conducted following the unified programme charted by the Statistical Committee of the USSR, using employment and occupation as the basis for the sampling frame (the so called “branch approach”). Survey respondents were individuals employed in the public sector. Nearly all concepts and classifications, including income and expenditure, differed from those used in market economies.

After Lithuania gained independence and embarked into the road of economic reform, the negative developments in the economy started taking place. There was a need to evaluate inflation and the consumer price index and to develop a detailed model of expenditure. The FBS could only partly meet these needs. Therefore, in 1992 the new HBS was started according to a new programme and methods. Major changes, introduced in 1992, included a new, more accurate sampling frame and modernisation of the questionnaires.

The survey was targeted at covering the entire population of households, including those operating in the expanding private sector, and at providing data on a monthly basis to monitor changes in household welfare, as well as for estimating minimum living standard to be used in setting the social assistance level. Despite these changes, the HBS failed to provide adequate data to meet users needs and, in general, did not sufficiently meet the needs of the emerging markets and democratic institutions for information. Moreover, its execution did not comply with standard methods of the modern household survey.

In 1994, having studied the survey, the World Bank experts made a conclusion that this survey provided only limited information on the poverty level, and that information was not adequately reliable. The reason for this was inaccurate samples, based on an outdated census. The accuracy of data was also diminished by a high non-response rate (around 40%) and poor control of the interviewers. Further, the World Bank experts considered the HBS results incomplete as the survey had not covered important areas of social life, such as health, employment (unemployment), living conditions, etc.

Having taken into consideration the previous flaws, experts of the Statistical Department together with the World Bank experts worked out a new HBS programme, complying with the Eurostat requirements. Starting January 1, 1996, the household budget survey was modified to follow a new programme which complies with the main requirements of Eurostat. The surveyors select 8000 households a year (700 each month) using the random sampling method, based on population register and household list made by rural municipalities. Such a sampling method is expected to ensure equal possibilities for representatives of all social strata to be selected for the survey.

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3 The survey included 294 families, members of which were employed in trade or industry sectors, had their own businesses or farms. The survey collected information on family income, expenditure, food consumption (in cash and in kind) and average prices of goods.
a. **Objective of the Survey**

The objective of the new HBS is to provide information on household incomes, expenditures and consumption. The HBS provides information on the standard of living of various segments of the population and gives basic data for poverty research and the estimation of the minimum subsistence level. The survey is one of the sources for the computation of the final consumption, for the purposes of the household sector of National Accounts. The HBS data are also used in order to compute the weights for the CPI calculation.

In compliance with the stated purposes, this survey is conducted in order to collect the following data:

- the structure of households by important demographic, social and economic characteristics of individuals: sex, age, education level, marital status, employment, occupation, etc.;
- the level and structure of household incomes by sources (in money and in kind);
- the level and structure of household expenditures (in money and in kind);
- the quantity of products (purchased and self-produced) used for personal consumption;
- the type of dwelling, and how the dwelling is equipped;
- possession of consumer durables;
- access to selected public institutions and facilities;
- the respondents’ assessments of their household living conditions.

b. **Sample design**

The annual sample of the HBS is divided into 12 non-overlapping sub-samples equally distributed over the period of January to December. Allocation of the sample among the three major areas is presented below:

<table>
<thead>
<tr>
<th>Number of households</th>
<th>selected</th>
<th>expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Major cities</td>
<td>4,476</td>
<td>3,122</td>
</tr>
<tr>
<td>2. Smaller towns</td>
<td>2,640</td>
<td>2,149</td>
</tr>
<tr>
<td>3. Rural areas</td>
<td>3,564</td>
<td>2,729</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10,680</td>
<td>8,000</td>
</tr>
</tbody>
</table>

The two-stage sampling procedure was introduced, with the exception of 5 large cities constituting self-representing Primary Sampling Units (further referred to as PSUs).

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4 Since the last population census was carried out in 1989, it was considered to be out-of date. For sampling purposes the Population Register was used in urban areas, and available lists of households - in rural areas. Because the current Population Register does not allow to identify households, urban households were selected through individuals. In this case, the probability of selection a household depends on the number of registered individuals aged 16 and over in the selected household.
Simple random sampling was used in each of the 5 large cities. The sample size in each city is proportional to the number of inhabitants (persons aged 16+). A sampling unit is a person aged 16 or older.

For smaller towns a two-stage selection process was used. Twenty-seven (27) towns with over 10,000 inhabitants (persons aged 16+) were divided into two or more PSUs formed on the basis of the street map. (11 towns with less than 1000 inhabitants were ascribed beforehand to neighbouring towns). Out of 140 PSUs, a sample of 20 PSUs was selected with probability proportional to the population aged 16 and over. In each selected PSU, 121 individuals (annual sample size) were randomly selected using the generator of random numbers, and they determined the households that were included in the sample. Unequal probability of selection of the households was eliminated by weighting.

The two-stage selection of households was used in rural areas as well. In the first stage, PSUs were set using administrative territorial units - “neighbourhoods,” with the assumption that each of them should have no less than 300 and no more than 2,000 households. Thus, some neighborhoods were divided into two or more PSUs, and some were merged to form one PSU. Out of 463 PSUs, 33 PSUs were selected with a probability proportional to the number of households in each PSU. 108 households were selected randomly in each of the selected PSUs.

In the case of non-response, substitution of the household is not allowed. The larger sample was selected in advance, taking into account the expected non-response rate. The probable non-response rate estimate in each domain was based on the Pilot Survey.

c. Organisation of the Survey

The HBS uses two data collection methods combined: (i) the interview aimed at collecting social and economic information on the households, their living conditions and income, and (ii) self-registration of particular household indicators (monetary expenditure, foodstuffs, material goods and services received free of charge, the indicators of farming activity).

Consumer expenditures are classified according to the Nomenclature of the International Consumer Expenditures (PROCOME-94). Classification of the income of households include 505 items--expenditure for food consists of 122 items, while non-food and services account for 383 items.

The HBS is conducted by 12 specially trained working groups, each of them which has a data entry station. Each group is comprised of one supervisor (supervisors are regular staff of the Department of Statistics), a few (5-9) interviewers, and a data entry operator.

To ensure high quality data, the entry is not only decentralised, but also done through a data entry program specially prepared for that purpose, which also checks the consistency of the data. This «intelligent data entry program» ensures the interaction between the data entry operators and the supervisors through the listing of errors, forced data, etc.
Verified data are copied onto diskettes in the regional offices, and sent to the Department of Statistics in Vilnius. Verified data from the 10 regional offices arrive into the central office in Vilnius once every month, in diskettes or by e-mail.

Survey results are published quarterly.

2.4 Price Indices

The main price indices available for National Account compilation comprise: 1) The Consumer Price Index (CPI), 2) The Producer Price Index (PPI), 3) The Building Cost Index by Type of Construction Unit, and 4) The Purchasing Price Index of Crops and of Livestock Products. Unit value indices of exports have been compiled only for the year 1996, although calculations are being performed for the year 1995. There are no available unit value indices of imports, but their compilation was planned starting from 1997.

Brief descriptions of the price indices used for constant price calculations are given below.

a. Consumer Price Index

A monthly index is compiled using the Laspeyres formula starting from May 1992. The weights are derived from household budget surveys. For 1992 and 1993, the 1991 weights were used. For the period 1994 to 1996, the price reference period was December 1993 and the weight structure corresponded to that of the households expenditures data obtained from the Household Budget Survey (HBS) of August 1992 - July 1993. From 1997, the CPI has used December of 1996 as the reference period, and the structure of household expenditure given by the HBS of 1995.

The classification of consumption is by purpose according to the recommendations of the System of National Accounts. Starting from 1997, the indices are to be compiled, using the COICOP classification, for twelve main groups of consumer goods and services. In the previous classification, indices were compiled for eight main groups.

At present, 456 consumer goods and services, constituting a constant “consumer basket” are selected for the CPI calculation, i.e. estimation of changes in prices for the same goods and services. The prices on goods and services are registered in selected retail and service outlets covering different ownership forms. Each month information on prices for goods and services is collected in 10 counties and 9 regional centers. Prices of foodstuffs are being surveyed additionally in 9 countryside regions. Prices are registered in about 2,700 retail and service outlets covering all different forms of ownership.

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5 Price statistics are used in the compilation of national accounts to value physical (volume) data and also to deflate the value data to derive real values. For this purpose, price data available through the compilation of the indices on consumer price, producer price, foreign trade prices, etc., are utilized.
b. **Producer Price Indices (PPI’s)**

The Producer Price Index covers the activities of manufacturing, mining and quarrying (from 1995 on - also electricity and water supply, and from 1996 on - gas supply). For the period 1992-1995, the indices were compiled using the International Standard Industrial Classification of all Economic Activities (ISIC Rev.3) and since 1996, using the Nomenclature of Activities of the European Community (NACE Rev. 1).

The Sauerbeck formula was used until 1995, which means that the short term (month-on-month) price relatives of each product were weighted by the fixed weights of the base period, thus producing a bias in the chained indices (an upward bias for the years of high inflation). Since 1995, the Laspeyres formula has been used, although the base year for the weights is changed every year using the structure of sales of the year \(t-2\) (where \(t\) is the current year), while the reference period for the prices is December of the previous year.

In 1997, the sample represented 87% of total sales by enterprises with 20 or more employees. On the 15th of each month, 290 enterprises report on prices for 1,300 products, of which 920 products are sold mainly in the domestic market and 380 are mainly for exports.

The prices used for the domestic market are registered as “franco-carrier-agreed place of destination” excluding value added and excise taxes. The prices of export goods are the FOB (free on board) prices; i.e. the transport costs to the Lithuanian customs border are included in the goods value.

Before 1994 only the overall index was compiled. Starting from January 1994 the index for sales in the domestic market was introduced, and starting from January 1996 - the price index for exports.

c. **Building Cost Index**

The Building Cost Index (BCI) indicates changes in price rates required to complete selected construction units over a definite period of time. To calculate the index, 11 construction units have been selected. These are 3 types of residential buildings as well as one construction unit of each of the following: industrial, administrative buildings, education, health care, a utility infrastructure network, waste water treatment facilities, roads and streets, as well as objects needing major repairs. Estimates are prepared for each unit, where costs of the building materials, costs of mechanisms, wages, social security, and overheads, are taken into account. These costs are currently reported by 160 building enterprises. The Building Cost Index is calculated according to the Laspeyres formula.

At the beginning of 1996 the Building Cost Index was revised; the list of sampled construction units was revised and supplemented, the new weight system was designed, the list of building materials and machinery was updated and the classification system of construction units was changed.
In order to calculate the new index over the base period, the average price rates of 1995 were taken, i.e. prices of each month under account were compared to the average prices of this period.

d. **Agricultural Prices**

For agricultural production, the Combined Purchasing Price index as well as Purchasing Price Indices for plant and animal products are calculated.

For the Combined Purchasing Price Index, 21 representative agricultural products (relating to both plant growing and livestock) are surveyed each quarter (although plant products are surveyed in only the 3rd and 4th quarters). Data on the purchasing prices of agricultural production are obtained quarterly from wholesale and processing enterprises purchasing agricultural products.

The indices are calculated in reference to the same quarter of the previous year and are Paashe-type, the weights being changed each quarter. Weights are based on values of purchases by manufacturers at purchasers’ price, excluding taxes (starting from 1997, subsidies are included).

### 2.5 Employment statistics

Employment data are vital for the National Accounts compilation. The allocation of the labor force by activity highly affects the allocation of value added by activity and the level of GDP itself, as the number of employees is used in the national accounts to adjust the reported data for undercoverage at the level of each economic activity (see Chapter 3).

The total labor force is estimated using a balance of the population. From the total population, the number of children below the school age is subtracted, then the number of non-working students, pensioners and housewives are subtracted. The remaining comprise the labor force which is divided between the unemployed and employed population using the shares of the labor force survey (see Table 2.1 below).

Data on the officially unemployed are collected, stored and processed by the National Labor Exchange established in 1991 and its local offices in different cities and districts. This information is collected monthly. The unemployed, according to the provisions of the Law on the Support to the Unemployed, are defined as working-age active unemployed persons who do not attend full-time educational institutions and who have registered with the National Labor Exchange of their residential locality as seeking a job and willing to participate in professional training programs.

The employed population is then allocated by economic activity (NACE classification) using different data sources: i) reports of enterprises (form F-01), number of licenses issued, and unincorporated households' enterprises (Ministry of Finance); ii) Social Security data on the
numbers of persons for which social contributions are received; iii) number of employees according to wages and salaries statistics (based on enterprises reports); iv) data provided by the Ministry of Internal Affairs on the number of convicted persons, and v) data provided by the Ministry of Defense on the number of the military.

Table 2.1
Labor force estimates for 1994-1996 (in thousands)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>3720.9</td>
<td>3714.8</td>
<td>3709.6</td>
</tr>
<tr>
<td>Less:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>under school age</td>
<td>371.9</td>
<td>347.7</td>
<td>339.1</td>
</tr>
<tr>
<td>non-working students</td>
<td>589.0</td>
<td>603.6</td>
<td>618.2</td>
</tr>
<tr>
<td>non-working pensioners and disabled persons</td>
<td>780.0</td>
<td>813.9</td>
<td>777.8</td>
</tr>
<tr>
<td>non-working housewives</td>
<td>43.0</td>
<td>45.0</td>
<td>45.0</td>
</tr>
<tr>
<td>Total labor force</td>
<td>1937.0</td>
<td>1904.6</td>
<td>1929.5</td>
</tr>
<tr>
<td>Thereof:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>employed</td>
<td>1675.0</td>
<td>1643.6</td>
<td>1659.0</td>
</tr>
<tr>
<td>unemployed</td>
<td>262.0</td>
<td>261.0</td>
<td>270.5</td>
</tr>
</tbody>
</table>

The number of employed persons in agriculture is based on the reports of enterprises and the assumption that for the small private farms with over 3 Ha. an average of two and a half persons are employed per farm. There are 52,000 such farms. The remaining employed labor force is allocated by activity, using expert judgment for all activities except trade, which is obtained as a residual.

These methods do not ensure consistency in aggregate data as it is difficult to collect reliable primary information, despite the efforts to comply with the methodological requirements of Eurostat. The labor force survey (LFS) started 1994 in the effort to achieve better conformity with Eurostat requirements and better comparability of employment data on an international scale. These surveys establish the number of economically active, employed, unemployed and non-active population.

However, since the Labor force surveys are rather expensive and owing to the shortage of funds, they are not conducted on a regular basis, and the number of persons surveyed is insufficient. Interviewers are mostly Department of Statistics employees, who interview the population and handle the coding of the questionnaires.

A pilot labor force survey was conducted in Vilnius in 1993, in which 230 households were interviewed. In 1994, two surveys were undertaken covering all the districts, interviewing 12,400 14-74-year old persons, whereas in 1995, three surveys were conducted covering 14,900 persons. In May 1996, 5,000 persons, or 0.2% of 14-74-year-old population, were surveyed.

The last sample survey on labor force was conducted in September 1996. 3,000 households were selected, comprising 7,900 inhabitants, or 0.3% of the total population of 14-74
years of age from all regions and towns. 7,300 or 92.3% of the chosen residents responded to the questionnaire.

As a comparatively small part of the population is surveyed (approximately 0.4 per cent of the 14-74-year-olds per year), it is rather difficult to assess accurately the actual situation in employment. Nevertheless, these mini surveys allowed the DOS to establish that the number of employed population (according to the Eurostat requirements) is higher and the number of the unemployed is twice as large as the numbers registered in Labor Exchanges.

The official (estimated through the balance of population) figures for the employed are lower than those established during the surveys; in 1996, according to the official figures, the number of the employed was 1,659,000 whereas according to the results of the survey this figure stood at 1,730,000. The difference is due to the fact that small farmers, who actually consume almost all of their produce themselves, are included among the employed. There is no uniform opinion within the DOS as to whether these persons should be attributed to the employed, as in most cases such persons are in the brackets of the non-working age and do not have any other income. The greatest doubts about their employment are raised during the winter season when their work is limited to tending 1-2 heads of cattle.

The difference in the number of the unemployed is based on differences in methodology (in 1996, according to the data provided by the Labor Exchange the average unemployment number was 124,000, the unemployment rate being 7.1%. According to the LFS data, these figures were 303,000 and 14.9%, respectively). Also, the survey established that only about 50% of the unemployed apply to Labor Exchanges. Others unemployed seek jobs in other ways.

2.6 Assessment of the quality of data and recommendations

A significant problem with the data provided by the financial reports of the enterprises is the lack of coverage. The number of reporting enterprises fluctuates each period and is significantly lower than the number of enterprises registered. Furthermore, the register is a mere list comprised of all legal entities established disregarding their current status, so it is difficult to assess the coverage problem.

Apart from the problem of coverage, the enterprises financial data from forms F-01 and F-04 are not subject to quality controls. The data is collected by the regional offices of the DOS, from where it is forwarded in a consolidated way to the Central Office. The lack of adequate checking procedures of the logical consistency of the data is reflected in the consolidated data, which sometimes have to be adjusted by the judgment of national account compilers. For example, there are cases where the intermediate consumption exceeds the value of output or presents high fluctuations from period to period.

In addition, there is an insufficient breakdown of expenditures on production from the financial reports (form F-01). More detailed data on the purchases of goods and services for production is needed. This will allow for a better classification of intermediate consumption,
well as for the use of double deflation techniques in the calculation of value added in constant prices.

Unincorporated enterprises of households do not report to the statistical office, and data is based on the income tax files, which consequently results in the problem of underestimation of incomes/ expenditures, which could be expected. Furthermore, the classification of economic activity is made at aggregate levels and is not currently updated. The data needs for unincorporated enterprises could be coordinated with the Ministry of Finance so the income tax declarations will also contain some additional information for statistical purposes. Until now, there are no data available to estimate intermediate consumption or trade margins for unincorporated enterprises.

The survey on investment has very limited coverage and the number of enterprises reporting in each period is different. The DOS department responsible for this survey has made no attempt to expand the data reported. The adjustment is done by the division of national accounts of the DOS using the correction factor of reported output for the respective activity. In addition, no information is available on acquisition of GFCF by small and unincorporated enterprises. The amount of capital formation by them is likely to be relatively small, but it is not negligible and is likely to grow.

Although the accuracy of foreign trade statistics has improved considerably in recent years, they still suffer from serious inconsistencies. The major problem with the foreign trade statistics is the lack of coverage of imports by individuals on a commercial basis (shuttle trips). Although individuals have always been required by Customs to fill a declaration if the amount of the goods exceeded a certain value (3,000 Lt., at present), these data have not been processed and are not included in the statistics. There is a problem with the valuation of imports and exports, e.g. of cars, which represent an important part of the Lithuanian foreign trade. Also, since the inclusion of the standard custom declaration for automobile export and imports by individuals, in the third quarter of 1996, there has been a remarkable decrease in the average unit value due to tax evasion purposes.

It is necessary to obtain more detailed data on purchases of goods and services from the execution of the budget of the general government. This will allow for the improvement of the estimates of output and consumption of government in constant prices.

For the estimation of the total gross output, the reported data are scaled up using the ratios of total employment to employment of the reporting units. The accuracy of the results, therefore, is highly dependent on the accuracy of the labor statistics and the reported employment in the financial reports F-01 and F-04. As explained above, the labor statistics are estimated using many assumptions, specially in the allocation by economic activity, and besides, the classifications used are not exactly the same.

The improvement of the financial statistics, tailored to serve the needs of the National Accounts compilation, should be given high priority as they constitute the main data source for the estimates of GDP by industrial origin. In the long term a comprehensive improvement of
financial statistics will first of all require the establishment of a business register which could be used as the framework for designing sample surveys.

Data from the financial reports F-01 should be processed for different size strata of enterprises. At least, separate estimates should be produced for the smallest enterprises reporting through this form in order to use this information for the imputations done to the missing data due to non-reporting enterprises.

There is a need to introduce quality and consistency checks of the reported data at the micro level (of the reporting units). The completeness of the questionnaires as well as the logical consistency of the data should be tested. The comparison with the data of previous periods as well as the logical consistency of the ratios between different indicators could be used to improve the quality of the data.

It is necessary to extensively document any change in methods or sources used in the compilation of the statistics.

There is a lack of information regarding the cost structure of small farms and the estimates have to be made based on assumptions. A small survey for these enterprises or the opinion of sectoral experts could be the basis to fill the information gap.

Data on employment by economic activity based on the labor force survey should be made available at more disaggregated level of activities, which could require an increase of the sample size. These data could replace the present estimates of employment based in different sources and assumptions, and be used for the coverage adjustment in the estimates of the production account.
Chapter III: Current Practice of GDP Compilation

3.1 Quarterly and Annual Estimates in Current and Constant Prices

The Lithuanian Department of Statistics (DOS) used the System of Balances of the National Economy (MPS) for compiling Gross Social Product and National Income until 1990. In 1991, the DOS initiated calculation of Gross Output, Gross Domestic Product and other aggregates of the System of National Accounts (SNA). Transition from the MPS to the System of National Accounts was made according to the methodology provided by the UN in “Comparison of the System of National Economy” (1977). The national accounts estimates are compiled on the basis of the 1993 SNA. In 1993, the Law on Statistics was adopted and a new bookkeeping system was introduced.

Annual sector accounts are available from 1992 to 1996 and some experimental accounts were also compiled for 1991. The accounts refer to those for production, the generation of income, the primary allocation of income, the secondary distribution of income, the use of disposable income, the use of adjusted disposable income, and capital. The production account is also estimated in constant prices, 1993 having been retained as the base year.

Estimates of output, intermediate consumption, and GDP by kind of activity are compiled in current and constant prices. Estimates of expenditure on GDP are produced at current prices only. Work is under way on developing price indices to calculate constant price expenditure aggregates.

GDP by production, expenditure and income approaches are produced every quarter starting from 1993.

3.2 GDP by industrial origin (Production approach)

Until 1994, GDP by production approach was calculated at the level of 23 main branches of activity. In 1994 GDP was calculated by 27 branches of activity. From 1995, the estimates are made at the level of 64 branches. Gross output in the non-financial corporations sector is measured as the sum of sales of goods and services and changes in inventories of finished goods and work-in-progress adjusted for holding gains and losses, based on quarterly and annual reports by enterprises. Output is valued at purchasers’ prices. Intermediate consumption (IC) was reported by enterprises as a total for each of the years 1992-1995 and might therefore include items not treated as IC in the SNA.
Constant price estimates are available for GDP by kind of activity (quarterly starting from 1993) with 1993 as base year. For calculations of value added in constant prices, its base year value is extrapolated with the volume indices for the gross output. For most kinds of activities, these volume indices are calculated by deflating the current value of output by the appropriate price index. The producer price index (PPI) and its sub indices, the building cost index and the price index for agricultural goods are used for deflation (see Chapter 2). The relevant components of the consumer price index are used to deflate output in communication, trade, dwellings, and business services. For electricity, gas, and water, as well as for transport, the volume index is calculated using data on production in physical units. Gross output volume indices for finance, insurance, and government services are estimated using the number of employees.

a. Industry

The Industrial Statistics division of the DOS conducts monthly sample surveys of industrial enterprises. Over 700 enterprises with 20 or more employees have been selected. In order to obtain quarterly and annual data on sales, changes in inventories, and intermediate consumption, general surveys are conducted when all known enterprises are interviewed. The main sources of data are statistical reports: P-01 “Annual report on the industrial activities of the enterprise,” P-11 “Monthly report on the industrial activities of the enterprise”, F-01, F-04, as well as the data on the number of persons working with livencies.

Starting from 1995, the output of industrial production has been classified according to the Combined Goods Classification (yearly data; monthly data - starting from 1997). Industrial statistics apply the duty tariff nomenclature of the Republic of Lithuania, compiled on the basis of the EEC combined goods description and codification system, with some units of measurement altered. In 1993-1995 ISIC was used (1992 data were recalculated accordingly), and from 1996 on - NACE Rev.1.

Value of output is compiled (on a quarterly basis starting from 1993) as the sum of revenue from sales on an accrual basis, and the change in inventories of finished goods and work in progress. The book value change in inventories is adjusted to eliminate holding gains. The method of inventory valuation by enterprises is assumed to be FIFO. According to this assumption, an algorithm recommended by the IMF technical assistance mission is applied to estimate the holding gains and the value of the change in inventories. Both gross output and intermediate consumption are adjusted for undercoverage using employment data (see 3.5 below).

Constant price estimates for mining and manufacturing are compiled by extrapolating the base year value added with the volume index derived by deflating gross output with the Producer prices index (see Chapter 2). For electricity, gas, and water the volume index is calculated using data on production in physical units.
b. Agriculture, Forestry, and Fishing

Data on agricultural production is provided by the Agriculture and Environment division of the DOS. The data refer to agricultural partnerships and enterprises, state enterprises engaged in agricultural activity, farmers and household farms.

The Ministry of Agriculture and Forestry provides annual data on the stock of land and its use, on income and expenditure of agricultural partnerships and state-owned enterprises.

The data on livestock (as of the beginning of the year) is also provided annually (F-7 ‘Number of livestock in all farms’). Thus, the division has all main data on land and the number of livestock that are necessary for further calculations.

Agricultural partnerships and enterprises, apart from quarterly financial reports F-01 and F-04, and supply to the DOS the following statistical reports on agricultural production:

- f.ZU-24 “Production of livestock products” (quarterly, presented by all enterprises keeping livestock);
- f.ZY-29 “Farm crop area and harvest” (annually, presented by all enterprises in possession of crop areas)

2,300 agricultural partnerships and enterprises presented data in 1996.

As of January 1, 1996, there were 196,000 private land owners, 51,000 of whom are listed in the Farmers’ Register, and 343,000 household farms. The following sample surveys are conducted in these farms:

1. Land usage (questionnaire Ⱦ-01), an annual survey.
2. Harvest of farm crops in private and household farms, an annual survey.
3. Production of livestock products (questionnaire Ⱦ-03), conducted every six months.

5% of private farms and 2% of household farms are selected for surveys. The obtained results are extended to cover all private and household farms.

Value added in agriculture is calculated by applying the share of intermediate consumption derived from the financial reports of agricultural partnerships to the total estimated gross output, (since no data on costs of inputs for private farms are available), and adjusting for holding gains of the value of intermediate consumption.

Constant price estimates are compiled by extrapolating the base year value added with the volume index, derived by deflating the gross output with agricultural prices index. Data on the purchasing prices of agricultural production are obtained quarterly from wholesale and processing enterprises purchasing agricultural products (see Chapter 2).
Since the Agricultural price index is an unconventional one (quarterly year-on-year Paashe-type index), it can lead to serious distortions when applied for deflation purposes. Hence it is recommended to rely on quantity of production data to estimate volume indices for Agricultural production.

Forestry production is calculated on the basis of forestry sales and works done. Data from statistical reports MU-1 “Expedient, thinning and sanitary felling,” MU-2 “Use of forests,” and the report of the Ministry of Forestry 12MF “Report of the forest stock,” as well as the quarterly financial report F-01 and F-04 are used for the calculation of forestry production.

The value of timber felled in private forests is calculated on the basis of the above-mentioned reports MU-1, MU-2 and 12MF (in which the price of one cubic meter of timber felled in state-owned forests is calculated) and of estimations of Ministry of Forestry experts to the effect that the average price in private forests is approximately 30 percent lower, since sanitary felling is more frequent than in state-owned forests.

Fishery production is calculated on the basis of fishermen landings. The main source of statistical information is financial report F-01 (quarterly) and F-04.

c. Construction

The Construction statistics Section of the DOS provides information on fixed capital formation, its structure, trends, and work carried out by construction enterprises and partnerships, the data being collected through financial reports F-01, F-04, as well as data on number of persons working by licences. Data on capital formation include enterprises and organizations engaged in different kinds of activity and with different forms of ownership: State budget, public enterprises, joint stock and private companies, joint ventures, and other enterprises (excluding personal enterprises). About 76% of enterprises recorded in the Statistical Register presented information to the DOS in 1995.

Work carried out by public, joint stock, and private companies is calculated on the basis of reports KS-01 “Report on the volume of works done” (annual, quarterly, and monthly) and financial report F-01. The work carried out by other enterprises is calculated on the basis of the F-01 report. Tax Inspection supplies data (F-04) on unincorporated enterprises and small enterprises which have obtained licenses. Data on individual construction is obtained from F.INS-01 (quarterly) on the completed residential area (in square meters) and multiplied by the building cost index.

Value of output is compiled as the sum of revenue from sales on an accrual basis, and the change in inventories of finished goods and work in progress (?). The book value change in inventories is not adjusted to eliminate holding gains. Both gross output and intermediate consumption are adjusted for underreporting.
Constant price estimates are compiled by extrapolating the base year value added with the volume index, derived by deflating of the gross output with the building cost index (see Chapter 2).

d. **Services**

*Trade*

The section of Trade Statistics provides information on retail trade of goods in trading enterprises irrespective of ownership and activity type, including marketplaces.

In order to obtain the necessary data, a survey of retail trade turnover is conducted on a monthly basis (f.PR-01); data is presented by all public, joint stock and private companies with 5 or more employees. In addition, quarterly surveys of the goods turnover in marketplaces are conducted (f.PR-02).

Data come from the enterprises’ F-01 financial reports and from F-04 reports of unincorporated trade companies, as well as information on acquired patents for trade in kiosks, street carts, door-to-door sales.

Expansion is performed on the basis of the Enterprise Register, using the data of a similar enterprise, or the data of the previous period of a non-respondent enterprise.

Once a year, the survey of goods turnover in retail trade (PR-07) is conducted where the turnover of retail goods is distributed by goods groups, and data on the number of shops and shopping floor space are presented.

For the gross output of trade for the National Accounts compilation, the value of the retail trade turnover estimated by the Section of Trade Statistics is used, implicitly assuming that the wholesale turnover is equal to that of retail trade, and that the trade margin in both of them is 50%. The share of intermediate consumption is derived from the financial reports. Constant price estimates are calculated using the volume index obtained by deflating with the goods component of the CPI.

*Hotels and restaurants*

The output of catering enterprises is calculated on the basis of the same reports as those used for trade enterprises (PR-01, PR-07, F-01, F-04) and on the basis of information provided by the State Tax Inspection on licenses acquired for public catering.

The main source of information on hotels’ output and inputs is the report on enterprise financial activities, F-01. Approximately 86% of enterprises responded in 1995. Expansion of information for the remaining part (up to 100%) is carried out on the basis of data on the number of employees in reporting enterprises (from F-01) which are compared to the DOS employment estimates.
These estimates, because of poor data coverage, were significantly lower than the estimates of the trade statistics division of the DOS, which were obtained through surveys. The latter, however, were used by the national accounts division only for the calculation of household consumption expenditure--thus including inconsistent data for uses and supply.

Transport and communication

The section of transport statistics presents information obtained from annual reports of different enterprises, the Ministry of Communications and Information, the Office of Road Police of the Interior Ministry, and the state enterprise “Lithuanian Railways.”

Data on sea transport is collected from the Lithuanian Vessel Register. The section provides data on public and private companies performing loading and unloading work in the Klaipeda state-owned seaport.

The main sources of data are the financial reports F-01 and F-04, and data of the Tax Inspection on acquired licenses.

The estimates for transport are based on quantity indicators referring to tone-kilometers for goods transported by rail, river, air, and road, and to passenger-kilometers or to the number of passengers using urban transport systems, and the train and the bus services provided. The output of transportation is measured by the value of the amounts receivable for transporting goods and persons. The volume index is calculated using weighted data on output in physical units.

For estimating communications output at current prices, the Post Office provides financial reports F-01 and F-04. The estimates at constant prices are derived by deflating with the CPI component for communication.

Financial services

This industry consists of all resident corporations principally engaged in financial intermediation or in auxiliary financial activities. They are
- the Central Bank;
- other depository institutions (commercial banks);
- insurance corporations and pensions funds;
- other financial intermediaries (excluding insurance corporations and pensions funds).

The Public Finance Statistics Unit is responsible for information on the financial sector. The main sources of data are: the report on banking activities, B-01, which is presented by all banks; the report on activity indicators of enterprises of financial intermediation, F-03, which is presented by the Stock Exchange and stock-brokerage enterprises; the report of activities presented by all types of insurance companies, F-02, and the report of activities of investment companies, F-05, as well as information on insurance contributions and payments by type presented by the Service for supervision of insurance companies.
Gross output of financial services is calculated as follows:

Gross output of banking equals interests received, minus interest paid, plus income from banking services. The difference between interest received (excluding property income received on own capital) and interest paid is financial intermediation services indirectly measured (FISIM), which is allocated to intermediate consumption of a nominal unit.

Gross output of insurance is estimated as the difference between insurance premiums received, plus interest on technical reserves, and claims paid, plus changes in technical reserves. Insurance output is not divided between life and non-life insurance.

General government

The sector consists of the central government units, other institutions financed from the state budget, local budget and extra-budgetary funds and social security fund. The data are obtained from the central and local budgets (on an accumulated basis) which are provided by the Ministry of Finance. Other information comes from the State Social Security Fund and extrabudgetary funds.

The same classification of revenue and expenditure, determined by the Ministry of Finance, is applied to the central and local budgets. Classification of budget revenue and expenditure conforming with international standards has been applied since 1993. In 1994, in general government sector, the value added was estimated by government functions (COFOG) for the first time. Such distribution enables more accurate estimates of the value of output and value added for each kind of activity. Up to now, the output of institutional units financed by the government was not distributed by kind of activities, and it was shown as total government production.

Gross output for the government sector is calculated as the sum of costs, i.e. intermediate consumption, compensation of employees, consumption of fixed capital and taxes on production. It includes gross output of social security in the government sector, calculated using the same method as government gross output.

Dwellings

From 1992 to 1994, the value of output was imputed at 8% of total household expenditure, the level similar to that of the East European countries in transition. For 1995-1996, more elaborate procedures were used by the NAD staff: a survey of rent rates in the private sector provided the benchmark estimates for 1995, which are extrapolated by the relevant price index.

Actual rent in private sector. Starting from 1995, output has been calculated using the estimates of the total value of rent received by the dwellings owners. The estimates for 1995 were calculated using survey data on the rented-out housing stock (by category) and rent for different types of dwellings. The stratification used is by city and resort areas (seasonally). It was assumed that in the two largest cities, about 25-30% of total dwelling stock is rented out by private
owners, while the figure is about 5% in the other cities. Stratification by type of dwelling was used as well, taking into account the quality, location, etc.

The rest of the dwellings output (Actual rent in public sector and Imputed rent for owner-occupied dwellings) was calculated by multiplying two factors: the average maintenance expenses per square meter, paid by the dwellers, and the rest of the housing stock measured in square meters. Both factors are updated monthly, according to the statistical form BF-01 submitted by the local authorities, as well as the unit price of average expenses for maintenance paid by households.

The share of intermediate consumption is estimated is assumed to be equal to that in the public sector.

Non-profit institutions serving households

Gross output for this sector is calculated at the cost basis, i.e. as the sum of intermediate consumption, compensation of employees, and consumption of fixed capital. Data are collected by the NAD staff. The data source is the special annual statistical reports (F-16) these institutions (political parties, trade unions, and foundations) are supposed to submit to DOS. However, the coverage is very poor: in 1996 F-16 forms were forwarded to 363 NPISHs out of 400 listed in the register, but only 58 responded. The survey’s results are grossed up for non-response based on the employment data.

Other services

For real estate, renting and business activities, the main sources of information are the financial quarterly reports F-01 and F-04. This information is provided by the Service statistics section. Activities of non-responding enterprises are assessed in two ways: when an enterprise has not responded but is known to function, the results of the preceding period are extrapolated. When an enterprise is registered but nothing is known about its activities, the indicators are assessed using the data of the Wages and Salaries Statistics unit on these enterprises’ wages.

For education services, health and social services, and other community, social and personal services, quarterly data from F-01 are used. Output equals the value of incomes from these services. Data is provided by the Service statistics section.

3.3 GDP by Final Use (Expenditure Approach)

The GDP by expenditure approach is estimated as the sum of its final uses, i.e. households final consumption, government final consumption, gross fixed capital formation, changes in stocks and exports less imports. GDP by this approach is estimated only at current prices.
a. **Households Final Consumption Expenditure**

The main source of data for the compilation is the survey of households expenditure (Households budget survey), which is described in Chapter 2. Other data sources used are:

**Purchases of goods** (durable and non-durable goods) - household budget survey data is complemented by data obtained from the trade statistics report, PR-07. Data from retail trade statistics by commodities groups are used as control information. In case there are discrepancies, the rule is to use the larger estimate. The discrepancies between the two sources of data are particularly substantial in the case of expenditure on tobacco, alcohol and durable goods.

**Purchases of services** - household budget survey data are complemented by the trade statistics report, PR - 07; the report on services, PS - 01; and the insurance companies’ report, F - 02.

Data on household agricultural production are used to estimate agricultural goods produced by households for their own consumption (the assumption being that their value is equal to 50% of the respective net agricultural production).

Part of employee compensation is income in kind—this represents 1% of employee compensation in household sector.

Data sources for estimation of the imputed rent of owner-occupied dwellings was described above.

Data on charitable contributions in kind from abroad are provided by the Customs Department of Lithuania.

Final consumption expenditure includes about 100 commodity groups. The data are aggregated into 3 consumption categories used for the quarterly accounts:

- durable goods: vehicles, other durables
- non-durable goods: food, alcohol and tobacco, clothing and footwear, energy products, other products;
- services: catering, transport and communication, financial services, other services.

b. **Final Consumption Expenditure of General Government and of Non-profit Institutions Serving Households**

These aggregates are calculated on the cost basis and the data sources were described in 3.2 above.
c. **Gross Fixed Capital Formation**

The main source of data used in national accounts compilation are the annual reports, KS-02, on capital formation submitted by customers, as their reports are considered to be more reliable than those submitted by contractors. The information is provided by 3500 incorporated and state-owned enterprises and institutions, mostly large- and medium-size. Small businesses and unincorporated enterprises are not covered by statistical observation. For the quarterly estimates, quarterly sample survey results are used.

Estimates of individual residential house construction are prepared by the investment statistics section of the DOS.

Information on fixed assets from Ministry of Agriculture are used to evaluate gross fixed capital formation (GFCF) in agriculture. This information on expenditure on construction and machinery and equipment, on fruit-bearing plants; and on purchases of breeding and dairy livestock.

GFCF is compiled as the total value of acquisitions, less disposals of fixed assets during the accounting period, plus certain additions to the value of non-produced assets through the productive activity by institutional units. Data on four types of assets are distinguished: buildings; civil engineering works; machinery and equipment, and capital repairs.

Since 1994, GFCF has been broken down by kind of activity. Different data sources and their mixes are used for GFCF estimation by sector, type of assets and type of activity. The estimates of investment in machinery, equipment and vehicles compiled with the statistical reports data are also checked with estimates based on the commodity flow of these capital goods, and adjustments are made if necessary.

d. **Changes in Inventories**

The data source is financial reports (F-01) of large and medium-sized enterprises. No information is available on inventories by small enterprises, but estimates should be available in the future. Before 1994, there was no information by type of inventories. Since 1994, the information has been collected for each type of inventory: raw materials and other materials, work in progress, finished goods; and goods purchased for resale. Information is presented every quarter on the opening and closing level of stocks at current book level value of stocks (i.e. inventories valued at the price at which they were bought). It is assumed that inventories are valued according to the FIFO principle.

To provide estimates on changes in inventories according to SNA requirements--at average prices of the period--adjustments for holding gains or losses are made. These adjustments are performed quarterly starting from 1993 (for 1992 the adjustments were made at annual level only). Starting from 1993, holding gains were calculated for seven main kinds of activity: industry, electricity, agriculture, construction, trade, transport and other. From 1995, estimations of holding gains are performed for 20 kinds of activity, from 1996 - for 55.
Changes in inventories and estimates of holding gains and losses for all kinds of inventories are calculated in the following way:

i) the calculation of deflators for the opening and closing inventories at the book value, needed in order to convert book values estimates to the valuation at base period prices;

ii) the deflation of the opening and closing inventories at the book value and the calculation of the change in inventories at base period prices;

iii) the revaluation - to the average prices of the current period - of the change in inventories at base period prices;

iv) the calculation of holding gains as the difference between closing and opening book values of inventories, less the change in inventories valued at average prices of the current period.

The price indices/deflators used to deflate the book values of inventories are indices relevant to each activity (there is no information on the commodity composition of the inventories).

Although the method used for holding gains estimation is reliable, but due to the poor quality of primary information from enterprises, the obtained results are not always satisfactory. The number of enterprises (especially small ones in trade, services, agriculture) has increased considerably and it is getting more difficult to obtain information from them.

e. Resource balance

Goods

Until 1994, the major source of data on exports and imports of goods were quarterly reports of the enterprises engaged in foreign trade. The trade flows were aggregated into 500 commodity groups according to “The Unified goods nomenclature of the European Council of Mutual Assistance.” Registers of countries of the world, their territories and currencies, classifiers of transactions, transport types and sorts conformed to the classifiers used in the customs system. Although from the technical point of view the system functioned well (price control was carried out), the data on foreign trade were incomplete, and the methodology of accounting did not correspond to international requirements.

Freight declaration used before 1995 did not conform to the requirements of the European Union. After 1995, the general document (SAD), conforming to the European Union requirements, has been used.

Starting in 1994, the foreign trade statistics have been based on the information collected by customs authorities in conjunction with imports and exports of goods, and are based on freight declarations. The customs department delivers primary data on exports and imports to the
Department of Statistics’ Division of Foreign Trade Statistics, monthly. Information on exports and imports of the electrical energy up to 1996 was based on the reports submitted by the Lithuanian State Energy Agency.

A harmonized system of goods description and codification is applied in foreign trade statistics. The commodities in foreign trade statistics are grouped according to the Customs Tariff nomenclature of Lithuanian Republic, which is based on EU Combined nomenclature. In Lithuania, the international codes are expanded with one 9-th digit for national commodities. Foreign trade statistics information by goods will be prepared according to the EU combined goods nomenclature, and according to the 3rd edition of the Standard International Trade Classification. This nomenclature is better adapted to the analysis of foreign trade statistics and classifies goods by their nature and the degree of industrial manufacturing. HS and SITC Rev.3 correlation tables have also been designed, but this classification has not yet been translated into Lithuanian.

The coverage of the statistics relates to the general trade principle and records all goods entering the country (imports) and all goods leaving (exports). Exports cover all goods exported from Lithuania, including exports of previously imported goods in free circulation, and exports of goods from customs warehouses. Imports covers goods declared for home use, temporary imports of goods for inward processing and imports in to customs warehouses.

There have been problems in the recording of imports and exports from customs warehouses in the years 1994 and 1995. Also, exports of processed goods on imported raw materials have, in some cases, not been reported as exports, but only as the value added in the country (the value of the service). The under-valuation of exports for this reason was estimated at 4% of exports in 1996. Corrections to the foreign trade data have been made in 1996 using data obtained from the processing enterprises. To this purpose, the DOS contacted about five hundred enterprises to inquire about the data.

Services

The estimates for 1992-1995 include exports and imports of services which cover construction, transportation, tourism, communication, financial services and other services. Information is based on the financial report, F-06, about revenues from sales of services, collected by the DOS. Expenses for maintaining Lithuanian embassies abroad and foreign embassies in the country are estimated on the basis of information from Ministry of Foreign Affairs.

The estimates of exports and imports of goods and services which are incorporated in the National Accounts correspond to the balance of payments data, compiled by the Central Bank of Lithuania.

3.4 GDP by income
In order to estimate GDP using the income approach, estimates have been made for compensation of employees, net taxes on production and consumption of fixed capital for the whole economy and by institutional sector, with operating surplus and mixed income derived as a residual. Compensation of employees as reported by enterprises is adjusted using the number of employees from the labor force survey and enterprise reports. GDP has been calculated by institutional sectors since 1992, and by kind of activities since 1995.

Reconciliation

GDP calculated by the production approach is considered more reliable because of better and more detailed information, and therefore is used as the basis for determining the level and growth of GDP. Household final consumption expenditure is adjusted on the expenditure side, and on the income side operating surplus is estimated as a residual.

3.5 Magnitude and Treatment of Undercoverage and Underreporting

As mentioned above, the most significant deficiency of the data provided by the enterprises’ financial reports is poor coverage. The number of reporting enterprises fluctuate among periods and is significantly lower than the number of enterprises registered. For the adjustment of the gross output by kind of activity the NAD (in some cases - relevant divisions of the DOS) staff are scaling up the quarterly reported data using the ratios of total employment by kind of activity (estimated by the Labor Statistics Division of the DOS) to employment of the reporting units. The implicit assumption, therefore, is that the non-reporting enterprises’ productivity is the same as the average productivity of the reporting enterprises. The adjusted for undercoverage intermediate consumption figure is estimated by applying the average share of the intermediate consumption obtained from the financial reports.

The adjustment factors for gross output for selected kinds of activity are presented in the Table 3.1 above. The largest adjustments (more than 30% for the total economy) were performed in 1992 when the reporting system was practically disrupted. Although the situation has somewhat improved since then, the coverage remains poor and the need for significant adjustments remains.

Apart from adjustments for undercoverage, made by applying the number of the employed adjustment ratio, in 1994 adjustments for underreporting were introduced in GDP calculations. These were done initially for manufacturing and trade only.

On the basis of the experience of Eastern European countries in the transition period, the share of non-observed output in the manufacturing industries was estimated. Calculation of the non-observed volumes of manufacturing output was based on the estimation of output sold in the ‘underground’ sphere. This adjustment amounted to 11% of the value added of the respondent enterprises or 2.6% of the country’s GDP.
Table 3.1.

Undercoverage: adjustment factors for gross output for selected kinds of activity, 1992-1996

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishing</td>
<td>8.22</td>
<td>2.01</td>
<td>2.15</td>
<td>1.72</td>
<td>1.47</td>
</tr>
<tr>
<td>Mining and manufacturing</td>
<td>1.29</td>
<td>1.07</td>
<td>1.17*</td>
<td>1.18*</td>
<td>1.14*</td>
</tr>
<tr>
<td>Construction</td>
<td>1.57</td>
<td>1.39</td>
<td>1.22</td>
<td>1.24</td>
<td>1.24</td>
</tr>
<tr>
<td>Hotels and restaurants</td>
<td>1.00</td>
<td>1.11</td>
<td>1.25</td>
<td>1.06</td>
<td>1.38</td>
</tr>
<tr>
<td>Transport and storage</td>
<td>1.36</td>
<td>1.21</td>
<td>1.11</td>
<td>1.11</td>
<td>1.19</td>
</tr>
<tr>
<td>Real estate, computer and other business services</td>
<td>1.47</td>
<td>1.82</td>
<td>1.37</td>
<td>1.35</td>
<td>1.26</td>
</tr>
<tr>
<td>Education</td>
<td>1.00</td>
<td>1.90</td>
<td>1.58</td>
<td>4.93</td>
<td>1.99</td>
</tr>
<tr>
<td>NPISH</td>
<td>1.00</td>
<td>1.61</td>
<td>4.74</td>
<td>4.32</td>
<td>1.24</td>
</tr>
<tr>
<td>Other personal services</td>
<td>9.51</td>
<td>3.07</td>
<td>5.01</td>
<td>5.07</td>
<td>6.13</td>
</tr>
<tr>
<td>Total economy</td>
<td>1.31</td>
<td>1.14</td>
<td>1.17</td>
<td>1.15</td>
<td>1.18</td>
</tr>
</tbody>
</table>

* Including adjustment for hidden economy.

The underreported goods turnover was assessed as the difference between i) the residents’ officially declared income of all types, less the changes in the residents’ bank deposits and savings equivalent to them, expenses for municipal utilities, taxes and duties, and ii) initial estimates, based on the trade statistics. This difference amounted to 18% of the goods turnover of the reporting enterprises, which in turn represented 3.9% of the country’s GDP.

In 1995, however, special surveys for the estimation of the non-observed economy were conducted. The results were used in alternative 1995 GDP estimates adjusted for i) hidden revenues, and ii) informal employment. Description and results of the surveys, as well as the methods applied for GDP adjustments, are presented in the Appendix 1.

3.6 Assessment of the accuracy of estimates and recommendations

Gross output estimates. The accuracy of the results, as was already noted, is highly dependent on the accuracy of labor statistics and reported employment in the financial reports F-01 and F-04. As explained in Chapter 2, the employment estimates are compiled under a lot of assumptions, especially in the allocation by economic activity, and the classifications used are not exactly the same.6

The other problem with using employment data for adjustments is that the quarterly employment data are of a preliminary nature and are usually revised

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6 For example, the extremely high adjustment factor for “Other personal services” is the result of treating this activity as “n.i.e.” for services in the employment statistics.
when more information is available for the annual estimates. However, the gross output estimates were not re-adjusted for more accurate annual employment statistics until 1996.

Intermediate consumption estimates. Accurate estimation of intermediate consumption presents major difficulties, and in many cases is not reliable. The problem originates in the statistical reporting system which is, as mentioned earlier, strongly biased towards output instead of financial indicators, and lacks proper data quality control. Intermediate consumption was reported by enterprises as a total for each of the years 1992-1995 and might therefore include items not treated as IC in the SNA. More of that, the intermediate consumption of farmers is calculated according to the structure and weights existing in agricultural partnerships and enterprises. Since the share of intermediate consumption is usually smaller at the small-size enterprises, and the share of farmers output is growing, this results most probably in a considerable undervaluing of the value added in agriculture. In other cases the share of intermediate consumption is unreasonably high or volatile.

Constant price estimates. High inflation, especially in 1991-1993, and lack of experience in price/volume indices compilation affected the accuracy of constant price estimates. It was already mentioned in Chapter 2 that the Producer Price Index at the beginning was calculated using the Sauerbeck formula, thus producing an upward bias in price measures, and accordingly, a downward bias in constant price estimates when applied for deflation of aggregates in nominal terms. In addition, for 1994 the PPI was “adjusted” to take into account export prices, although they were already included in the PPI calculation - this resulted in a considerable discrepancy between the GDP deflator and CPI for 1994, as well as an underestimated decline in the Manufacturing). The use of other non-conventional price/volume measures (in agriculture, transport, and services) incurred additional deficiencies in constant price estimates.

Final Use estimates. The DOS prepares estimates by final uses only at current prices. There are independent estimates for each of the categories of final uses, although the final estimate of household consumption expenditure is obtained as a residual from the difference of GDP measured by the production side and the sum of all other components of the final uses. Independent estimates of household consumption expenditure are based in the household budget surveys (HBS), carried out annually, and on retail trade turnover data and production statistics. These estimates have been systematically lower than the estimate obtained as a residual.

As mentioned in Chapter 2, a new household budget survey was introduced in 1996 with the assistance of the World Bank. A comparison of the 1996 HBS data with those of the year 1995 shows an increase on household consumption expenditure of 100% in nominal terms or about 60% in real terms which, given the higher reliability of the 1996 survey, would prove the underestimation of consumption in earlier surveys.

The review of fixed capital formation figures reveals that there is a great discrepancy between the output of construction activity and the estimate of capital formation in construction works. The latter is based in the investment survey adjusted for coverage. It has been recommended to replace the estimate of capital formation in construction by the output of the
construction industry, making provisions for differences in valuation needed--namely, the use of purchases prices (including taxes) instead of the basic prices used in the production account. At the same time, it has been recommended to use a commodity flow approach to estimate capital formation in machinery and equipment. Rough estimates by this method give significantly higher results than the respective estimates based on the investment survey.

With the implementation of the new household survey and considerably improved data on external transactions, it should be expected that the GDP estimate by final use becomes more accurate than that compiled by industrial origin.

It is obvious that until a reliable sample frame for sample surveys is established, the existing procedure of gross output estimation would not provide accurate results. However, more attention should be paid to the analysis of accuracy of the employment data used for undercoverage adjustment, since these data are crucial for the final estimates of the gross output and value added by kind of economic activity.

More attention should be paid to the data on intermediate consumption, especially in agriculture. For this reason it is very important to form a network of private farm-respondents for statistical surveys, which would sufficiently represent all farmers. Farm-respondents supplying data on the production of agricultural products and consumption, and farm-respondents doing financial accounting and providing data on the farmers’ economic activities must be properly selected. This would be a source of data for compiling national accounts--revenue from farming activities, expenses, productivity, and use of labor force.

The results of the pilot survey on the hidden economy should be incorporated. However, the NAD should keep track of all the adjustments, both for undercoverage and for underreporting, and have the “last word” here.

Since GDP by final use estimate becomes more and more reliable and can be considered to be more accurate than that by industrial origin, it should be recommended to expedite import and export price indices calculation to make possible GDP estimation by final use in constant prices.

Simple time and cross-section consistency checks are very useful and highly recommended. This “internal auditing” will ensure consistency of estimates and allow the capture of drawbacks in data provided by other DOS divisions for National Accounts compilation.\(^7\) The auditing can be done by the NAD staff, who will rotate each quarter. To facilitate the consistency checks, it might be useful to use regularly updated specially designed tables/spreadsheets of the time-series of basic derived indicators and ratios for a detailed breakdown of the value added by industrial origin. The list of indicators should include: share of

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\(^7\) Thus, in 1994 the GDP deflator was inconsistent (much lower) with the CPI change. The IMF mission brought this to attention and draw a conclusion that the 1994 GDP was undervalued. More detailed analysis has proven that the problem was partly due to a considerable overvaluation of the 1993 GDP because of an erroneous estimate of the gross output and value added in Electricity, gas, and water production in 1994. As a result, the correspondent implicit deflator percentage change was negative (!), with accordingly unreasonably low GDP deflator for 1994.
intermediate consumption, implicit deflators, real growth rates, value added per employee, etc. At present, although most of these derivatives are calculated, their time and cross-section analysis is hindered by a non-conventional presentation of the data; in the NAD, working files are presented by kind of activity, with the annual data interchanging with quarterly estimates.
Chapter IV: Main Revisions of Annual GDP by Industrial Origin Estimates at Current and Constant Prices

4.1 Main Features of the Revised GDP Estimates

The estimates for the production approach were revised for both current and constant prices. The available data sources used for the revision were almost the same as for the official estimates, though most of the corrections are due to methodological changes introduced in the calculations of the new series.

Previously published official and revised total GDP estimates by industrial origin are presented in the Tables 4.1-4.3. The revisions was performed for all the branches of economic activity, and the result is the sum of upward adjustments in some sectors and downward adjustments - in some others. Thus, the revised nominal GDP estimates for 1990, 1992-1993, and 1995-1996 turned out to be somewhat larger than the preliminary ones. On the other hand, the revised nominal estimates for 1991 and 1994 are lower than then the official estimates - mostly due to the downward revaluation of value added in industry and trade, and the introduction of FISIM.

The revised estimates in constant prices continue to show the same overall trend and a sharp declines especially in 1992 and 1993 as the official estimates. At the same time they reveal that, on the whole, since the start of the radical economic reforms, that is from 1990 through 1995, the first year of a positive growth, the GDP by industrial origin dropped not by more than 60 percent as previously reported, but by about 40 percent. It should also be noted that the revised estimates in constant prices now show quite different year-on-year changes than the official estimates, especially for 1994, and show that the economic growth actually started in 1995 and not in 1994.

The detailed official and revised estimates of GDP by industrial origin are presented in tables 1-6 of the Statistical Appendix A.

The main general revisions are as follows:

Valuation. In the new series, the estimates of output were made at basic prices, therefore, value added by economic activity is at basic prices. GDP at market prices was then obtained as the sum of value added across all the activities plus the net taxes on products. In the previous GDP series, output was calculated at purchasers’ prices.
FISIM. In the new series, the estimates of FISIM were added to total intermediate consumption since they are not included as part of intermediate consumption at the level of each economic activity. In the previous series there was a double counting in GDP for the amount of the FISIM, as they were not added to total intermediate consumption (or deducted from total value added).

Holding gains. The estimates of holding gains are important in order to calculate the value of the changes in inventories from book value inventories reported by enterprises. As mentioned, output is calculated from the financial data of enterprises as the sum of sales and the change in inventories; intermediate consumption is calculated from the same sources as the value of purchases of goods and services minus the change in inventories of raw materials and other materials for production.

In the previous estimates, adjustments for holding gains were made only for the calculation of output, while in the revised estimates these adjustments were made also for intermediate consumption for the years previous to 1994. Since 1994 the enterprises’ accounting practices have included a continuous revaluation of the inventories, which implies that the intermediate consumption reported corresponds to the valuation concept of the national accounts.

The procedure used to calculate holding gains and the change in inventories is the same as the one used by the DOS in the calculations for the official estimates. It is assumed that for years previous to 1994, the method of valuation of the inventories is FIFO and the book values data are reevaluated at the average price of the periods using the price index of the relevant group of goods.

Table 4.1
Gross Domestic Product: Official and Revised Estimates

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</thead>
<tbody>
<tr>
<td>GDP at market prices, mln. Litas</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Official data</td>
<td>129.0</td>
<td>422.8</td>
<td>3,386.7</td>
<td>11,107.0</td>
<td>16,980.7</td>
<td>23,829.0</td>
<td>31,449.2</td>
</tr>
<tr>
<td>Revised data</td>
<td>134.1</td>
<td>414.7</td>
<td>3,405.8</td>
<td>11,589.6</td>
<td>16,904.2</td>
<td>24,102.8</td>
<td>31,568.9</td>
</tr>
<tr>
<td>GDP real growth rate (percent)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Official data</td>
<td>..</td>
<td>-13.1</td>
<td>-34.0</td>
<td>-30.4</td>
<td>1.0</td>
<td>3.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Revised data</td>
<td>..</td>
<td>-5.7</td>
<td>-21.3</td>
<td>-16.2</td>
<td>-9.8</td>
<td>3.3</td>
<td>4.7</td>
</tr>
<tr>
<td>GDP deflator change (percent)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Official data</td>
<td>277.3</td>
<td>1,113.6</td>
<td>371.0</td>
<td>51.4</td>
<td>36.3</td>
<td>26.1</td>
<td></td>
</tr>
<tr>
<td>Revised data</td>
<td>227.9</td>
<td>943.0</td>
<td>306.2</td>
<td>61.6</td>
<td>38.0</td>
<td>25.0</td>
<td></td>
</tr>
</tbody>
</table>

Adjustments for non-observed economy. To adjust for undercoverage, revised and more accurate data on employment were used. The results of the pilot survey on non-observed economy were used to make adjustments for shadow economy.
Table 4.2
Gross Domestic Product: Official and Revised Volume Index, 1990 = 100

<table>
<thead>
<tr>
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<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Official data</td>
<td>100.0</td>
<td>86.9</td>
<td>57.4</td>
<td>39.9</td>
<td>40.3</td>
<td>41.5</td>
<td>43.3</td>
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<tr>
<td>Revised data</td>
<td>100.0</td>
<td>94.3</td>
<td>74.3</td>
<td>62.2</td>
<td>56.1</td>
<td>58.0</td>
<td>60.7</td>
</tr>
</tbody>
</table>

Adjustments for non-observed economy. To adjust for undercoverage, revised and more accurate data on employment were used. The results of the pilot survey on non-observed economy were used to make adjustments for shadow economy.

Constant prices. Wherever possible, more appropriate deflators/extrapolators were used to calculate constant price indicators.

Table 4.3
Gross Domestic Product by Industrial Origin: Official and Revised Real Growth Rates (%)

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Official</td>
<td>-42.8</td>
<td>-6.1</td>
<td>5.9</td>
<td>4.5</td>
</tr>
<tr>
<td>Revised</td>
<td>-29.3</td>
<td>-18.1</td>
<td>3.4</td>
<td>3.8</td>
</tr>
<tr>
<td>Agriculture</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Official</td>
<td>-6.8</td>
<td>-5.5</td>
<td>25.7</td>
<td>9.6</td>
</tr>
<tr>
<td>Revised</td>
<td>3.3</td>
<td>-18.5</td>
<td>9.7</td>
<td>12.1</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Official</td>
<td>-25.4</td>
<td>6.0</td>
<td>-2.3</td>
<td>2.9</td>
</tr>
<tr>
<td>Revised</td>
<td>-10.2</td>
<td>-2.2</td>
<td>1.8</td>
<td>3.5</td>
</tr>
<tr>
<td>GDP, total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Official</td>
<td>-30.4</td>
<td>1.0</td>
<td>3.0</td>
<td>4.2</td>
</tr>
<tr>
<td>Revised</td>
<td>-16.2</td>
<td>-9.8</td>
<td>3.3</td>
<td>4.7</td>
</tr>
</tbody>
</table>

4.2 Revisions by Kind of Activity

a. Agriculture

The main revision introduced was in the calculation in constant prices. In the previous estimate, the value added in constant prices was obtained by deflating the value at current prices with the price index of purchases of agriculture products, which was calculated with an unconventional formula. In the revision, the estimates were obtained by multiplying the quantities of each product by the respective average price of the base year.
In intermediate consumption, holding gains adjustments were revised, and the assumption was made that with individual farmers, the share of intermediate consumption is 15% lower than that of the "partnerships" (there are no data on inputs of individual farmers).

b. **Mining and Manufacturing**

a) Gross output, - i) output for all years was reevaluated to be presented at basic prices; ii) more accurate estimates of holding gains were made.

b) Constant prices - i) for 1992-1993 the PPI which is used as a deflator was recalculated to take care of the upward drift created by use of the so called Sauerbeck formula (starting from 1994 PPI is calculated with the use of a proper Laspeyros formula - the IMF provided the necessary guidance but the PPI’s were not recalculated back); ii) the constant price estimates for 1994 were recalculated using standard PPI.

c. **Electricity, Gas, Water, etc.**

a) Gross output - the main revision was for 1993, since the output was grossly overvalued due to problems in reporting. The revised data was obtained from the Industry Division staff and used in new estimates.

b) Constant prices - the volume index calculated by the Sectoral staff was used as an extrapolator.

d. **Transport**

Constant prices - a new volume index was calculated to take into account not only cargo/passenger turnover, but also changes in the average distance.

e. **Trade, Hotels and Restaurants**

In the previous estimate the value of turnover of the retail trade was wrongly included as the value of output (trade margin) of the retail and wholesale trade activity. In the revised estimates the trade margin of the retail trade was obtained from the financial reports of the enterprises engaged in trade and adjusted for undercoverage and underreporting. The constant price estimates are derived by deflation with the CPI for goods. Still the estimates are not considered to be reliable, especially for 1991 and 1993 due to i) insufficient coverage and extremely high magnitude of adjustments; ii) probable inaccuracy of the CPI estimates in 1991 and 1992.

For restaurants and hotels, the estimate of gross output at current prices, except for 1996, was taken as the value of turnover (excluding taxes) as estimated by the Trade statistics division of the DOS. Only for 1996 the sources were the financial reports collected through forms F-01 and F-04, adjusted for coverage using employment ratios. The value added was deflated by the respective sub-index of the CPI.
f. **Government**

a) The estimate of output of the general government was revised to include the consumption of fixed capital. Since there are no current data available, the same ratio of consumption of fixed capital to other costs of production (intermediate consumption and compensation of employees) -- 8%, as in 1990, was added for all the years in the new series.

b) In constant prices, the new estimates of output are calculated as the sum of the cost components in constant prices. Compensation of employees of the base year has been extrapolated by the number of employees in public administration and defense (in previous estimates instead of the number of employees in public administration and defense for extrapolation, the total number of employees on the government payroll was used), while intermediate consumption was deflated by the CPI.

g. **Insurance services.**

Net premiums received and intermediate consumption were revised to exclude reinsurance with non-resident insurance companies. In the revised estimates, the value of output (insurance service) includes only the commissions obtained from re-insurers abroad. At the same time, intermediate consumption excludes the payments of premiums to re-insurers abroad, that in the previous estimates were included, thus distorting the input-output relations for this industry.

h. **Other services**

a) Dwellings - the major revisions refer to improved imputed rent estimates. For constant price estimates, the annual average total area in square meters was used as an extrapolator (instead of deflating with the CPI component for rent).

b) For other services the revisions were done using more accurate data on employment for adjustments for undercoverage, as well as more specific deflators (respective sub-indices of the CPI) for constant price calculations.

4.3 **Adjustments for Hidden Economy**

The revised estimates include adjustments for the hidden economy, based on the results of the pilot survey for 1995 (see Appendix 1). The adjustment has been made in most activities using the ratios of the hidden output to reported output estimated in the survey as bench-mark ratios, as presented in Table 4.4.

<p>| Table 4.4 |
| Underreporting: adjustment factors for gross output for selected kinds of activity, 1992-1996 |
| Mining and manufacturing | 1.058 | 1.058 | 1.119 | 1.162 | 1.162 |</p>
<table>
<thead>
<tr>
<th>Sector</th>
<th>1.003</th>
<th>1.007</th>
<th>1.013</th>
<th>1.013</th>
<th>1.013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>1.066</td>
<td>1.132</td>
<td>1.265</td>
<td>1.265</td>
<td>1.265</td>
</tr>
<tr>
<td>Construction</td>
<td>1.158</td>
<td>1.210</td>
<td>1.242</td>
<td>1.315</td>
<td>1.315</td>
</tr>
<tr>
<td>Trade</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.220</td>
</tr>
<tr>
<td>Hotels and restaurants</td>
<td>1.057</td>
<td>1.057</td>
<td>1.115</td>
<td>1.115</td>
<td>1.115</td>
</tr>
<tr>
<td>Transport and storage</td>
<td>1.496</td>
<td>1.496</td>
<td>1.496</td>
<td>1.496</td>
<td>1.496</td>
</tr>
<tr>
<td>Education</td>
<td>1.144</td>
<td>1.289</td>
<td>1.289</td>
<td>1.289</td>
<td>1.289</td>
</tr>
<tr>
<td>Healthcare</td>
<td>1.210</td>
<td>1.210</td>
<td>1.105</td>
<td>1.105</td>
<td>1.105</td>
</tr>
<tr>
<td>Real estate, other business services, etc.</td>
<td>1.056</td>
<td>1.056</td>
<td>1.112</td>
<td>1.112</td>
<td>1.112</td>
</tr>
<tr>
<td><strong>Total economy</strong></td>
<td><strong>1.073</strong></td>
<td><strong>1.078</strong></td>
<td><strong>1.149</strong></td>
<td><strong>1.180</strong></td>
<td><strong>1.182</strong></td>
</tr>
</tbody>
</table>

It was assumed that the underreporting practice in most activities was developing starting in early 90s, and accordingly the adjustment factors used for 1992-1993 were taken at ½ of their 1995 bench-mark value.

Detailed data on the adjustments for both under-coverage and under-reporting, used to compile the revised estimates, are presented in the Statistical Appendix B.: “Working Tables for GDP by Industrial Origin Derivation”

*   *   *
*   *

It is believed that the revised GDP estimates are technically sounder and better in quality and coverage than the former official estimates, and puts the results before the authorities for consideration as the revised official estimates. Even though the revised estimates introduced some new methods and took into account new as well as revised basic data, they do not address all the existing deficiencies in the compilation of main SNA aggregates and should not be regarded as final estimates. The availability of better data through new censuses and sample surveys, development of input-output framework, improvement of volume and price indicators, and well compiled subsets on balance of payments and monetary statistics would enhance the quality of GDP estimates for Lithuania in the future. Moreover, the compilation of GDP by three approaches and of the sectoral and sub-sets of accounts within the integrated framework would improve internal consistency. Until then, the approaches used and the proposed estimates could serve the current needs of the users.
Chapter VI: Data Revision and Dissemination
Policy for Basic Macroeconomic Indicators

6.1 Data Flows from DOS to Data Users

Users of official statistics, whether government agencies or the private sector, want relevant and up-to-date statistics. In most cases, these users seek socio-economic statistics in standard formats and/or presentations. However, in some instances, the users will require statistical reports/data to be tailored to their specific needs—thus the statistical office should maintain a mechanism able to fulfill these requirements. It should be noted that these special requests will be fulfilled on a charge-back basis. Therefore, it is very important that the statistical offices must first, maintain close links with the representative group of users and second, make these users aware that this tailored type of presentation requires a lengthy planning and development period within the statistical office. For example, in certain instances the statistical office will have to revise or modify their surveys questionnaires, procure special software, etc.

The national and international statistical offices have been able to cope with the demand for statistics in various ways. Some central statistical organizations are required by their enabling legislation to have an Advisory Council, with representatives of major users from all sectors of the community, as well as representatives of organizations which supply data in surveys. With suitable membership, which the central statistical organization can normally have some influence in determining, the Advisory Council can make recommendations to the Government and controlling Ministries (some of which will be represented in the Council) regarding desirable statistical outputs and services. While the Council will also normally want to consider issues of methodology of statistics in relation to their uses, it should not be permitted to direct the head of the statistical organization on such matters, these remaining the final prerogative of the statistical organization.

The general experience of such Advisory Councils has been favorable, although difficulties for the statistical organization can arise. The important factor is that key organizations in the economy participating in the work of the Council can generate a concern for the effective promotion of official statistics. They also must exert influence to give the statistical organization the needed resources to provide the statistical outputs which Council members deem desirable. The DOS does not have such an Advisory Council and there might be a case for considering such a step in due course.

Many countries do have standing committees of specialist users of statistics in such areas as macro-economic statistics, the consumer price index, social statistics, etc. These are not normally very helpful in improving the resource base of the official statistical organization, but often play an important role in acquainting the relevant subject-matter statisticians with emerging statistical needs and desirable modifications to existing statistics. It is understood that the DOS
convenes meetings for users of various economic statistics, particularly those in the Ministries concerned with economic policy. As far as the macroindicators are concerned, there is a need to engender a more active relationship between the NAD and the policy economists in the Ministry of Economy, as probably the most important set of SNA users in the country. Discussions with senior staff in that Ministry revealed a passive attitude regarding SNA statistics. There is no direct personal contact between these users and the NAD to improve user understanding of the statistics, their timelines, and their effective use.

Direct consultation with specific individual organizations and users, of course, is essential, and the DOS undoubtedly follows this practice. The key point is that the DOS must be seen as taking the initiative in such consultation, at least on some occasions, as this demonstrates the concern for adapting to users’ changing needs.

The special category of user which needs particular attention is the news media. Education of journalists in the concepts and uses of official statistics and the dissemination of statistics to them in the form of news releases, written in a style which will lead to their direct use in newspapers, radio and television, is a practice which will publicize the statistical organization and improve its status. Calling a news conference, in which the head of the statistical organization releases key statistics, such as SNA or price statistics, has proven to produce very effective results.

The practice of formulating an approved, annual list of statistical outputs by the DOS is important and useful, while extensive consultation, particularly with the relevant Ministries, precedes the official adoption of the list. Presumably, these lists are formulated so as to include development projects, where these extend over more than one year.

The above preceding summary of international practice may be of value in any internal review of DOS practice on user consultation.

Increasingly, central statistical organizations are have had to draw a distinction between "public good" statistics and services and "customized" statistics and services. The former are designed to meet information needs in the areas of public policy investigation, formulation and monitoring within government, as well as the general needs of users, both in the community and internationally, to be kept informed of economic, demographic and social developments. In addition to "public good" outputs, however, the central statistical organization also normally encounters a demand for other statistics and services which serve particular enterprises or other user needs, where there is no justification for government funding for the provision of such statistical outputs. Increasingly, central statistical organizations are insisting on charging for this provision. The revenue generated is normally permitted to be used to finance the maintenance or development of public good outputs. The DOS generates a small amount of revenue in this way, but the prospect of increasing this significantly by a marketing campaign needs to be considered in view of DOS budget cuts. With the availability of standard computer packages for processing survey data, it is relatively inexpensive to produce ad hoc analyses of existing survey data for the business needs. This type of service should be charged for not on the basis of the cost, but on the negotiated value of the analyses to the purchaser--that is, the market price. Statisticians have
been pleasantly surprised by these negotiations, as to what businesses are prepared to pay for such customized products. Of course, such analyses always need to be done to ensure that no direct or indirect breach occurs of confidentiality guarantees to survey respondents. The household income and expenditure survey and population census are two examples where, in some countries, significant revenue can be obtained.

Generally the responsiveness of the central statistical organization to users’ needs, however, is not just a matter of user consultation. Many users often do not determine their needs until well after a survey has been planned and conducted. If these late-emerging needs do not go beyond the variables covered in the survey questionnaire, the value of a database philosophy in statistical processing systems becomes apparent. With the full set of survey unit-records edited and stored in the data base, modem data base software allows for the ready accessing of the required data and processing of any additional tabular or other statistical analysis of such data, whether in isolation, or as a joint exercise involving other subject-matter data available in related data bases. This impact on improved user access to statistics is one of the key justifications for reasonable priority being given in the DOS to the adoption of a data base philosophy in computer processing.

This whole question of demonstrating to the Lithuanian business community, as well as the whole community, the indispensable value of the availability of relevant and timely statistical information from the DOS, is the essence of the ultimate solution to the problem of obtaining a high level of cooperation from enterprises (and households) in responding to DOS surveys and responding with accurate data. The statistical law and its compulsory provisions are a necessary but not a sufficient part of the solution. A form of unwritten "social contract" agreeing on mutual cooperation between enterprises (and households) and the DOS to produce useful, relevant and timely statistical information to government and the community is the answer. While no country can claim that this "social contract" exists to an ideal extent, some can claim a reasonably workable "contract." The difficulties encountered in the economic transition in Lithuania makes this concept unrealistic at present, but the senior management of the DOS should not lose sight of it as a future goal.

It is therefore recommended that:

a) The appropriateness of more formalized methods for consultation with users of statistics, such as a general Statistics Advisory Council, and/or standing consultative committees in particular subject-matter areas be considered in due course as being of value in improving relations with users.

b) The DOS introduce special measures, if these are not already in place, to improve relations with the news media, by issuing statistics in news release form capable of direct quotation in media news programs and by calling news conferences in the DOS office of all news media organizations when key economic statistics like macro-economic and price statistics are released.
c) The DOS should adopt a data base philosophy in the design of its computerized processing systems to improve its capability to respond quickly to emerging user needs.

d) Whenever there are significant changes in the methodologies or the contents of data, appropriate public relations work should be carried out to brief and educate the public media (TV, radio, and newspapers) and guide the users. There are certain topics which are highly sensitive and important e.g. national accounts, unemployment, prices, money, international reserves etc. for which the community should be kept well informed if any major changes in the methodology or compilation are envisaged and later when introduced.

6.2 Revision Policy of Current and Annual Estimates

Deficiencies in data are inevitable and if soundly based corrections cannot be made analytically, care should be taken to at least keep the deficiency consistent in effect in the shorter term in order to at least correctly indicate relative changes between periods. Of course, efforts to remove deficiencies, either at source or by later analytical means, are essential and when these deficiencies are eliminated for a suitable run of periods for which the SNA statistics are being prepared back revisions should be made to minimize discontinuities in the time series. SNA statistics, for this reason, are always approximations and revisions should lead to convergence on the actual level or trend being measured. A balance between too many and insufficient revisions is essential, these revisions resulting from the progressive supply of data from the various sources for a given period of reference, corrections to past data and improvements in estimation methods. User confusion and frustration results from too many revisions, while insufficient revisions mean less than satisfactory indication of economic performance is being conveyed to users.

One of the priority items for DOS is to publicize that periodic revisions of previously-released socio-economic statistics is international standard practice. The causes for these revisions are several, but the most important is that, as new and better information are becoming available, there is an imperative need to revise already existing series. In almost all the countries, new information is becoming available through population and economic censuses, surveys, administrative records and other sources.

This coupled with the daily advancements of technology for processing statistics, enables statistical offices to make revisions\(^8\) and further improvements of the socio- and economic statistics. For example, in an economy of transition, it is very likely that some of the new emerging economic activities are not captured in the present system of data collection, however, these will be reflected as the new surveys are developed.

To achieve credibility for its revision policy, DOS has to adopt a time table for estimation of quarterly and annual estimates, reconciliation of estimates, and a general policy for revision of estimates following the recommendations of this report.

The time table may be as follows:

\(^8\) Argentina, Russian Federation, USA, etc.
First: estimate of the quarterly data based on preliminary data and estimates of trends—30 days after the quarter ends.

Second: estimate of quarterly macroindicators based on quarterly statistics where available—at the end of the last month of the following quarter (90 days).

Revisions of quarterly estimates are also performed after the fourth and seventh month after the end of the quarter.

Final revision of all the quarters is done in March of the following year.

January of the following year—first estimates of annual data based on twelve months.

March of the following year—second estimates of annual data based on data for four quarters.

September of the following year—third estimates of the annual data based on annual statistics, in compliance with the requirements of the IMF SDDS.

The following March—fourth estimates based on annual estimates and reconciliation with estimates for the four quarters.

The fifth estimate of annual data on new benchmarks, derived from an input-output table developed once in five years, is to be conducted after the table is developed.

The estimates may be performed for the previous five years. After these estimates are done, the annual data are considered to be final.

The revision policy schedule has to be discussed by the Government of Lithuania, and involve the DOS, the Ministries of Economy and Finance, the Central Bank, the Customs Committee, etc. It has to be an agreement reached on a schedule of data flows, needed for national accounts, from the government agencies to DOS, as well as flows of data from the DOS to other government agencies-data users.

The proposed revision policy places additional demands on the staff of the Department of National Accounts. That means that Government has to devote additional resources needed to improve the time table and revision policy.

6.3 Dissemination Policy for Preliminary and Revised Data

The current practice of GDP presentation as progressive cumulated year-to-date monthly and quarterly indicators in comparison with the corresponding period of the previous year makes its analysis extremely difficult. The DOS has to adopt the standard international practice of
displaying GDP series in both current and constant prices in the standard consistent time series format. This also applies to the presentation of price and volume index series. The use of cumulative year-to-date presentations loses vital information on occasions because it hides what is happening in the latest quarterly (or monthly) period. When turning points occur in trends such a loss of information can be a serious matter. The traditional cumulative year-to-date comparisons were adopted to avoid seasonal distractions in inter-quarterly or inter-monthly comparisons. The standard international practice for coping with this problem is to seasonally adjust the quarterly or monthly data, using standard statistical techniques for doing this.

In order to facilitate the analysis of trends and turning points the national accounts data should be presented in the non-cumulative time series form. Therefore, the DOS should investigate and initiate the collection of basic data in terms of individual months and quarters to facilitate non-cumulative compilation by National Accounts Department.

The compilation and analysis of the main SNA indicators and other macroeconomic variables should be disseminated basically in terms of absolute numbers on values, volumes, and indices rather than changes.

The changes are transformations of basic time series which can accompany the absolute numbers in press releases to explain the movements. When the analysts wish to calculate absolute numbers from the changes, they have to look for an absolute number for a base or any other year, and in the calculation process there is always a likelihood of losing some significant digits.

The DOS should have an objective, transparent, efficient and progressive dissemination policy on national accounts to cater the needs of policy makers and users both in the government and the private sector. The statistics to be disseminated should be of good quality, timely, and in a convenient format to enable the users to make well-informed, timely decisions.

The dissemination policy should be goal-oriented, otherwise they may fail to obtain the support and confidence of the users. These objectives should be clearly laid down in consultation with the main users. The statistical steering committee could also provide some guidance on these objectives.

In order to obtain the trust and credibility in the numbers to be disseminated, the DOS should be transparent and open in publicizing the methodology underlying the national accounts statistics, in pointing out the strengths and weaknesses of data, and explaining the changes in the time series and inconsistencies or discrepancies.

The openness and transparency of data dissemination policy becomes even more important with the decision of the Government of Lithuania to join the IMF Special Data Dissemination Standards (SDDS).

The DOS should adopt the most efficient techniques and media in disseminating data. It should always be progressive in using the latest techniques of printing, reproduction, and distribution so that data can reach promptly and in a user friendly format to the users. In order to
support its dissemination program, there should be some user support through subscription. The
growth in the value and volume of subscription could be an indicator of the users’ interest in the
kind and format of statistics.

The dissemination program should lay down a phased program on the extent of data sets
and on the technological updating of the media of dissemination. There should be automation in
printing through the use of electronic procedures and networking should be utilized for
disseminating data in a timely fashion. The publication program should also progress
simultaneously with automation of data, maintenance, processing and scope.

There should also be a long-term program on the expansion of the range of statistical
publications and on the closure of less useful publications. The need and popularity of the
contents of each publication need to be confirmed at intervals through sample surveys, and the
contents and layout of the publication and tables should be geared to the needs of the users. As in
leading industrial countries, each publication should include the timetable for the release of each
indicator, and for revisions.

One issue which is closely dependent on effective coordination, either in respect of the
performance of inter-connected activities or harmonization of activities over time, is that of
achieving the scheduled timelines of release of statistics. Users demand increasingly speedy release
of statistics, particularly short-term economic statistics, and this demands increasing attention to
effective organizational coordination, among other needed management action.
Survey of Informal Economic Activity and Incorporation of Its Findings in GDP Compilation

In 1996, a pilot survey on the assessment of the non-observed economy in 1995 was carried out in Lithuania. The object of this survey was to provide documented estimates of the size and scope of informal activities in the country.\(^9\)

In countries with transitional economies, including post-independence Lithuania, the work of the state statistical agencies have undergone the most profound changes both in area of data collection and that of main economic indicators and their estimation. A need emerged for a speedy transition to the European standards, as the methodologies and statistical indicators had to be harmonized to allow for international comparisons. There still exist, however, a lot of difficulties which have not yet been overcome, and which hinder the statisticians in the successful application of the SNA methodology and providing more accurate GDP estimates. One of the most important of them is the expansion of the non-observed economy, i.e. the activities which cannot be directly evaluated through the established system of statistical reporting/observation.

At the same time, the indirect methods of evaluation are hindered by the existing shortcomings in the overall information system of Lithuania, such as absence of income declarations and registers of jobs, etc. These important data if available would help the statisticians in providing much more accurate GDP estimates, including those on the non-observed economy.

Certain difficulties exist in the area of statistics:

- The register of companies is not accurate.
- The reported number of the employed is not accurate.
- The salaries are underreported, especially in the private sector.
- The value and volume of output is not accurate in reports.

These inaccuracies appear because companies avoid taxes, and hence registration, accountability for their activities, and hide the actual numbers of employees, salaries, turnover, turnover,

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\(^9\) Although the survey was conducted to gather data on the non-observed economy in illegal activities and monetary flows, only the part dealing with non-observed economy in legal activities only is presented in this appendix, since the results of this part of the survey were used for GDP adjustments.
and the quantities of output; do not complete tax statements and do not report to the Statistics Department.

The above-mentioned outward difficulties turn into sources of statistical errors.

The existing situation did not allow directly to apply well known ‘Hungarian’ or ‘Italian’ methods of collecting data on these activities, an attempt has been made to develop a new methodological approach for assessment of the non-observed economy. Both, reporting and non-reporting to the Statistics Department enterprises have been chosen as the object of survey. The companies are stratified with respect to their activities and their size. The unofficial labor market has been taken as a separate object of research (these are individuals who work without contracts, do not declare their income and do not register their activities).

The main indicators used for the assessment of the non-observed economy are the following:

- the volume of the unofficial market, the volume of its output and revenues received;
- the volume of the under-reported output and income in registered and reporting companies.

The assessment of the non-observed economy in legal activities was divided into:

- Assessment of the under-reported revenue of enterprises.
- Assessment of the non-observed turnover in the retail trade.
- Assessment of the non-observed wages.
- Assessment of the non-observed employment.
- Assessment of informally provided services.
- Assessment of income of the companies not reporting to the Statistics Department of Lithuania.

1. Assessment of the Under-reported Revenue of Enterprises

In order to assess the magnitude of the underreported revenue of companies, an anonymous poll of tax inspectors was carried out. A questionnaire had been designed where the selected tax inspectors had to assess the percentage of underreported income in the overall income of a company according to types of activities and company size (number of employees). Eleven types of activities with the possibility of the double-entry accountancy were singled out.
The experts were given the opportunity to include types of activities that were not mentioned. Activities which embrace companies very different in size were grouped according to the number of employees.

The questionnaires were distributed among almost 2,000 tax inspectors in all towns and rural regions of Lithuania. Out of 1,189 questionnaires returned, 206 were rejected because they were either blank or only reasons encouraging the double-entry accounting were indicated. Thus data obtained from 983 questionnaires was generalized.

Most inspectors indicated that the biggest share of underreported revenue goes to small companies (up to 9 employees) engaged in retail trade--about 35%. Middle-size retail trade companies underreport about 26%, while large companies underreport about 21% of their revenue. The share of underreported revenue in wholesale companies is insignificantly lower.

In the experts’ view, companies engaged in light industry, food and timber processing activities most often underreport their revenue. In small companies with up to 19 employees the share of the underreported revenue makes up about 25-30%, in middle-size--about 19-25%, and in large--about 10%.

It should be noted that, according to the experts, the share of the underreported revenue is less in industry--especially in energy sector and oil processing--than in many other activities. Two experts, however, have an divergent opinion: they indicated that 25% of revenue is underreported in the oil processing industry, and 35% is in the energy sector.

The share of the underreported revenue in construction and road transport companies is similar to that in industry.

Companies engaged in household goods repairs, public catering, and real estate transactions underreport about 30%; firms providing education services--about 10%; and health care institutions--about 19% of their total revenues.

Answering the question as to what encourages companies to keep the double-entry bookkeeping, the experts in the majority of cases mentioned the following reasons: large tax rates, an imperfect taxation system, and frequent changes of laws.

Having used the expert evaluations, the volume of the underreported revenue by the companies reporting to the Statistics Department has been calculated. The results are presented in Table 1.

Since individual (non-incorporated) enterprises are small, the percentage of the smallest companies has been applied in the assessment of their underreported revenues. The percentage for non-incorporated industrial companies is the average of all industrial activities which employ up to 19 workers.

*Table 1*
The share of the underreported revenue in the total revenue of small companies

<table>
<thead>
<tr>
<th>Activity</th>
<th>Share of the underreported revenue (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>25</td>
</tr>
<tr>
<td>Construction</td>
<td>31</td>
</tr>
<tr>
<td>Trade</td>
<td>35</td>
</tr>
<tr>
<td>Public catering</td>
<td>32</td>
</tr>
<tr>
<td>Repairs of household utensils</td>
<td>34</td>
</tr>
<tr>
<td>Road transport</td>
<td>26</td>
</tr>
<tr>
<td>Real estate transactions</td>
<td>29</td>
</tr>
<tr>
<td>Financial intermediation</td>
<td>33</td>
</tr>
<tr>
<td>Education</td>
<td>10</td>
</tr>
<tr>
<td>Health care and social activities</td>
<td>19</td>
</tr>
</tbody>
</table>

The volume of the underreported revenue has been calculated by the size of companies and the type of property.

The underreported revenue by the size of companies is presented in Table 2. All individual enterprises and state-owned companies and joint stock companies with up to 100 employees are grouped under small companies, while those with over 100 employees are grouped under large companies.

Table 2
The underreported revenue by the size of companies

<table>
<thead>
<tr>
<th>Activity</th>
<th>Share of the underreported revenue (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small companies</td>
<td>18.8</td>
</tr>
<tr>
<td>state companies and joint stock companies</td>
<td>14.7</td>
</tr>
<tr>
<td>individual companies</td>
<td>31.0</td>
</tr>
<tr>
<td>Large companies</td>
<td>9.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12.8</strong></td>
</tr>
</tbody>
</table>

The results of the survey show that the share of the under-reported revenue in small companies is considerably higher than in large companies. However, the latter overtake the former by the volume of their revenue. For this reason the total volume of the under-reported revenue in small companies as a whole is not significantly larger.

The under-reported revenue by types of property is shown in Table 3.
Table 3

The underreported income by the type of property

<table>
<thead>
<tr>
<th>Activity</th>
<th>Share of the under-reported revenue (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total in the country</td>
<td>12.8</td>
</tr>
<tr>
<td>state-owned companies and joint stock companies</td>
<td>10.9</td>
</tr>
<tr>
<td>unincorporated (individual) enterprises</td>
<td>31.0</td>
</tr>
</tbody>
</table>

The results show that individual enterprises underreport a much larger share of their revenue than state companies and joint stock companies. In monetary terms, however, the underreported revenue of the latter three times exceeds those of individual companies (See Figure 1).

Figure 1. Structure of the underreported revenue by types of property

```
State Companies and joint stock companies 76.4%
Individual enterprises 23.6%
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The results of the survey indicate the total underreported revenue in the reporting companies amounts to 12.8%, i.e. 4,711,178 thousand Lt in 1995.

2. Assessment of the Non-observed Turnover in the Retail Trade

A substantial amount of purchases by population are done outside the official trade channels in the market places, where registration (licensing) is not required by law. To account for this trade, adjustment had to be made to the data collected in the retail trade establishment. In 1993 and 1994, the retail trade turnover in these market places were estimated using data derived from the family budget surveys, i.e. expenditure on food, clothing, footwear and other consumer goods. This information, however, was not sufficient to allow to estimate the size of those markets, the commodity composition of sales, as well as to assess the trade margin in these markets. To fill-in this gap it was decided to launch a special survey of the market places where operation does not require licenses or special permits.

Out of all the markets where the trade without licenses is permitted, 96 largest market places were selected from the lists compiled by the statistical offices in all the towns and regions. All selected market places are operated by an administrative unit which besides other functions is selling tickets to the traders.
With the participation of market administrators, a list of indicators for compilation was chosen and a questionnaire was designed. The first part of the questionnaire containing information on the total number and daily vacancies of trading places, working days during the period under review, composition of goods traded by groups of goods was filled in by the administrators. The second part of the questionnaire dealt with the data on the average daily sales (turnover) by one trader. The surveyor had to fill out this part of the questionnaire on the basis of the interviews of traders. Information on goods sold and average prices of the goods was collected at this point. Based on these questionnaires the total sales and sales by groups of commodities were estimated for each of the surveyed market places. It has been estimated that in 1995 there were 19,200 trading slots in these markets and the total turnover was estimated as 1,395.5 million Lt, or 15% of the total retail trade turnover in Lithuania.

In addition, to the trade in the market places trade is conducted in small private shops, from street carts, etc. This type of activity requires to have a license. Using the data on licenses and patents, the turnover of such trade was estimated at 492.9 million Lt., or 5.6% of the total retail trade turnover.

Based on the survey and the estimates, the non-observed retail trade turnover in 1995 was derived as 1,898.4 million Lt, or 20.6% of the total retail trade turnover.

3. **Assessment of the Non-observed Earnings**

The following assumptions were held in the assessment of the non-observed earnings:

1) In the state sector, all companies whose data are reasonably reliable (the number of employees, earnings) are considered to be statistically observed and thus their data were not adjusted.

2) Hence, statistically unobserved companies mostly belong to the private sector. The assumption was made that illegal employees (those who work without legal contracts) prevail in the close joint stock companies; therefore the number of employees and earnings are adjusted to take account of the hidden employment.

3) The number of the actually operating individual (non-incorporated) enterprises is equal to the number of enterprises which submit income declarations. The assumption is made that the number of hired workers here is also equal to the number of workers entered in the income declaration. However, the declared wages are considered underreported since in most cases they are very low and close to the official minimum monthly wage, and should therefore be adjusted upwards.
a. Review of the results of the survey

For the purpose of conducting this survey, anonymous questionnaires were designed. Social insurance inspectors and statistics department workers in the towns and regions assisted with their completion. Out of 1,500 questionnaires forwarded, 521 were returned, and 265 were completed correctly. The following main indicators were included in the anonymous questionnaire: the type of company, the type of economic activity, the size of the company, profession (position), and the average monthly earnings of the known anonymous individual.

The results obtained from the survey confirmed the assumption that it is expedient to adjust wages and salaries in private joint stock companies and individual enterprises. The largest number of questionnaires reflected data on wages and salaries in joint stock companies (37.7%) and individual (personal) companies (35.1%).

According to the data of the anonymous questionnaires, most of the labor force was employed in companies with 1-9 or 10-99 workers. The survey is most representative of the trade, processing industry and construction sectors, as the majority of workers included in the survey were employed in these particular activities.

According to the questionnaire data, the disparity between actual and declared wages was greatest in individual (personal) enterprises. If in the second half of 1995 the declared average of earnings in individual (personal) companies amounted to 170 Lt, according to the questionnaire data it was as high as 479 Lt (as of January 1996). The highest average earnings were 806 Lt, while the lowest was just 259 Lt (1.5 times exceeding the declared wages and salaries).

Actual wages in close joint stock companies and joint stock companies are higher than indicated in companies’ statistical reports. According to official statistical data, the average net salary in these companies amounted to 437 Lt, while according to the questionnaire data it was 644 Lt. More detailed information is presented in Table 4.

Since each type of economic activity has a different ‘weight’ with respect to the number of workers, the ‘weighed’ earnings were calculated for this purpose according to the activities in the table; it amounted to 600 Lt. The official data was assessed in a similar way. The comparison of these data reveals that the actual earnings in joint stock companies and closed joint stock companies are higher by 67% than recorded in reports (only for activities indicated).

The data in the table show that the average earnings in construction, transport, real estate, renting and business activities is more than double the officially declared average.

It is more complicated to compare data on individual enterprises, since the data on earnings comes from different periods of time. It is possible to say, however, that the actual average of earnings in the said companies exceeds, by at least 2-3 times, the declared earnings. According to the data of the anonymous questionnaires, the ‘weighed’ average of earnings amounted to 479 Lt, while according to the official data it was 164 Lt.
Since the number of the returned questionnaires was not significantly large, it cannot be stated that the data in the table give a comprehensive view of the private sector. It is, however, one of the main sources of information on the actual earnings. Using the averages of the actual and officially declared earnings, coefficients (the relation between the two indicators) were calculated. With their help, and by applying the 5th adjustment method (see below), monthly averages of earnings in close joint stock companies and individual enterprises were calculated for the year 1995.

Table 4
Official and adjusted net earnings

| Type of Economic Activity | Average net earnings as of January 1996 | | | |
|---------------------------|----------------------------------------|--|---|---|---|
|                           | Private companies and joint stock companies | Official data | Deviation from the official data, % | Individual (unincorporated) companies | Official data (2nd half of 1995) |
|                           | Data from the anonymous questionnaire | Official data (2nd half of 1995) | Official data (2nd half of 1995) |
| Agriculture, hunting and forestry | 644/600 | 437/359 1) | 479/479 1) | 170/164 1) |
| Agriculture, hunting and forestry | 474 | 184 | 47.4 | 479 |
| Industry | 464 | 454 | 2.2 | 443 | 138 |
| Electricity, gas and water supply | 590 | 500 | 18.0 | 443 | 138 |
| Construction | 1099 | 476 | 130.9 | 542 | 290 |
| Wholesale and retail trade; motor vehicle and motorcycle, personal and household goods repairs | 568 | 317 | 79.2 | 465 | 160 |
| Hotels and restaurants | 240 | 266 | -9.8 | 357 | 124 |
| Transport, storage and communications | 1143 | 444 | 157.4 | 1250 | 175 |
| Real estate, renting and business activities | 1056 | 477 | 121.4 | 600 | 205 |
| Other municipal, social and personal service activities | 653 | 410 | 59.3 | 250 | 193 |

1) the "weighed" earnings average in respect to the number of employees, by economic activities indicated

Analysis of the survey data on earnings by profession shows that the best paid were senior managers, whose earnings in January 1996 amounted to 2,350 Lt. Earnings averages of the representatives of other professions were the following: heads of departments--1,213 Lt, mechanics--1,000 Lt, constructions workers--867 Lt, painters--825 Lt, joiners--825 Lt, workers servicing radio, TV and electronics equipment--870 Lt, book-keepers and accountants--623 Lt, masons--600 Lt.

b. Review of the assessment of the non-observed earnings by methods of adjustments
Five types of adjustments were applied in the assessment of the share of the non-observed earnings:

**Method 1--adjustment of earnings according to the minimum monthly earnings:** if the earnings reported by a company are lower than the minimum monthly earnings, the former is corrected into the minimum monthly earnings (it being 135 Lt in 1995).

**Method 2--adjustment of earnings according to the average in the corresponding branch of economic activity:** if the earnings reported by a company are lower than the minimum monthly earnings, the former is replaced by the average in the corresponding branch of economic activity.

**Method 3--adjustment of earnings when the marginal earnings amount to 230 Lt.:** if earnings reported by a company are less than 230 Lt, the former is replaced by the average in the corresponding branch of economic activity.

**Method 4-- adjustment of earnings when the marginal earnings amount to 300 Lt.:** if earnings reported by a company are less than 300 Lt, the former is replaced by the average in the corresponding branch of economic activity.

**Method 5--adjustment of earnings using the data from the survey:** Consolidated results of the survey (for January 1996 net earnings) were compared with the officially declared net earnings average for January 1996 and adjustment coefficients were calculated. They revealed to what extent the official data differed from the results of the survey. The said coefficients were applied to adjust the official gross earnings in 1995 (the assumption being that the gross earnings differ on the same scale as the net earnings do).

The assessment of earnings in the economy of Lithuania according to the five methods of interpolation is presented in Table 5.

As it is evident from the data in Table 5, the non-observed earnings differ significantly from the official earnings: according to method 1, the difference is 0.7%; method 2 - 3.7%; method 3 - 7.6%; method 4 -10.4%; and method 5 -18.2%.

From analyzing the data, one can conclude that the 4th and the 5th calculation methods are the most suitable for the assessment of non-observed earnings. It is logical to assume that the earnings average in the private sector cannot be lower than 300 Lt. This especially refers to individual enterprises where the declared earnings (159 Lt) increases to 542 Lt, i.e. 3.4 times the declared amounts, when the 4th method is applied. However, its impact on the overall earnings average throughout the country is not significant, since the number of hired workers in these companies amounts to only 3.6% of the total labor force. In other private companies, excluding individual enterprises, the earnings average increased from 453 Lt to 521 Lt (15%) with the application of the 4th method. The overall earnings average amounted to 528.7 Lt and exceeded the official indicator by 10.4%.
The earnings average increased to 276 Lt in individual enterprises, when the 5\textsuperscript{th} method of calculation was applied. The result was influenced by the fact that the earnings average of only some economic activities could be determined from the anonymous questionnaire. Due to the shortage of information, the declared earnings average has not been changed in other economic activities. In other private companies the earnings amounted to 686.5 Lt and exceeded the earnings in the economy of the country (565.9 Lt) by 18.2\%.

According to the 4\textsuperscript{th} and the 5\textsuperscript{th} methods, the overall and non-observed total of earnings in the economy of Lithuania was distributed in the following way:

<table>
<thead>
<tr>
<th></th>
<th>4\textsuperscript{th} method</th>
<th>5\textsuperscript{th} method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross earnings total, mln. Lt</td>
<td>7848.3</td>
<td>8399.9</td>
</tr>
<tr>
<td>Deviation (+, -) from the officially adjusted gross earnings total, %</td>
<td>10.4</td>
<td>18.2</td>
</tr>
<tr>
<td>The non-observed gross earnings total, mln.Lt</td>
<td>1603.2</td>
<td>2162.9</td>
</tr>
<tr>
<td>%, compared to the gross earnings total</td>
<td>20.4</td>
<td>25.7</td>
</tr>
</tbody>
</table>

c. **Assessment of the number and earnings of illegally employed workers**

The calculation of the official gross earnings in the economy of Lithuania is based on the data of statistical reports. With the assumption that the earnings of statistically unobserved workers equals the earnings average of the reporting companies by types of activity, only the number of workers in the private sector is adjusted.

In 1995, 1,112.6 thousand workers, or 86.1\% of the total, were employed in statistically observed companies, and 13.9\% of all hired labor worked in statistically unobserved companies. It is reasonably to assume that they were employed illegally, i.e. without work and labor contracts. The number of statistically unobserved workers is calculated with the aid of additional sources of information, mainly using unemployment statistics. Having deducted farmers, owners of individual enterprises, the persons held in detention, family members working in private firms owned by the family, and individuals in military and civil service from the number of the employed, the number of hired workers, which amounted to 1,291,500 people in 1995 is derived as residual.

The number of the statistically unobserved hired workers (178.9 thousand) is derived by deducting from total number of hired workers as estimated above, the number of the statistically observed workers (1,112.6 thousand). It is difficult to assess how many of these are illegally employed, and how many are hired in companies which ignore statistical reporting. It would be logical to assume that non-registered workers constitute the majority of the statistically unobserved