

QUARTERLY NATIONAL ACCOUNTS IN THE BALTIC STATES

Sources and Methods of Estimation

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FOREWORD

This document has been produced as part of the Baltic Regional Programme – the main vehicle for OECD’s co-operation with Lithuania, Latvia and Estonia. The programme, which began in 1998, covers a range of activities, including statistics with three principal aims:

- (i) To support the efforts of the Baltic countries in completing the transition to market economies.
- (ii) To facilitate their integration into the global economy.
- (iii) To encourage the use of best practices developed by the OECD.

In the area of macro-economic statistics, the main focus of the co-operation between OECD and the Baltic countries is the development of quarterly national accounts (QNA). These data are crucial for analysts at the OECD and other agencies who monitor economic developments in the Baltics. These data also form part of the *acquis communautaire* of the European Union.

The aim of this document is to provide descriptions of the data sources and compilation methods used for QNA in the Baltic countries. We believe this document will be of interest to users of national accounts data in the Baltic countries, in international agencies, as well as to compilers of national accounts in transition economies generally.

The production of the document has been a joint effort between the OECD Statistics Directorate and the national accounts experts in the Baltic statistical offices. The OECD would like to thank the staff of the Baltic statistical offices for their open and efficient co-operation.

This document is prepared under the auspices of OECD’S Centre for Co-operation with Non-Members and is published on the responsibility of the Secretary-General.

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I. Introduction to Quarterly National Accounts Issues

Introduction

The international standard for compilation of national accounts is the *1993 System of National Accounts* (SNA93), from which is derived the EU standard *European System of Accounts* (ESA 1995). Annual estimates of gross domestic product (GDP) in the Baltic countries are now compiled to a very large extent in line with these standards. In the case of quarterly GDP estimates, however, international guidelines have only become available more recently, and consequently the methods used in many countries are still under development. In fact, although quarterly national accounts (QNA) are compiled by 25 of the 30 OECD Member countries, and it is fair to say that none of these has attained the ideal set of quarterly national accounts¹.

The aim of this document is to describe the data sources and compilation methods used to compile quarterly GDP estimates in the Baltic countries, and is structured as follows. Chapters I and II are introductory in nature – Chapter I discusses some of the main difficulties encountered in trying to measure GDP quarterly rather than annually, and Chapter II explains the benefits of quarterly estimates, particularly in the context of transition economies. Chapter III seeks to summarise the general approaches used in the three Baltic countries, both in the form of descriptive text and summary tables, before the main body of the document, the detailed country descriptions, in Chapters IV, V and VI. These descriptive chapters are supplemented with tables of historical quarterly GDP data (Annex I), a glossary of acronyms, and a list of sources of further information.

While the aim of this document is to describe the data sources and compilation methods used for QNA in the Baltic countries, it cannot hope to provide full discussions of all the issues associated with QNA compilation. Some readers may therefore find it useful to consult guidance manuals such as Eurostat's *Handbook on Quarterly National Accounts* (1999), and the IMF's **draft Handbook on Quarterly National Accounts Compilation**². Similarly, although references are made to the sources and methods used in most OECD Member countries, some readers may wish to consult OECD's *Quarterly National Accounts – Sources and Methods Used by OECD Member Countries – 1996*, and, of course, the countries' own methodological material (references and website addresses are given at the end of the document).

Special Problems in Compiling QNA

The problems associated with compiling QNA arise from two main causes. Firstly, the fact that QNA compilation relies on incomplete information and that the estimation process is built on assumptions of varying validity – the resulting problems are discussed under the heading of 'indicator bias'.

¹. Quarterly accounts for OECD member countries are published in a standardised form in the publication *Quarterly National Accounts*, issued quarterly by the OECD since 1976. Quarterly accounts for selected non-member countries, including the Baltic countries, are published in the OECD's *Main Economic Indicators* (monthly) and at the OECD website <http://www.oecd.org/std/dnm>

². The draft can be viewed at: <http://www.imf.org/external/pubs/ft/qna/2000/Textbook/index.htm>

Secondly, the timing issues arising from a shorter (sub-annual) reporting period:

- Problems such as “float” and the fact that government transactions are recorded on a cash, rather than accruals, basis are aggravated.
- The size of aggregate values is smaller, which means that some errors or biases will have a proportionally larger effect than they would on annual estimates.
- The fact that some production cycles are longer than a quarter.

Indicator Bias

The main consideration in the compilation of quarterly national accounts must be the timely availability of monthly or quarterly data. There are generally less quarterly than annual data available and, given the need to produce quarterly accounts with the least delay possible, initial quarterly estimates tend to be more affected by delays in the collection and processing of the basic data than annual estimates. Both these facts will tend to contribute to the problem of timing errors.

For most items in the accounts, the annual figures act as benchmarks for the quarterly figures by providing a basis from which the quarterly figures can be interpolated or extrapolated. Many of the revisions to quarterly accounts are attributable to corresponding revisions to the annual accounts, and it is possible that ultimately more revisions are due to revisions in the annual benchmarks than to revisions in the basic quarterly data per se. In the present context, the annual accounts are assumed to be accurate, and the relevant question is how well the quarterly accounts compare with them.

Because many data will always be available only for complete years, there is no possibility of quarterly accounts ever attaining the same standards of accuracy and reliability as annual accounts, and users must recognise and be willing to accept this fact. On the other hand, there are still abundant sources of data for compiling quarterly accounts in most countries and the difference between annual and quarterly accounts in this respect is one of degree and not kind.

The most usual method of compiling quarterly accounts is the indicator method, i.e. a set of indicators is used to represent the national accounts variables. The number of indicators varies greatly from country to country. The common feature of such indicators is that their coverage is less complete than is the case for the benchmark data. For example, indicators often give partial coverage of :

- **Variables**, i.e. output indicators only, or inputs only, are available, so a single indicator method is used to derive value added based on assumptions of constant relationships between input and outputs (constant IO ratios³).
- **Establishments**, i.e., a sample survey are used instead of a census, or similarly, a smaller sample is surveyed monthly/quarterly than annually.
- **Commodities/industries** – it is assumed that value added for the commodities/industries not covered is behaving in the same way as those that are.

³ Assuming a constant relationship between inputs and outputs is equivalent to assuming a constant relationship between output and value-added.

- **Geographic regions** – the regions measured are assumed to be representative of the whole territory.

This incomplete coverage means that indicators suffer from bias in comparison to the more comprehensive data, arising from factors such as sampling error, differences in use of the business register (different versions of the register, grossing methods, reclassifications of establishments), different quarterly and annual accounting methods used by respondents, and respondent error.

Bias also arises when an indicator is used as a proxy for the target variable, but the assumptions about the relationships between proxy indicator and the target variable are weak. For example, single indicator methods where output (or one or more inputs) is a proxy for value added, based on the assumption of a constant relationship between inputs and outputs.

The Step Problem

Since it is important that annual and quarterly accounts are consistent, and since it is generally the case that annual estimates are more reliable, quarterly estimates are usually adjusted in line with annual figures once the annual data become available. For any benchmark period (e.g. a year for which ANA are available) the benchmark : indicator (BI) ratio can be calculated, for any aggregate, as the annual total divided by the sum of the four quarterly values. Since this can be viewed as a measure of the indicator bias it would be tempting to simply adjust for the bias by distributing the annual level data according to the distribution of the quarterly indicator, i.e. some means of pro-rata distribution across quarters. This would be fine in cases where the BI ratio is constant from year to year. If, however, BI ratios for adjacent years are different, and pro-rata adjustments are used in each year, a discontinuity in the growth rate from the last quarter of one year to the first quarter of the next will be introduced. This is known as the “step problem”. In other words, the growth between Q4 of one year and Q1 of the next will reflect the change in the BI ratio (adjustment) between the years as well as any genuine growth between Q4 and Q1. Various algorithms have been developed which smooth any changes in BI ratios from year to year.

Bias in IO Ratios and Productivity Assumptions

When single indicator methods are used to estimate value added (i.e. only output or intermediate consumption are measured) the assumption is usually made that the relationship between output and intermediate consumption is the same as it was when both were last measured using benchmark data. However, the assumption of fixed IO ratios over time may be weak and this would lead to bias in GDP estimates. IO ratios may vary over time due to factors such as:

- Seasonal effects, e.g. the use of some inputs (such as fuel) may show a seasonal pattern.
- Changing capacity utilisation rates.
- Technological change.
- Productivity trends.
- Changing relative prices (current prices only).

The impact of technological changes may not be significant in the short-term (one year) and can be adequately handled through the benchmarking process provided the benchmark period is no longer than one or two years. Similarly, seasonal variations in IO coefficients cause only minor errors in the form of seasonal discrepancies between supply and use. These seasonal errors are removed altogether in seasonal adjustment and thus do not restrict the ability to identify trends and turning points. However, misguided attempts to correct the problem in the original data could distort the underlying trends.

It is recommended that IO ratios be derived, and then applied in constant prices. Using fixed IO ratios with current price data, assumes that prices of inputs, outputs and value added are all moving in the same proportions. But, relative prices can often be quite volatile due to factors such as changes in exchange rates, wage rates, profitability, and commodity prices. In the same way, deflating value added by output price indices ignores these relative price movements. It is almost always possible and better to:

1. Deflate output at current prices by the output deflator; then
2. Estimate intermediate consumption at constant prices by using a fixed IO ratio.
3. Derive value added as the difference between the estimates of output and intermediate consumption, all at constant prices.

In fact, output, intermediate consumption, and value added, all at both current prices and in volume terms should always be shown in a complete presentation, consistent with SNA93 and the supply-use approach. Compiling the full production account by industry makes explicit the assumptions about input-output ratios that might otherwise be implicit or ignored - faulty assumptions of fixed input-output ratios at both current and constant prices might become apparent in implausible implicit price deflator movements; or deflating value added by an output price index might result in unacceptable changes in IO ratios.

Timing Problems

The difficulty of ensuring that transactions are recorded at the correct time is one of the fundamental problems affecting short-term accounts. This problem affects annual accounts as well as quarterly accounts, but its effects are often more serious for the latter. This is largely a practical problem for which the only remedy is to improve the quality of the basic data on which the accounts are based.

The problem of “float” has been defined as the lack of synchronisation of accounting entries which stems from the fact that the economic units involved in a transaction receive only delayed notice of the fact that a transaction has occurred. In principle, a transaction should be recorded when payment becomes due, that is at the moment at which ownership of the goods changes or a service is delivered. Nevertheless, the different parties to a transaction may record this in their accounts at different times. Float will introduce inconsistencies into national accounts only in respect of transactions, which are still incomplete at the beginning or end of the accounting period (a transaction being regarded as complete when all the parties to it have recorded it in their accounts). At any particular time there will be a certain amount of float which is independent of the length of the accounting period, so that in relation to the aggregate of transactions recorded, the problem of float becomes more important as the accounting period is shortened.

Apart from float, inconsistencies can occur in systems of national accounts simply because transactions are reported at the wrong time. In practice, the effects are indistinguishable from those of float. There are some important and commonly occurring examples of timing errors of this kind, which are worth specifying. The first of these refers to government expenditures, which are generally recorded on a cash or payments basis, whereas national accounts require transactions to be entered on an accrual basis. Some countries adjust these payments for national account purposes in an attempt to put government expenditures on an accrual basis, but the adjustment is difficult. Other countries do not attempt such an adjustment, so that inconsistencies arise between government expenditures and other items in the accounts recorded on an accrual basis. This is undoubtedly an important problem with regard to quarterly accounts in a large number of countries.

Foreign trade is another area in which timing errors may occur because of the time needed to complete most international transactions. In principle, merchandise imports and exports should be recorded when change of ownership occurs. In practice, however, the basic statistics of merchandise imports and exports collected in most countries are based on copies of the customs documents received by the statistical office (although direct inquiries to exporters and importers are also applied, for example for internal trade in the European Union from 1993). Numerous and possibly elaborate adjustments have to be made to convert the basic statistics, which usually reflect when the goods crossed the border of the recording country, into the form required for balance of payments and national accounts statistics. In most countries, there is a serious risk that many items of foreign trade are recorded at the wrong time and some statistical authorities are concerned about the extent to which inconsistencies may be introduced between the foreign trade figures and other items in the accounts, especially changes in inventories.

The final issue to be considered under the heading of timing is the problems caused by production cycles of more than a quarter – particularly for capital assets and agriculture.

Long production cycles and time of recording of gross fixed capital formation (GFCF)

The following activities all have examples of assets with production cycles longer than a quarter, where GFCF (or work-in-progress) should be recorded in all quarters covered by the production cycle:

- **Construction** – the production cycle may vary from a few months in the case of a house, to several years for major civil engineering projects.
- Manufacturing of **machinery and equipment** – examples of goods with long production cycles are ships, submarines, aeroplanes, and some heavy equipment.
- **Agriculture** – breeding plants or animals intended for constant or repeated use, over a period of more than one year, to produce agricultural outputs, are treated as fixed assets when they reach maturity. Examples of agricultural assets which have a long production cycle (take a long time to reach maturity) are dairy cattle, breeding livestock, draught animals, vines, fruit trees, etc.
- **Services** – e.g. movie-making and architectural services.

National accounting principles require that production is recorded and valued when it takes place, not simply when the finished product is sold⁴, the production taking place in each quarter must be valued even though a finished product may not yet be ready – the production should be recorded as work-in-progress, and forms part of inventories. This avoids a situation where the earlier quarters in a production process record intermediate consumption but no output, and thus record negative value added.

The concept of work-in-progress is consistent with business accounting practices, and it fits into the three approaches to GDP measurement as follows:

- Output – as part of additions to inventories.
- Expenditure – as part of additions to inventories.
- Income – as part of operating surplus/mixed income.

The general principle of economic and national accounts valuation of output is to use market (transaction) prices, but it is uncommon to find transactions in unfinished capital goods so, the usual approach is to calculate a value based on input costs for the quarter plus mark-up. The mark-up can be estimated using the ratio of output value to costs, at constant prices⁵, over previous whole production cycles. Thus, in effect, the operating surplus is estimated as being earned over the production cycle in proportion to costs in each period. The eventual price of the final product might not actually be known (particularly in periods of high inflation), so these provisional estimates must be revised when the actual sale price becomes known.

There are two main differences between the valuation of work-in-progress by business accountants and national accountants. Firstly, business accountants may deliberately undervalue production (assuming no mark-up or an underestimated mark-up) in line with the business accounting doctrine of erring on the side of caution. This means that profits are not counted until they are realised, at the end of the production cycle causing lumpiness in the data. Similarly, progress payments may not reflect work actually done in the period. Secondly, business accountants do not distinguish between holding gains and production.

While progress payments may be a suitable indicator of output in many cases, there are several potential problems with their use as a data source:

- The payments may be infrequent.
- The payments may be delayed.
- A significant bonus element may be paid at the end of the contract, on completion of the work.

Adjustments should be made to deal with these shortcomings. If an asset is:

⁴ SNA93 (6.39) states “For simplicity, the output of most goods or services is usually recorded when their production is finished. However, when it takes a long time to produce a unit of output, it becomes necessary to recognise that output is being produced continuously and to record it as work-in-progress”.

⁵ If the output : costs ratio is derived at current prices, it will reflect prices at the time of sale, whereas the ratio should reflect the relationships at the time of production, i.e. the effect of relative price movements between production and sale should not be included.

- Produced **under contract** – for each quarter during the production cycle, on an ongoing basis, the output and GFCF are recorded simultaneously, as a sale for the producer and GFCF for the purchaser, i.e. production and acquisition occur simultaneously.
- Produced **speculatively**, i.e. no buyer has been identified – for each quarter during the production cycle, on an ongoing basis, the output is recorded as work-in-progress for the producer and thus as an addition to inventories. Once the asset is completed, its total value remains in inventories, but is recorded as inventories of finished goods, not work-in-progress. When it is sold, the producer records a sale, and a withdrawal from inventories, and the purchaser records GFCF.
- Produced on **own account** - for each quarter during the production cycle, on an ongoing basis, the output and GFCF are recorded simultaneously as own account capital formation.

Agricultural Production

Agriculture is a special case in that, for many commodities, production is highly seasonal and unpredictable due to the effects of weather, combined with the fact that the production cycle may stretch over more than one quarter. For many annual crops, sales will all occur in one quarter, while a large proportion of intermediate consumption will occur in earlier quarters, leading to negative value added in earlier quarters, unless the early growth of the crops is treated as work-in-progress. Estimates of farm output and income in quarters before crops are harvested and sold necessarily involve making assumptions regarding yields and prices, which need to be revised, as the facts are known.

The SNA93 recommends that output be recorded as being produced continuously over the entire period of production and not simply when, for example, the crops are harvested. Thus, at the start of the year an estimate is made of the likely value of the crop when sold in the future, based on areas planted and likely price movements. This forecast output should then be distributed across all quarters in the period of production (from preparation to sale), in proportion to the costs⁶ incurred in each quarter, and recorded as work-in-progress. Once harvesting has taken place, the output estimates for previous quarters can be revised (and the work-in-progress is converted to inventories of finished goods), and then revised once again when sales take place (and the inventories of finished goods are converted to sales in the accounts). The output in the quarter when harvesting take place is therefore proportional to the inputs in that quarter, which could mean that the seasonal peak in output will not occur in the harvesting quarter.

Eurostat's Handbook on Quarterly National Accounts discusses the problems associated with the SNA93 recommendation and proposes an alternative treatment. This sets output (work-in-progress) equal to costs in the pre-sale quarters and then records the balance of output in the quarter when the output is sold. This removes the need for revisions to earlier quarters, but does result in more extreme seasonal patterns than the SNA93/ESA95 method, particularly if costs are underestimated by not including an estimate for operating surplus in the earlier quarters (with the result that all the operating surplus is recorded in the sale quarter).

Both the SNA93/ESA95 interpolation method and the Eurostat alternative assume quarterly cost data are available, and the SNA93/ESA95 method requires that reasonable estimates can be made of the expected annual output (sales).

⁶ Where costs is the sum of intermediate consumption, compensation of employees, operating surplus/mixed income, taxes less subsidies on production and consumption of fixed capital.

The ways in which OECD countries treat the issue of single-use crops and livestock with a long production cycle vary considerably. In some, crop production is assigned to the quarters in which harvest occurs (Austria, Germany, Norway), in others crop production is assigned to the third quarter (Denmark, Finland, Netherlands – sugar beet in the fourth quarter), in Sweden a quarter of total output is assigned to each quarter, and in Denmark and Norway intermediate consumption for crops is distributed over quarters in fixed proportions.

II. Background to National Accounts Development in the Baltic Countries

The General Requirements of Policy-Makers

Macroeconomic policy-makers in all countries need reliable estimates of production, income and final expenditures, available sufficiently frequently, and quickly, to allow effective monitoring of policy performance. Quarterly national accounts, if disseminated quickly enough after the end of each quarter, and in sufficient detail, will serve this purpose. Thus, the interest of the OECD Secretariat in the development of quarterly national accounts follows naturally from the fact that one of its main tasks is to analyse and forecast short-term economic developments in Member countries and to contribute to the formation of sound economic policies.

National accounts can be constructed with varying degrees of detail and disaggregation. It is important, therefore, to identify the elements, which are most important for policy formulation and monitoring. The basic requirement is to have quarterly estimates of overall economic activity – this is best measured by **GDP**. Annual production (output) data are poor indicators of changes in economic trends, both because the data are usually available with a long lag (generally around six months), and because they cannot capture cyclical turning points within the year.

The second requirement is that quarterly estimates of the main **categories of final expenditure** be available, to allow analysis of the structure of GDP in terms of consumption and investment. At a minimum, this would require the conventional broad categories of:

- Household final consumption expenditure.
- Government final consumption expenditure.
- Gross fixed capital formation.
- Changes in inventories (including work in progress).
- Exports and imports of goods and services.

Even if some expenditure categories are derived as residuals, it is generally still useful to provide the expenditure breakdown.

Thirdly, it is desirable for all data to be shown in **constant prices** (as well as current prices), i.e. the growth in volumes of goods and services is separately identified from “growth” which is in fact due to price inflation. Constant price data are also needed for most kinds of economic analysis such as changes in productive capacity and the measurement of multi factor productivity.

Another important requirement is that **seasonally adjusted** estimates of GDP should be available. With unadjusted data, changes in trend can only be estimated using 12-month comparisons, such as comparing the rise (or fall) in output in the latest quarter with the rise/fall in the same quarter in the previous year. Twelve-month comparisons are likely to result in turning points being detected on average some six months late. No method of seasonal adjustment is perfectly reliable, but this is not a reason for not attempting to make adjustments. Without seasonal adjustment, much of the value of quarterly estimates is lost. Of course, seasonal adjustment requires a certain length of time series, which will not be available for the first few years after a country starts compiling QNA (the minimum length depends on the stability of the seasonality). Some countries have solved this problem by calculating a retrospective series of quarterly accounts. Even for very short series it might, however, be possible to make some very summary adjustments for seasonality in the main aggregates.

In conclusion, policy-makers' first requirement is quarterly estimates of GDP on a seasonally adjusted basis, broken down by the components of expenditure, in constant prices.

Gross value added (GVA) by kind of activity is also useful, both to indicate the relative importance of the different activities and to show their relative rates of growth. Similarly, estimates of GDP from the income side are also useful, both intrinsically and for strengthening the credibility of the estimates from the production and expenditure sides.

The data tables at the end of this chapter give a picture of the range of QNA data published in each Baltic country. All three countries provide GDP at current and constant prices broken down by main expenditure category and by activity. All three countries publish quarterly GDP by activity in current and constant prices.

Estonia also publishes seasonally adjusted estimates back to 1993. The quarterly press release contains seasonally adjusted total GDP at current and constant prices, and the annual national accounts publications contain seasonally adjusted series, from 1993, by activity (NACE 16), and institutional sector. Further decompositions of time-series have been used in the preliminary forecasts of GDP, which are used internally. Latvia and Lithuania are both developing their seasonal adjustment systems (using TRAMO/SEATS, in line with Eurostat guidelines), and in January 2001 Latvia published the first results, i.e. seasonally adjusted output and gross value added, by activity, in graphical form only. Lithuania is planning to publish first results later in 2001. The seasonally adjusted series (total GDP) used for illustrative purposes later in this chapter, have been produced by the OECD using X-12 ARIMA.

The Development of QNA in Transition Economies

The development of QNA in transition economies has been quite different to QNA development in OECD economies where annual national accounts in general were well established before any QNA were produced. Moreover, in OECD economies QNA methods could be developed and introduced on an experimental basis over many years before being considered sufficiently reliable for release to governments and to the general public. In transition economies, there has generally not been sufficient time for such lengthy experimentation, and QNA have been developed in parallel with, or in some cases even before, the annual national accounts. As a consequence, the quarterly methodology is often more similar to the annual methodology, than is the case in most OECD countries.

In the Baltic countries the previous framework for macro-economic indicators, the System of Balances of the National Economy (often referred to as the Material Product System, MPS), was phased out in the early 1990s in favour of the international System of National Accounts (SNA) adopted as the

framework for the reform of the statistical system and the development of the national accounts. At the same time there were rapid and deep economic changes and both governments and international organisations required timely macro-economic information to be able to monitor these economic developments. An early development of quarterly national accounts became necessary for statistical offices to be able to provide the necessary short-term macroeconomic information on the evolution of the economies in transition. Therefore, work on quarterly national accounts started in the first half of 1990s, before established annual national accounts were available.

Chart 1 illustrates the extent of the economic changes in the Baltic countries over the past ten years – the dramatic fall in output in 1991-92, zero growth during 1993-94 and the return to positive growth in 1995.

Chart 1: Total GDP at constant prices 1990-2000
(not seasonally adjusted)

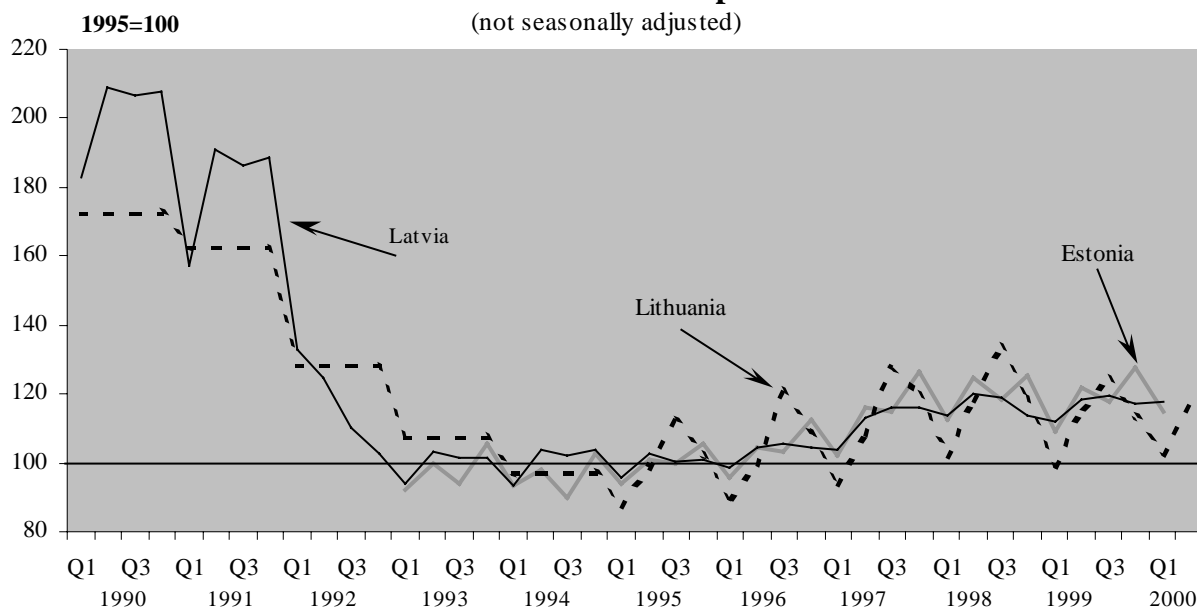


Chart 2 (below) focuses on the period 1993-2000, allowing closer examination of the seasonal pattern in total GDP in the three countries. It is interesting to note that Latvian GDP follows a much smoother path than Estonian, which in turn has a much less pronounced pattern (smaller amplitude) than the Lithuanian data. This is due, in part, to the differing importance of agriculture in each economy, combined with the different method used to account for agriculture in Latvia compared to the other countries (see chapter III).

Chart 2: Total GDP at constant prices 1993-2000

(not seasonally adjusted)

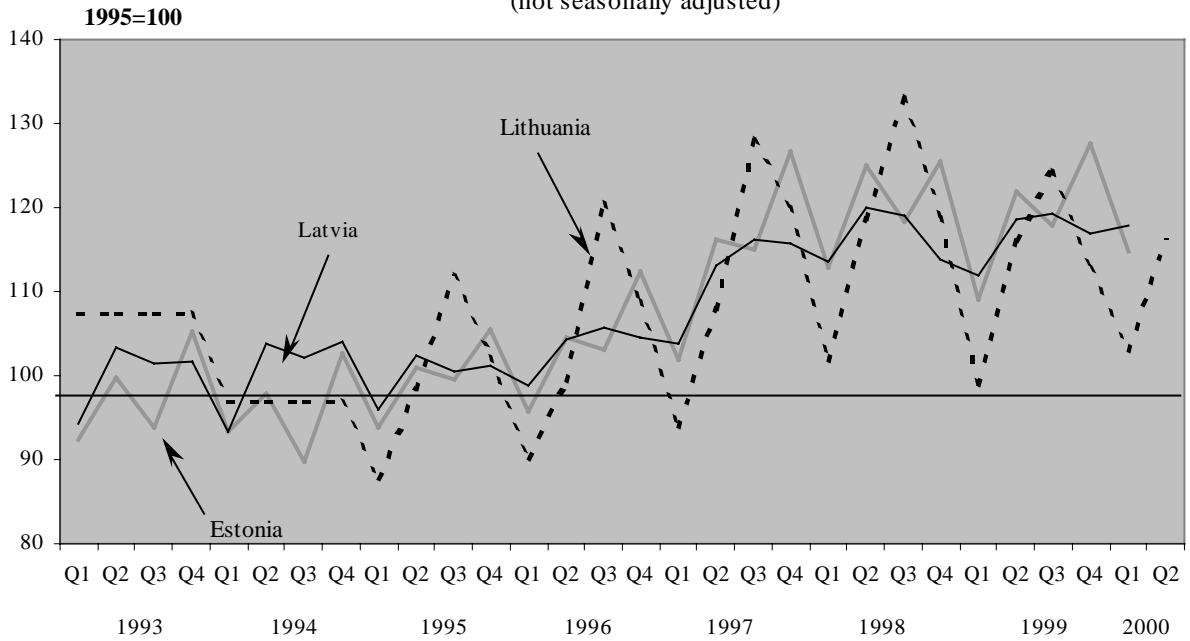
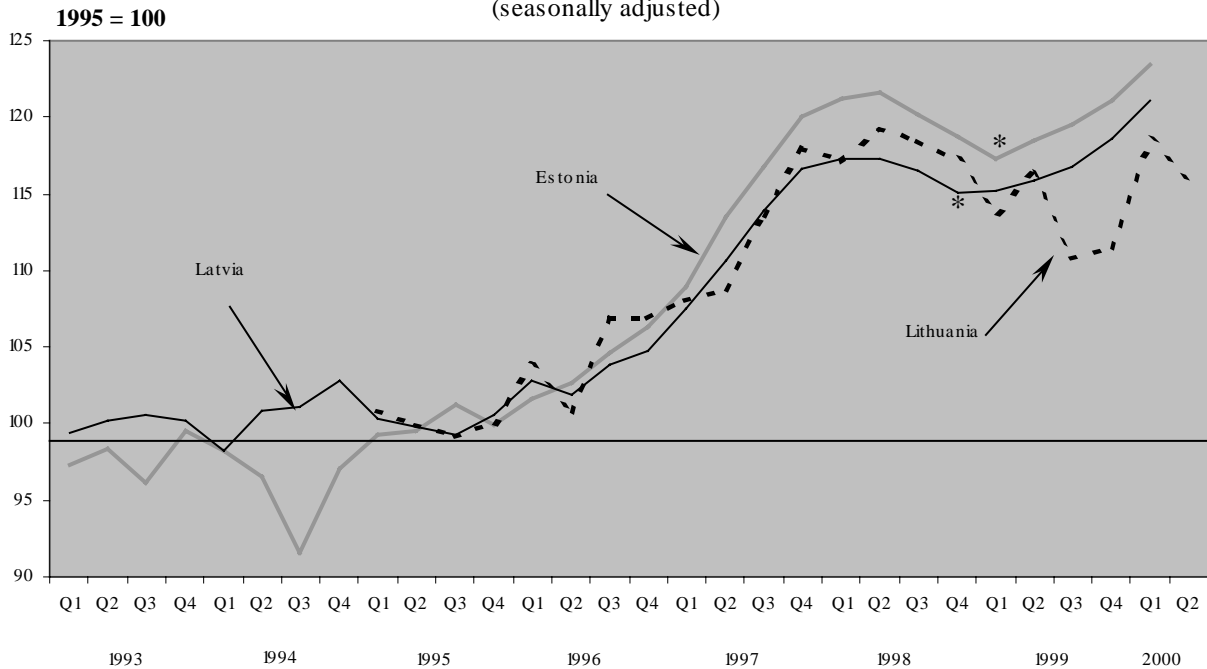


Chart 3: Total GDP at constant prices 1993-2000

(seasonally adjusted)



A similar presentation for 1993-2000 is given in Chart 3, but using seasonally adjusted data. This allows a clearer analysis of trend, and clearly shows the strong growth during 1996-97, followed by a slowing down and contraction in output in 1998 associated with the Russian crisis.

This is a good illustration of the value of seasonally adjusted quarterly data – the turning points in trends are much more clearly revealed than in Charts 1 and 2. This point is discussed further below.

Identifying Turning Points

When quarterly (or any sub-annual) data are not seasonally adjusted, and the seasonal pattern is sufficiently pronounced to obscure changes in trend in the most recent periods, the usual solution is to compare the current period (t) estimate with the estimate of the same period in the previous year (t-4 for quarterly data, t-12 for monthly data). The resulting annual change (growth rate) will detect turning points in trend with a lag of six months, on average. By far the best way to monitor trends is to make comparisons with the previous period using seasonally adjusted (smoothed) data.

The following charts compare the annual growth rates (of unadjusted data) with quarter to quarter growth rates (adjusted data). They give clear examples of the ‘advanced warning’ given by quarterly rates. For example, chart 3 shows troughs, or turning points (*), preceding a recovery in growth, for Latvia in Q4 1998 and in Q1 1999 for Estonia. This is not so clearly seen in the Lithuanian data as the adjusted series is not so smooth (due to a combination of factors – a shorter time series, more pronounced seasonality, and poor harvest in 1999).

The diagrams, below, show, for each quarter, the change in constant price GDP over the previous quarter (quarterly growth rate) as white bars, and the change over the same quarter of the previous year (12-month growth rate) as black bars. Looking again at the trough in Latvia’s GDP growth in Q4 1998 (chart 3), chart 5 shows that in Q1 1999, quarter on quarter growth for Latvia switched from being negative to positive, i.e. an upturn was signalled, consistent with the picture suggested by chart 3. Chart 5 shows that the annual rate in this quarter was strongly negative, however, giving no indication of recovery. Annual rates did become a little less negative in Q2 but did not actually indicate growth until Q3 1999. In other words, using annual changes only, recovery would be detected in Q3 1999, whereas quarter to quarter changes would have signalled recovery as early as Q1 1999. The Estonian data provide a similar illustration.

Chart 4 ESTONIA

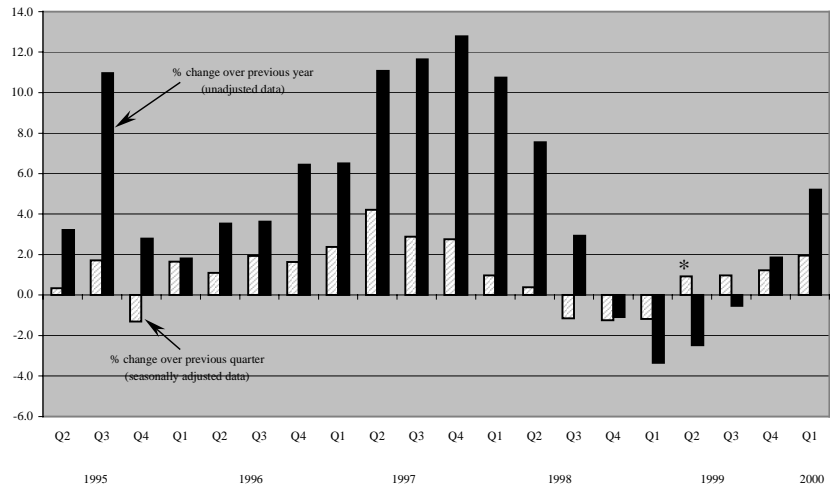


Chart 5 LATVIA

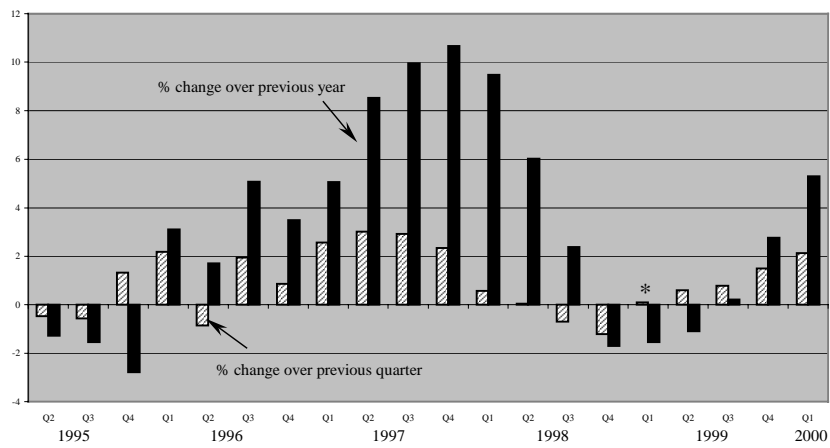
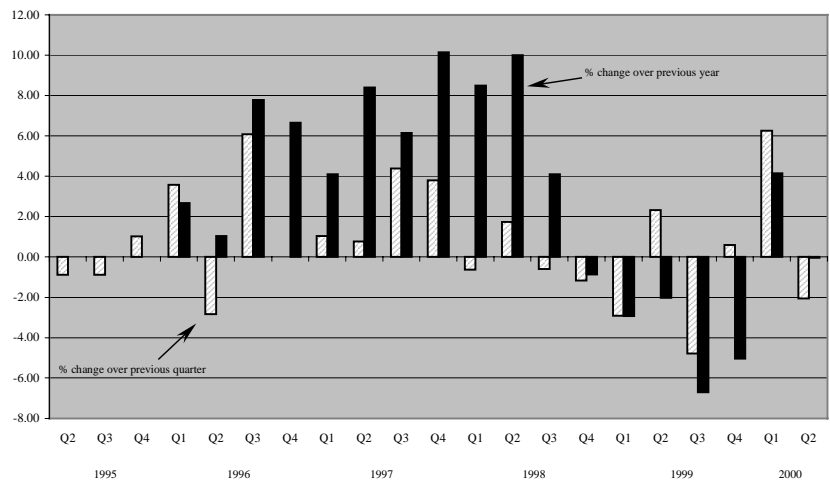


Chart 6 LITHUANIA



III. Comparison of QNA Sources and Methods in the Baltics

Introduction

This chapter provides a summary of the detailed country descriptions in Chapters IV, V and VI in two formats – a text description, and then a series of summary tables.

In the early 1990s all three countries moved from compiling national accounts according to the Material Products System (MPS), to adopting the principles of the SNA 93, and more recently the specific requirements of the ESA 95. While the methods used to compile quarterly accounts have changed considerably since the early 1990s, some of the main data sources are to a large extent unchanged. In particular, the extensive quarterly enterprise surveys continue to provide data on a wide range of variables from a large proportion of enterprises. This is in marked contrast to most OECD countries where NSOs are under pressure to reduce the length of survey questionnaires, and sample sizes, in order to minimise the reporting burden placed on businesses. The Baltic NSOs, however, are now starting to reduce their quarterly collections, so that in future they will be making more use of benchmark and indicator techniques, and other data sources, to compile QNA estimates.

Coverage and Publication (Summary Tables 1 and 6).

In all three countries, quarterly estimates of GDP have been compiled based on the SNA93 for Q1 1993 onwards. Estimates are made from the production and expenditure approaches and in Lithuania and Estonia from the income side. All countries publish GDP broken down by activity (the 16 main headings of NACE Rev. 1) and by main expenditure category, at both current and constant prices⁷. The base year for constant price estimates is 1995. GDP broken down by type of income is published at current prices only.

In Latvia and Lithuania, the GDP estimates from the production and expenditure approaches are completely reconciled, whereas in Estonia a statistical discrepancy is published (the production estimate is treated as the official figure). Estimates from the income side (Estonia and Lithuania) are automatically reconciled with the production estimates since the operating surplus/mixed income component is derived as a residual.

The publication timetables vary between countries – Lithuania and Estonia publish “flash” estimates of GDP growth, 30 and 65 days after the end of the quarter respectively. Latvia publishes estimates from the production approach, with activity breakdown, at 90 days, and the expenditure breakdown at 120 days. Lithuania publishes estimates from all approaches with all breakdowns at 90 days, and Estonia provides full data at 120 days.

The revisions policies allow for revisions at any time that improved data become available, and in practice this means that Q1- Q3 (of year t) are revised when Q4 data are published (March t+1) to give the first annual estimates for year t, all quarters are revised later in year t+1 as preliminary annual

⁷ Although Lithuania was not publishing Q GDP by expenditure category at constant prices at the time of writing, publication was due to start in April 2001.

estimates are made based on annual data, and then again in March of year t+2 as annual data for year t are “finalised” (although in practice, further revisions may be made).

As mentioned in the previous chapter, Estonia publishes seasonally adjusted current and constant price GDP each quarter, and each year publishes seasonally adjusted series, from 1993, by activity (NACE 16), and institutional sector. Latvia and Lithuania are both developing their seasonal adjustment systems (using TRAMO/SEATS, in line with Eurostat guidelines), and in January 2001 Latvia published the first results, i.e. seasonally adjusted output and gross value added, by activity, in graphical form only. Lithuania is planning to publish first results later in 2001.

In all cases, data are published both at the NSO website and in paper press releases and publications.

Taking Account of “Non-Observed” Activity

Exhaustiveness of national accounts estimates is difficult to achieve because the way in which certain economic activity is carried out means that it tends to go unrecorded, i.e. activities that are illegal, underground, informal, or simply missed by the statistical system. This is known as the non-observed economy (NOE). Users often assume that the figures published by NSOs exclude the NOE, and then try to make their own estimates of what they consider to be the NOE. However, a couple of caveats are needed here – firstly, there is much confusion over terms such as black economy, hidden, underground, etc. and the degree to which they interact/overlap. Secondly, most NSOs do estimate and include the majority of the NOE in their published GDP estimates. Thirdly, there is little point in comparing the size of the NOE across countries since the size of the NOE depends on the exhaustiveness of the data collection system in each country.

It is also worth pointing out that many transition economies (particularly EU candidate countries) may be ahead of more developed economies in their measurement of the NOE, largely because they are using a logical framework to analyse and correct for under-recording. Extensive work has been done in this area in the Baltic countries, in co-operation with Eurostat, and other organisations such as the World Bank. In addition, the OECD is publishing (in late 2001) a *Handbook for Measurement of the NOE*, a draft of which can be viewed at <http://www.oecd.org/std/dnm>⁸

Chapters IV, V and VI contain fairly detailed descriptions of the methods used to measure the NOE in each country, and it can be seen that the approaches follow the framework developed by Eurostat, i.e. the reasons why any activity might go unrecorded are identified, clearly defined and used as general headings for investigation. Adjustment factors are thus calculated and applied at a detailed level. Note that the headings are not mutually exclusive, and thus cannot be aggregated directly. The Eurostat headings are:

1. **Non-response** to surveys – usual to some extent for all surveys. Standard imputation/grossing methods are used to deal with this, as described in Chapters IV and VI.
2. **Enterprise registers** not sufficiently updated. All three countries use a combination of methods to keep registers as up to date as possible, i.e. specific register surveys to ascertain whether enterprises are active or not, plus monitoring of newspapers, advertisements, etc. to detect new enterprises.

⁸ Click on Meetings and then on the workshop in the Russian Federation, 16-20 October 2000 – *Joint OECD- Eurostat Workshop on Measurement of the NOE*.

3. Statistically **non-observed** – e.g. units not surveyed, as they are smaller than the minimum size threshold of the business register.
4. **Deliberate underreporting** – e.g. under-reporting of output, and/or over-reporting of intermediate consumption to reduce tax liabilities. In Latvia, this is detected using verification techniques based on accounting identities. In Estonia and Lithuania special surveys of bookkeepers and accountants are used to derive adjustment factors. In Estonia, underreporting is assumed to occur only in the service industries.
5. **Deliberate non-registration** of units or parts of units (“hidden” units). In all three countries this is tackled initially with the methods mentioned above under 2, and then by confronting data from different sources, particularly employment data from enterprise surveys, LFS and tax records. In Estonia, hidden activity is a particular issue in service industries such as trade, construction, real estate, hotels and restaurants.
6. **Informal** (households’) activity. Although a significant proportion of this activity will be identified through the LFS, a lot will be missed. Thus, all three countries use a range of employment data sources in combination with special surveys such as the HBS supplementary questionnaire used in Lithuania which asks for information on payments mad to individuals/enterprises for which no receipts or documents were provided.
7. **Illegal** activity. All three countries make estimates of the expenditure on illegal drugs, and of the production of prostitution services. Only Estonia includes these estimates in published GDP – in Latvia and Lithuania the estimation methods are still under development. Estimates are also made of the value of production of illegal audio/video media in Estonia, and in Lithuania the expenditure on stolen cars is estimated.
8. **Other** – e.g. production for own final use, tips, wages and salaries in kind, etc.

In the Baltic countries a wide variety of data sources is used to calculate adjustment factors for both the production approach and the expenditure approach (and the income approach in Lithuania). The factors are generally calculated annually and then applied to quarterly data, taking account of special economic conditions in any quarter.

Despite having said that there is little value in cross-country comparisons, the following table shows the sum of the adjustments made in the three countries. This table is simply a summary of the information and any conclusions drawn from a simple comparison of the figures could be highly dubious.

1998	NOE included in GDP (as % of GDP)	Illegal activity (as % of GDP)
Estonia	12.4	0.6 (included in GDP)
Latvia	16.78	0.96 (not included in GDP)
Lithuania	18	0.5 (not included in GDP)

Main Data Sources (Summary Tables 2 and 4)

All Baltic NSOs maintain a **business register** for statistical purposes (usually called a statistical profile, or statistical business register). These registers provide the sampling frame for the regular surveys of enterprises and public bodies, and are based on, and updated from, the administrative registers of various government bodies.

The business registers currently hold records at the enterprise level, but work is in hand in all countries to bring them onto the basis of establishments, or local kind of activity units. The Latvian and Lithuanian business registers have no size threshold and thus cover all small units, as far as they have been identified. The Estonian register includes units with an annual turnover in excess of 250 000 Kroons (approximately USD16 000), although in the next few years the SOE will be granted access to individual tax records which means that smaller units can be included. In all cases the registers are updated using many information sources, including specific register surveys aimed particularly at new units.

Agricultural enterprises are covered by the business registers but smaller, private farms are listed in a special register or database. In Estonia and Lithuania, all holdings larger than one hectare are covered (plus smaller holdings providing significant income in Lithuania), giving roughly 51 000 and 67 000 entries respectively. In Latvia there is no size cut-off and the farms register currently holds around 300 000 records, and is not yet complete.

In all countries, the population databases/register (the sampling frame for HBS, LFS, etc.) have been outdated for the past few years, but will be improved considerably following the population censuses of 2000/1.

All three countries have **statistical surveys** covering:

- Enterprises
 - Quarterly financial surveys
 - Wages and salaries surveys
 - Retail trade surveys
 - Investment surveys
 - Surveys of consumer and producer prices, and construction costs
- Agricultural holdings
 - Small private farms/holdings (>1 ha) are sampled quarterly (twice a year in Latvia)
- Non-profit organisations serving households (NPISHs)
 - annual surveys

- Households
 - Household budget surveys (HBS)
 - Labour force surveys (LFS)

All countries also use data from the following **administrative sources**:

- Customs and Excise Department
- Tax Department
- Ministry of Finance – budget data
- Central Bank

Compilation of GDP at Current Prices

The Production Approach (Summary Table 2)

Market activities are classified according to NACE Rev. 1, or a national classification based on NACE Rev. 1, e.g. the Classification of Activities of the Estonian National Economy (EMTAK). The goods and services produced by government units are classified as either individual or collective according to the Classification of the Functions of Government (COFOG).

In all countries the main data source for calculating the value added of **non-financial corporations** is the quarterly enterprise survey. Quarterly value added in current prices is calculated mainly using direct level estimates, i.e. in Estonia and Lithuania data on intermediate consumption are collected each quarter and thus assumptions about input-output (IO) relationships are not needed. In Latvia, intermediate consumption data are collected annually only, and thus value-added is calculated from output (turnover) data using input-output ratios at the 2 digit level, in current prices, from the previous year's annual data.

From 2001 onwards, Estonian business surveys will be redesigned to reduce the reporting burden on enterprises, so that less data will be collected on a quarterly basis from non-financial corporations. Thus, quarterly GDP calculations will involve assumptions about IO relationships, plus more use of growth rate data, extrapolation and benchmarking techniques, as are commonly used in OECD countries.

In Lithuania, the level of value-added for unincorporated enterprises is derived to some extent using annual tax returns (which provide data on receipts and expenditure). Quarterly tax data were available until the start of 1999, and these historical data provide the quarterly path, which is used to impute data for the current quarter based on the last available annual level data and current changes in the smaller of the surveyed enterprises. These quarterly estimates are revised in line with the relevant annual data as soon as possible.

Agricultural output is calculated using quantity revaluation techniques, i.e. using average crop yields per hectare which are grossed up using land use data, to give volumes which are multiplied by average

prices to give output at current prices. Livestock output is based on quarterly sales data and surveys of livestock numbers. Purchases by food processors are also used to estimate output.

In Estonia and Lithuania, agricultural output is recorded when sales occur, and intermediate consumption is recorded when it occurs, i.e. account is not taken of work-in-progress for growing crops and livestock. In Latvia, output is recorded in each quarter as it occurs (sales adjusted for changes in inventories and own account production), and intermediate consumption is calculated by applying the overall IO ratio for the previous year. So, each quarter is assumed to have the same IO relationship, and the problem of negative value added does not arise (this approach also has the effect of partially smoothing extreme seasonal patterns). It is interesting to note (see Chapter II, Chart 1, 1995 onwards) that the seasonal pattern in overall GDP does appear to be smoothed in the case of Latvia, and is considerably more pronounced in Estonia and Lithuania, (the amplitude is also much greater in Lithuania, where agriculture makes up a larger proportion of GDP).

In Latvia, the intermediate consumption of **FISIM** is allocated to activities using the structure of the previous year, but final consumption of FISIM is not allocated to HFCE or exports. In Estonia and Lithuania, FISIM is allocated to a nominal sector rather than to sectors of intermediate or final consumption (as shown in the data tables in Annex I).

The estimation of output of **housing services** presents problems in most transition economies. The EU *acquis communautaire* requires countries to estimate the output of owner-occupied dwelling services by imputing rents, stratified by dwelling type, location, etc. Although estimates of dwelling stocks (volumes) are not too bad, most candidate countries cannot comply at the moment, as they cannot make good estimates of private rents (prices) due to the nature of their housing markets:

- Very large owner-occupied sectors, but tiny private rental sectors.

Percentage of :-	Owner-occupied	Private rented	Government (including co-ops)
Estonia	70	6	24
Latvia	53	12	29
Lithuania	94	3	3

So, private rents do not exist for many types of dwelling, and generally may be impossible to collect as they may be 'hidden'.

- The value of rents for government-owned dwellings are as low as 10% of market (private rents) and thus cannot be used as proxies for private rents.

Another approach, used in some member states, is self-assessment (owner-occupiers are asked to suggest the level of rent that could be charged for their property). Eurostat rejects this as too subjective, and particularly unreliable in countries where private rents are rare in any case. So, Eurostat has concluded for the time being, that the best way forward (albeit an unsatisfactory solution) is a user-cost method, i.e. to estimate market rents from their components – intermediate consumption, consumption of fixed capital, compensation of employees (assumed to be zero), taxes on production, and net operating surplus. Unfortunately, net operating surplus is proving extremely difficult to estimate, and much more work is needed in this area. Development work will continue, with the participation of Estonia and Lithuania. The medium term aim is for all countries to adopt the full stratification method using private rents, but this will only be possible as housing markets become freer.

The output, and value-added, of **government services** are calculated as the sum of costs using monthly or quarterly budget reports. The output, and value added, of **NPISHs** are calculated by imputing one quarter of the most recently available annual data, and, in the case of Estonia, adjusting these values using data on wages and salaries from the National Tax Office.

Holding gains and losses on inventories are calculated quarterly in Estonia and Lithuania, and annually in Latvia.

The Expenditure Approach (Summary Table 4)

In all countries, valuation and classification of transactions is in accordance with ESA 95 and SNA93:

- Transactions are recorded on an accruals basis, with the exception of government expenditure, in which case the recording is on a cash basis;
- International transactions are recorded at the time the goods enter/leave the economic territory as documented in the corresponding customs declarations, and imports and exports are valued f.o.b. They are classified using a national classification at the detailed level (usually 9-digits), derived from the EU's Combined Nomenclature;
- Household final consumption expenditure (HFCE) is valued at purchasers' prices, and classified according to the Classification of Individual Consumption by Purpose (COICOP). The expenditure of NPISHs is also classified by COICOP;
- Gross fixed capital formation (GFCF) is valued at purchasers' prices where existing assets are acquired or basic prices where new assets are produced for own use. Expenditure on fixed capital formation is classified according to the ESA 95, i.e. following NACE (Rev. 1). Inventories are valued at basic prices, except for intermediate consumption which are valued at purchasers' prices;
- Government output and expenditure are classified according to the Classification of the Functions of the Government (COFOG).

The main data source for estimating **HFCE** in each country is the HBS, although a wide range of adjustments are made to HBS data to correct for underreporting and other causes of non-observed expenditure, and for the fact that the scope of HBS data is different to the scope of GDP. These adjustments have mostly been developed in co-operation with Eurostat, and more details are given in the country chapters.

The final consumption expenditure of **government and NPISHs** is estimated in all cases as their output (calculated from costs), less the revenue from sales, plus imports of any government services (such as technical assistance services obtained from the balance of payments).

GFCF is calculated based on quarterly investment survey data, which are available by major class of asset. In Estonia and Lithuania, data are collected on acquisitions each quarter, but not disposals, thereby assuming little trade in second-hand assets. GFCF by agricultural enterprises is available quarterly in Latvia (CSB survey) and Lithuania (Ministry of Agriculture) but annually in Estonia. GFCF by small farms, and other unincorporated enterprises, is estimated using HBS data, plus building permit data (Lithuania) and the construction register (Estonia).

Information on the flows of intangible assets and valuables is scarce in all countries.

Changes in inventories is calculated as a residual (balancing item) in Latvia. In Lithuania, best estimates are made using quarterly survey data but are adjusted during balancing as their quality is poorer than that of other components of expenditure. In Estonia, changes in inventories are derived independently using source data – they are not derived as a residual, and GDP(E) is published with a statistical discrepancy. Estonian data are obtained directly from the quarterly and annual enterprise surveys on inventories of raw materials, work in progress finished goods and goods for resale, and are adjusted for holding gains. Agriculture is an exception in Estonia in that work-in-progress and inventories are not taken into account, i.e. output is assumed equal to sales, and intermediate consumption equal to purchases.

In all countries, quarterly balance of payments data are used as the source for estimates of **exports and imports** of goods and services. In all cases, balance of payments data are compiled to a very large extent in accordance with the IMF's 5th Balance of Payments Manual, and thus take account of expenditure and earnings by residents abroad, and by visitors to the territory, and to some extent underreporting and non-observed trade (see also sections on measurement of the non-observed economy).

Compilation of GDP at Constant Prices

The Production Approach (Summary Table 3)

In all three countries, a single indicator method of deflation/extrapolation is used for all activities. Single deflation methods make the assumption that the relationship between output and value added at constant prices is stable over time, i.e., constant input-output ratios over time. In compliance with ESA 95, all three countries are working with Eurostat to develop double deflation methods, in conjunction with developing annual supply and use tables.

The deflators used are PPI and CPI components, construction cost indices, and in some cases, agricultural prices indices.

Volume changes are estimated directly for several activities, using data on physical quantities, which are then used to extrapolate constant price value added from the previous quarter. The activities treated in this way are:

- Agricultural and forestry output (Estonia and Latvia).
- Transport and storage (all three).
- Fishing (Latvia).
- Electricity and gas (all three).
- Communication services (Estonia and Latvia).

Constant price estimates of value added by government and NPISHs are made by extrapolating the previous quarter's estimates using employment data in Latvia and Estonia. Adjustments are made for productivity changes in some areas – in Estonia for education, where the number of students (pupils), teachers are taken into account (stratified by education level), and in health, using the numbers of outpatient visits, inpatients, average bed use etc. In Lithuania, output at constant prices is calculated

as the sum of intermediate consumption, compensation of employees and consumption of fixed capital at constant prices. The components of intermediate consumption at current prices are deflated using appropriate CPI sub-indices for ten commodity groups. Compensation of employees is deflated using average earnings indices, adjusted for changes in productivity, as measured by educational and professional qualifications. Consumption of fixed capital at constant price is derived as the share of output in the base year. Value added is calculated as the sum of compensation of employees and consumption of fixed capital.

In all three countries constant price estimates of value added by financial institutions are made by extrapolating the previous quarter's estimates using employment data. Adjustments are made for productivity changes using volume indicators such as number of bank accounts, insurance policies, etc.

The Expenditure Approach Summary (Table 5)

In Lithuania, constant price estimates from the expenditure approach have been developed quarterly but have not yet been published quarterly as the import deflators have not, until recently, been sufficiently reliable. However, following recent developments in these deflators, there are plans to publish, in April 2001, constant price estimates of the expenditure components for all quarters from 1995.

In all three countries, **HFCE** is deflated using CPI components at varying levels of detail – Estonia for 109 groups, Latvia for 12 groups (280 annually), and Lithuania for 45 groups.

In Estonia, final consumption expenditure of **government and NPISHs** is derived by deflating output (less incidental sales) using the all-items CPI. In Lithuania, the deflator is the implicit deflator for government and NPISH output, and in Latvia, constant price expenditure is assumed to be the same as constant price output.

GFCF estimates at constant prices are produced as follows:

- For construction, in Lithuania each main type of construction is deflated by the appropriate component of the construction cost index is used, i.e. for residential buildings, for non-residential buildings, and for other structures. A similar breakdown is used in Latvia, and in Estonia, the overall construction cost index is used.
- In all countries, for domestically produced machinery and equipment, the appropriate PPI for the domestic market component is used as a deflator. For imported machinery and equipment, import unit value indices are used.
- GFCF of livestock at constant prices is calculated based on volume changes.

In Estonia and Lithuania, **changes in inventories** are deflated in detail using the relevant PPIs and CPIs, weighted according to rates of stock turnover, although in Lithuania this item is treated to some extent as a balancing item. In Latvia, changes in inventories are derived as a residual.

In all three countries, **export** price indices are used to deflate values of goods exported and a combination of import price indices and unit value indices are used for deflating **imports** of goods.

In Estonia, exports of services are deflated using the relevant component of the domestic CPI. Imports of services are deflated using a weighted average of CPIs of the most important trade partners and of the most important countries of destinations of Estonian tourists. Exchange rate effects are not taken into account because the Estonian kroon is pegged to the EURO, and the countries of the European Monetary Union (EMU) account for more than 60% of total Estonian foreign trade and services. Thus it is the opinion of SOE that exchange rate changes do not have a strong effect.

In Lithuania and Latvia, all exported services are deflated using the relevant components of the domestic CPI, except transport services which are deflated using the implicit output deflator for transport services, and construction services where the construction cost index is used.

In Lithuania, all imported services are deflated using the same average index of partner country price indices for their exported services. The index is not currently adjusted for exchange rate movements, but this work is under development. In Latvia, imports of services are deflated using changes in currency exchange rates (usually US \$) and changes in domestic PPIs for the services – it is not currently possible to identify the country of origin for imported services. The services involved are transport, financial services, and to a lesser extent construction and some government services (technical consultancy).

Balancing the Production and Expenditure Approaches

In all three countries the estimates from the output approach are considered to be the most reliable, but while Latvia and Lithuania bring the output and expenditure estimates in line before publication, Estonia prefers (for the time being) to publish estimates which may not be completely reconciled, i.e. there is a statistical discrepancy. OECD Member countries vary in their practices – some consider that having more than one independent approach, and publishing a discrepancy, indicates the accuracy and reliability of the estimates, while others see having more than one estimate as confusing for users⁹.

In all countries, regardless of whether estimates are completely balanced, there will be some degree of reconciliation. Particular attention is paid to items calculated indirectly and to items based on weak or revised source data. This is why, after all “rational” balancing, any remaining discrepancies are absorbed into changes in inventories. It is worth making the point that, given the rapid economic development and changes in statistical systems in the Baltic countries, the balancing process presents different challenges from year to year, and thus it is not possible to state which data are systematically revised.

In Latvia balancing is done both in current and constant prices – the results are reasonably consistent in current prices. For 1995 annual data, a commodity flow approach has been used, whereby the goods and services account is reconciled (for the moment, at an aggregate level). This has been further developed into a supply and use framework for 1996 onwards, which is published at the NACE 2-digit level (calculations are done at a more detailed level).

Estonia considers the estimates by the output approach to be the most reliable, and estimates from the output and expenditure approaches are not reconciled due to the absence of supply and use tables. Annual tables for 1997 were published in October 2000, and the plan is to compile supply and use tables for every year in current and previous year constant prices starting from 1997.

⁹ See IMF Working Paper *Discrepancies Between Quarterly GDP Estimates* – Adriaan M. Bloem et al. September 1997 (WP/97/123).

In Lithuania GDP estimates for all sectors from the production approach are considered more reliable than any item from the expenditure approach. In the income approach, operating surplus and mixed income are calculated as a residual, and thus the income estimates cannot be viewed as independent, but nevertheless can provide useful input into the validation process.

Reconciliation of Quarterly and Annual Estimates

It is essential that quarterly estimates are consistent with annual estimates for any particular year – differences in growth rates between quarterly and annual GDP would confuse and irritate users and must be reconciled. Since annual estimates are nearly always based on more comprehensive, and thus more accurate, data, quarterly estimates are adjusted retrospectively to bring them in line with annual figures.

The first step in reconciliation is to identify and correct any systematic causes of differences, e.g. bias in quarterly data due to sampling and grossing effects. Any remaining differences must be removed by a mathematical approach, the most straightforward of which is a simple pro-rata distribution, i.e. distributing the annual level data according to the distribution of the quarterly indicator. Unfortunately this approach is only suitable in very limited circumstances, i.e. where the ratio of annual data to the sum of the quarters is constant from year to year. If ratios for adjacent years are different, and pro-rata adjustments are used in each year, a discontinuity in the growth rate from the last quarter of one year to the first quarter of the next will be introduced. This is known as the “step problem”, and various techniques have been developed to deal with it.

In Lithuania the main method of reconciliation is to identify the causes of the difference between quarterly and annual estimates of each preliminary aggregate. These differences and any remaining discrepancies are distributed between the quarters weighted by quarterly output. Adjustments can be significant in the case of agriculture because it is necessary to forecast crop production in order to make quarterly estimates, and these need to be replaced with actual data which usually are available on an annual basis.

In Latvia the ratio between the annual value and the sum of the quarters is calculated for each activity (2-digit), and individual quarters are revised where reasons for differences can be quantified. If no specific explanation can be found then, then all quarters are adjusted, but the first quarter is adjusted less than the later quarters in order to avoid the step problem between years, but within the constraint that the sum of the quarters will still equal the annual total. On the expenditure side, investment data and household final consumption expenditure estimates are generally the areas that need reconciling.

Pro-rata distribution is used in Estonia.

Table 1. Approaches used to Compile Quarterly GDP

Country	Production approach GDP(O)	Expenditure approach GDP(E)	Income approach GDP(I)	Basis of official GDP	Seasonal adjustment	Reconciliation with annual accounts	Remarks
Estonia	Current prices Constant prices: at average prices of 1995	Current prices Constant prices: at average prices of 1995	Current prices	Estimates from the production approach., with statistical discrepancy between GDP(O) and GDP(E) explicitly shown.	First published in 1997, series back to 1993; quarterly GDP by economic activity (16) and institutional sector, at current and constant prices.	Production and expenditure estimates are benchmarked to annual data using the same pro-rata adjustments in each quarter.	Annual estimates for non- observed activity, by broad economic activity, are used to adjust quarterly data. The intermediate consumption of FISIM is not allocated across activities, and is shown separately as a nominal industry.
Latvia	Current prices Constant prices: at average prices of 1995	Current prices Constant prices: at average prices of 1995	Current prices, but only annually	Estimates from the production approach, with the discrepancy between GDP(O) and GDP(E) usually included in change in inventories, so that the two approaches are reconciled.	Under development, with the first results published in <i>Macroeconomic indicators of Latvia 3/2000</i> (issued in January 2001).	Production and expenditure estimates are benchmarked to annual data using the same pro-rata adjustments in each quarter.	Annual estimates for non- observed activity, by broad economic activity, are used to adjust quarterly data. The intermediate consumption of FISIM is allocated across activities.
Lithuania	Current prices Constant prices: at average prices of 1995	Current prices Constant prices: under development, publication planned for April 2001.	Current prices	Estimates from the production approach, with the discrepancy between GDP(O) and GDP(E) usually included in change in inventories, so that the two approaches are reconciled.	Under development but not yet published.	Production and expenditure estimates are benchmarked to annual data using the same pro-rata adjustments in each quarter.	Annual estimates for non- observed activity, by broad economic activity, are used to adjust quarterly data. The intermediate consumption of FISIM is not allocated across activities, and is shown separately as a nominal industry.

Table 2. GDP (O): Sources and Methods for the Production Approach in Current Prices

A. Main sources: Census-type and sample surveys

Country	Type of survey	Activities/Sectors	Units covered	Response rates	Variables used for GDP(O)
Estonia	Quarterly enterprise financial survey	All except agriculture, hunting and fishing.	All public enterprises, plus all private enterprises with 20 or more employees, and a sample of all other enterprises	About 88% response; Grossing up for non-response Done by statistical branches	Direct level estimates for output and intermediate consumption , by sectors and branches, for each quarter ; results sometimes used to extrapolate from previous quarter data
	Annual survey of non profit institutions	Selected services	Around 50% of NPISHs	80% for sports clubs and dwelling unions, 50% for other NPIs.	Quarterly data are imputed in each quarter of the current year, equal to 25% of the most recently available annual data, adjusted using data on wages and salaries from the National Tax Office.
	Monthly survey of wages and salaries	All branches	Enterprises with more than 50 employees.	70%	Persons employed and direct level estimates of wages and salaries
	Quarterly surveys of agricultural production	Agriculture	Incorporated agricultural enterprises, plus unincorporated private farms > 1 ha.	85%	Direct level estimates of physical quantities and prices of agricultural products
	Household budget survey		All economically active households		Direct level estimates of market production for own-use by households, valued at market prices
	Quarterly labour force survey		All economically active households		Labour force data, used to assess the size of the non-observed economy, by estimating the labour input of unincorporated enterprises

Latvia	Quarterly enterprise financial survey	All branches , except banks and insurance	All enterprises with annual turnover over 300,000 Lats, plus most of those between 200,000 and 300,000 Lats.	About 93% response; Grossing up for non-response Done by statistical branches	Direct level estimates for output at basic prices; intermediate consumption calculated using share of previous year and value added for each quarter ; results sometimes used to extrapolate from previous quarter data; taxes minus subsidies on products calculated using budgetary data
	Monthly surveys of enterprises	All branches , except financial intermediaries	All enterprises with 20 employees or more; sample for those with less than 20 employees	90-95%	Value of turnover or sales, split between domestic sales and export. Number of employees.
	Annual survey of NPISH	Selected services	All non-profit institutions registered in statistical register	Quarterly data imputed using previous year data	Quarterly data are imputed in each quarter of the current year, equal to 25% of the most recently available annual data.

Table 2 (contd.)....

	Quarterly surveys of labour and wages	All branches including budgetary institutions	All enterprises with 20 or more employees, plus budgetary institutions Agricultural enterprises, including state farms	85-90% Grossing up for non-response done by statistical branches	Direct level estimates of wages and salaries
	Quarterly surveys of agricultural production	Agriculture	Private farms (unincorporated, but > 1ha)	85%. Grossing up for non-response done by statistical branches	Physical quantities and prices of agricultural products
	Sample survey of private farms performed twice a year	Agriculture	All economically active households	Grossing up for non-response done by statistical branches	Physical quantities and prices of agricultural products
	Household budget survey		All economically active households	Non responding households are substituted	Production by households
	Labour force survey performed twice a year				Labour force data
Lithuania	Quarterly survey of businesses	All branches except financial intermediation and public administration	Since quarter 1, 1998, all enterprises above a certain employment size (which varies from activity to activity); ratio estimation used to derive aggregates for each activity	About 80% response; Grossing up for non-response Done by branch statisticians since 1998; previously by NA compilers	Direct level estimates for output at basic prices and intermediate consumption, by branches and type of ownership; taxes minus subsidies (cash basis) added to value added; adjustments on output and intermediate consumption for holding gains/ losses. Value added calculated for 38 branches, published for 16; results sometimes used to extrapolate from previous quarter data
	Quarterly survey of agriculture	Agriculture	Since quarter 1, 1999, all agricultural enterprises, and all private farms > 50 ha. Smaller private farms are sampled		Quantities of crop and livestock production, intermediate consumption and inventories.
	Surveys of financial corporations	Financial institutions	All registered insurance companies and other financial intermediaries	95%	Profit and loss data
	Survey of NPISH	Sports clubs, charities, trades unions, and political parties. Not churches.	All institutions	About 75%, grossed up using employment data	Quarterly data are imputed in each quarter of the current year, equal to 25% of the most recently available annual data

Table 2 (contd.)...

	<p>Annual census, and quarterly sample survey of wages, salaries and employment.</p> <p>Half-yearly labour force survey</p>	<p>NACE Rev 1 branches A to O</p>	<p>All types of enterprise except sole proprietorships</p> <p>All economically active households</p>		<p>Persons employed, wages and salaries and working hours</p> <p>Data are compared with employment data from financial reports, then used to adjust gross output and intermediate consumption for under coverage.</p> <p>Labour force data – used in assessment of the size of the non-observed economy – labour input of unincorporated enterprises</p>
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Table 2. GDP(O): Sources and Methods for the Production Approach in Current Prices

B. Administrative Sources

Country	Type of data base	Activities/Sectors	Variables used for GDP(O)
Estonia	Monthly and quarterly budget data	General government	Data are on cash basis. Revenues and expenditures by cost component are used to derive output as the sum of costs. Taxes less subsidies are added to total value added in all branches
	National Tax Board	Non-financial corporations in all branches	Turnover data are used for the flash estimate of GDP. Data on employee compensation and taxes on products are used to check against trends in output by activity from survey sources. Data are monthly and are available by activity (in the future SOE will have access to individual tax records).
	Bank of Estonia, and Estonian Insurance Supervisory Authority	Banking and insurance	Profit and loss data, balance sheets
Latvia	Monthly budget data from The Treasury	General government	Data are on cash basis. Revenues and expenditures by cost component are used to derive output as the sum of costs. Taxes less subsidies are added to total value added in all branches
	Bank of Latvia, and the State Insurance Supervision Inspectorate	Banking and insurance services	Profit and loss data quarterly; balance sheets monthly
	State Revenue Service – Taxpayers’ Register	Payers of tax in all branches	Data on receipts and outlays, provide estimates of output and intermediate consumption. Data are available to the CBS in aggregate form only.
Lithuania	Central and local government budget data from the Ministry of Finance	General government	Revenue and expenditure data are available quarterly by government function and economic classification, on a cumulative basis.
	Bank of Lithuania	Banking services	Profit and loss data

Table 3. GDP(O): Sources and Methods for the Production Approach in Constant Prices

Country	Single indicators, output related indices		Single indicators, input related measures	
	Value added extrapolated with physical quantity index	Value added extrapolated with deflated output	Value added extrapolated with numbers employed	Deflation
Estonia	Forestry; mining; electricity; steam; hotels; sale, maintenance and repair of motor vehicles; retail sale of automotive fuel; transport; freight.	Fishing; manufacturing; gas; water; building; construction; wholesale trade; retail trade; restaurants; storage; real estate; renting; business activities; education; health and social work; other services	General government; NPISH; financial sector. Productivity adjustments are made for education and health services	
Latvia	Agriculture; fishing; forestry; electricity; gas; sales of motor vehicles and fuel; transport; freight; postal; communication; dwelling services	Mining; manufacturing; gas, water; building; construction; wholesale trade; retail trade; repair of vehicles; hotels; restaurants. education; health (related to market services)	Financial sector.; storage; real estate; renting; business services; General government; NPISH. Productivity adjustments are made for education and health services	
Lithuania	Electricity, gas and water; transport and storage (not communication)	Agriculture; fishing; mining; manufacturing; construction; hotels and restaurants; real estate and business; education; and health/ social (market services only)	Financial intermediation and insurance services, adjustments are made to account for changes in productivity.	General government and NPISH – value added is the sum of compensation of employees deflated with average earnings indices (adjusted for productivity change), and consumption of fixed capital (assumed to make up the same proportion of output as in the base year).

Table 4. GDP(E): Sources and Methods for Expenditure Approach in Current Prices

A. Final Household Consumption Expenditure

Country	Household budget survey	Sales or revenue statistics	Other regular statistics	Commodity flow	Other sources
Estonia	Quarterly household budget survey data used for estimating consumption of food, non alcoholic beverages, and partly for services	Quarterly retail trade survey; data adjusted for sales to business (intermediate consumption); used for estimating alcohol, tobacco, clothing, footwear, household equipment, other consumer goods	Fuel and energy data from supplying enterprises used to estimate consumption; transport expenses estimated from transport enterprise survey; meals and accommodation estimated from survey of catering and hotels; goods produced for own consumption estimated from agricultural survey and HBS; HBS data also used for income in kind	Used for items such as alcohol, tobacco	Expenditure of residents abroad and of non-residents in Estonia estimated from balance of payments data; adjustments made for income in kind, persons living in institutions, and smuggling of alcohol and tobacco
Latvia	Monthly household budget survey, COICOP classification	Monthly and quarterly retail trade survey	Labour statistics on income in kind; consumption of electricity, gas, water; register of vehicles; survey of markets	Used for items such as alcohol, tobacco, cars (but only annually)	Consumption of residents abroad and non-residents in Latvia estimated using balance of payments data; survey and estimates for non-observed economy; Bank of Latvia information on savings used as a basis for adjusting income data
Lithuania	Quarterly household budget survey, according to COICOP	Retail trade survey data for 15 commodity groups	Goods produced for own consumption estimated from agricultural survey; labour statistics on income in kind used to estimate consumption of primary income in kind; quarterly survey of market services provided to the population	Used for items such as alcohol, tobacco, cars (but only annually)	Expenditure of residents abroad and of non-residents in Lithuania estimated from balance of payments data; estimates of own account household production; estimates of imputed rent by owner occupiers

Table 4. GDP(E): Sources and Methods for Expenditure Approach in Current Prices

B. Final Consumption Expenditure of General Government and NPISHs

Country	Statistics on input costs		Other sources	Production based data
	Expenditure statistics	Wage and salary statistics		
Estonia	Quarterly and annual detailed reports on State budget revenues and outlays; monthly data less detailed	State budget reports used for estimating wages and salaries	Data for 4 largest extra-budgetary funds from MOF and Ministry of Social Affairs; outlays of state and municipal health care institutions; NPISH survey data used for estimating NPISH final consumption expenditure; data on indirect taxes and subsidies from budget reports	Output minus income from market sales and incidental sales of goods and services
Latvia	State budget statistics and annual survey of budget organisations	Wages and salaries data from State Budget , plus survey of budgetary institutions	Balance of payments data used for imports and exports of government services;	Output minus incidental sales plus imports of Government services (technical assistance)
Lithuania	Quarterly reports on central and local budget revenues and outlays; quarterly reports of Social Security and health Insurance Funds regarding revenues and outlays	Wages and salaries data from State Budget	Quarterly market and incidental sales estimates based on annual data for previous year. NPISH quarterly estimates based on annual data for previous year	Output minus incidental sales

Table 4. GDP(E): Sources and Methods for Expenditure Approach in Current Prices

C. Gross Fixed Capital Formation

Country	Investment survey	Government statistics	Other sources	Adjustments
Estonia	Quarterly investment survey of investment and construction covering all state and municipal enterprises and private enterprises with 50 or more employees, and sample survey of small enterprises with 10-50 employees.	Data from state and local budget	Farms surveys data (expenditure on agriculture equipment), data from tractors and other registers; Agriculture Research Institute; household budget survey for estimating GFCF for households	
Latvia	Quarterly investment survey of investment of all enterprises with 20 or more employees. Plus, quarterly investment survey of investment of all enterprises with less than 20 employees	State budget information. and data from MOF	Household budget survey; housing surveys ; farm surveys; building permits	Estimates for unrecorded construction
Lithuania	Quarterly survey of new investment of all enterprises, excluding unincorporated enterprises	Quarterly reports on expenditure of general government	Household budget survey; housing surveys ; farm surveys; building permits; additional estimates for unincorporated enterprises using financial reports of small enterprises, etc.	

Table 4. Sources and Methods for Expenditure Approach in Current Prices

D. Changes in Inventories

Country	Source	Activities covered	Type of inventory	Calculation of holding gains/losses	Compilation methods
Estonia	Quarterly and annual enterprise financial survey data , but this excludes sole proprietors Quarterly surveys of agricultural production	All except banks and other finance; public administration and defence, and compulsory social security Agriculture	Quarterly inventories, opening and closing, for raw materials, work in progress, finished goods and goods for resale	Adjustments from 1993 onwards; standard methodology used for calculation of changes in inventories, including holding gains/ losses by stage of processing and kind of activity , quarterly and annual	Corrections for non- response; quarterly data adjusted to annual data/ level.
Latvia	Quarterly enterprise financial survey data	All except agriculture, banks and other finance; public administration and defence, and compulsory social security	Quarterly inventories, opening and closing, for raw materials, work in progress, finished goods and goods for resale)	Calculated annually only using standard methodology used for calculation of changes in inventories, including holding gains/ losses by stage of processing and kind of activity .	Calculated as a residual.
Lithuania	Quarterly enterprise financial survey data (mark-up sample , estimates made for all enterprises	All except agriculture, banks and other finance; public administration and defence, and compulsory social security	Quarterly inventories, opening and closing, for raw materials, work in progress, finished goods and goods for resale	Standard methodology used for calculation of changes in inventories, including holding gains/ losses by stage of processing and kind of activity , quarterly and annual	Calculated as a residual.

Table 4. GDP(E): Sources and Methods for Expenditure Approach in Current Prices

E. Export and Import of Goods and Services

Country	Goods		Services	
	Customs declarations	Additional estimates	BOP statistics	Additional estimates
Estonia	<p>Customs declarations are the basis for compiling foreign trade statistics and balances.</p> <p>Declarations data processed by SOE.</p> <p>Balance of payments statistics compiled by Bank of Estonia.</p> <p>Exports shown at fob value; imports adjusted from cif to fob</p>	<p>Adjustments made for purchases in shops on liners, goods purchased while abroad and for repair work, and for unidentified imports and exports.</p> <p>Foreign visitor survey data used to estimate expenditure in Estonia by non - residents</p>	All services included	Adjustments for exports since 1997 to allow for under valuation of goods exported from Customs warehouses
Latvia	<p>Customs declarations are the basis for compiling foreign trade statistics and balances.</p> <p>Declarations data processed by CSB.</p> <p>Exports shown at fob value; imports adjusted from cif to fob</p>	<p>Goods not covered in Customs declarations - electricity , natural gas; goods procured in ports by carriers; goods for humanitarian aid.</p> <p>Adjustments made for purchases in shops on liners, goods purchased while abroad and for repair work, and for unidentified imports and exports.</p> <p>Travellers survey data used to estimate expenditure in Latvia by non – residents and by Latvian residents abroad</p>	<p>All services included</p> <p>Statistical survey data for exports and imports of services</p>	Adjustments for exports since 1997 to allow for under valuation of goods exported from Customs warehouses
Lithuania	<p>Customs declarations are the basis for compiling foreign trade statistics and balances. Declarations data processed by SL.</p> <p>Balance of payments statistics compiled by Bank of Lithuania.</p> <p>Exports shown at fob value; imports adjusted from cif to fob</p>	<p>Goods not covered in Customs declarations - electricity , natural gas; goods procured in ports by carriers; goods for humanitarian aid.</p> <p>Adjustments made for purchases in shops on liners, goods purchased while abroad and for repair work, and for unidentified imports and exports.</p> <p>Foreign visitor survey data used to estimate expenditure in Lithuania by non – residents</p>	All services included	Adjustments for exports since 1997 to allow for under valuation of goods exported from Customs warehouses

Table 5. GDP(E): Sources and Methods for Expenditure Approach in Constant Prices

Country	Final Household Consumption Expenditure	Final Consumption Expenditure of General Government	NPISH	Gross Fixed Capital Formation	Changes in Inventories	Foreign Trade
Estonia	Deflation using CPI by commodity group (Laspeyres index , weights 1997, reference base 1995)	Output minus market and incidental sales at current prices, deflated by quarterly CPI data (at the all-items level only)	Method as for general government	Deflation using aggregate price indices for machinery and equipment, imports and an aggregate construction price index	Deflation using: PPI for total raw materials; CPI for fuel; PPI (by industry) for work in progress and finished goods; CPI for goods for resale.	Export price index for exports; CPI for services for export of services. Import price index and unit value indices for imports of goods; CPIs for major trade partners and major foreign destinations for Estonians, for imports of services.
Latvia	Deflation using CPI (Laspeyres index with weights from Q4 1998 to Q4 1999) by COICOP component	Estimates are derived in the same way as on the production side, i.e. extrapolation using employment data	Method as for production approach	Construction, import price indices and PPIs, deflated at reasonably detailed level	Deflated using PPI and implicit import unit value indexes (by stage of processing and by industry)	Unit value indices for both imports and exports.
Lithuania	Deflation using CPI (Laspeyres index with weights from Q4 1998 to Q3 1999) by COICOP component	Deflation of expenditure by kind of activity, using implicit output deflators from production side	Deflation using CPI for services	Construction cost indices for dwellings; construction cost indices of other buildings and structures. PPIs for six types of machinery and equipment	PPIs by industry, CPIs, construction cost index , indices of purchasers' prices of agricultural production (>30 products)	PPIs for exported goods. Unit value indices for imported goods

Table 6. Publication and Revision Policy

Country	First results	Full breakdowns	Revision	Medium of release
Estonia	Flash estimate of growth rate for total GDP at 65 days after end of quarter	First estimate according to SNA methodology, with activity and expenditure breakdowns at current and constant prices at 120 days after end of quarter	Q1-Q3 (of year t) are revised when Q4 data are published (March t+1) to give the first annual estimates for year t, all quarters are revised later in year t+1 as preliminary annual estimates are made based on annual data, and then in March of year t+2 as annual data for year t are "finalised". Revisions policies allow for revisions at any time that improved data become available.	Press release, web-site and bulletin
Latvia	GDP(O) at 90 days, with GVA by activity, at current and constant prices.	Breakdown by expenditure categories at 120 days (current and constant prices).	Q1-Q3 (of year t) are revised when Q4 data are published (March t+1) to give the first annual estimates for year t, all quarters are revised later in year t+1 as preliminary annual estimates are made based on annual data, and then in March of year t+2 as annual data for year t are "finalised". Revisions policies allow for revisions at any time that improved data become available.	Press release, web-site and bulletin
Lithuania	Flash estimates of growth rate for total GDP at 30 days	Breakdown by activity and by expenditure categories at 90 days (no constant price expenditure breakdown).	Q1-Q3 (of year t) are revised when Q4 data are published (March t+1) to give the first annual estimates for year t, all quarters are revised later in year t+1 as preliminary annual estimates are made based on annual data, and then in March of year t+2 as annual data for year t are "finalised". Revisions policies allow for revisions at any time that improved data become available.	Press release, web-site and bulletin

IV. Details of the Sources and Methods used in Estonia

Introduction

Annual and quarterly national accounts are compiled by the State Statistical Office of Estonia¹⁰ (SOE), according to SNA93 concepts. When SNA93 principles were first introduced, the intention was to compile accounts according to the System of Material Products (MPS) and accounts according to the SNA93 in parallel for several years. It was soon decided, however, that this would not be practical, and the MPS was abandoned in favour of the SNA93. Annual accounts have been compiled in accordance with the SNA93 since 1992 and quarterly accounts since 1993. In connection with European enlargement the SOE has focused on the implementation of ESA 95.

The first quarterly GDP figures (by the output, expenditure and income approaches) were published in 1993 for the first quarter of 1993. The first quarterly constant price figures (calculated according to the output approach) were published in 1994 and the quarterly constant price expenditure approach figures were first published in 1998 for the period back to 1993.

GDP estimates compiled by the production approach are disseminated in current and constant (1995) prices broken down by 16 activities, plus FISIM, and by institutional sector. GDP is also disseminated broken down by major expenditure category in current and constant prices, and by income category in current prices only. GDP estimates derived from the production and expenditure approaches are published as independent estimates, i.e., a statistical discrepancy is published. There is no statistical discrepancy between the output and income approaches since the income approach is balanced with the output approach using the operating surplus as a residual item.

The current methodologies used to compile quarterly and annual GDP figures are almost identical - the annual and quarterly business survey questionnaires are identical, and GDP figures are mainly direct level estimates for both annual and quarterly GDP. From 2001 onwards, however, the business surveys have been redesigned to be more efficient and to reduce the reporting burden on businesses, with the result that that less data are collected on a quarterly basis for non-financial corporations. Thus, quarterly GDP will be calculated making more use of a range of short-term indicators and the extrapolation techniques used in most OECD countries.

A “flash” estimate of total GDP growth is published 65 days after the end of the quarter. It was first published for the first quarter of 1998. Preliminary GDP estimates (with SNA93 breakdowns) are published four months after the end of the reference quarter. Revised estimates are published 16 months after the year in question, and these estimates are reconciled with the annual data. These quarterly figures are revised in line with any later revisions to the annual data.

^{10.} <http://www.stat.ee>

Main Data Sources

Frames for Statistical Surveys

The Statistical Profile database is maintained by the SOE and is used as a sampling frame. It covers enterprises, government units, NPIs and those sole proprietors with an annual turnover exceeding 250 000 Estonian Kroons (approximately USD16 000 in 2000). Smaller sole proprietors have not been included, but the National Tax Board will supply data to the SOE at the individual unit level, probably from the end of 2001, with the result that smaller unincorporated enterprises will be included in the Statistical Profile.

The basis for the Statistical Profile is the Central Commercial Register (CCR) and the Business Register (BR) which are maintained by the Estonian Enterprise Register (EER) Unit under the Ministry of Finance. Each month, the SOE receives information from the EER on new units registered in the CCR and BR, plus information on liquidated units.

The information provided by EER is not sufficient, however, to maintain a working sampling frame, and additional procedures are carried out to correct and update the information. Every autumn, before establishment of a new Statistical Profile, which will be kept almost unchanged during the year, a special survey is carried out to correct the information on units already in the frame and also to gather information on new units. The survey does not cover units for which the current information is known to be up-to-date, i.e., units which regularly respond to surveys, such as SOE wages and salaries survey, financial survey of enterprises, foreign trade statistics, investment statistics.

In 1999, the total number of units in the Statistical Profile database was 67 393 (including both active and non-active units) and the number of units in the Statistical Profile used as the population for survey purposes was 55 185 (active units or units treated as active).

The Statistical Profile holds information both on enterprises and on establishments, although the information on establishments is not comprehensive. Each entry in the Statistical Profile has information about the number of employees, wages, and turnover. The employment and wages data are updated once a quarter using the database of the Social Security Office.

The Farm Database is maintained by SOE and covers all agricultural or forestry holdings larger than one hectare, which are not incorporated enterprises. The database is stratified for sampling purposes into 15 geographical areas (counties) and 7 size categories. In 2000 the database had nearly 51 000 entries. The database is updated once a year using the information from the Land Cataster (an administrative register containing information on land ownership and use).

A Population Registration Database is maintained by the Ministry of Internal Affairs, and was originally created using the following sources:

- The lists of people who changed money when Estonia replaced soviet roubles with new Estonian Kroons in 1992.
- Registration of vital events and migration.
- Issuing of personal identification documents

The main sources of information for continuously updating the database are personal records held by the Register Office (births, deaths and marriages), and residency information held by the Registry Services. The database is used as a sampling frame for household surveys. Annual population estimates are made, based on 1989 Population and Housing Census data adjusted using up-to-date vital and migration events data. The 2000 Population and Housing Census will significantly improve the database and the quality of population estimates. Starting from January 1, 2001 the population estimates will be based on the 2000 Population and Housing Census.

Statistical Surveys

The *Quarterly Enterprise Financial Survey* has been running since 1993 and covers all incorporated enterprises and all branches except agriculture, hunting and fishing. The Statistical Profile is the sampling frame for the enterprise financial surveys. Enterprises are surveyed quarterly, and establishments annually (as far as establishments are identified in the Statistical Profile), and quarterly data are converted to an establishment basis using the structure of the most recent year for which annual results are available. All enterprises with more than 20 employees are surveyed, and stratified random sampling is used for the smaller enterprises below this cut-off. The response rate is around 86%. The questionnaire asks for information from enterprise quarterly business accounts such as turnover (sales), goods purchased for resale, costs, own-account fixed capital, wages and salaries, changes in inventories, work-in-progress and financial transactions. The survey sales data are compared with the corresponding aggregated National Tax Office data, at the NACE 2 digit level. From 2001 the questionnaire will be reduced, and will cover sales, changes in inventories, investments in fixed assets and wages and salaries.

The quarterly *agricultural survey* covers incorporated agricultural producers which are sampled using the Statistical Profiles, and unincorporated agricultural enterprises owning more than one hectare of land are sampled, using the Farm Database as a frame. The following data are collected:

- The prices and quantities per hectare of crops produced. This allows calculation of average yields per hectare, which are then grossed up using land use data received from the Land Cataster (detailed data on land use are available).
- Numbers of livestock and prices.
- Intermediate consumption and wages and salaries.

All insurance corporations are surveyed monthly by SOE, to obtain data on premiums and claims, and are surveyed quarterly to obtain full accounting data. Other financial intermediaries are surveyed quarterly by SOE. Data are also obtained directly from the Insurance Supervisory Authority, but these are used only for validating the survey data. The Central Bank of Estonia provides quarterly accounting data covering its own operations and those of all commercial banks, plus data for the bigger leasing companies (covering approximately 95% of leasing services).

The quarterly survey of *retail trade* covers all enterprises, including sole proprietors, registered as NACE divisions 50 (motor trade) and 52 (retail trade) in the Statistical Profile. Thus, sole proprietors with turnover of less than 250 000 Kroons a year (approximately USD16 000) are not covered. All enterprises with 20 or more employees are surveyed, and a stratified random sample is used for the smaller enterprises. In 1999, 1 755 enterprises were surveyed of a registered population of 6 987. Adjustments are made for non-response but not for under-coverage of informal activity. Retail sales

volume data are derived after deflating with the CPI for goods only. The response rate in 1997 was 65%, in 1998 more than 70%.

Since July 1995 the Estonian **Household Budget Survey** (HBS) has been carried out by the SOE¹¹. The survey is continuous and covers all private households living officially and permanently across the whole territory, with samples drawn from the database of Estonian inhabitants. The number of households surveyed each month in 2000 is 826, i.e., 9 912 households for the year. The survey is not compulsory. In January 2000 the response rate was 68% (all questionnaires) and the response rate of household picture was about 80% (the household picture is completed by interviewers, and collects sociological data, some of which may be used in national accounts compilation, such as dwelling type and ownership). The response rate is lower among higher income households.

The quarterly survey of **investment and construction** covers state and municipal enterprises, all private enterprises with 50 or more employees and a sample of the smaller enterprises. In 1998, 35 180 enterprises and 1 193 institutions were surveyed, of which the sample of smaller units comprised 5 377 enterprises and 920 institutions. This covered 80% of incorporated enterprises and 96% of institutions. Data are collected on construction and alteration of buildings and structures, and acquisitions and sales of equipment, machinery, vehicles, land and other assets. The information held in the construction register is used as a check.

The main sources of data on **NPISHs** are the annual surveys of:

- Sports clubs and dwelling unions.
- Other registered NPIs.

The surveys provide data on wages and salaries, employers' social contributions, costs and transfers and cover around 50% of NPISHs. The response rate is around 80% for the surveys of sport clubs and dwelling unions, and 50% for other NPIs. Adjustments are made for non-response. Information is also collected from other associations and organisations (churches, Union of Non-Profit Institutions and Foundations), since the Ministry of Finance has made available the list of those institutions which have received resources from general government (plus the amount received by each institution).

The **Labour Force Survey** has been conducted quarterly since the beginning of 2000. All geographical areas and income groups are covered, and working-age (15-74) residents are surveyed. Self-employed persons are covered and include unpaid family workers, persons engaged in the production of economic goods and services for own and household consumption. Apprentices receiving payment in kind are considered as paid employees. In 1998 6 556 households participated resulting in 13 090 interviews. Survey methods comply with ILO recommendations.

ILO recommendations are also followed regarding definitions of direct wages and salaries, including overtime payments and sick benefits. Since 1997 the data have been based on a monthly sample survey of economically active enterprises, organisations and institutions in the corporate and general government sectors (farms and smaller sole proprietors are not included). All units with 50 or more employees are surveyed (4 500 units in 1998, and 3 400 in 1999). For smaller units a stratified random sample is used, such that 1 300 units are surveyed each month. The response rate is around 70% and adjustments for non-response are made using stratum means (small units) or hot deck (large units) methods. Confidence intervals are published for headline figures. The reference period is the

¹¹. Prior to July 1995, the HBS was carried out by the Estonian Market and Opinion Research Centre (EMOR).

whole month. The data exclude payments to employees without permanent contracts since it is difficult to measure the hours worked and recording is not required by law, hence it is difficult to convert to full-time equivalents.

The **CPI** is calculated as a fixed base Laspeyres index with 1997 as the reference base. Both the weights and the monthly price collection cover the whole country. Prices are collected from 10 regional centres and all income groups are covered (except institutions). Indices are calculated for 470 items (364 goods and 105 services). Approximately 13 000 prices are collected each month from more than 800 outlets (33 prices for each good, less for services). Prices are collected including taxes. The weights are based on national accounts estimates of household final consumption expenditure, combined with the household budget survey data for 1997 (thus, HBS data are adjusted for under-reporting of alcohol and tobacco). Previously the weights have been revised in the third quarter of 1990, in June 1992, and in 1993, and will be updated annually from 2001.

The **PPI** covers the manufacturing, mining, electricity and heating industries. Prices are collected for goods sold both domestically and exported. Each month prices are collected for 560 representative products from 160 enterprises. The price concept used for the index is the monthly average basic price received by the producer excluding any taxes, duties, etc. Individual prices are weighted by enterprise sales of 1995 to give industry indices at the NACE Rev.1 4-digit level (in fact, PPIs are produced according to EMTAK¹² headings). The standard Laspeyres formula is used with average 1995 prices as the price reference base. No adjustments for quality change and seasonal items are made. The procedures used to deal with missing prices are, in the first month – carry forward the price from the previous month, and in the second month, find a replacement.

Construction cost indices have been compiled quarterly since the start of 1995. At present the construction cost index covers four groups of buildings – detached houses, blocks of flats, industrial buildings and office buildings. The index takes a cost approach, i.e. actual transaction prices are not measured, but instead prices for certain building types are calculated as the sum of costs. Thus, the price changes of the basic inputs – wages and salaries, building materials and machinery – are used. Around 2 400 prices are collected each month from 80 enterprises. The weights are based on construction value data from 1997 and are updated roughly every five years.

SOE have been compiling average **export price indices** (EPI) since 1994 and average **import price indices** (IPI) since 1998. Prices are collected from enterprises for both the EPI and the IPI, and exchange rate effects are taken into account. Since 1995 unit value indices (UVI) are also available for exported and imported goods based on the customs data.

Agricultural output price data are collected as part of the quarterly agricultural surveys. Average prices and price indices are available for each type of agricultural product (cereals and legumes, potatoes, livestock for slaughter, cattle for breeding, milk, and eggs), from 1990. The annual survey covers a larger number of products. Agricultural input price indices exist for several groups of goods, such as seeds, livestock, energy, fuel, lubricants, feeding-stuffs etc. Around 600 prices are collected each month from 200 enterprises. Weights relate to 1998 and are updated every five years.

^{12.} Estonian Classification of Economic Activities, based on NACE Rev.1.

Administrative Data Sources

The **Ministry of Finance** provides both monthly and quarterly budget reports for central government, and monthly reports only for local government. These budget reports provide data on receipts, expenditure and taxes on production. Data for central government give details of types of expenditure on each activity, where as local government data are less detailed giving totals broken down by activity, and then separately broken down by type of expenditure.

The **National Tax Board** provides information on the turnover of non-financial corporations by activity (which is available at <http://www.ma.ee>). Monthly data are available 50 days after each quarter and the SOE use this information to calculate GDP flash estimates and for checking other quarterly data. The Tax Board also provides data on taxes on products (mainly VAT and excise duties) and aggregate data on the compensation of employees. In 2001 or 2002 SOE will have access to enterprise tax records – covering all units paying VAT (available monthly) and the annual tax returns of the smaller sole proprietors.

Data on Profit and loss data for banks and insurance companies are obtained from the Bank of Estonia and the Estonian **Insurance Supervisory Authority**.

The total volume of exports and imports corresponds to the estimates made by the **Bank of Estonia** in the Balance of Payments, although the data on goods originate from customs declarations - prepared by the **Customs Board**, and checked and processed by the Foreign Trade Statistics Section of the SOE. For trade in services, data are gathered and the Bank of Estonia makes estimates. For transport, the Bank runs a transport survey and collects information from foreign payment orders. For travel services, the main source of information is a survey carried out by the SOE (in co-operation with the Bank of Estonia and the Estonian Tourism Board). Information on construction services, on communications services and on other services is obtained from the Enterprise Financial Surveys.

Other Sources

Housing statistics are compiled by SOE Enterprise Statistics Division. Quarterly data are collected from the units managing the dwellings, i.e. real estate management companies owned by municipalities (enterprises), and dwelling unions (NPIs). Data on the stock of housing cover location, size, amenities and maintenance costs per square metre.

Compilation of GDP at Current Prices

The Production (Output) Approach

Transactions are recorded on an accruals basis. General government data are mainly on a cash basis - only social security contributions are recorded on an accruals basis. However, as a result of technical co-operation with Eurostat, SOE has identified several other government budgetary items available on an accruals basis, either in full or partly - tax arrears, interest payments, and state and local government expenditure data (the total difference between cash and accrual is very small). So far, these new data have been used only for the purposes of Eurostat's government debt and deficit project, but SOE plans to use them for national accounts purposes in the near future.

Output and gross value added are estimated at basic prices, intermediate consumption at purchasers' prices, inventories at basic prices (inventories purchased for intermediate consumption at purchasers' prices), and output of non-market services at cost. Tips are included in the calculation of output of hotels and restaurants. Bribes are excluded from the value of output.

Market activities are classified according to the Classification of Activities of the Estonian National Economy (EMTAK), which is based on NACE Rev. 1. The goods and services produced by government units are classified as either individual or collective according to the Classification of the Functions of Government (COFOG).

Estimation of Market Output and Output for Own Final Use

The main data sources for the value added of **non-financial corporations** are the quarterly Enterprise Financial Surveys carried out by SOE, covering all activities except agriculture, hunting and fishing. The current methodologies used to compile quarterly and annual GDP figures are almost identical - the annual and quarterly business survey questionnaires are identical and comprehensive. Quarterly value added is calculated mainly using direct level estimates, and since data on intermediate consumption are available each quarter assumptions about input-output relationships are not needed. From 2001 onwards, however, the business surveys will be redesigned to be more efficient, so that less data will be collected on a quarterly basis for non-financial corporations. Thus, quarterly GDP will be calculated making more use of short-term indicators and the extrapolation techniques used in most OECD countries.

Enterprises are surveyed quarterly, and establishments annually (as far as establishments are identified in the Statistical Profile), and quarterly data are converted to an establishment basis using the structure of the most recent year for which annual results are available. Thus, establishment level information is available for turnover (sales), goods purchased for resale, intermediate consumption, own-account fixed capital formation, wages and salaries, changes in inventories and work-in-progress.

Value added is calculated as:

- Sales at basic prices (less goods purchased for resale)
- + Output for own final use
- + Change in inventories of finished goods and work in progress (corrected for holding gains)
- Intermediate consumption of goods and services

Agricultural output is calculated using average crop yields per hectare which are grossed up using land use data, to give volumes which are multiplied by average prices to give output at current prices. Livestock output is based on quarterly sales data and surveys of livestock numbers. At present, account is not taken of work-in-progress and changes in inventories when calculating agricultural output, i.e. output is recorded when sales occur. Similarly, intermediate consumption is recorded when it occurs. Estimates of output are checked against HBS data. The agricultural surveys also provide information on intermediate consumption, allowing value added to be calculated directly each quarter. Data are not collected on the non-agricultural activities of farms and the extent of these activities will be assessed following the Agricultural Census in 2001.

Since agricultural holdings of less than one hectare are not covered in the regular surveys, their output is estimated as follows – the total area of smallholdings is equal to the total territory of Estonia *less* the area not used for agricultural purposes *less* the area used agricultural enterprises and farms larger than

one hectare. The breakdown of use of these smallholdings, in terms of agricultural products, and yields, are assumed to be the same as that of larger enterprises.

Quarterly estimates of forestry output are made using data from the quarterly enterprise financial survey, adjusted to take account of the most recently available annual data which is more comprehensive, and generally somewhat higher than quarterly data.

In the area of construction, the majority of output is produced by registered enterprises for which output and intermediate consumption data are obtained from the Enterprise Financial Surveys and from the survey of construction and investment. Construction output by households is calculated based on the inputs purchased for new construction and for capital repair. Information on building permits and completion is obtained from local authority construction registers.

The output of the wholesale and retail trades is their trade margin, and is calculated as the difference between the value of sales and the cost of goods for resale.

The output of **financial corporations**, except insurance companies, is estimated as FISIM plus net income from banking services directly charged for. FISIM are measured as the total property income receivable by financial intermediaries minus their total interest payable, excluding the value of any property income receivable from the investments of their own funds. Own funds are measured as the sum of net value of equity capital and shares emitted.

The output of insurance services is calculated on the basis of premiums earned and claims due. The SOE surveys insurance companies monthly to collect information on premiums earned and claims paid by type of insurance, and quarterly to collect full profit and loss and balance sheet data. The output of other, small financial units is calculated in the same way as for banks, and they are surveyed quarterly by SOE.

The SOE uses a combination of methods to measure the output of **housing services**. The first step is to divide the dwelling stock into a rented (roughly 12%) and an owner-occupied sector (88%) using dwelling stock and other data. The rented sector is then further subdivided into central, local government (7%) and private rented (5%) categories. The owner-occupied sector is subdivided into private dwellings managed by the municipality, private dwellings managed by housing associations, one family houses and country houses.

For each of the classes of dwelling a volume figure expressed as an area in square metres is derived from the dwelling stock and other data. For each of the classes a “rent” figure is then collected, or estimated. The gross output for dwelling services is then obtained by simply multiplying the volume by the price data for each of the classes of dwelling and summing to a total for the whole economy. Intermediate consumption is estimated as percentage of output of dwelling services and is deducted from the gross output to yield value added.

The current method used to estimate private rents (and thus the rents imputed for owner-occupied housing services) does not comply with the SNA93/ESA95 guidelines since it is almost impossible to use the stratification method to arrive at reliable results, as the private rented sector is small and the private renting activity is mostly hidden. So, using the guidelines developed by the Eurostat Task Force on Dwelling Services, SOE is hoping to develop a user-cost method, i.e. output is calculated as the sum of costs plus an allowance for net operating surplus.

Estimation of Other Non-Market Services

The **general government** sector includes all central, local and regional government units, the social security (Medical Insurance Fund, Pension Fund, and state and municipal health care institutions) and extra-budgetary funds. The output of collective and individual services by general government and non-profit institutions is estimated as follows:

Intermediate consumption
+ Compensation of employees
+ Consumption of fixed capital
+ Other taxes on production

Value added is calculated as the above total less intermediate consumption – the calculations are carried out in full for the sake of transparency.

The output, and value added, of **NPISHs** are calculated by combining the most recently available annual data (divided by four) adjusted using data on wages and salaries from the National Tax Office.

Holding Gains/Losses

Holding gains/losses have been calculated and excluded from changes in inventory values since 1993. Holding gains are calculated according to the methodology proposed by the IMF. Data are obtained directly from the quarterly and annual enterprise surveys on inventories of raw materials, work in progress, finished goods and goods for resale. Holding gains are calculated for each of these types of inventory, using the usual assumptions about bookkeeping practices – historic cost accounting, FIFO (LIFO accounting is illegal in Estonia). Calculations are done at activity level for the four different types of inventory, but there is no disaggregation by type of good. The age profile of the inventories is calculated based on the sales to inventory ratio.

The following methodology is used to convert from historic cost accounting values to current values:

1. The book values of the inventories at the beginning and end of the accounting period are converted to base period (constant) prices.
2. The change in inventories at constant prices is calculated.
3. This change is re-valued to average prices of the accounting period, using a specifically calculated price index.
4. Holding gains are derived as the difference between the change at book value and the change at current prices.

Taxes and Subsidies on Products

Taxes on products consist of VAT, local sales taxes and excise taxes. The VAT rate is 18% on most goods and services. There are three types of subsidies on products: subsidies on public transportation, agricultural producers and rural newspaper deliveries. Data are received from the Ministry of Finance on a cash basis.

The Expenditure Approach in Current Prices

Transactions are recorded on an accruals basis, with the exception of government expenditure, in which case the recording is on a cash basis. International transactions are recorded at the time the goods enter/leave the economic territory as documented in the corresponding customs declarations, and imports and exports are valued f.o.b. Household expenditure is valued at purchasers' prices. Gross fixed capital formation is valued at purchasers' prices where existing assets are acquired or basic prices where new assets are produced for own use. Inventories are valued at basic prices, except for intermediate consumption, which are valued at purchasers' prices.

Government expenditure is classified according to the Classification of the Functions of the Government (COFOG) and individual consumption expenditure according to the Classification of Individual Consumption by Purpose (COICOP).

Household Final Consumption Expenditure

The main data source used to estimate HFCE is the quarterly HBS. HBS data (purchases of goods and services per person) are expanded to the total population living in households covering about 60% of HFCE. In fact about 40% of all HBS information is actually used, the residual part being covered by other data sources such as trade and services statistics. Information from producers (of water, electricity, energy etc.) is also used.

A best estimate for each of commodity group is made, based on different sources, and a bottom-up approach is used to derive for the total HFCE estimate is used. For this purpose the "tabular approach" which was recommended by Eurostat (Activity A1 "Private Household Consumption") has been adapted to Estonian needs.

The following adjustments are made:

- Wages and salaries in kind are estimated using data from the HBS, and also information from the output approach is used as a check. From 2000, the HBS distinguishes between the following types of income in kind:
 - a). Company car for private use.
 - b). Free petrol (also small quantities)
 - c). Free or subsidised company meals
 - d). Public transport paid by the employer
 - e). Company-owned flat free of charge
 - f). Telephone or postal services paid by the employer
 - g). Therapeutic services paid by the employer
 - h). Training not connected with work paid by the employer
 - i). Sports activities paid by the employer

- j). Holidays paid by the employer
 - k). Foodstuffs
 - l). Other
- Production for own consumption (food only) is estimated using the data from agricultural surveys and the HBS;
 - Imputed rent expenditure is calculated in the same way as output;
 - In addition, purchases made from sellers who are not registered or not surveyed (mainly purchases in market places) are estimated using the results of studies carried out by different research institutes;
 - Adjustments are made for illegal activities (drugs, prostitution, and illegal copies of videotapes, audiotapes and CD's). Using information from the police, medical surveys, newspapers etc.;
 - Additions are made to take account of consumption by people living in institutions, Additions....gifts and transfers.

Final Consumption Expenditure of NPISHs

The final consumption expenditure of NPISHs is estimated as their output *less* their income from sales of goods and services. Output and sales data are obtained from the annual surveys and quarterly values are calculated using the most recently available annual data divided by four, adjusted with changes in wages and salaries data from the National Tax Office.

Final Consumption Expenditure of General Government

The final consumption expenditure of general government is estimated as output *less* income from sales of goods and services. The distinction is made between individual and collective final consumption expenditure of general government. The main data source is the Ministry of Finance (execution of state and local budgets and extra-budgetary funds). Some bigger extra-budgetary funds provide their quarterly data directly to SOE. The Ministry of Social Affairs provides data on state and municipal health care institutions.

Gross Fixed Capital Formation

The quarterly survey of investment and construction provides data on acquisitions and capital repair of buildings and structures, machinery and equipment, transport vehicles, computers and other assets. Data are also extracted from state and local government budget reports. Information about financial leasing by kind of asset is also available and has been included in GFCF since 1995. Estimates of agricultural GFCF for enterprises are available on an annual basis – expenditure on agricultural machinery is obtained from private farm surveys, and the tractors register. Data on breeding and dairy livestock and fruit trees are also available annually. Quarterly GFCF of households is estimated by extrapolating levels of previous periods. The HBS is also used to estimate construction by unincorporated enterprises of households, and the construction register is used as a check.

Changes in Inventories

This item is derived independently using source data, it is not derived as a residual. Data are obtained directly from the quarterly and annual enterprise surveys on inventories of raw materials, work in progress, finished goods and goods for resale, and are adjusted for holding gains. Agriculture is an exception in that work-in-progress and inventories are not taken into account, i.e. output is equal to sales, and intermediate consumption is equal to purchases.

Changes in inventories are calculated each quarter on the basis of stocks recorded at the beginning and at the end of the quarter. Estimates are usually adjusted at the end of the following quarter, since the levels recorded for the end of one quarter are often different to those recorded as the beginning of the next. An average is usually taken so that the end stock of the quarter t is equal to the beginning stock of the quarter $t+1$. Preliminary annual estimates of changes in inventories are calculated as the sum of quarterly estimates, whereas final annual estimates are based on the stock recorded at the beginning and at the end of the year.

Exports and Imports of Goods and Services

Balance of payments statistics are compiled by the Bank of Estonia and include adjustments to customs data made in line with the Balance of Payments Manual 5 (IMF), including:

- Exports of electrical energy.
- Imports of natural gas.
- Sale of fish or crustaceans in foreign waters and ports.
- The sale of these goods between residents and non-residents, where the goods do not cross the customs frontier, e.g. fuel purchased at the time of staying abroad, goods sold in the vehicles etc.
- Purchases in shops on liners.
- Repair work done abroad.
- Under-valuation of goods exported from customs warehouses (since 1997).
- Smuggling - adjustments are made on the basis of net assessment on import side of goods. The commodity groups most significantly affected are fuel, alcohol and tobacco.
- Expenditure by Estonian households while abroad, and by foreign visitors to Estonia. Data on these expenditures are compiled as a collective effort by SOE, Bank of Estonia and the Estonian Tourist Board, and are distributed between the main commodity groups, based on work done in co-operation with Eurostat. Visitors' spending in Estonia is measured via the Foreign Visitor Survey (started in 1997, and performed twice a year since 1998). For Estonian residents' spending abroad, the Tourism Survey questionnaire of the HBS is used, and results of the annual "Estonian visitors abroad" survey (started in 1999) are used as a check.

The Bank makes estimates for trade in services as part of the balance of payments compilation. The services currently important for Estonia are construction, insurance, communications services and leasing equipment. Services obtained as foreign assistance are also included. Various sources of

information are used. Information on construction services, on communications services and on other services originates from the enterprise survey. Data about insurance services come from Insurance Inspection and from the enterprise surveys. Information on the income and expenses of Estonian foreign representations comes from the Ministry of Foreign Affairs. The expenditures of the foreign representations located in Estonia are estimated based on the expert opinion of the Balance of Payments Section of the Bank of Estonia. Information on some financial services is obtained from the Bank of Estonia. The Ministry of Finance supplies data on services rendered as foreign assistance (technical assistance). Additional information on all services can also be obtained from foreign payment orders.

The Income Approach in Current Prices

Compensation of Employees

Data on wages and salaries and employers' social contributions are based on financial reports of enterprises and public institutions, plus government budget data. Adjustments are made using the reports on social and health insurance. Any bonuses paid by enterprises and envelope salaries (illegally untaxed) are also taken into account.

Operating Surplus and Mixed Income

Operating surplus and mixed income are derived as a residual through balancing with the output estimates of GDP.

Consumption of Fixed Capital

Due to insufficient data, it is not currently possible to estimate the consumption of fixed capital (CFC) using the perpetual inventory method as recommended by SNA93. Estimation is therefore based on bookkeeping data on the stock of fixed capital, obtained from enterprises' financial surveys, state and local budgetary data and other sources, e.g. the Ministry of Finance performs an annual survey of capital stock held by government. CFC is calculated by kind of activity and by institutional sector. Straight-line depreciation is assumed.

Taxes Less Subsidies on Production

Data are mostly received from the Ministry of Finance and data from the quarterly Enterprise Financial Surveys are also used.

Compilation of GDP at Constant Prices

The Production (Output) Approach in Constant Prices

A single indicator method of deflation/extrapolation is used for all activities except agriculture. Single deflation methods make the assumption that the relationship between output and value added at constant prices is stable over time, i.e., constant input-output ratios over time. Indices of output at current prices are deflated using appropriate price indices, and the resulting volume index is used to extrapolate constant price value added. In compliance with ESA 95, the SOE is developing double

deflation methods, in conjunction with developing supply and use tables for the year 1997. Detailed information for updating the IO assumptions in the supply and use tables will next be available in 2000.

The following price indices are used:

- Agricultural prices indices are used for all agricultural intermediate consumption;
- Relevant PPIs are used for mining, quarrying, manufacturing and construction;
- Components of the CPI are used for wholesale and retail trade, restaurants, real estate, education and health.

Volume changes are estimated directly for several activities, using data on physical quantities, which are then used to extrapolate constant price value added from the previous quarter. The activities treated in this way and the physical indicators used are:

- Agricultural output
- Forestry – volume of woodcut
- Transport – tons per kilometre, passengers per kilometre
- Fishing – tons
- Production of electricity – gigawatt hours
- Heat production – gigawatt hours, megajoules (MJ)
- Gas production – terajoules (TJ)
- Communication services – number of telephone calls.

Constant price estimates of value added by government, NPISHs and financial institutions are made by extrapolating the previous quarter's estimates using employment data. Adjustments are made for productivity changes in the case of education, where the number of students (pupils), teachers are taken into account, and in health, using the numbers of outpatient visits, inpatients, average bed use etc.

Dwelling services are deflated using appropriate CPI components.

Constant price estimates of taxes and subsidies are made by multiplying base year taxes and subsidies by the change in constant price GDP at basic prices between the base year and the current year, or by deflating current price taxes and subsidies by a deflator appropriate to the goods and services to which the tax/subsidy is applied. This method takes into account flows of goods and services at base year prices, but changes in the rate of taxes and subsidies are not taken into account.

- Local sales taxes, set by municipalities, are deflated using the respective commodity components of the CPI.

- For constant price estimation of excise taxes quantity indices (available from production and foreign trade statistics) for aggregated homogeneous commodity groups and base year excise tax data are used. (Excise taxes at constant prices in current year = quantity in the current year/quantity in the base year * excise taxes in the base year).
- Import and export taxes – revenues from customs services are treated as change in volume, unity deflator is used. The bulk of this income is classified as state duties (other taxes on production) and excluded from the amount of taxes on production since 1996 due to changes in tax legislation.
- To deflate subsidies, the corresponding components of the CPI are used (public transport, telecommunication services, motor fuel). Direct support to milk and grain producers is converted into constant prices using PPIs. There are some subsidies, however, which cannot be associated with either quantities nor expenditures (subsidies to some agricultural activities). In such cases the subsidy is treated as a change in volume and the deflator 1,0 is used for converting it into constant prices.

The Expenditure Approach in Constant Prices

Household Final Consumption Expenditure

Current price expenditure by 109 commodity groups is deflated by the most relevant component of the CPI, before aggregating to give total household final consumption expenditure at constant prices.

Final Consumption Expenditure of General Government and NPISHs

Output less market and incidental sales is deflated using quarterly CPI data at the all-items level (no disaggregation into components).

Gross Fixed Capital Formation

Current price estimates for machinery and equipment are deflated using an aggregate PPI for domestically produced machinery and equipment, and another deflator for imports. Construction estimates are deflated using the total construction price index.

Changes in Inventories

Inventories are deflated as follows:

- Raw materials – the relevant PPI except for fuel where the CPI is used.
- Work in progress – the relevant PPI.
- Finished goods – the relevant PPI.
- Goods for resale – CPI for goods is used.

Exports and Imports of Goods and Services

Export price indices are used to deflate values of goods exported and a combination of import price indices and unit value indices are used for deflating imports of goods. Exports of services are deflated using the relevant component of the domestic CPI. Imports of services are deflated using a weighted average of CPIs of the most important trade partners and of the most important countries of destinations of Estonian tourists. Exchange rate effects are not taken into account because the Estonian kroon is pegged to the EURO, and the countries of the European Monetary Union (EMU) account for more than 60% of total Estonian foreign trade and services. Thus it is the opinion of SOE that exchange rate changes do not have a strong effect.

Taking Account of Non-Observed Activity, Including Illegal

Measurement of the non-observed economy (NOE), i.e., informal, hidden and illegal activities, began in 1991 – at that time very little information existed and expert opinion estimated that the NOE contributed around 5% of GDP. In 1992 direct measurement techniques were introduced, and the level was estimated at 12% of GDP. In principle, all types of NOE (informal/hidden/illegal) were included regardless of type. Since 1993, NOE estimates have been distributed between activities. The share of the NOE in overall GDP is estimated to have remained fairly constant during this time, but its distribution between activities has changed as a result of changing legislation and economic conditions. Various special studies have been done on the NOE¹³, which have greatly helped in the estimation.

The adjustments are described below by approach and kind of adjustment. Generally, detailed adjustments are not made each quarter, rather, the higher level adjustments calculated annually are applied each quarter for non-registered units, underreporting, etc. However, the size of any adjustment in a particular quarter is not fully determined by these earlier results – it depends on the economic situation of the quarter in question, and the adjustments are re-examined each quarter.

Output Approach

Non-Response

In strata where random sampling is used, the number of responding enterprises is considered as the sample size. If it is detected that an enterprise is inactive then it is treated as a respondent with economic indicators equal to zero. This approach is equivalent to the assumption that the structure of the set of responding enterprises is similar to those not responding. Data for the non-respondents are imputed, using the stratum means of the respondents, or using data from other sources, e.g. yearly enterprise accounts reports.

Under-Reporting / Over-Reporting

For enterprises producing goods there is assumed to be no underreporting of output (and thus gross value added). Underreporting occurs mainly in the activities where cash flows and final consumption

¹³. Project report *Assessment on the Size and Composition of the Illegal Economy of Estonia* (1996). Project report *Assessment of the size of the underground economy in Estonia by the labour force method* (1996).

by households occurs (trade, construction, other services). So, in trade, hotels and restaurants and other personal services underreporting is taken into account based on estimations of “envelope salaries”. The calculations are based on the studies mentioned above and expert estimates made by accountants and bookkeepers working with these activities.

Over-reporting of intermediate consumption takes place where wages and salaries in kind are actually recorded as intermediate consumption rather than compensation of employees. SOE reallocates part of the intermediate consumption to gross value added (the level of output is not affected). The estimated data are received informally from enterprise bookkeepers.

Not Registered Units

This covers “hidden” units or labour, mainly in trade, construction, real estate services, hotels and restaurants and other services activities. The hidden units/labour are detected by analysing and comparing data from the Tax Office, LFS, and the statistical register (differences due to the different definitions used in these sources are taken into account).

Informal Activities

Adjustments are made in construction, real estate, other services.

Other Adjustments

The output of restaurants and other personal services is adjusted for tips using expert opinions. Adjustments for wages and salaries in kind are described above under over-reporting/under-reporting (over-reporting of intermediate consumption) – information is also used from the HBS and Labour Cost Survey.

Expenditure Approach

The same types of under-coverage apply to GDP estimates from the expenditure approach. Adjustments for non-response are made for all components of expenditure, except exports and imports of services. Illegal activities are estimated for HFCE and for imports of goods.

Non-Response

Adjustments for non-response are made in the same way as described under the output approach for the surveys of: retail trade (for HFCE), investments and construction (GFCF), survey of NPISH (for FCE of NPISH), financial survey of enterprises (for the changes in stocks). For the HBS, adjustments for non-response are made by re-weighting the response based on the differential response by location, and structure of population.

Units not Covered

The under-coverage of units is an issue in COICOP divisions where data from several surveys are used, and where the coverage and quality of data depends on the quality of sampling frames (registers)

and samples. For HFCE estimates this implies two types of adjustment – purchases made from street traders or at market places, and adjustments for the underground economy for alcohol and tobacco. Purchases from markets are not completely covered by surveys, and studies by research institutions are used to make adjustments to the purchases of certain commodities, e.g. clothing, footwear, household appliances etc. Expenditures of persons living in institutions are estimated on the basis of data from these institutions, and from certain ministries. At present the share of these expenditures is less than 1% of HFCE.

Under-Reporting

The following types of underreporting are recognised:

- The consumption of alcohol, tobacco, education and dwelling services is generally under-reported.
- Services provided by those units/persons who are not obliged to register, who work temporarily and who avoid paying taxes. These adjustments are made for example for the maintenance and repair services.
- Adjustments for small NPISH, which are not registered, are made using information from other studies and expert estimates.
- The Bank of Estonia estimates the underreporting of exports and imports of goods. Exports are adjusted upwards based on the differences between the values of goods entering and leaving customs warehouses. In 1997 the difference between the two accounted for 6,6% of exports of goods. Such adjustments were necessary until the 1 November 1999 when the legislation was changed.
- The underreporting of imports of goods because of evasion of Estonian excise tax or customs duties is taken into account. Estimates are based on expert opinions from the customs board, and fuel and tobacco importers; and news about the cases of confiscated goods on the border. The Bank of Estonia estimates underreported foreign trade only as the net value because they do not have more information to split these data. The three commodity groups of underreported foreign trade were fuel (68,1%), alcohol (9,1%) and tobacco (11,4%). Exports made up less than 10% of underreported foreign trade.

Other Adjustments

Other corrections for under-coverage include estimation for income in kind, gifts and other transfers. Income in kind calculations are based both on HBS data and also on information from labour cost survey. For 1997 the value of income in kind was not very significant. Adjustments for gifts are made on the basis of information from Balance of Payments.

Illegal Activities

SOE has made estimates of the contribution of illegal activities to GDP since the introduction of SNA93 concepts. Illegal activities made up 0.8% of GDP in 1998.

For **drugs**, firstly the different types consumed in Estonia have been identified. Almost all drugs are imported because there is no significant domestic production of drugs. Thus, a commodity flow approach is used based on the following data:

- Seized quantities.
- Average street prices.
- Domestic consumption – data from the police and medical services give an estimate of the number of addicts, which are combined with standard international consumption rates.
- Seizure rate (the estimates have been made by SOE).

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

The production of **audio-video copies** is insignificant in Estonia, but the imports and sales in market places are significant. The prices of these items are widely known, and the number of confiscated items and the seizure rates have been used to estimate domestic consumption and the trade margins of these activities.

The calculation of the transactions of **prostitution** is quite straightforward. Data on prostitution are collected from different sources: the Police, service charges published in newspapers (also in Finnish newspapers), lists of places providing such services are published in newspapers, and a number of expert opinions on the number of prostitutes, e.g. mini-surveys of taxi-drivers.

According to the estimates of medical institutions and police there are 2 000 prostitutes in Estonia who are mainly providing their services through brothels, sauna and massage services providers and hotels. The average price per hour in these institutions was 1000 Kroons. The basis for calculations have been the number of the institutions of that kind, their average turnover and other estimated data. Turnover was estimated using the number of prostitutes, the price and the number of clients. In fact, part of the prostitution activity is already recorded implicitly under such service providers like saunas, hotels, etc.

Balancing the Different Approaches

The SOE considers the estimates by the output approach to be the most reliable, and estimates from the output and expenditure approaches are not reconciled due to the absence of supply and use tables. The SOE considers supply and use tables to be important for the compilation of both annual and quarterly national accounts, and annual tables for 1997 were published in October 2000. The plan is to compile supply and use tables for every year in current and previous year constant prices starting from 1997. Previously, input-output tables were compiled every five years, the last one in 1987 using the MPS methodology. There are plans to produce input-output tables for all benchmark years, i.e. 1997, 2000 and then every three to five years.

Reconciliation of Quarterly and Annual Estimates

Preliminary QNA data are published 4-5 months after the end of the quarter and are revised when the annual data are available. Preliminary annual data are generally available the following May, and

final data in March of the next year (i.e., 15 months after the end of the reference year). The benchmarking adjustments are based on the ratio between the annual figures and the sum of the four quarters.

Seasonal Adjustment

SOE started work on seasonal adjustment of time-series in the middle of 1997. The quarterly press release contains seasonally adjusted total GDP at current and constant prices. The annual national accounts publications contain seasonally adjusted series, from 1993, by activity (NACE 16), institutional sector and expenditure components. Further decompositions of time-series have been used in the preliminary forecasts of GDP, which are used internally.

Work in this area will become more robust as more data points become available, i.e. the time series become longer due to the passage of time. More attention will also be focussed on the technical issues, such as analysing and assessing (with the help of statistical criteria) the appropriateness of decomposition models, and the seasonality for each quarter.

Revisions Policy

In the short-term, quarterly data may be revised as a result of new or improved survey data, e.g., the receipt of late responses to surveys, and as a result of methodological improvements. In the medium- and long-term, quarterly data are revised in reaction to the need for consistency with annual estimates, i.e., quarterly estimates are bench-marked to annual estimates. Plus, whenever annual estimates are revised, the quarterly figures must also be revised to maintain consistency. Revisions may be carried back to 1993. The revisions due to the differences between preliminary quarterly and “final” annual figures take place mainly for non-financial corporations, GFCF and general government data.

SOE have held seminars with users where we have given information on calculation of accounts. There have not been many complaints from users in connection with revisions.

Flash Estimate of GDP

The main source for the flash estimate is the VAT information of the National Tax Office, which gives monthly turnovers of enterprises by activity. These data are received 50 days after the month. Data are also received on the number of enterprises providing statements, which allows identification of enterprises not responding promptly, for which adjustments are made. The registers of the SOE and the Tax Office do not coincide because the activity status of enterprises is sometimes recorded differently in data of the Tax Office.

The growth in output of the non-financial corporations (NFC) sector is calculated as follows:

- A. The first step is to calculate, for each activity, the growth in turnover from the previous quarter, based on Tax Office data and branch statistics indicators;
- B. Next, the level of turnover in the current quarter is calculated for each activity by multiplying turnover in the previous quarter (from the enterprise financial survey) by the growth rate calculated in A;

- C. Then, this level of turnover is converted to output at current prices, using the output/turnover ratio for that activity. The turnover/output ratio is calculated, by activity for NFCs, using data from the same quarter of the previous year (enterprise financial survey) and annual data (survey of establishments);
- D. This output is adjusted for holding gains based on the structure of the previous year – for each activity, the share of turnover is calculated based on data for the same quarter of the previous year (enterprise financial survey);
- E. Single deflation is used to arrive at constant price output, which can then be converted to constant price GVA using the 1995 input-output structure.

For sectors other than non-financial corporations (NFC), the database is already filled by the time the data from the tax office arrive (HBS, agriculture including the agriculture of NFC, data from governments' budget including taxes and subsidies on products, data on financial sector including FISIM). Also the turnover data and some short-term indicators (manufacturing, trade, etc.) are available to compare against the tax office data. PPI and CPI data are also available.

	1998 Q1	1998 Q2	1998 Q3	1998 Q4	1999 Q1	1999 Q2	1999 Q3	1999 Q4	2000 Q1	2000 Q2
Flash estimates of GDP	8,0	5,5	1,8	0,2	-5,8	-2,4	0,2	1,9	5,2	7,5
GDP quarterly accounts	9,3	5,7	1,7	-0,7	-5,6	-2,3	0,0	1,8	5,2	7,4

Future Plans

In general, the goal is to improve the exhaustiveness of estimates and constant price calculations. The main tools to arrive at better coverage are supply and use tables and further use of the employment method for estimating non-observed activity. The aim is to integrate the compilation of supply and use tables with the regular national accounts compilation and thereby improving both the annual and quarterly estimates.

The estimation of the production, expenditure and income of households needs improvement. The main task for 2000 is to increase the coverage of HBS data (e.g. imputation of data for families who have responded to the Household Picture, but have not completed an HBS diary). Another area for improvement is the calculation of GFCF in the household sector, since the current data sources do not cover all fixed assets.

For constant prices the main challenge is to improve the use of double deflation, which has been prevented until now by the lack of the information on the structure of intermediate consumption. This information is now available for 1997, and will again be available for 2000.

The calculation of dwelling services needs improvement. SOE have doubts about using the stratification method since information on market rents is almost non-existent, and are therefore moving towards the user-cost approach which seems more promising.

SOE have participated in a number of Eurostat projects. The results will be put into practice in the coming years.

V. Details of the Sources and Methods Used in Latvia

Introduction

Since 1991 the Central Statistical Bureau of Latvia has replaced the system of material balances with the System of National Accounts (SNA). For 1992 onwards, a complete system of national accounts is compiled every year, including the opening and closing balance sheets. The aim is to compile the accounts in accordance with international standards, and it is anticipated that 2003 will achieve compliance with the ESA95.

Estimates of quarterly GDP for 1990 and 1991 were made in 1992 and were derived based on annual data for these years. Since 1993, independent quarterly estimates data have been compiled and published each quarter in the statistical bulletin "Macroeconomic Indicators of Latvia". Quarterly estimates of GDP are calculated from both the production and expenditure approaches, and in current and constant prices, the base year for constant price estimates being 1995.

Quarterly GDP from the **production** side is published in the following breakdown in both current and constant prices. Constant price data are published both in raw and seasonally adjusted form). Before 1996, establishments were classified according to ISIC rev. 3, and since then NACE Rev.1 has been used. Gross value added is published for the following activities:

A01	Agriculture, hunting and related service activities
A02	Forestry, logging and related services activities
A	Agriculture, hunting, forestry
B	Fishing
C	Mining and quarrying
D	Manufacturing
E	Electricity, gas and water supply
F	Construction
G	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal
H	Hotels and restaurants
I	Transport, storage and communications
J	Financial intermediation
K	Real estate, renting and business activities
L	Public administration and defence; compulsory social security
M	Education
N	Health and social work
O	Other community, social and personal service activities
D.21	Taxes on products
D.31	Subsidies on products
B.1g	Gross domestic product

GDP is published broken down by the following **expenditure** categories in both current and constant prices:

	Final consumption expenditure
P.3	
P.3(S.14, S.15)	-Final consumption expenditure of households and of non-profit institutions serving households (NPISH)
P.3(S.13)	-Final consumption expenditure of general government
P.5	Gross capital formation
P.51	-Gross fixed capital formation
P.52	-Changes in inventories
P.53	acquisition less disposals of valuables
P.6	Exports of goods and services
P.7	Less: Imports of goods and services
B.1g	Equals: GDP at purchasers' prices

After GDP has been calculated from both the production and expenditure sides, data are analysed and balanced so that possible discrepancies are minimised. Any remaining discrepancies between production and expenditure are included in quarterly publications in “changes of inventories” - thus, no statistical discrepancies are published. Quarterly data are revised after the annual results are received and previously published data are corrected in order to achieve balance between quarterly and annual data.

GDP estimates from the production approach are published 90 days after the quarter (the website address is <http://www.csb.lv>). GDP broken down by expenditure category is published one month later. Quarterly data are revised twice - firstly, data for first three quarters of year t are revised at the end of March in year t+1, when preliminary annual results are published. The second round of revisions are made after the annual figures are finalised, at the end of March of year t+2.

Main Data Sources

Frames for Statistical Surveys

The Latvian statistical system makes use of several administrative registers, for example, the Enterprise Register of the Republic of Latvia which is the responsibility of the Ministry of Justice, and the Taxpayers' Register of the State Revenue Service, which also includes information on the payers of social insurance tax (i.e., all employers and self-employed). The CSB and State Revenue Service currently co-operate in comparing lists of registered enterprises, and are discussing the possibility of CSB having access to enterprise tax records. These registers and tax registration system have a common enterprise identification code that enables the exchange of information between them.

The Statistical Business Register (STBR) was created specifically to meet statistical, rather than administrative, needs. The register includes all legal enterprises listed in the Enterprise Register, and all central and local government institutions and non-profit institutions irrespective of their main kind of activity (including seasonal enterprises). The scope of the STBR includes all sizes of enterprises; i.e. there is no cut-off. The STBR does not include free professions (individuals licensed to practice certain professions), secondary self-employed activities, market and street traders, work on service

contracts, individual persons with short-term licenses issued by different authorities, or temporary and occasional activities.

At the moment the STBR does not contain information at the level of local kind of activity units (LKAUs) or establishments, although an intensive effort is being made gather the information necessary to enter these units in the register when the new software is introduced (planned for 2001). A temporary file has been created containing information on 25 000 LKAUs linked to their enterprise records. This information is used to more accurately calculate regional GDP.

In December 1998 there were 35 912 active enterprises in the STBR.

- The register contains fields for:
- Name
- Address
- Identification number
- Form of proprietorship and legal status
- Main and two secondary kinds of activity NACE Rev.1 code according to the geographical breakdown
- Size category according to the number of employees
- Net turnover (excluding taxes, including subsidies).
- Company capital and foreign participation on it (company capital broken down into domestically and foreign owned, and which country owns it).
- The activity situation of the enterprise (active, liquidated, in the process of liquidation, bankruptcy, insolvency, has ceased its activity for indefinite period, not found either in its legal or owner's home address), and date since the enterprise has been in this situation.

Information on the number of employees is stored for the last three years, but on the net turnover for the last two years.

Updating the STBR

The main information sources for updating are the Enterprise Register, register surveys (continuous) and the regular statistical reports (survey returns). Six months after a new enterprise is registered, it is included in the register survey, and if it is not yet active, then it is surveyed repeatedly until it is. In principle, each enterprise listed in the STBR, which is also listed in the Taxpayers' Register, is surveyed not less than once every 18 months or two years. Register surveys do not include enterprises, which have responded regularly to statistical surveys in the corresponding year.

Other external information sources are used for updating the STBR. For example, staff of the register division routinely monitors advertisements in the main newspapers, to check for enterprises, which might be advertising but are listed as inactive in the register. Any such enterprises are immediately

included in the next register survey. The STBR is also updated by comparing all available sources of information about the activity of individual enterprises, e.g. an enterprise may have replied to a previous register survey indicating that it is no longer economically active, but may have presented customs declarations, indicating foreign transactions. Such an enterprise will be repeatedly surveyed in the register survey.

Although no registers of budgetary institutions and public organisations are kept for administrative purposes, a list is maintained for statistical use and included in the STBR. The list is updated systematically every two years when all ministries and local governments are asked to update the lists of institutions for which they are responsible. In the intervening periods, the list is continuously updated on the basis of information from regular statistical reports

Agricultural enterprises are included in the Enterprise Register, and a separate **Farms Register** is maintained for private farms, household plots and private subsidiary farms. This farm register is based on parish (pagast) records plus Land Cadastre data. Each parish holds enumeration cards for its farms, containing information about the land ownership, land use and the households working on the farms. The Land Cadastre holds data on land ownership. The farms register was set up by the CSB through its 26 regional offices. Although Land Cadastre data are available in electronic form, information from the parish enumeration cards must be entered manually – so far around 300,000 records have been manually created.

Statistical Surveys

The sampling frame for enterprise surveys is the population of all active enterprises in the STBR. In December 1998 there were 35,861 active enterprises, which were stratified into the following groups:

1. All state and municipal enterprises with state or municipal share of 50% or more, and all private enterprises with net turnover in the previous year in excess of 300 000 Ls, or with 50 or more employees (thresholds may be lower for some activities). In December 1998 there were 4 741 active enterprises in this group.
2. All private enterprises with between 20 and 49 employees, and net turnover in the previous year less than 300 000 Ls. In December 1998 there were 1 323 active enterprises in this group.
3. All private enterprises with less than 20 employees, and net turnover in the previous year between 200 000 Ls and 300 000 Ls. In December 1998 there were 594 active enterprises in this group;
4. All other enterprises. In December 1998 there were 29 203 active enterprises in this group.

The **quarterly enterprise financial survey** covers all activities, except banking and insurance. All enterprises with an annual turnover greater than 300 000 Lats are surveyed, nearly all enterprises of between 200 000 and 300 000 are surveyed, and below 200 000 are not surveyed. This survey follows the structure of a profit and loss statement and thus covers the main items from bookkeeping balance sheets. Production costs are not broken into intermediate consumption and wages and salaries. Data on changes in inventories are collected.

The **monthly surveys of enterprises** covers all branches, except financial intermediaries. All enterprises with 20 or more employees are surveyed. The survey explicitly collects data on:

- Value of turnover or sales – split between for domestic sale and export.

- Number of employees.

Data on total production are also asked for, and respondents are instructed to take account of the value of own-account construction and changes in inventories.

Agricultural enterprises (including state farms) are surveyed as part of the quarterly financial survey, plus, they are surveyed to collect data on physical quantities produced. These surveys are carried out monthly or quarterly as appropriate for different commodities. Response rates are around 85%, and grossing up for non-response is carried out. Annual surveys collect information about agricultural inputs and investment. Private farms (peasant farms, household plots and private subsidiary farms) are surveyed twice a year (June and November) to collect data on physical quantities of agricultural production. Around 13,000 farms are surveyed - selected from the Farm Register of all those larger than 1ha of agricultural land.

The **quarterly survey of investment** covers all central and local government enterprises, institutions and companies that employ more than 20 persons and where the turnover in the preceding year exceeded 20 000 Lats, are surveyed. State agricultural farms and statutory companies are covered, but private farms are not covered. The response rate is 90-95%. The survey collects information on acquisitions and disposals of land, residential buildings, other buildings and structures, machinery and equipment, planted areas and livestock, other fixed assets, long-term intangible assets, and work-in-progress.

The monthly and quarterly **surveys of labour and wages** cover all activities including budgetary institutions, and all enterprises with 20 or more employees are surveyed. The response rate is 85-90%. Questions cover wages and salaries, hours worked and numbers and types of employees.

Since **NPISHs** form a small proportion of total GDP, they are not surveyed quarterly, but annually as part of the survey of central and local government units. All non-profit institutions registered in the STBR are surveyed and the response rate is around 95%. The survey gives annual totals from which quarterly data are imputed for the following year.

The sampling frame for the **household budget survey (HBS)** consists of all economically active households and is prepared using the Register of Population (Residents Register) which will be updated when the results of the Population Census 2000 become available. Alongside data on expenditure, information on production by households is also collected, both market and non-market. The survey is continuous (rolling) and non-responding households are substituted for. Around 4,000 households participate each year.

The **labour force survey (LFS)** has been carried out twice a year (in May and November) since 1995, according to ILO recommendations. The sampling frame is the same as used for the HBS and the sample comprises people over 15 years of age, in roughly 8 000 households. One third of the sample is replaced (rotated) each year.

The 2000 **consumer price index (CPI)** covers a basket of 408 goods and services, classified according to COICOP. Each month prices and tariffs are collected in 15 districts and towns from 1 950 trade and service establishments (shops, canteens, restaurants, markets, workshops, etc.), estimated to represent 80% of consumer sales. In total, approximately 18 500 prices are observed every month. Discounts offered to all purchasers are also taken into account. Rents are collected from 30 housing agencies each month. Owner-occupied housing is not included.

The CPI weights are updated annually. The weights used in 2000 are based on HBS expenditure data for Q IV 1998 to Q III 1999 inclusive. HBS data are supplemented with supply-side information (for tobacco and alcohol) and with information from the State Insurance Supervision Inspectorate (weights for household and motor insurance are calculated as gross insurance premiums paid less claims received). The CPI is calculated as an annually chain-linked Laspeyres index with 1995=100 for publication purposes.

When prices are missing, a price is imputed based on the movement of prices of similar products, or, for seasonal items the last available price is carried forward. If a replacement product is required, any quality differences are taken into account by the 'overlap' method, or by adjustments based on expert opinion about the value of the quality difference.

The **producer price indices (PPIs)** monitor the prices of domestically produced goods for both the domestic and export markets. They are classified according to NACE Rev 1 and in 2000 120 classes of 168 are covered (mining and quarrying, manufacturing, electricity, gas and water supply), accounting for around 75% of industrial output. Prices for around 1 000 products are collected each month from 330 enterprises. Weights are based on the results of the 1998 Annual Survey of Industrial Activities (all enterprises above 20 employees and 200 000L), and are updated annually. Missing prices are imputed by carrying forward the last observed price or imputing the movement of a similar product. No adjustments are made for quality change.

Agricultural price indices are not compiled. Instead, average prices are collected monthly or quarterly (as appropriate for each commodity) from purchasing enterprises.

The **construction price indices** reflect changes in the cost of various types of construction work, based on the changes in price of the inputs. Since 1997, six specifications have been priced covering civil, industrial and domestic construction, including repair. 'Bills of quantities' for building materials, plus labour and building machinery requirements are priced by construction enterprises (sample of 160), leasing companies, and raw material suppliers (40). Weights are based on output data (including own account) from all large enterprises (more than 20 employees and 300 000L turnover), and are updated annually.

The **export unit value index (EUVI)** is an indicator reflecting changes in price levels of the country's exports in the reporting period against the base period. The calculation of the EUVI was started in 1994. For the export unit value index calculation, 300 Latvian Combined Commodity Nomenclature (CN) items were selected, the average export value per month of which exceeded 20 000 Lats and which had been exported for not less than 8 month during the year. The share of these commodity items in the total value of Latvia's export was 77% in 1997. The breakdown of the total value of Latvia's exports in the previous year by CN divisions and groups was used as weights in EUVI calculations.

The main source of data for EUVI calculations is customs declarations. Customs statistics are used for the calculation of price indices of homogeneous goods (agricultural and food products, mineral products, wood, metals and so on). The unit value of these goods is obtained by dividing the value of exported goods by the quantity of these goods. The indices obtained by means of such calculations tend to be rather influenced by modifications in the assortment, quality, composition and other factors.

For the calculation of indices of non-homogeneous goods (machines, equipment, appliances, means of transport, devices and apparatus, furniture, pharmaceuticals, toiletries, clothing and footwear), information from enterprises involved in price recording about the prices of exported representative goods is used.

Since 1997 **import unit value indices (IUVI)** have been calculated using data from customs documents on a CIF basis.

Administrative Data Sources

Central and local government budget reports - Monthly information on revenues and expenditure are supplied by The Treasury. The Treasury also presents an annual detailed breakdown by activity, and by different types of units.

The **Taxpayers' Register of the State Revenue Service** holds information on all taxpayers, including social tax. The CBS can currently use only aggregate information on taxes and subsidies from State Revenue Service.

Balance of Payments statistics are calculated according to the IMF Balance of Payments Manual, Fifth edition, 1993 and the IMF Balance of Payments Statistics Yearbook. From 2000, responsibility for BoP compilation will pass from the CBS to the Bank of Latvia.

The **Bank of Latvia** and the **State Insurance Supervision Inspectorate** collect profit and loss statements of banks and insurance companies, quarterly, and monthly balance sheets. These aggregate data are used to calculate the national accounts of financial institutions.

Other Sources

GDP estimates aim to cover the entire economy, and special adjustments are made for the non-observed (informal) economy. These adjustments are calculated each year using annual data and applied to quarterly estimates (see later section).

Compilation of GDP at Current Prices

The Production (Output) Approach

Transactions are recorded on an accruals basis, except quarterly government transactions for which budgetary data are on a cash basis. The annual surveys of general government transactions provide information on an accruals basis, and where, possible, this information is used to adjust quarterly data in the following year.

Output and gross value added are evaluated at basic prices, intermediate consumption at purchasers' prices. GDP at purchasers prices is calculated as the sum of gross value added and taxes on products minus subsidies on products

Market activity is classified according to NACE Rev. 1 at the 2 digit level. Products are classified according to PRODCOM. Government activity is classified according to the national classification, which is based on COFOG.

Estimation of Market Output and Output for Own Final Use

Direct level estimates for output at basic prices are calculated using production information from the quarterly enterprise surveys. Thus changes in inventories and own-account production are taken into account.

Since data on intermediate consumption are not collected quarterly, value added is derived based on assumptions about input-output relationships. These input-output ratios are calculated using full data from the annual surveys of the previous year. In other words, a single indicator method is used to derive value added. The ratios are calculated at the 2 digit level and are applied to the output figures at current prices to derive intermediate consumption and thus GVA at current prices. (It is better to apply input-output ratios in constant prices, but it is still usual to find that current price data are used in OECD member countries).

Financial intermediation services produced by the banking and insurance sectors are calculated using quarterly information from profit and loss accounts. For banking institutions and insurance companies, calculations can be done directly quarterly using profit and loss statements, which contain data on administrative expenses, and wages and salaries (also from wages survey). The output of other financial intermediaries is estimated using output data from the quarterly financial survey, and IO relationships from the previous year.

In the annual national accounts the intermediate consumption of FISIM is distributed by kind of activity (using the shares of intermediate consumption of the previous year), but final consumption of FISIM is not allocated to household final expenditure or exports.

Agricultural value added is calculated by taking actual production in each quarter (sales adjusted for changes in inventories and own account production), and applying the overall IO ratio for the previous year. So, each quarter is assumed to have the same IO relationship, and the problem of negative value added does not arise. Data from government budgetary statements are also used to obtain estimates for large-scale expenditures, animal health issues, etc. (this element is decreasing over the years).

Construction output is estimated using various sources – enterprise surveys, plus, for unincorporated enterprises, estimates based on labour input methods.

The output of public **housing services** is calculated using survey data, but imputed rents of owner occupied dwellings and rents for privately rented dwellings are calculated using data on dwellings stocks and average rents per square meter. Private dwellings are stratified by region. Private rents are regulated on a regional level, so that assumptions can be made about average rents.

Estimation of Other Non-Market Services

Output of the services of **general government** is calculated using monthly budgetary data, which give information about total expenditures. For each COFOG heading, capital expenditures are subtracted assuming the same proportion as for overall government expenditure. Of the remainder, the split between IC and VA is calculated based on IO ratios obtained from the annual survey data of the previous year for that COGOG heading. Quarterly investment survey gives information, which allows CFC to be calculated by type of asset.

The quarterly output of **NPISHs** is extrapolated using annual data from the previous year – each quarter of the current year is given an imputed value equal to one quarter of the previous years value.

Taxes minus subsidies on products calculated using budgetary data.

Holding Gains/Losses

Holding gains are not calculated on a quarterly basis, but the CSB does not consider this a serious problem under the current conditions of low inflation and low stock levels for finished goods and work in progress.

Annual calculations are made for the non-financial corporations sector using information from bookkeeping balance sheets. Calculations are done separately by kind of activity (2 digit NACE) and by the following types of inventories:

- Finished goods and goods for resale.
- Work in progress.
- Raw materials and other inventories.

Holding gains calculations are based on methods recommended by the IMF where turnover period is calculated and stocks are evaluated at average prices of current year.

The Expenditure Approach in Current Prices

Transactions are recorded on an accruals basis except government expenditure where the cash basis is used in quarterly calculations (annual surveys of budgetary institutions record expenditure on an accruals basis). Consumption expenditures except consumption of own-account production are evaluated at market (purchasers') prices.

The classifications used are:

- For government expenditure - the Latvian national classification based on COFOG.
- For household final consumption expenditure – COICOP.
- For external trade – the Latvian Combined Commodity Nomenclature, which is based on the EU's Combined Nomenclature.

Household Final Consumption Expenditure

The main data source for household final consumption expenditure is the Household Budget Survey. Adjustments are made to the HBS data each quarter using adjustment factors derived from retail trade data and data from other data sources for the previous year – the annual data give a more detailed commodity breakdown than the quarterly retail sales data. Adjustments are made to account for:

- Converting insurance payments from a gross premium to net premium basis (premiums paid less claims received).
- Imputed rent for owner-occupied housing services.

- Consumption of collective households, including the military.
- Under-recording in the HBS – alcohol and tobacco estimates are adjusted using consumption data from medical sources. For purchase of cars using annual information from the Road Traffic Inspectorate on private car registrations.
- The expenditure of Latvian residents when abroad, using balance of payments data based on the travellers survey.

Adjustments are also made for the consumption of ‘hidden’ goods and services, using results from the anonymous questionnaire attached to the HBS.

Consumption of goods and services received in-kind, including from own-account production, is included in HBS data but not in retail sales data – this is taken into account where retail sales data are used for comparison purposes.

The consumption of agricultural goods produced by agricultural households is included, as are construction activities performed in households for their own needs. These data are collected as part of the HBS.

Final Consumption Expenditure of NPISHs

This is calculated in same way as output of non-market services, i.e. quarterly data are imputed using annual totals.

Final Consumption Expenditure of General Government

This is calculated as output of general government plus imports of general government services (technical assistance services obtained from Balance of Payments) minus sales of government services.

Gross Fixed Capital Formation

Since the quarterly investment surveys cover enterprises, including agricultural enterprises, and government institutions, all GFCF estimates are based on the survey results, plus data from the previous year. Adjustments are made to account for private investment – dwellings and agricultural machinery of private farms - using annual volume data.

Agricultural GFCF of state farms and subsidiary companies is calculated using investment survey data.

Changes in Inventories

Changes in inventories are used as a balancing item during the process of reconciling quarterly GDP from the production and expenditure approaches, and thus they are derived as a residual.

Exports and Imports of Goods and Services

Quarterly balance of payments data are used for goods, and imports and exports of services are calculated from enterprise surveys. The expenditure of residents while abroad, and expenditure by foreign tourists in Latvia are accounted for in BOP data, based on the results of the quarterly travellers' survey carried out by the CSB. Estimates for exports due to the expenditure of foreign visitors are derived from surveys of these visitors. Border officials provide data on the number of travellers. Estimates are compiled by comparing the number of foreign visitors with the estimates of average expenditures. The same source also gives information on Latvian residents travelling abroad.

Trade in services data are obtained from a variety of sources. For transportation, information is obtained from the quarterly survey "External settlements of enterprises" - all enterprises, which have foreign transactions are surveyed. It covers all modes of passenger and freight transportation, as well as port services and other auxiliary and supporting transport activities. Other services measured are those currently important to Latvia, such as construction, insurance, communications, financial, computer and information services, royalties and license fees, personal, cultural and recreational services as well as a variety of other services, including government services. Data for these items are extracted from the surveys of enterprises, of the Insurance Supervision Inspectorate, the Bank of Latvia and commercial banks. Information on the earnings and expenditures of Latvian foreign representations comes from the Ministry of Foreign Affairs. The Ministry of Finance supplies data about services regarded as foreign assistance (sometimes called technical assistance).

The Income Approach in Current Prices

Estimates are not currently made of GDP from the income approach on a quarterly basis and these calculations are done annually only. The CSB plans to start quarterly calculations in 2001.

Compilation of GDP at Constant Prices

The Production (Output) Approach in Constant Prices

Constant price values for manufacturing are mostly derived using single deflation, i.e. output is deflated and the resulting movement in constant price output is assumed to represent the movement in constant price value added. A system of double deflation is currently being developed, using the supply and use tables for 1996. This will then be repeated for 1997 and 1998. The supply and use table is compiled at the level of 60 industries and 60 products.

Employment data are the main data source used to extrapolate 1995 values of financial intermediation services, and services of general government and NPISHs. Adjustments for productivity change in financial intermediation services are made using volume indicators of banking services, e.g. the numbers of accounts held by banks, numbers of operations performed, etc. These methods are being developed in co-operation with the Bank of Latvia. For health and education, volume indicators are used in a similar way to adjust for productivity change. In education the numbers of students and teachers are used, stratified by the level of education. Also, in health and education the employment data are stratified by skill level, in order to account for productivity shifts.

Physical quantity data are used to extrapolate 1995 values for the following activities:

- Forestry – felling permits in square metres, plus volume changes in exports.
- Electricity and gas – kw hours, and cubic metres of gas.
- Sales of motor vehicles and fuel – by vehicle type at detailed level.
- Transport – passenger kms by rail, number of tickets for local transport.
- Freight - tonne kms by type of transportation.
- Postal and communication services – number of letters, call time for phone.
- Output of dwelling services – using square meters of dwellings.

Deflation of taxes and subsidies is done using previous year ratio.

The Expenditure Approach in Constant Prices

Household Final Consumption Expenditure

Deflation is performed at the CPI group level, i.e. 12 CPI group indices (280 expenditure groups are deflated for the annual GDP estimates). Residents' spending abroad is deflated annually with a deflator compiled using the overall CPIs of the 20 countries (of highest expenditure by Latvians), adjusted by exchange rates, and then weighted by expenditure in each country (converted to Lats). Since these data are available annually only, current quarters are deflated using the previous years' composite index and then revised once the current years' price index is available.

Final Consumption Expenditure of General Government and NPISHs

Constant price estimates are derived in the same way as for constant price estimates of output.

Gross Fixed Capital Formation

Current price output is deflated using construction price indices, PPIs, and import price indexes at as detailed a level as possible. Estimates are compared with the estimates of the growth in construction by enterprises only, published by the real estate and investment statistics division of CSB – the estimates are found to be comparable.

Changes in Inventories

Changes in inventories are derived as a residual in quarterly calculations.

Exports and Imports of Goods and Services

Exports and imports of goods are deflated using a combination of actual price indices and unit value indices. Exports of transport services are deflated using the implicit output deflator obtained from the balance of payments data on exported transport services. Imports of services are deflated using changes in currency exchange rates (usually US\$) and changes in domestic PPIs for the services – it is not currently possible to identify the country of origin for imported services. The services involved are transport, financial services, and to a lesser extent construction and some government services (technical consultancy).

Taking Account of Non-Observed Activity, Including Illegal

The CBS places a high priority on achieving full coverage of legal economic activity, i.e., including the activity of enterprises which are not registered and and/or not surveyed. The results of illegal activity, and distribution of incomes, are not currently included in QNA estimates, although experimental calculations have been done for 1997 and 1998 to evaluate prostitution and trade in drugs both from the production and the expenditure sides.

Production Approach

Enterprise survey data are adjusted to correct for:

- A. Non-response.
- B. Newly active enterprises are picked up through advertisements and via the register survey, and are immediately surveyed for the main variables such as turnover, costs, and number of employees.
- C. Underreporting. For large enterprises, this was found to be largely due to erroneous (not hidden) reporting, and was picked up through verification and accounting audits. For small enterprises (up to 50 employees) – if average wage levels as reported are below the legal minimum then the data are adjusted upwards. Similarly, if profits are reported as being less than wages, profits are adjusted upwards.
- D. Unregistered informal activity, i.e. production by unincorporated enterprises (see below).

Estimates of the last category – **informal activity** – are made based on employment data from the following sources:

- Enterprise surveys giving employee numbers (full and part-time) and wages.
- Labour force survey.
- Social taxes register.
- Registered unemployment.
- Private farms survey.
- Demographic data on size of the labour force.

By combining data from all of these sources, total employment figures (numbers of employees, and full-time equivalents), by NACE section, are obtained, which in turn are used to calculate exhaustiveness adjustments. These adjustment factors are calculated annually and applied, by activity, each quarter.

The following tables show the adjustments made to production aggregates by type of adjustments for 1997 and 1998:

1997 (Thousands LVL)

Type of adjustments	Gross output	Intermediate consumption	Value added	Percentage of GDP	Percentage of total
A. Non-response	75 704	54 032	21 672	0.66	4.15
B. Not updated register	61 544	41 907	19 637	0.60	3.76
C. Underreporting	248 323	58 965	189 358	5.78	36.25
D. Not registered	764 076	477 981	286 095	8.73	54.78
Other GDP under-coverage	5 545	0	5 545	0.17	1.06
Total	1 155 192	632 885	522 307	15.95	100.00

1998 (Thousands LVL)

Type of adjustments	Gross output	Intermediate consumption	Value added	Percentage of GDP	Percentage of total
A. Non-response	87 150	62 789	24 360	0.68	4.05
B. Not updated register	148 512	82 439	66 073	1.84	10.97
C. Underreporting	32 112	56 923	89 035	2.48	14.78
D. Not registered	780 240	364 285	415 955	11.59	69.06
Other GDP under-coverage	6 864	0	6 864	0.19	1.14
Total	1 054 878	452 590	602 287	16.78	100.00

Expenditure Approach

Estimates of **household final consumption expenditure** are based on HBS data, adjusted using retail sales data and production information for certain commodities (see HFCE description above for more detail). Further adjustments are made based on responses to the questionnaire attached to the HBS form, asking households about their opinion of the extent of hidden activity, their expenditure on goods and services provided “informally”, and the value of any wages and salaries they have received “in envelopes” (unofficially).

No adjustments are made to estimates of the **final expenditure of government or NPISHs**.

Gross fixed capital formation estimates are adjusted to take account of GFCF by households (unincorporated enterprises). Construction by households is estimated from the production side, and GFCF in machinery and equipment is estimated using data on imports, and stocks of agricultural capital goods.

Export data are adjusted upwards – in the case of goods, to account for undervaluation, and in the case of services, to account for the services of intermediaries not covered in BoP surveys.

The following tables show the adjustments made to expenditure aggregates in 1997 and 1998:

1997 (Thousands LVL)

Type of adjustments	Private consumption expenditure	Gross fixed capital formation	Exports of goods	Exports of services	Total
Not surveyed		52 497		21 419	73 916
Underreporting			51 891		51 891
Non registered	400 939				400 939
Total	400 939	52 497	51 891	21 419	526 746

1998 (Thousands LVL)

Type of adjustments	Private consumption expenditure	Gross fixed capital formation	Exports of goods	Exports of services	Total
Not surveyed		59 313		35 342	94 655
Underreporting			64 976		64 976
Non registered	469 985				469 985
Total	469 985	59 313	64 976	35 342	629 616

Illegal Activities

Estimates have been made for the production of, and expenditure on, prostitution and narcotic drugs in 1997 and 1998.

(Thousands LVL)

Type of activity	1997		1998	
	Production	Expenditure	Production	Expenditure
Prostitution	20 612		20 612	
Narcotics	10 000		14 098	
Total	30 612	26 200	34 710	34 379
% of GDP	0.93	0.8	0.97	0.96

Balancing the Different Approaches

Once expenditure estimates become available, roughly two weeks after the production estimates, GDP balancing is done both in current and constant prices and the results are usually quite consistent in current prices. In the balancing process, particular attention is paid to items calculated indirectly and to items based on weak or revised source data. For this reason, any remaining discrepancies between the approaches are absorbed into changes in inventories.

For 1995 annual data, a commodity flow approach has been used, whereby the goods and services account is reconciled (for the moment, at an aggregate level). This has been further developed into a supply and use framework for 1996 onwards, which is published at the NACE 2-digit level (calculations are done at a more detailed level). However, given the rapid economic development and changes in statistical systems, it is currently the case that the balancing process presents different challenges from year to year, and thus it is not possible to state which data are systematically revised during the reconciliation process.

Reconciliation of Quarterly and Annual Estimates

The ratio between the annual value and the sum of the quarters is calculated for each activity (2-digit). In cases where the differences between annual and quarterly totals are due to an identifiable reason then revisions are made to the quarter in question. If however, no specific explanation can be found then, all quarters are adjusted, but the first quarter is adjusted less than the later quarters in order to avoid the step problem between years, but within the constraint that the sum of the quarters will still equal the annual total. On the expenditure side, investment data and household final consumption expenditure estimates are generally the areas that need reconciling.

Seasonal Adjustment

The CSB has completed the first seasonal adjustment exercise – output and gross value added, by activity have been seasonally adjusted. The results were first published in “Macroeconomic Indicators of Latvia” in January 2001.

Revisions Policy

Published quarterly data are revised at any time during the year if improved data are available. Then, when fourth quarter data become available, plus some annual survey data, preliminary annual estimates are possible and the first three quarters may be revised (particularly if agricultural harvest data are different to forecasts) – these revisions are generally minor. More significant revisions are usually necessary when the final annual estimates are calculated, towards the end of the next year, since actual data for intermediate consumption are available annually, leading to significant revisions to value added for some activities. To avoid this situation in the future, the CSB plans to publish a second preliminary estimate of annual GSP earlier in the following year, based on data from the annual surveys, and revise quarterly estimates in line with these. Quarterly data would then be finalised once annual estimates are finalised. Care is always taken to explain the reasons for revisions to users, but still there is scope for further work in this area.

Future Plans

Currently, the main task for the national accounts staff is to implement the improvements identified through co-operation with Eurostat (during 1998-2000). These improvements relate mainly to annual calculations but issues, such as the introduction of double deflation techniques, are also important for quarterly calculations. Other priorities include:

- Quarterly GDP estimates from the income approach will be developed.
- It is hoped that the CSB will be able to access data of the State Revenue Service in a form that will enable ‘flash’ estimates of GDP to be produced.
- Work on seasonal adjustment will be expanded so that expenditure components are also adjusted.

VI. Details of the Sources and Methods used in Lithuania

Introduction

Statistics Lithuania (SL) started compiling annual national accounts based on the SNA93 methodology in 1992, and non-financial accounts, broken down by branch and sector, were published for 1992. Quarterly estimation of GDP started in Q1 1993, and a full set of quarterly accounts was produced for each quarter in 1994. After 1994, however, the sources for both annual and quarterly accounts were changed, and from 1995 onwards quarterly estimates of GDP, with various breakdowns, have been compiled on a consistent basis. The estimates of GDP (not the full accounts) for 1993 and 1994 were also revised onto a consistent basis with the later figures. The need for these major changes to data sources came from the rapid economic developments, particularly the growth in the informal sector, combined with progressive improvements in enterprise registers, statistical expertise and resources.

Quarterly GDP from the production approach is published at both current and constant prices (1995) broken down by economic activity (2 digit NACE), FISIM, and taxes less subsidies on products. GDP estimates from the expenditure approach are published at current and constant prices broken down by major expenditure category. GDP from the income approach is published in current prices. The GDP estimates from the production and expenditure approaches are fully reconciled and thus no statistical discrepancy is published.

Since 1999 the ‘flash’ estimate of GDP, at current prices plus the growth rate, is produced 30 days after the end of the quarter. Preliminary estimates, from all approaches, with all breakdowns, are published after 90 days – firstly as a press release (available at the SL website¹⁴), and one week later as a Quarterly Bulletin “Quarterly National Accounts”.

By the end of March of the following year, together with preliminary 4th quarter GDP data, the first estimate of annual GDP is published, as a sum of quarters. This annual estimate, and the corresponding quarterly estimates, is revised when the annual data have been processed, by the end of the following September (coinciding with publication of the 2nd quarter of the current year). Also these data are published in the quarterly bulletin. These data are revised again after more complete annual data become available, and after the compilation of the full set of annual accounts, in March 15 months after the reference year.

Main Data Sources

Frames for Statistical Surveys

In Lithuania various registers exist or are under development, including specific registers of: enterprises, public (social) organisations, non profit organisations, budgetary institutions, the statistical profile business register (SPBR), farmers’ farms (small private or households), population, tax payers, social security contribution payers, chambers of commerce, holders of various licences, holders of bank accounts, real estate, and movable property.

SL currently manages the first seven of these:

¹⁴ www.std.lt

The **Enterprise (business) Register** was established by the Register Law (1st August 1990) and is the main source for all other Registers, e.g. SPBR. Until 1st February 1995 responsibility for the register lay with the Ministry of Economics, but from 1st February 1995 was transferred to SL.

The **Public (social) Organisations Register** was established at the end of 1995, and is still under development.

The **Non Profit Organisations Register** was established in late 1996 and contains public institutions, associations, charity funds and organisations. This register is not yet complete.

In April 1997 the **Budgetary Institutions Register** was established. All budgetary institutions and organisations under governmental regulation are obliged to register, although since they may make their own decision regarding the time of registration, not all budgetary institutions are registered yet, especially culture organisations.

At the end of 1992 by the decree of Director General of SL the **Statistical Profile Business Register** (SPBR) was established. This register exists for statistical purposes (the Law on Statistics states that SL should maintain the SPBR) and it covers all types of units from all administrative registers. So, since all units, both with or without legal status, have to be registered in administrative registers, the SPBR should contain all kinds of domestic enterprises, foreign owned or partly foreign owned enterprises, public, budgetary institutions and organisations, non profit organisations, co-operative partnerships and other kinds of organisations or institutions. Individual persons cannot be registered, i.e. all individual persons paying only income tax in spite of kind of their activity are not covered in the register. Lawyers are not covered but are included in the social security tax payers register.

Until now, full information about local units or establishments has not been available, since the Law on Registers does not oblige enterprises to register their local units or establishments, although some enterprises do provide the necessary information. Since 2000, more than 4 000 enterprises have reported their local units.

In addition to the administrative details held in their original registers, the records for all units also contain the following information required for statistical purposes:

- Number of employees
- Turnover
- Status of activity (active or not)
- Form of ownership
- Activity (NACE, Rev.1, by four digit level).

At the end of each calendar year a special version of the register is prepared, where only active units are included and information about units is updated as fully as possible, using all available sources. All newly created units during the year are included and all closed units are taken out of the register. This updated register is used for all statistical surveys.

The SPBR is updated from several sources:

- Firstly, there are the administrative registers managed by SL. The SPBR is updated with information from the administrative registers on a daily basis. This information concerns newly created units, closed units and units which have made changes.
- Secondly, data from specific questionnaires, including the Eurostat DOSME project.
- Thirdly, the special questionnaire of the SPBR unit is sent to newly created units and to those not responding to surveys. The SPBR Unit of SL starts to work with newly created units after half a year. It sends special questionnaire where unit has to specify address, phone number, to fill number of employees, economic activity, turnover, local units and few other indices.
- Fourthly, data from external registers such as the tax payers' and social security tax payers' registers. The tax payers' central database is not yet established, but SL uses regional data-bases to get turnover data, and information such as telephone number, name of new manager (any changes are cross checked). From the social security tax payers' central database SL takes the number of employees, status of activity and other information for cross checking purposes.

The **Register of Farmers' Farms** was started at the end of 1994. SL manages the register in co-ordination with the Ministry of Agriculture and the Lithuanian Farmers Union. The register holds information on farms or plots of land of 1 ha and over acquired, resituated or granted on lease. Where the agricultural land amounts to less than 1 ha, the holding should be registered if the declared income from the agricultural activity per calendar year makes up not less than 40 times the minimum standard of living, and not less than 50% of total business income received per year. If a farm is engaged in agrotourism, the income from agriculture has to account for at least 25% of total income.

The Register holds the following data on each holding: total area, the area under crops, number of livestock and poultry, farm buildings, agricultural machinery and equipment. At 1 January 2000 the Farms register held records for 66 982 private farms.

The **Population Register** was established in 1992, based on administrative sources, mainly the list of passport holders which at that time was all persons over 16 years of age. The register currently comprises 2.8 million persons against an estimated population of 3.7 million. This estimation is based on the 1989 population census extrapolated using statistics on births, deaths and external migration. The population register has been used in designing the sample frame for the labour force survey since 1994 and the HBS since 1996. The next population census will take place on 6th April 2001, and will cover the whole population.

Statistical Surveys

The sectoral divisions of SL provide data to the national accounts division, from the following sources:

- Financial survey of non-financial enterprises, (both annual and quarterly) – the quarterly survey of businesses (QSB) is the main source for QNA.
- Capital investment surveys.
- Household budget surveys.

- Wages and salaries and labour cost surveys.
- Agricultural surveys.
- Insurance enterprises and other financial intermediaries surveys.
- Retail trade survey.
- Surveys on services.
- NPISH activity survey.
- Price indices.
- Employment statistics.

Of these, the main source for calculating output, intermediate consumption and value added on a quarterly basis are the **quarterly surveys of businesses** - QSB (report form F-01 “Enterprise Main Financial Indicators”). Enterprises are surveyed (not yet establishments), classified by branches according to their principal activity. The same questionnaire is sent by mail to large and small enterprises, producing both goods and services.

Since the beginning of 1998 all enterprises with 500 thousand litas of annual turnover, with more than 20 employees, and which have been operating for more than half a year, are surveyed (in 1997, a fixed panel of enterprises was surveyed, and prior to 1997 complete censuses were carried out). Non-financial enterprises include: state enterprises, municipal enterprises, closed joint-stock companies, joint-stock companies, specialised joint-stock companies and co-operative companies. The breakdown of enterprises by main economic activity conforms to the sections of NACE Rev. 1. In 1998, 20 546 non-financial enterprises were registered as operating, 15 257 of which were covered by the survey, accounting for 92.1% of total sales of operating enterprises and 90% of all employees of operating enterprises.

The survey results are grossed-up using the turnover and number of employees of both the responding enterprises and of the population of all operating enterprises.

The survey covers the following activities:

- Forestry
- Fishing
- Mining and quarrying – with a breakdown at the 2-digit level of NACE Rev 1
- Manufacturing – with a breakdown at the 2-digit level of NACE Rev 1
- Electricity, gas and water supply – with a breakdown at the 2-digit level of NACE Rev 1
- Construction
- Trade – with a breakdown at the 3-digit level of NACE Rev 1

- Transport – with a breakdown at the 3-digit level of NACE Rev 1
- Post and communications
- Real estate activities
- Renting of machinery and equipment
- Computer and related activities
- Research and development
- Other business activities
- Education (market output)
- Health and social work (market output)
- Sewage and refuse disposal
- Recreational, cultural and sporting
- Other service activities.

The main questions cover:

1. Sales of goods and services
2. Output for own final use
3. Changes in inventories of:
4. Finished production
5. Work-in-progress
6. Goods purchased for resale

(thus, output is calculated as = 1+2+3+4+5-6)

7. Purchases of goods for resale
8. Purchases of raw materials
9. Changes in inventories of raw materials
10. Purchases of fuel
11. Purchases of services

(thus, intermediate consumption = 7+8+9+10+11)

For **agriculture**, since Q1, 1999 a quarterly survey similar to F-01 has been used for all agricultural partnerships (enterprises) and all private farms larger than 50 ha, where data are collected on crop and livestock production, crop and harvest areas, intermediate consumption and inventories. Smaller private farms (less than 10% of all farms) are sampled. Small and household farms are also surveyed quarterly - 1-2% of household farms are covered but data on output only are collected. Data on purchases by processing enterprises are also used to estimate agricultural output.

Data for **financial corporations** are collected via quarterly reports submitted by the Bank of Lithuania on the financial activity and intermediate costs of the central bank and commercial banks. For

insurance companies and other financial intermediaries these data are obtained from a comprehensive quarterly statistical survey of bookkeeping information, which has a response rate of around 95%. For 2000 onwards, insurance companies will present quarterly and annual accounts in accordance with EU regulations.

Production indices are compiled using data from all enterprises with more than 20 employees (approximately 1,200) active in manufacturing, mining, quarrying, electricity, gas and water supply. Around 90% of total industrial production is covered. Non-response is low – generally in the region of 1% of units, for which imputation techniques are used. Each month, sales volume indices are compiled for 136 products using quantity data to extrapolate.

The **Quarterly Survey of Investments** covers all central and local government institution, and all financial corporations. For non-financial corporations, around 50% of those with more than 20 employees are covered, together with sampling of the smaller non-financial corporations. The survey is performed using a combination of sampling techniques and by targeting those enterprises that are known to be planning investment expenditure – for example, the Ministry of Finance provides information about investment programmes. The survey collects data on the acquisitions (disposals are collected annually) of: buildings; civil engineering equipment; other equipment (machinery and vehicles); and expenditure on capital repair.

NPISHs are surveyed annually to provide data on revenue and expenditure. Sports clubs, charities, trades unions and political parties are covered – churches are not covered yet. Since the response rate is around 75%, adjustments for non-response are made by imputing the average values of similar units.

The **Retail Trade Survey** measures the monthly changes in retail sales – turnover invoiced in the reference period, excluding VAT. The target population is all enterprises with trade or catering as their principal activity. Enterprises are stratified into 10 size classes. All enterprises with 50 or more employees are surveyed with 100% response rate, and smaller enterprises are sampled using a stratified random sample (e.g. 55% of enterprises with 20-49 employees are surveyed with 85% response).

The **Household Budget Survey (HBS)**, which is published quarterly, provides data on income, expenditure and consumption of households. The survey covers more than 10 000 households every year in major cities, smaller towns and rural areas. It has a response rate of around 80%, which is more than 700 responses per month. The survey relies on random sampling methods based on the Population Register and the households' list maintained by the rural administrative units.

The **Wages and Salaries Survey** was monthly until 2000, since when it is quarterly. Data are collected on the number of hired employees, average monthly earnings, and working hours. The survey covers activities A to O of NACE Rev 1., and all enterprises irrespective of type of ownership except sole proprietorships. The sample size in 2000 was around 5 308 and it is estimated that the quarterly enterprise returns cover 85%. Data are compiled according to ILO recommendations. The number of employees is adjusted to a full-time equivalent basis, and average earnings are published on a gross and net basis.

The **Labour Force Survey (LFS)** is performed according to ILO recommendations. The survey has been performed twice a year in spring and autumn, since 1994. The sample size is around 3 000 households (7 700 persons) accounting for 0.3% of the population 14 years and older..

Producer Price Indices (PPIs) are produced for mining and quarrying, manufacturing, and also electricity, gas and water supply, classified according to NACE Rev 1 (122 classes of 207 are covered). The major example of goods not covered is the building and repair of ships and boats. Since January 1996, three separate PPIs have been calculated – for total industry production, including both domestically sold and exported goods, for goods sold in the domestic market, and for exported goods. Since January 1999, PPIs are calculated by five main industrial groupings (MIG – Eurostat – stage of processing). The prices collected are basic prices (excluding VAT and excise duties) for actual transactions. On average, each month 1 590 prices for 570 products are collected from 395 enterprises (accounting for 76% of industrial output in 1998). The PPI is a chain price index of the Laspeyres types. Weights are updated annually using sales data from the annual survey of industrial activities, and currently relate to 1998. Missing prices are imputed by carrying forward the last available price, or imputing the movement of similar products, or group to which the product belongs. Quality change is adjusted for using the overlap method, or quantitative assessments by respondents.

The **Consumer Price Index (CPI)** represents all households in all geographic areas. Prices are collected in 19 centres, directly representing around 77% of the population and 87% of sales. On average, each month 44 700 prices are collected from 3 400 outlets, and 639 item indices are compiled using the modified Laspeyres formula. Weights are updated annually and are derived from the HBS (adjusted with retail sales data, foreign trade data, and national accounts data for services), they currently relate to October 1998-September 1999. Owner-occupied housing is not included. The procedures used to deal with missing prices and quality change are the same as those used for PPIs. Serious attention is paid to detecting quality changes, and detailed product specifications are used.

Agricultural output prices are collected quarterly from producers, and purchase prices are collected from processing enterprises for all the major products – grain, potatoes, sugar beet, flax fibre, vegetables, fruit, types of meat, milk and eggs. Prices are also collected for fodder roots, hay, and green fodder, calculated as the sum of costs (since market prices are not widespread for commodities that are mainly produced on own-account).

Unit value indices are calculated for **imports and exports** down to the 9 digit level of the CN are calculated quarterly, but export unit value indices are not used for national accounts deflation as PPIs are a more reliable measure of price change. Export unit value indices (EUVI) have been calculated since 1996, and import unit value indices (IUVI) have been calculated since 1997. The main source of information comes from customs declarations, although since 1998 this has been supplemented for the EUVI by data on sale prices collected from producers. This additional price information is particularly necessary in the case of non-homogeneous goods. EUVIs are calculated using fob prices, and IUVs using cif prices. The Laspeyres formula is used with weights updated each year. The baskets of goods are also updated each year – around 70-80% of total exported goods are represented, and 50-60% of imports.

The **construction cost index** is based on the cost of constructing a basket of eleven specifications for buildings and other construction: residential, industrial, administrative, educational, trade, engineering network, wastewater plant, and roads. The price index for capital repair is calculated separately (classified according to the UN Construction Classification by Type). 155 cost items are monitored, including building materials, fuel and running costs for machinery/equipment, wages and salaries, and other expenses. Around 3 700 prices per month are collected from 132 construction enterprises, and 49 suppliers of materials. Weights are based on construction and civil engineering data for 1998, and are updated every three years.

Administrative Data Sources

Besides SL other government institutions also collect data used to compile National accounts directly or after being processed, respectively, by other statistical divisions of SL.

The **Ministry of Finance** compiles statistics of central and local government revenue and expenditure. Data are available quarterly by government function and economic classification, on a cumulative basis. The position of the State social security fund is also reported quarterly giving information on its revenue and expenditure by type as well as on the surplus/deficit.

The **Bank of Lithuania** is responsible for money and banking statistics and compiles the balance of payments data quarterly (monthly from 2000). The Bank collects data on the banking sector, while the remainder (the majority) of data for the balance of payments is collected by SL and the Customs Department. In particular, SL collects data on trade in services via enterprise surveys on international transactions.

The **Customs Department** provides data on international trade in goods, compiled using customs declarations. They also provide information on charity contributions in kind.

The **Border Police** present information about incoming and outgoing foreigners.

The **National Labour Exchange** provides information about the unemployment rate in Lithuania.

Other Sources

Housing statistics come from a combination of the annual survey of dwelling stocks performed by SL, and the register of land and real estate (Land Cadastre). Plus, quarterly data from local administrations on permits for construction of new dwellings and on construction completed.

Compilation of GDP at Current Prices

The Production (Output) Approach

All transactions are recorded on an accruals basis, except for general government, which are recorded on a cash basis. Output and gross value added are estimated at basic prices; intermediate consumption at purchasers' prices; inventories at basic prices; dwelling services at rental value of comparable structures; non-market services at cost.

Enterprises are classified by kinds of activities according to NACE (Rev. 1) replacing ISIC (Rev. 3) at the 4-digits level. Since 1997, individual products are classified according to the EEC Combined Nomenclature (CN) of products. Value added is calculated for 64 activities and published for 16 NACE Rev 1 headings.

Estimation of Market Output and Output for Own Final Use

As described above, large **non-financial enterprises** are surveyed using the quarterly financial survey (QSB) which collects data on output, intermediate consumption and inventories. Thus, value added

can be calculated directly for large enterprises, but for small enterprises a variety of other methods is used. For many activities, the value-added of unincorporated enterprises can be calculated annually using tax returns (which provide data on receipts and expenditure). Quarterly tax data were available until the start of 1999, and these historical data provide the quarterly path, which is used to impute data for the current quarter based on the last available annual level data and current changes in the smaller of the surveyed (F-01) enterprises. These quarterly estimates are revised in line with the relevant annual data as soon as possible.

In the case of agriculture, simplified quarterly sample surveys provide output data and the more comprehensive quarterly surveys of agricultural enterprises (F-01) allow structural coefficients (input-output ratios) to be calculated and applied to the output of unincorporated enterprises. Agricultural output is recorded in the quarter when sales take place.

FISIM is estimated as the difference between interest receivable and interest payable, on an accruals basis, using data from the Bank of Lithuania. Interest receivable on government bonds and loans, are included and interest receivable on own funds is distinguished. FISIM is allocated to a nominal sector rather than to sectors of intermediate or final consumption.

The output of **dwelling services** is derived from dwelling stocks data (volume) and information on rents (prices). Taking the stock data first - annual data on dwelling stocks are adjusted, by national accounts staff, using results from the quarterly survey of construction (completion) of new dwellings. These data do not allow identification of empty dwellings, demolitions, garages and holiday houses. The dwelling stock is stratified by:

- The occupancy status of dwellings: state-owned rented (3.3% in 1998), privately owned rented dwellings (2.9%), owner-occupied dwellings in urban (58%) and rural (35.8%) areas. The split between state owned and private stock is obtained from the construction and investment statistics section. The split between privately owned rented dwellings and owner occupied dwellings is based on specialist advice from real estate agents.
- The location of dwellings in the towns: centre, near centre, uptown (near central dormitory areas), and individual houses. For imputed rents – additionally divided up to urban and rural areas.
- Facilities: the data are separated into 3 groups: standard, low standard, low standard without bath. We understand standard as the equipment of dwelling with water supply, sewerage, central heating, low standard – without sewerage, and low standard – without bath. The stratification of stock of dwellings by facilities comes from Construction and Investment statistics section.

All the data on stock of dwellings are expressed in terms of the area, in square meters.

The gross output of actual rents for **state-owned dwellings** is calculated by multiplying, for each stratum, the stock of state-owned dwellings by the average fixed rent per square meter received from local administration units.

The output of actual rents for **private owned dwellings** is calculated using the market prices (obtained in 1995 from Real estate agency, and then extrapolated by the appropriate sub-index of the CPI for rents), and the rented out area in square meters from the housing stock estimates described above. These data on privately owned rented dwellings come from real estate agencies in the five largest towns.

The output of **imputed rents** is evaluated using mentioned estimated market prices and stock of dwellings calculated as the difference between total private and private rented out area. The situation with prices for imputed rents is more complicated. The part of private stock of dwellings does not have facilities, for example in rural area, without bath or sewerage, or even without them both. Therefore, in this calculation we can not use the same market price as we are getting for calculation of actual private rent (based on five major towns). Some kind of estimation of these prices is made in National accounts division. On the base of prices per square meter from Real estate agency and prices from Prices statistics section there the estimation of average prices per square meter for small towns and villages is done. This is also market price but some lower.

Intermediate consumption for the production of dwelling services is calculated using data from the HBS. The share of intermediate consumption is calculated according to HBS expenditure for regular maintenance and repair of the dwelling and insurance of dwelling. Then the expenses of maintenance and repair of common areas such as electricity and cleaning in corridors are estimated and added to total intermediate consumption. It is assumed that share of intermediate consumption is fixed as for 1995 and is the same for the calculation of actual and imputed rent.

Estimation of Other Non-Market Services

From the quarterly reports on central and **local government** budgets, and from the reports of the social security fund and other extra-budgetary funds, expenditure data are used to estimate output as the sum of input costs.

The quarterly output of **NPISHs** is estimated by imputing one quarter of the most recently available annual total. These estimates are revised as soon as more current annual data become available.

Holding Gains/Losses

Changes in inventories and associated holding gains or losses are calculated quarterly, with annual data calculated as the sum of quarterly estimates. Data are obtained directly from the QSB on inventories of raw materials, work in progress, finished goods and goods for resale. According to the Lithuanian Law of Bookkeeping, enterprises provide their data on stocks valued at historic cost and assuming FIFO. Thus, in order to comply with the ESA95 requirement that changes in inventories should be valued in a consistent manner to output, intermediate consumption and final use, SL revalues stocks to current prices to remove any holding gains.

The calculations are done by industry and separately for raw materials, and for the sum of finished products plus work-in-progress plus goods for resale, as follows:

1. Average stock-holding periods (turnover rates) are calculated – opening stocks of raw materials are divided by the intermediate consumption of the previous period, and closing stocks are divided by the intermediate consumption of the current period. The sum of opening stocks of work in progress, finished products and goods for resale (except for government services, for which goods for resale only) is divided by the sales of the previous period, and the closing stocks are divided by the sales of the current period.
2. Using these turnover rates (which approximate to an age profile for the inventories) and appropriate CPI sub-indices, PPIs and agricultural price indices special deflators are constructed for the beginning and end of the quarter. These price indices have a fixed base (1995) and are

relevant to each activity (although there is no information on the precise commodity composition of the inventories).

3. Each type of inventory is deflated with its special deflator, so that all inventories are on a constant price (1995) basis. Changes in inventories at constant prices are then calculated as the difference between closing and opening stocks.
4. The changes in inventories at constant prices are then reflat to current prices using appropriate price indices, to give change in inventories at current prices, which can then be used in GDP calculations

Holding gains are the difference between closing and opening book values of inventories less the change in inventories valued at average prices of the current period. Annual inventory holding gains are the sum of the relevant quarterly holding gains.

Taxes and Subsidies on Products

Data on taxes and subsidies on products are available on a cash basis.

The Expenditure Approach in Current Prices

Transactions are recorded on an accruals basis, with the exception of government expenditure, in which case the recording is on cash basis. International transactions are recorded at the time the goods enter/leave the economic territory as documented in the corresponding customs declarations. Household expenditure and gross fixed capital formation are valued at purchasers' prices; inventories at basic prices. Imports are valued c.i.f. and exports f.o.b.

Government output and expenditure are classified according to the Classification of the Functions of the Government (COFOG) and individual consumption expenditure and consumption expenditure of non-profit institutions serving households (NPISHs) according to the Classification of Individual Consumption by Purpose (COICOP). Expenditure on fixed capital formation is classified according to the ESA 95, and assets' and changes in inventories' classifications follow NACE (Rev. 1). International transactions are classified using the Lithuanian Combined Nomenclature (LCN), which distinguishes products at the 9-digits level and is derived from the EU's Combined Nomenclature. The LCN is identical to the Harmonised System (of the Customs Co-operation Council) (HS) at the 6-digits level.

Household Final Consumption Expenditure

The main focus is on quarter to quarter changes in overall expenditure, and in the structure of expenditure, i.e. ten main consumption categories. Data from 100 commodity groups in the Household Budget Survey are used in the calculations. Adjustments at the ten group level are made as follows:

- Expenditure on alcohol, tobacco and durable goods such as cars, furniture, electronic and white goods is adjusted upwards using data from the retail trade survey.

- Estimates of consumption of own-account agricultural production are obtained from agricultural surveys.
- Data on charitable contributions in kind from abroad are obtained from the Customs Department.
- The expenditure of foreign visitors to Lithuania and of Lithuanian residents whilst abroad are obtained from the balance of payments.
- The consumption of owner-occupied housing services, as estimated from the production side.
- The consumption of institutional households is added based on annual from the previous year.

Final Consumption Expenditure of General Government and NPISHs

These estimates are derived in the same way as the estimates for the production side, less income from sales of market output.

Gross Fixed Capital Formation

The Quarterly Survey of Investment provides data on acquisitions (not disposals) of buildings, infrastructure, machinery and equipment and capital repairs. Data are also extracted from quarterly reports on general government expenditure. The Ministry of Agriculture supplies information on fixed assets and on expenditure on construction, fruit trees and breeding and dairy livestock. Information on intangible assets is scarce, as is information on the stocks and flows of valuables. Estimates of capital formation by unincorporated enterprises are made using data from the Household Budget Survey and data on building permits. Commodity flow methods are used as a means of combining these different data sources, particularly for machinery and equipment.

Changes in Inventories

To some extent this item is derived as a residual when estimates of GDP from the expenditure approach are brought into line with GDP from the output approach. Thus, best estimates for changes in inventories are compiled, but are adjusted during balancing. Data are obtained directly from the QSB on inventories of raw materials, work in progress, finished goods and goods for resale. Estimates of holding gains/losses are made from the unadjusted data.

Exports and Imports of Goods and Services

Balance of payments data are used directly, which are already fully adjusted to take account of:

- Purchases in shops on liners.
- Expenses of Lithuanian embassies abroad (data provided by the Ministry of Foreign Affairs).
- Expenditure by Lithuanian households while abroad.

- Repair work done abroad.
- Expenditure by foreign tourists to Lithuania (derived from information provided by the Lithuanian State Department of Tourism and the Border Police department.
- Estimates for non-observed international trade.

The Income Approach in Current Prices

Compensation of Employees

The main data source is the QSB, which collects data on the wages and salaries paid by enterprises. These data are cross-checked against quarterly data on the total number of employed persons and their average wages and salaries. Adjustments are made to include wages and salaries in kind such as meals, uniforms, sports facilities, private use of business cars, telephones, etc. This information is re-estimated each year from sources such as the labour cost survey and the HBS, and applied to quarterly data as adjustment factors.

Operating Surplus and Mixed Income

For non-financial corporations, operating surplus is available from the QSB. For financial enterprises, the data are obtained from the Central Bank and the quarterly survey of financial intermediaries and insurance companies. However, during GDP balancing, operating surplus and mixed income are treated as a residual.

Taxes Less Subsidies on Production

Overall levels of taxes and subsidies are obtained each quarter from the Ministry of Finance, by type of tax (on a cumulative basis – which are de-cumulated by SL). The QSB provides data on taxes paid by enterprises and subsidies received, and these data are used to split the Ministry of Finance data between activities.

Compilation of GDP at Constant Prices

The Production (Output) Approach in Constant Prices

A single indicator method is used for most activities whereby an index of output at current prices is deflated using an appropriate price index, and the resulting volume index is used to extrapolate constant price value added. This approach assumes that the relationship between output and value added is constant over time (constant input-output ratios). This single indicator method makes use of different price indices as follows:

- Agricultural price indices are used to deflate agricultural output.

- The relevant PPIs are used to deflate manufacturing, mining and quarrying. The PPI for fish products is used for fishing.
- Components of the CPI are used for hotel and restaurant services, communication services, wholesale and retail trade and other services.
- The construction cost index is used to deflate construction.

Volume data are used in certain areas - for the supply of electricity, gas and water. For transport and storage services volume data on kilometres travelled and cargo transported are collected from the rail, air and land transport enterprises, and supplemented by the output data obtained from the QSB.

Indices of employment are used to extrapolate constant price value added for financial intermediation and insurance services. Adjustments are made for changes in productivity using volume indicators such as the number of insurance policies handled.

For the output of NPISHs and of government (other non-market) services, output at constant prices is calculated as the sum of intermediate consumption, compensation of employees and consumption of fixed capital at constant prices. The components of intermediate consumption at current prices are deflated using appropriate CPI sub-indices for ten commodity groups. Compensation of employees is deflated using average earnings indices, adjusted for changes in productivity, as measured by educational and professional qualifications. Consumption of fixed capital at constant prices is derived as the share of output in the base year. Value added is calculated as the sum of compensation of employees and consumption of fixed capital.

The Expenditure Approach in Constant Prices

Constant price estimates from the expenditure approach have been developed quarterly but have not yet been published quarterly as the import deflators have not, until recently, been sufficiently reliable. However, following recent developments in these deflators, there are plans to publish, in April 2001, constant price estimates of the expenditure components for all quarters from 1995.

Household Final Consumption Expenditure

Current price expenditure for 45 commodity groups is deflated by the most relevant component of the CPI to give constant price estimates, which are then aggregated to give total household final consumption expenditure at constant prices.

Final consumption expenditure of government and NPISHs

The estimates at constant prices are derived by deflating current price expenditures by the implicit deflators for government and for NPISH output.

Gross Fixed Capital Formation

The deflators used are as follows:

- For construction, each main type of construction is deflated by the appropriate component of the construction cost index is used, i.e. for residential buildings, for non-residential buildings, and for other structures.
- For domestically produced machinery and equipment, the appropriate PPI for the domestic market component is used. For imported machinery and equipment, import unit value indices are used.
- GFCF of software is deflated using a special price index for computer software.

GFCF of livestock at constant prices is calculated based on a volume index compiled by the Department for Agricultural Statistics, which is calculated using the change in the number of livestock, broken down by type.

Changes in Inventories

To some extent this item is derived as a residual when estimates of GDP from the expenditure approach are brought into line with GDP from the output approach. Thus, best estimates for changes in inventories are compiled, by deflating with specially constructed deflators (see description of holding gains), but these estimates are always adjusted during balancing.

Exports and Imports of Goods and Services

The current price data for imported goods are deflated by the appropriate unit value indices, and exported goods values are deflated by the appropriate PPI to obtain data in constant prices. Transport services are deflated using the implicit output deflator for transport services. Exports of construction services are deflated using the construction cost index. All other exported services are deflated using the relevant components of the domestic CPI. All imported services are deflated using the same average index of partner country price indices for their exported services. The index is not currently adjusted for exchange rate movements, but this work is under development.

Taking Account of Non-Observed Activity, Including Illegal

Measurement of the non-observed economy has been, and remains, a priority for SL, and the office has been involved in two major projects in the last few years. In 1996, a pilot survey on assessment of the non-observed economy was financed and conducted by the World Bank and involved the methodological support of other international organisations. The results were published¹⁵ and were incorporated into national accounts estimates. The data were obtained from an additional HBS questionnaire, plus surveys of the opinions of experts from the Tax Inspectorate and Social Security system.

More recently SL has participated in Eurostat's pilot project on exhaustiveness (PPE) which has led to the estimation of non-observed activity at a very detailed level and using methods in common with EU Member States and other Candidate Countries. The estimation is done on an annual basis, but the results are applied to quarterly data using adjustment coefficients.

¹⁵. *Non-observed Economy: Concepts, Surveys, Problems*, Vilnius 1998

Unrecorded transactions (excluding illegal) are estimated to amount to around 18% of GDP in 1998, and are now included in GDP estimates.

The Production Approach –(Non-Observed Output)

The following types of adjustment are identified:

- Non-response
- Non-registration
- Underreporting
- Informal activity
- Other.

Non-Response

This is identified for units of non-financial enterprises which do not respond to a particular survey, although they are listed as active in the statistical register (the response rates of government units and financial corporations is 100%). When a unit is known to be operating, but is not responding, the first step is to impute the response from the previous period. If, after repeated follow-up by telephone, the unit still will not respond, then values are imputed taking into account the production trends of responding enterprises in the same activity. Non-response in large public enterprises was found to be negligible. Non-response occurs in NPISHs, but its overall effect is small.

Registers Incomplete and/or not updated

A major effort has been made in the last year to ensure that the SPBR would provide a reliable frame for all surveys of enterprises. Details of the SPBR structure and updating systems are given above, under “Frames for statistical surveys”. Details of other registers used for units not listed in the SPBR (such as lawyers, self-employed individuals, farmers, etc.) are also given above.

Adjustments for under-recording in the business register are made using the “employment method”; i.e. it is assumed that the difference between LFS data and employment data from enterprise surveys is due to intentional non-registration of some enterprises, or of some employees, and to the register not being updated. Adjustment coefficients by kind of activity were calculated, and further work is planned to improve the split of LFS data by activity.

General government and financial corporations are assumed to be fully registered and covered by the regular surveys.

Mis-reporting

Adjustments for mis-reporting make use of the extensive work done in this area in 1995, of which a survey of the opinions of tax inspectors was a key element – the adjustments are updated periodically

based on other expert opinions, and it is hoped that the wide-scale survey can be repeated. In this survey the degree of mis-reporting was estimated for different categories of observed enterprises: by size, by economic activity and by legal status. These estimates were used to adjust upwards the output of the various categories of enterprises, and to adjust reported intermediate consumption downwards. The survey confirmed that smaller enterprises hide value added to a much greater extent than larger enterprises – input-output analysis for types of activity and sizes of enterprises was carried out.

Informal Activity

The estimation of informal activity (i.e. by households) is one of the most difficult problems due to the lack of specific data sources or special investigations. Analysis is therefore done using a combination of all available data sources related to employment. The LFS will record self-employed persons who would not be recorded in the SPBR, but it will not capture those who wish to keep their labour hidden (unregistered). In order to assess the amount of informal (and hidden) activity a special investigation was undertaken for 1995 and 1996 as part of the HBS whereby households were asked about their expenditures on goods and services (mainly) provided by individuals or enterprises, for which receipts or other documents were not provided. Adjustments related to the activity of these intentionally unregistered small businesses are made, by kind of activity in the households sector.

Other GDP Under-Coverage

Estimates of wages and salaries in kind are made based on the fact that the intermediate costs reported by non-financial enterprises are usually over-estimated since they contain expenditure on goods and services provided to employees. Therefore, the intermediate consumption of non-financial corporations by kind of activity is adjusted. Tips are judged to be very small by Statistics Lithuania. It is assumed that tips are implicitly covered in the adjustments for mis-reporting.

The Expenditure Approach –(Non-Observed Expenditure)

Adjustments to Private Consumption Expenditure

It is obvious that HBS data do not properly reflect the expenditure of the richest part of population, and adjustments are therefore made using several other sources – retail trade data are used to assess expenditure on alcoholic beverages and tobacco, medicine, furniture and cars. The results of the survey on services rendered were used to calculate expenditures on different types of services. These adjustments for non-response amounted to **243,4** mill. LTL, affecting the level of the component by 0,9% in 1998.

Assessment of the adjustments is complicated by the fact that household final consumption expenditure is often adjusted in the process of reconciliation between GDP estimates from the production and expenditure sides. The total adjustment to household consumption expenditure amounted to 602,4 million LTL. The COICOP groups taking most of the adjustments were health, recreation and culture, education and miscellaneous goods and services. These adjustments amounted to 1,4% of GDP in 1998.

Adjustments to Gross Fixed Capital Formation

Underreporting of GFCF in the non-financial corporations and households sector is likely to be an issue due to the rapid development of sole-proprietors activities and the limited sources of information on their investment activities. Significant adjustments are made to the available data for machinery and equipment using commodity flow analysis. Indirect sources were used to measure the size of GFCF in agriculture for farmers' farms. The census of farmers' farms, which is planned for 2002, will provide better information on stocks of capital. The adjustments due to the underreporting amounted to **267,3** mill. LTL in 1998 or 2,6% of total GFCF.

Other adjustments made to GFCF were mainly identified using commodity flow methods. These other adjustments amounted to **1147,1** mill. LTL, or 2,7% of GDP in 1998.

Adjustments to Exports and Imports

Balance of payments data are compiled by the Bank of Lithuania, and include estimates of the value of purchases made by tourists in Lithuania obtained by surveys. Based on its analysis of the flows of national currency and foreign currency, and taking into account the large positive errors and omissions entry, the Bank considers that a part of the income from the export of goods and services is not covered by the official statistics. Lithuanian manufacturers exporting to Russia and the countries of the CIS tend to undervalue their exports, in order to reduce the burden of higher import taxes. Therefore, the value of exports of goods was adjusted upwards by 4,9 % in 1998. The value of imports was also adjusted up by 5,5%. The overall impact to GDP in 1998 was -0,9%.

All adjustments made to the GDP expenditure components amounted to **1760,3** mill. LTL and accounted for 4,1% of GDP in 1998.

Income Approach

The adjustments mainly relate to the compensation of employees and gross operating surplus in the sectors of non-financial corporations and households. Complete coverage is assumed for the financial corporations and general government sectors. Overall, the adjustments made to the income approach amounted to 6859,7 mill. LTL and their share to GDP were 16,0 percent.

Adjustments to the Compensation of Employees

All adjustments concerning compensation of employees amounted to 12,9%, and 5,6% of GDP. The estimates were based on comparisons between the QSB and results from the wages and salaries survey. Unincorporated enterprises usually report the minimum wages (permitted by the law) in their tax declarations, and therefore their returns were compared with the average wage for each activity and adjusted upwards. These adjustments were 1906,9 mill. LTL for non-financial corporations and 318,0 million LTL in households sector.

Efforts were made to estimate W&S in kind (described above), and the adjustments represent 0,4% of GDP in 1998.

Adjustments to Gross Operating Surplus and Mixed Income

These are made based on the production approach, i.e. gross operating surplus and mixed income are derived as a residual.

Other taxes on Production

Although it is assumed that all taxes are completely covered, in the government budgetary data, adjustments are made to the “other taxes on production”. However, these were treated as corrections rather than adjustments for exhaustiveness.

Illegal Activities

The first estimates of illegal activities were made for 1998, covering prostitution, consumption of drugs, and fencing of stolen cars. Taking into account all estimated types of illegal activities the overall adjustment to the private household consumption could be 235,5 mill LTL, or 0,5% of GDP in 1998, but illegal activities are not yet included in the official published GDP figures. The estimates concern only the use side; the supply side has yet to be investigated. The absolute size of the each activity was estimated on the basis of information received from the Ministry of Interior Affairs and other institutions.

Prostitution

According to the Police Department there were 2 680 persons in 1998 engaged in this activity. Taking into account the assumed average earnings per hour and minimum number of “working days” per year the possible earnings are estimated at **48,2** mill. LTL in 1998. It is known that significant part of non-resident persons is active on territory of Lithuania. Nevertheless, the current estimates do not represent all possible aspects of these phenomena and further investigations are needed.

Consumption of Drugs

On the basis of information from the Ministry of Health and Police Department the estimates of total expenditure on drugs were made. Their absolute size was **169,5** mill. LTL in 1998. Different types of drug were distinguished and the specification of consumption by regions was taken into account. According to the opinions of experts, prices for drugs are decreasing, while the number of consumers is increasing rapidly. The weaknesses of the estimates should be noted, since not all flows like production, imports and exports were measured. These will be estimated in the future.

Fencing of Stolen Cars

Relying on the Police Department information on the registered events of stolen cars, and the possible average prices of selling of stolen cars (expert opinion by different models of cars) the estimates of income received were made. Their absolute size was **17,8** mill. LTL in 1998. It is assumed that all stolen cars were sold on the territory of Lithuania, so, the value above should be a part of consumption. According to Police imports and exports of stolen cars are negligible and, therefore, were not taken into account.

Balancing the Different Approaches

Since GDP estimates for all sectors from the production approach are considered more reliable than any item from the expenditure approach, the changes in inventories are adjusted to bring the GDP from the expenditure approach in line with the output estimate. In the income approach, operating surplus and mixed income are calculated as a residual, and thus the income estimates cannot be viewed as independent, but nevertheless can provide useful input into the validation process.

Reconciliation of Quarterly and Annual Estimates

Where relatively independent annual estimates of macroaggregates are made, annual estimates are used as a benchmark and quarterly figures are adjusted to sum to the annual figures at current prices. The main method of reconciliation is to identify the causes of the difference between each preliminary aggregate, calculated on the quarterly basis and its related annual aggregate and then to revise the quarterly estimate. The discrepancy between quarterly and annual data is distributed between the quarters, weighted by quarterly output i.e. pro-rata distribution. Adjustments can be significant in the case of agriculture because it is necessary to forecast crop production in order to make quarterly estimates, and these need to be replaced with actual data which usually are available on an annual basis.

Seasonal Adjustment

Development work has started.

Revisions Policy

Since 1999 the ‘flash’ estimate of GDP, at current prices plus the growth rate, is produced 30 days after the end of the quarter. Preliminary estimates, from all approaches, with all breakdowns, are published after 90 days – firstly as a press release, and one week later as a Quarterly Bulletin “Quarterly National Accounts”.

By the end of March of the following year, together with preliminary 4th quarter GDP data, the first estimate of annual GDP is published, as the sum of quarterly estimates. This annual estimate, and the corresponding quarterly estimates, is revised when the annual data have been processed, by the end of the following September (coinciding with publication of the 2nd quarter of the current year). These data are revised again after more complete annual data become available, and after the compilation of the full set of annual accounts, in March 15 months after the reference year.

Future Plans

All quarterly and annual national accounts estimates will be revised to take account of the improvements to sources and methods resulting from recent technical co-operation with Eurostat. The plan is to publish the revised series in October 2001. The improvements affect the following areas – exhaustiveness (non-observed activity), household final consumption expenditure, government expenditure, constant price estimation, consumption of fixed capital and dwelling services.

Work will continue to:

- Develop seasonal adjustment systems.
- Improve deflators of imported services.
- Improve constant price estimation for non-market services.
- Improve productivity adjustments.

ANNEX I: DATA TABLES

ESTONIA

Current prices (millions of Kroons)																	
		1993				1994				1995				1996			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Gross capital formation		1237	1061	1440	2083	1779	2200	1647	2558	1875	3081	2866	3059	2408	3318	4179	4674
Gross fixed capital formation		1150	1400	1290	1440	1669	2054	2025	2256	2323	2803	2630	2821	2915	3770	3540	3790
Changes in inventories		87	-339	150	644	110	146	-379	303	-448	278	236	239	-508	-452	639	884
Final consumption		3640	4309	4170	5067	5230	6411	5955	7442	7730	8792	7991	9797	10179	11486	10749	12062
Households consumption		2748	3175	3079	3590	3838	4648	4430	5175	5285	6107	5673	6688	7216	8068	7647	8560
NPISH		26	31	28	35	36	40	39	43	45	53	51	59	85	90	88	90
Total government consumption		865	1104	1063	1442	1357	1723	1487	2224	2400	2632	2267	3050	2878	3328	3014	3412
Exports of goods and services		2701	3442	4189	4865	4802	5758	5552	6373	6242	7109	7761	8339	7492	8580	9171	9944
Imports of goods and services		2755	3629	4172	5569	5753	6321	6139	7526	7181	8057	7773	9725	8803	9725	10328	12373
Statistical discrepancy		-313	107	-208	-54	177	-287	10	-269	-90	-386	-419	-305	-240	-288	-144	105
Gross domestic product		4511	5289	5418	6392	6236	7761	7025	8578	8575	10538	10427	11164	11036	13372	13626	14412
Constant prices (1995 millions of Kroons)																	
		1993				1994				1995				1996			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Gross capital formation		2534	2025	2511	3273	2583	2991	1961	2847	2038	3171	2778	2894	2184	2821	3443	3797
Gross fixed capital formation		2386	2519	2281	2383	2444	2817	2402	2503	2490	2887	2539	2660	2627	3196	2900	3055
Changes in inventories		148	-494	230	890	139	175	-442	343	-452	284	239	234	-443	-375	544	742
Final consumption		7333	8079	7336	8327	7368	8146	7238	8699	8336	8979	7863	9132	8653	9369	8705	9488
Households consumption		5443	5831	5288	5786	5331	5841	5347	6028	5663	6215	5597	6276	6138	6595	6213	6717
NPISH		50	54	48	54	50	50	46	49	48	55	50	55	72	73	71	71
Total government consumption		1840	2194	2001	2487	1988	2254	1845	2622	2624	2709	2216	2801	2443	2701	2422	2699
Exports of goods and services		5323	6410	7391	7763	6683	7358	6790	7083	6667	7335	7651	7799	6593	7391	7803	8312
Imports of goods and services		5364	6416	7218	8604	7408	7785	7389	8471	7499	8159	7652	9426	7782	8392	8711	10305
Statistical discrepancy		-416	45	-465	-40	269	-752	525	295	18	-1048	-516	346	82	-548	-752	145
Gross domestic product		9411	10143	9555	10719	9496	9958	9124	10453	9558	10278	10124	10745	9730	10641	10490	11437
% change at constant prices (growth over same quarter of previous year)																	
		1993				1994				1995				1996			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Gross capital formation						1.9	47.7	-21.9	-13.0	-21.1	6.0	41.7	1.7	7.2	-11.0	23.9	31.2
Gross fixed capital formation						2.4	11.8	5.3	5.0	1.9	2.5	5.7	6.3	5.5	10.7	14.2	14.8
Changes in inventories						-6.1	-135	-292	-61	-425	62	-154	-32	-2.0	-232	128	217
Final consumption						0.5	0.8	-1.3	4.5	13.1	10.2	8.6	5.0	3.8	4.3	10.7	3.9
Households consumption						-2.1	0.2	1.1	4.2	6.2	6.4	4.7	4.1	8.4	6.1	11.0	7.0
NPISH						0.0	-7.4	-4.2	-9.3	-4.0	10.0	8.7	12.2	50.0	32.7	42.0	29.1
Total government consumption						8.0	2.7	-7.8	5.4	32.0	20.2	20.1	6.8	-6.9	-0.3	9.3	-3.6
Exports of goods and services						25.5	14.8	-8.1	-8.8	-0.2	-0.3	12.7	10.1	-1.1	0.8	2.0	6.6
Imports of goods and services						38.1	21.3	2.4	-1.5	1.2	4.8	3.6	11.3	3.8	2.9	13.8	9.3
Gross domestic product						0.9	-1.8	-4.5	-2.5	0.7	3.2	11.0	2.8	1.8	3.5	3.6	6.4
GDP by activity in current prices																	
	NACE	1993				1994				1995				1996			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Agriculture, hunting and ... (1)	(A,B)	395	517	550	717	534	722	662	751	559	733	888	695	682	961	921	970
Industry, including energy	(C-E)	1090	1258	1206	1296	1500	1647	1399	1825	1809	2230	2098	2291	2503	2564	2506	2839
Construction	(F)	308	361	404	228	335	448	428	474	383	570	607	601	500	705	795	734
Wholesale, retail, hotels, ... (2)	(G-I)	1271	1569	1605	1644	1443	2081	1920	2005	2113	2691	2865	2598	2815	3601	3923	3355
Financial intermediation, ... (3)	(J,K)	418	421	390	787	553	729	782	994	990	1230	1152	1423	1468	1592	1593	2068
Other service activities (4)	(L-O)	641	812	817	1094	1052	1301	1167	1682	1757	2087	1769	2354	2181	2687	2264	2732
Taxes less subsidies on products		482	460	559	760	929	979	809	1072	1129	1169	1266	1436	1149	1533	1873	2063
FISIM		-94	-110	-113	-133	-111	-147	-141	-225	-164	-172	-217	-233	-262	-271	-248	-350
Gross domestic product		4511	5289	5418	6392	6236	7761	7025	8578	8575	10538	10427	11164	11036	13372	13626	14412
GDP by activity in constant prices																	
	NACE	1993				1994				1995				1996			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Agriculture, hunting and ... (1)	(A,B)	586	722	765	1006	635	720	713	751	582	713	844	738	573	706	818	716
Industry, including energy	(C-E)	2101	2020	1920	2130	2034	1937	1783	2193	2037	2020	2079	2292	2250	2091	2061	2280
Construction	(F)	417	507	536	543	421	490	491	490	421	515	633	592	460	562	674	678
Wholesale, retail, hotels, ... (2)	(G-I)	2195	2496	2449	2565	2304	2525	2475	2471	2370	2599	2640	2658	2424	2799	2903	3021
Financial intermediation, ... (3)	(J,K)	1310	1262	1182	1217	1262	1148	1083	1358	1138	1220	1163	1275	1151	1234	1184	1357
Other service activities (4)	(L-O)	1839	2052	1739	2157	1854	2087	1702	2171	1926	2134	1733	2173	1910	2193	1782	2211
Taxes less subsidies on products		1115	1243	1165	1317	1149	1221	1092	1249	1250	1250	1250	1250	1140	1242	1303	1426
FISIM		-152	-159	-201	-215	-162	-170	-214	-230	-164	-172	-217	-233	-178	-186	-235	-252
Gross domestic product		9411	10143	9555	10719	9496	9958	9124	10453	9558	10278	10124	10745	9730	10641	10490	11437
% change at constant prices (growth over same quarter of previous year)																	
	NACE	1993				1994				1995				1996			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Agriculture, hunting and ... (1)	(A,B)					8.4	-0.3	-6.9	-25.4	-8.4	-1.1	18.3	-1.7	-1.6	-0.9	-3.0	-3.0
Industry, including energy	(C-E)					-3.2	-4.1	-7.1	3.0	0.1	4.3	16.6	4.5	10.4	3.5	-0.9	-0.5
Construction	(F)					0.8	-3.3	-8.5	-9.7	0.1	5.1	29.0	20.9	9.4	9.1	6.4	14.5
Wholesale, retail, hotels, ... (2)	(G-I)					4.9	1.2	1.1	-3.7	2.9	2.9	6.7	7.6	2.3	7.7	10.0	13.6
Financial intermediation, ... (3)	(J,K)					-3.7	-9.0	-8.4	11.6	-9.8	6.3	7.5	-6.2	1.2	1.2	1.7	6.4
Other service activities (4)	(L-O)					0.8	1.7	-2.1	0.6	3.9	2.3	1.8	0.1	-0.8	2.8	2.8	1.8
Taxes less subsidies on products						3.1	-1.8	-6.2	-5.1	8.7	2.4	14.4	0.0	-8.8	-0.6	4.3	14.1
FISIM						6.6	6.5	6.6	6.5	1.5	1.5	1.5	1.5	8.1	8.1	8.1	8.1
Gross domestic product						0.9	-1.8	-4.5	-2.5	0.7	3.2	11.0	2.8	1.8	3.5	3.6	6.4

(1) Agriculture, hunting and forestry

(2) Wholesale, retail, hotels, restaurants, transport services

(3) Financial intermediation; real estate, renting and business activities

(4) Public administration and defense; compulsory social security; education; health and social work; other community, social and personal service activities

ESTONIA

Current prices (millions of Kroons)															
1997	1998				1999				2000						
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
3094	4411	5960	6380	4660	5925	6032	4955	3526	4497	4811	5652	4400	5205	5146	Gross capital formation
3841	4379	4586	5156	5005	5810	5353	5593	4325	4708	4755	5107	4521	4921	4737	Gross fixed capital formation
-747	32	1374	1224	-345	115	679	-638	-798	-211	56	545	-121	284	409	Changes in inventories
11897	13261	12454	14598	14308	15378	14182	15772	14853	15763	14441	16886	15899	17623	16358	Final consumption
8653	9390	9249	10294	10604	10923	10491	11156	10685	10890	10293	11735	11545	12475	11994	Households consumption
101	101	102	101	117	117	118	117	127	128	128	129	131	137	139	NPISH
3143	3769	3103	4204	3588	4338	3573	4498	4041	4745	4021	5022	4223	5011	4225	Total government consumption
9701	12421	13381	14710	13333	15480	15087	14690	12158	14560	15798	15473	17240	19980	20935	Exports of goods and services
11100	13749	15058	17727	15599	17169	16845	16654	13461	15331	15612	18067	18120	20731	20768	Imports of goods and services
-149	77	77	-316	60	-92	103	-280	-374	140	-203	-158	-755	-48	-199	Statistical discrepancy
13443	16421	16814	17645	16761	19523	18559	18482	16695	19689	19171	19805	18664	22029	21472	Gross domestic product
Constant prices (1995 millions of Kroons)															
1997	1998				1999				2000						
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
2451	3447	4582	4880	3309	4208	4281	3462	2476	3126	3282	3876	3026	3553	3478	Gross capital formation
3055	3421	3470	3890	3569	4121	3765	3950	3068	3285	3239	3474	3112	3347	3200	Gross fixed capital formation
-605	26	1112	990	-259	87	517	-487	-592	-159	43	402	-87	206	278	Changes in inventories
9204	9948	9086	10402	9895	10569	9647	10676	9877	10475	9549	11066	10246	11359	10386	Final consumption
6711	7097	6774	7369	7353	7559	7171	7583	7127	7288	6839	7725	7462	8093	7655	Households consumption
77	75	73	71	80	79	79	79	84	84	83	84	84	87	87	NPISH
2417	2776	2239	2962	2462	2930	2397	3014	2665	3103	2626	3257	2700	3180	2644	Total government consumption
7881	9728	10225	11389	10124	11561	11077	11396	9244	10976	11423	11494	12419	14084	14583	Exports of goods and services
8917	10946	11865	13926	12187	13413	12704	13093	10640	11906	11879	13836	13648	15362	15152	Imports of goods and services
-257	-358	-318	152	332	-214	-248	316	134	-300	-379	397	-374	-333	-469	Statistical discrepancy
10362	11819	11710	12897	11474	12711	12054	12757	11090	12371	11990	12996	11669	13301	12826	Gross domestic product
% change at constant prices (growth over same quarter of previous year)															
1997	1998				1999				2000						
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
12.2	22.2	33.1	28.5	35.0	22.1	-6.6	-29.1	-25.2	-25.7	-23.3	12.0	22.2	13.7	6.0	Gross capital formation
16.3	7.0	19.7	27.3	16.8	20.5	8.5	1.5	-14.0	-20.3	-14.0	-12.1	1.4	1.9	-1.2	Gross fixed capital formation
37	-107	104	33	-57	235	-54	-149	129	-283	-92	-183	-85	-230	547	Changes in inventories
6.4	6.2	4.4	9.6	7.5	6.2	2.6	2.6	-0.2	-0.9	-1.0	3.7	3.7	8.4	8.8	Final consumption
9.3	7.6	9.0	9.7	9.6	6.5	5.9	2.9	-3.1	-3.6	-4.6	1.9	4.7	11.0	11.9	Households consumption
6.9	2.7	2.8	0.0	3.9	5.3	8.2	11.3	5.0	6.3	5.1	6.3	0.0	3.6	4.8	NPISH
-1.1	2.8	-7.6	9.7	1.9	5.5	7.1	1.8	8.2	5.9	9.6	8.1	1.3	2.5	0.7	Total government consumption
19.5	31.6	31.0	37.0	28.5	18.8	8.3	0.1	-8.7	-5.1	3.1	0.9	34.3	28.3	27.7	Exports of goods and services
14.6	30.4	36.2	35.1	36.7	22.5	7.1	-6.0	-12.7	-11.2	-6.5	5.7	28.3	29.0	27.6	Imports of goods and services
6.5	11.1	11.6	12.8	10.7	7.5	2.9	-1.1	-3.3	-2.7	-0.5	1.9	5.2	7.5	7.0	Gross domestic product
GDP by activity in current prices															
1997	1998				1999				2000						
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	NACE
728	995	1121	1055	844	1109	1213	989	791	944	1186	948	776	959	1223	(A,B) Agriculture, hunting and ... (1)
2652	3088	3005	3455	3481	3621	3314	3580	3271	3333	3234	3745	3862	3956	3842	(C-E) Industry, including energy
619	848	929	918	844	1161	1197	1033	772	928	1039	943	811	1037	1227	(F) Construction
3617	4418	5070	4236	4726	5458	5869	4739	4729	5726	6073	5201	5337	6606	6814	(G-I) Wholesale, retail, hotels, ... (2)
1974	2209	2020	2156	2538	2598	2350	2385	2870	2964	2608	2700	3024	3285	2902	(J,K) Financial intermediation, ... (3)
2576	3137	2678	3354	2894	3481	2864	3632	3150	3890	3173	4068	3219	4027	3308	(L-O) Other service activities (4)
1583	2051	2264	2739	1694	2341	1993	2378	1400	2153	2176	2493	1939	2498	2511	Taxes less subsidies on products
-305	-325	-273	-268	-260	-247	-241	-252	-280	-310	-306	-312	-306	-341	-355	FISIM
13443	16421	16814	17645	16761	19523	18559	18482	16702	19628	19183	19785	18663	22029	21471	Gross domestic product
GDP by activity in constant prices															
1997	1998				1999				2000						
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	NACE
584	727	893	747	652	754	818	704	637	724	814	712	606	691	801	(A,B) Agriculture, hunting and ... (1)
2292	2482	2395	2754	2592	2611	2424	2629	2391	2393	2382	2721	2759	2829	2733	(C-E) Industry, including energy
501	655	764	827	650	849	949	888	556	660	805	790	577	727	933	(F) Construction
2588	3078	3234	3337	2969	3403	3467	3330	2919	3540	3535	3500	3107	3879	3779	(G-I) Wholesale, retail, hotels, ... (2)
1316	1385	1305	1521	1455	1464	1414	1575	1548	1563	1477	1658	1560	1636	1557	(J,K) Financial intermediation, ... (3)
1978	2237	1811	2319	1982	2262	1776	2276	1984	2271	1790	2286	1955	2244	1772	(L-O) Other service activities (4)
1301	1460	1563	1655	1375	1562	1403	1555	1270	1457	1420	1566	1335	1550	1511	Taxes less subsidies on products
-197	-204	-255	-262	-201	-195	-195	-200	-215	-236	-233	-237	-231	-255	-261	FISIM
10362	11819	11710	12897	11474	12711	12054	12757	11090	12371	11990	12996	11668	13301	12826	Gross domestic product
% change at constant prices (growth over same quarter of previous year)															
1997	1998				1999				2000						
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	NACE
2.0	2.9	9.1	4.3	11.7	3.8	-8.4	-5.8	-2.4	-3.9	-0.4	1.1	-4.8	-4.7	-1.6	(A,B) Agriculture, hunting and ... (1)
1.9	18.7	16.2	20.8	13.1	5.2	1.2	-4.5	-7.7	-8.4	-1.7	3.5	15.4	18.3	14.7	(C-E) Industry, including energy
8.8	16.6	13.5	21.9	29.9	29.7	24.1	7.4	-14.5	-22.4	-15.1	-11.1	3.7	10.2	15.8	(F) Construction
6.7	10.0	11.4	10.5	14.7	10.5	7.2	-0.2	-1.7	4.0	2.0	5.1	6.4	9.6	6.9	(G-I) Wholesale, retail, hotels, ... (2)
14.3	12.2	10.3	12.1	10.5	5.7	8.3	3.6	6.4	6.8	4.5	5.3	0.8	4.7	5.5	(J,K) Financial intermediation, ... (3)
3.5	2.0	1.6	4.9	0.2	1.1	-1.9	-1.9	0.1	0.4	0.8	0.4	-1.5	-1.2	-1.0	(L-O) Other service activities (4)
14.1	17.6	20.0	16.1	5.7	7.0	-10.3	-6.1	-7.6	-6.7	1.2	0.7	5.1	6.4	6.5	Taxes less subsidies on products
10.7	9.8	8.4	4.2	2.0	-4.5	-23.5	-23.8	7.1	21.1	19.5	18.6	7.6	8.0	11.9	FISIM
6.5	11.1	11.6	12.8	10.7	7.5	2.9	-1.1	-3.3	-2.7	-0.5	1.9	5.2	7.5	7.0	Gross domestic product

(1) Agriculture, hunting and forestry

(2) Wholesale, retail, hotels, restaurants, transport services

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(4) Public administration and defense; compulsory social security; education; health and social work; other community, social and personal service activities

LATVIA

Current prices (millions of Lats)																					
	1992				1993				1994				1995				1996				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2			
Gross capital formation	78	99	120	117	10	36	52	37	64	103	88	136	91	103	85	134	76	125			
Gross fixed capital formation	16	29	22	45	31	42	38	91	32	82	83	108	49	85	96	125	76	129			
Changes in inventories	63	70	98	71	-21	-6	14	-55	32	21	5	28	42	18	-11	10	0	-4			
Final consumption	74	112	146	189	228	264	263	340	350	394	403	463	461	482	501	549	577	620			
Individual consumption	62	83	116	135	174	182	192	222	269	288	306	337	334	354	382	401	440	460			
Total government consumption	13	29	30	54	54	82	71	118	82	106	97	126	127	128	119	147	138	160			
Exports of goods and services	137	168	209	289	297	281	248	248	213	238	244	254	259	274	269	300	323	368			
Imports of goods and services	131	150	190	264	206	223	200	207	206	224	215	262	273	267	277	341	353	411			
Gross domestic product	159	229	285	331	328	358	364	417	421	511	520	591	537	593	578	641	624	702			
Constant prices (1995 millions of Lats)																					
	1992				1993				1994				1995				1996				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2			
Gross capital formation													89	130	89	106	86	120			
Gross fixed capital formation													47	84	97	127	73	108			
Changes in inventories													42	47	-9	-21	13	12			
Final consumption													489	488	506	509	519	525			
Individual consumption													357	357	377	380	386	392			
Total government consumption													132	132	129	129	133	133			
Exports of goods and services													264	284	271	281	298	340			
Imports of goods and services													279	301	275	303	322	372			
Gross domestic product													563	602	591	594	580	612			
% change at constant prices (growth over same quarter of previous year)																					
	1992				1993				1994				1995				1996				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2			
Gross capital formation																		-2.9	-8.3		
Gross fixed capital formation																		56	28		
Changes in inventories																		-69	-75		
Final consumption																		6.0	7.6		
Individual consumption																		8.0	10		
Total government consumption																		0.6	1.1		
Exports of goods and services																		13	19		
Imports of goods and services																		16	24		
Gross domestic product																		3.1	1.7		
GDP by activity in current prices																					
	NACE	1992				1993				1994				1995				1996			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2		
Agriculture, hunting and ... (1)	(A,B)	25	47	56	40	27	46	52	32	33	51	56	31	39	64	71	45	34	61		
Industry, including energy	(C-E)	49	67	77	87	116	96	86	113	110	113	100	136	145	139	129	159	166	157		
Construction	(F)	7	12	12	17	10	14	15	19	14	29	28	37	15	26	31	31	17	29		
Wholesale, retail, hotels, ... (2)	(G-I)					99	102	109	125	115	145	150	165	131	151	145	150	188	205		
Financial intermediation, ... (3)	(J,K)					25	25	27	27	37	45	59	78	49	51	39	63	46	56		
Other service activities (4)	(L-O)					31	46	38	54	58	76	68	75	85	88	81	106	95	112		
Taxes less subsidies on products		10	14	18	23	20	29	38	48	53	52	59	69	73	74	81	87	77	81		
Gross domestic product		159	229	285	331	328	358	364	417	421	511	520	591	537	593	578	641	624	702		
GDP by activity in constant prices																					
	NACE	1992				1993				1994				1995				1996			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2		
Agriculture, hunting and ... (1)	(A,B)	55	92	88	59	39	73	82	48	36	60	67	42	39	65	76	40	35	59		
Industry, including energy	(C-E)	269	234	182	190	166	151	132	164	151	138	123	155	147	134	126	164	157	138		
Construction	(F)	64	37	54	42	21	26	25	29	16	33	31	33	14	27	32	30	21	28		
Wholesale, retail, hotels, ... (2)	(G-I)	137	132	104	102	114	137	134	131	133	159	156	154	141	153	145	138	159	157		
Financial intermediation, ... (3)	(J,K)	58	52	48	47	52	52	55	58	53	50	55	54	52	57	47	46	47	51		
Other service activities (4)	(L-O)	86	82	80	78	86	86	88	87	87	87	88	90	96	92	84	88	98	94		
Taxes less subsidies on products		110	104	92	85	74	82	80	80	74	82	81	82	73	74	81	87	62	85		
Gross domestic product		780	734	648	603	553	607	596	597	548	610	600	611	563	602	591	594	580	612		
% change at constant prices (growth over same quarter of previous year)																					
	NACE	1992				1993				1994				1995				1996			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2		
Agriculture, hunting and ... (1)	(A,B)					-28	-21	-7.2	-20	-9.2	-17	-18	-11	9.1	7.6	13	-5.6	-9.2	-9.1		
Industry, including energy	(C-E)					-38	-35	-27	-13	-9.3	-8.4	-7.2	-5.7	-2.2	-3.1	2.7	5.9	6.5	2.9		
Construction	(F)					-68	-30	-54	-31	-22	27	24	15	-11	-20	2.1	-8.3	49	5.8		
Wholesale, retail, hotels, ... (2)	(G-I)					-17	3.9	29	29	16	16	17	17	6.3	-3.5	-6.8	-11	13	2.4		
Financial intermediation, ... (3)	(J,K)					-11	1.2	13	23	0.5	-3.9	0.0	-5.8	-1.1	13	-14	-15	-9.2	-11		
Other service activities (4)	(L-O)					-0.2	4.7	10	12	0.5	1.1	-0.6	3.2	11	6.2	-4.8	-1.5	2.3	1.8		
Taxes less subsidies on products						-33	-21	-13	-5.8	-1.0	0.3	0.6	2.2	-0.7	-9.7	0.8	6.2	-15	15		
Gross domestic product						-29	-17	-8.1	-0.9	-0.9	0.4	0.7	2.3	2.7	-1.3	-1.5	-2.8	3.1	1.7		

(1) Agriculture, hunting and forestry

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LATVIA

Current prices (millions of Lats)																		
		1997				1998				1999				2000				
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
126	205	70	221	229	226	202	240	280	269	249	227	251	315	217	285	331	Gross capital formation	
153	155	84	172	183	175	183	243	280	273	180	201	253	322	190	268	281	Gross fixed capital formation	
-27	51	-14	49	47	52	19	-3	0	-5	69	26	-2	-7	27	16	50	Changes in inventories	
642	686	642	668	692	805	688	767	782	847	709	822	831	894	807	877	857	Final consumption	
497	517	494	530	551	606	526	579	596	615	535	611	643	667	621	660	668	Households consumption	
146	169	148	138	141	199	162	187	186	232	174	211	188	227	186	217	189	Total government consumption	
378	371	362	418	424	465	470	506	450	415	400	439	439	429	470	504	502	Exports of goods and services	
421	484	389	501	492	566	523	606	597	602	456	524	542	587	505	586	603	Imports of goods and services	
725	778	685	806	853	931	838	907	916	929	902	964	979	1052	990	1079	1087	Gross domestic product	
Constant prices (1995 millions of Lats)																		
		1997				1998				1999				2000				
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
118	115	67	140	163	123	140	163	201	180	159	151	142	164	116	147	178	Gross capital formation	
124	129	75	154	153	141	146	189	209	210	138	146	184	239	143	202	211	Gross fixed capital formation	
-6	-15	-9	-15	10	-19	-5	-27	-8	-29	21	5	-41	-76	-27	-54	-34	Changes in inventories	
548	561	525	549	558	604	544	595	609	626	552	625	645	653	585	632	642	Final consumption	
417	427	395	416	428	464	412	451	470	477	416	480	503	512	455	489	504	Households consumption	
131	134	130	133	130	139	132	144	139	149	136	146	142	141	130	143	138	Total government consumption	
342	345	340	385	374	398	397	430	386	357	344	378	379	370	401	431	413	Exports of goods and services	
387	406	322	410	412	444	415	484	498	495	391	451	459	492	402	473	483	Imports of goods and services	
621	614	610	664	683	680	668	704	699	668	664	703	707	694	700	737	749	Gross domestic product	
% change at constant prices (growth over same quarter of previous year)																		
		1997				1998				1999				2000				
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
33	8.4	-23	17	38	6.9	111	17	23	47	13	-7.1	-29	-9.3	-27	-2.4	25	Gross capital formation	
27	1.9	2.8	43	24	9.3	94	23	37	49	-5.4	-23	-12	14	3.8	38	15	Gross fixed capital formation	
-30	-31	-166	-224	-260	28	-37	83.1	-184	58	-498	-119	405	157	-226	-1165	-18	Changes in inventories	
8.4	10	1.2	4.6	1.8	7.6	3.7	8.3	9.1	3.7	1.3	5.1	5.9	4.3	6.0	1.1	-0.5	Final consumption	
11	12	2.3	6.2	2.6	8.8	4.4	8.2	9.7	2.8	0.9	6.4	7.0	7.3	9.4	2.0	0.3	Households consumption	
1.6	3.8	-2.1	-0.2	-0.5	3.8	1.6	8.5	7.2	6.9	2.7	1.0	2.2	-5.4	-4.3	-2.0	-3.2	Total government consumption	
26	23	14	13	9.4	15	17	12	3.3	-10	-13	-12	-1.8	3.6	17	14	8.8	Exports of goods and services	
41	34	0.0	10	6.6	9.3	29	18	21	11	-5.8	-6.7	-7.7	-0.6	2.9	4.9	5.2	Imports of goods and services	
5.1	3.5	5.0	8.5	10	11	9.5	6.0	2.4	-1.7	-0.6	-0.2	1.2	3.9	5.5	4.8	5.9	Gross domestic product	
GDP by activity in current prices																		
		1997				1998				1999				2000				NACE
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
80	46	27	44	58	37	25	37	44	28	30	43	48	34	34	46	51	(A,B)	
153	175	176	188	185	232	205	178	159	182	173	159	161	185	185	171	167	(C-E)	
35	35	19	33	40	44	38	54	66	55	38	63	76	66	48	71	84	(F)	
215	218	196	231	270	280	225	264	311	275	267	298	299	303	315	338	365	(G-I)	
57	63	56	75	76	75	81	102	71	94	111	119	120	140	122	137	138	(J,K)	
104	120	117	131	118	146	140	148	143	170	153	175	159	193	169	185	167	(L-O)	
82	120	94	104	106	117	122	125	122	124	130	107	117	132	118	132	114	Taxes less subsidies on	
725	778	685	806	853	931	838	907	916	929	902	964	979	1052	990	1079	1087	Gross domestic product	
GDP by activity in constant prices																		
		1997				1998				1999				2000				NACE
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
76	37	36	62	79	39	36	59	72	37	34	54	66	36	38	57	68	(A,B)	
133	160	161	157	154	197	189	173	155	176	168	152	153	181	174	160	156	(C-E)	
30	29	22	32	32	31	26	36	40	35	30	38	45	36	31	40	47	(F)	
153	156	170	171	175	168	186	184	183	174	195	200	188	180	207	205	208	(G-I)	
50	51	52	54	52	55	56	56	52	55	62	60	58	65	68	69	64	(J,K)	
90	91	104	98	95	94	105	101	97	96	107	103	99	98	109	105	101	(L-O)	
88	90	64	91	96	97	70	96	98	95	69	96	99	99	73	100	105	Taxes less subsidies on	
621	614	610	664	683	680	668	704	699	668	664	703	707	694	700	737	749	Gross domestic product	
% change at constant prices (growth over same quarter of previous year)																		
		1997				1998				1999				2000				NACE
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
0.5	-6.5	2.2	5.2	3.0	4.1	-1.1	-4.9	-8.3	-3.5	-5.6	-8.7	-9.0	-3.1	13	6.0	3.3	(A,B)	
5.7	-2.5	2.8	14	15	23	17	10	1.0	-11	-11	-12	-1.6	3.2	3.8	5.4	2.0	(C-E)	
-4.8	-5.1	4.5	12	7.5	8.0	18	13	25	12	12	7.7	10	2.7	3.5	5.1	5.5	(F)	
4.9	13	7.0	9.1	15	7.6	9.2	7.6	4.6	3.8	4.7	9.0	2.7	3.2	6.2	2.3	11	(G-I)	
6.6	10	9.4	5.2	4.1	7.5	8.2	4.7	0.4	0.5	11	6.7	11	18	10	16	10	(J,K)	
8.1	3.3	6.1	4.7	5.0	3.1	0.3	2.3	2.9	1.9	2.4	2.4	1.8	1.7	2.3	2.0	1.8	(L-O)	
8.7	3.6	2.7	6.2	8.6	7.5	9.5	6.0	2.2	-1.7	-0.7	-0.4	1.0	3.8	5.5	4.8	5.9	Taxes less subsidies on	
5.1	3.5	5.0	8.5	10	11	9.5	6.0	2.4	-1.7	-0.6	-0.2	1.2	3.9	5.5	4.8	5.9	Gross domestic product	

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LITHUANIA

Current prices (millions of Lit)as													
		1995				1996				1997			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Gross capital formation		1118	1261	2019	1561	1265	1656	2484	2327	1645	2467	3097	2967
Gross fixed capital formation		1068	1324	1561	1601	1266	1658	2130	2216	1645	2123	2791	2778
Changes in inventories		50	-63	458	-40	-1	-2	354	111	0	344	307	189
Final consumption		4332	4895	5367	6394	5703	6478	7011	7747	7072	7809	8115	9221
Individual consumption		3938	4435	4863	5657	5279	5858	6214	6971	6387	7036	7316	8166
Households consumption		3460	3788	4210	4766	4604	4960	5360	6028	5625	5910	6424	6948
NPISH		4	4	4	4	5	5	5	5	8	8	8	8
Total government consumption		868	1103	1153	1624	1093	1513	1646	1714	1439	1891	1683	2265
Individual government consumption		474	643	649	888	670	893	848	939	754	1118	884	1210
Collective government consumption		394	460	504	737	424	620	798	776	685	773	799	1055
Exports of goods and services		2616	3144	3462	3543	3725	3964	4516	4638	4521	5133	5448	5796
Imports of goods and services		3500	3625	3852	4632	4355	4578	4966	6045	5357	6193	6034	7366
Gross domestic product		4566	5675	6996	6866	6338	7520	9044	8667	7880	9217	10626	10617
Constant prices (1995 millions of Lit)as													
		1995				1996				1997			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Gross capital formation		1111	1305	1898	1646	1221	1335	2063	1920	1412	2052	2692	2458
Gross fixed capital formation		1133	1366	1519	1536	1170	1513	1875	1975	1424	1819	2363	2367
Changes in inventories		-22	-62	378	110	51	-178	188	-54	-13	233	330	91
Final consumption		4906	5057	5333	5691	4992	5472	5868	6372	5548	5906	6125	6842
Households consumption		3824	3926	4144	4347	4106	4265	4562	5020	4580	4650	5014	5355
Total government consumption		1082	1131	1189	1344	887	1207	1306	1351	968	1256	1111	1487
Exports of goods and services		2701	3160	3422	3482	3402	3615	4109	4109	3845	4511	4748	4979
Imports of goods and services		3432	3594	3914	4669	4188	4433	4778	5841	5156	5977	5856	7053
Gross domestic product		5286	5928	6738	6151	5427	5989	7262	6560	5649	6492	7708	7226
% change at constant prices (growth over same quarter of previous year)													
		1995				1996				1997			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Gross capital formation						9.9	2.3	8.7	16.6	15.6	53.7	30.5	28.0
Gross fixed capital formation						3.3	10.8	23.4	28.6	15.6	20.2	26.0	19.8
Changes in inventories						-332	187	-50	-149	16	-231	76	-269
Final consumption						1.8	8.2	10.0	12.0	15.6	7.9	4.4	7.4
Households consumption						7.4	8.6	10.1	15.5	15.6	9.0	9.9	6.7
Total government consumption						-18.0	6.7	9.8	0.5	15.6	4.1	-14.9	10.1
Exports of goods and services						26.0	14.4	20.1	18.0	15.6	24.8	15.6	21.2
Imports of goods and services						22.0	23.3	22.1	25.1	15.6	34.8	22.6	20.7
Gross domestic product						2.7	1.0	7.8	6.6	15.6	8.4	6.1	10.2
GDP by activity in current prices													
		1995				1996				1997			
	NACE	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Agriculture, hunting and ... (1)	(A,B)	232	514	1309	532	481	821	1623	625	662	913	1745	692
Industry, including energy	(C-E)	1277	1385	1419	1691	1768	1768	1901	2055	2099	2022	2105	2397
Construction	(F)	313	369	480	405	313	472	674	595	390	614	860	781
Wholesale, retail, hotels, ... (2)	(G-I)	1226	1507	1745	1862	1658	1891	2217	2353	2048	2243	2484	2766
Financial intermediation, ... (3)	(J,K)	516	556	575	679	672	738	763	870	768	819	851	858
Other service activities (4)	(L-O)	660	880	841	1109	974	1281	1167	1370	1172	1614	1485	1889
Taxes less subsidies on products		456	600	744	735	583	663	830	950	854	1124	1226	1362
FISIM		-115	-134	-116	-148	-112	-114	-132	-151	-113	-133	-129	-129
Gross domestic product		4566	5675	6996	6866	6338	7520	9044	8667	7880	9217	10626	10617
GDP by activity in constant prices													
		1995				1996				1997			
	NACE	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Agriculture, hunting and ... (1)	(A,B)	366	545	1072	604	391	667	1312	596	462	684	1513	562
Industry, including energy	(C-E)	1360	1443	1456	1512	1485	1400	1508	1557	1531	1553	1541	1710
Construction	(F)	342	385	462	377	261	382	524	454	259	406	571	491
Wholesale, retail, hotels, ... (2)	(G-I)	1343	1612	1715	1669	1377	1536	1773	1893	1582	1685	1858	2053
Financial intermediation, ... (3)	(J,K)	580	575	577	595	604	607	594	604	598	605	612	609
Other service activities (4)	(L-O)	859	872	878	881	868	892	903	882	741	1000	923	1163
Taxes less subsidies on products		556	624	709	647	571	630	764	690	594	683	811	760
FISIM		-120	-128	-131	-135	-130	-125	-116	-116	-118	-124	-122	-122
Gross domestic product		5286	5928	6738	6150	5427	5989	7262	6560	5649	6492	7708	7226
% change at constant prices (growth over same quarter of previous year)													
		1995				1996				1997			
	NACE	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Agriculture, hunting and ... (1)	(A,B)					6.8	22.4	22.4	-1.3	18.2	2.5	15.3	-5.8
Industry, including energy	(A,B)					9.2	-3.0	3.6	3.0	3.1	10.9	2.2	9.8
Construction	(C-E)					-23.9	-0.8	13.2	20.4	-0.7	6.4	9.0	8.1
Wholesale, retail, hotels, ... (2)	(F)					2.6	-4.8	3.4	13.4	14.9	9.7	4.8	8.5
Financial intermediation, ... (3)	(G-I)					4.1	5.7	2.9	1.5	-0.9	-0.4	3.1	0.9
Other service activities (4)	(J,K)					1.0	2.3	3.0	0.1	-14.6	12.1	2.2	31.8
Taxes less subsidies on products	(L-O)					2.7	1.0	7.8	6.7	4.1	8.4	6.1	10.2
FISIM						7.9	-2.5	-11.4	-13.9	-8.7	-0.8	4.8	4.8
Gross domestic product						2.7	1.0	7.8	6.7	4.1	8.4	6.1	10.2

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LITHUANIA

Current prices (millions of Lit)as

Current prices (millions of Lit)as												
1998					1999					2000		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1751	2617	3731	2395	1595	2995	3003	2215	1481	2396	2725		Gross capital formation
1804	2634	3056	2970	1723	2732	2805	2321	1361	2182	2496		Gross fixed capital formation
-53	-17	675	-575	-128	263	198	-106	121	214	229		Changes in inventories
8519	9338	9497	10252	8361	9504	9378	9941	8791	9427	9659		Final consumption
7612	8399	8395	9066	7499	8503	8484	8957	7823	8437	8655		Individual consumption
6145	6562	7082	7303	6165	6776	7264	7377	6518	6858	7384		Households consumption
9	9	9	9	9	9	9	9	9	9	9		NPISH
2366	2768	2407	2941	2187	2719	2105	2556	2265	2561	2265		Total government consumption
1405	1675	1304	1754	1325	1718	1211	1571	1296	1571	1262		Individual government consumption
960	1093	1102	1186	862	1001	894	984	968	990	1003		Collective government consumption
5132	5450	5111	4590	3930	4250	4469	4304	5068	5089	5694		Exports of goods and services
6001	6591	6581	6221	4587	5594	5347	5821	5344	5694	5921		Imports of goods and services
9401	10814	11759	11016	9299	11155	11503	10640	9997	11218	12028		Gross domestic product
Constant prices (1995 millions of Lit)as												
1998					1999					2000		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1525	2500	3457	2151	1254	2452	2548	2459	1342	2069	2414		Gross capital formation
1538	2255	2515	2457	1580	2251	2209	2175	1375	1997	2171		Gross fixed capital formation
-13	233	330	91	-326	201	339	284	-33	73	243		Changes in inventories
5982	6440	6707	7186	5847	6534	6553	6765	6088	6505	6766		Final consumption
4600	4870	5359	5564	4698	5159	5455	5499	4967	5248	5608		Households consumption
1383	1570	1349	1622	1149	1375	1098	1265	1121	1257	1158		Total government consumption
4489	4874	4610	4243	3902	4057	3920	3404	4166	4232	4575		Exports of goods and services
5867	6671	6751	6417	4971	6043	5524	5804	5317	5771	5884		Imports of goods and services
6129	7142	8024	7164	6032	7000	7496	6823	6278	7035	7870		Gross domestic product
% change at constant prices (growth over same quarter of previous year)												
1998					1999					2000		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
8.0	21.8	28.4	-12.5	-17.8	-1.9	-26.3	14.3	7.0	-15.6	-5.3		Gross capital formation
8.0	24.0	6.4	3.8	2.7	-0.2	-12.2	-11.5	-13.0	-11.3	-1.7		Gross fixed capital formation
0	5	186	-436	2408	-18	-64	-193	-90	-64	-28		Changes in inventories
7.8	9.0	9.5	5.0	-2.3	1.5	-2.3	-5.9	4.1	-0.4	3.3		Final consumption
0.4	4.7	6.9	3.9	2.1	5.9	1.8	-1.2	5.7	1.7	2.8		Households consumption
42.9	25.0	21.4	9.1	-16.9	-12.4	-18.6	-22.0	-2.4	-8.6	5.5		Total government consumption
16.7	8.0	-2.9	-14.8	-13.1	-16.8	-15.0	-19.8	6.8	4.3	16.7		Exports of goods and services
13.8	11.6	15.3	-9.0	-15.3	-9.4	-18.2	-9.6	7.0	-4.5	6.5		Imports of goods and services
8.5	10.0	4.1	-0.9	-1.6	-2.0	-6.6	-4.8	4.1	0.5	5.0		Gross domestic product
GDP by activity in current prices												
1998					1999					2000		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	NACE
678	873	1641	716	502	803	1262	698	492	720	1229		(A,B) Agriculture, hunting and ... (1)
2260	2232	2271	2309	2036	2127	2271	2439	2573	2481	2806		(C-E) Industry, including energy
521	828	1034	871	475	850	958	676	402	650	798		(F) Construction
2378	2697	2722	2611	2474	2753	2693	2629	2733	2978	3018		(G-I) Wholesale, retail, hotels, ... (2)
888	912	1007	984	921	1047	1045	1075	1066	1080	1127		(J,K) Financial intermediation, ... (3)
1567	2018	1802	2216	1885	2319	1885	2088	1866	2225	1928		(L-O) Other service activities (4)
1246	1400	1437	1474	1141	1366	1469	1301	1034	1249	1302		Taxes less subsidies on products
-136	-146	-156	-163	-103	-178	-183	-191	-169	-166	-178		FISIM
9401	10814	11759	11016	9332	11087	11400	10716	9997	11218	12028		Gross domestic product
GDP by activity in constant prices												
1998					1999					2000		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	NACE
472	681	1374	612	378	618	1171	683	407	606	1174		(A,B) Agriculture, hunting and ... (1)
1613	1691	1749	1743	1487	1628	1600	1555	1559	1558	1696		(C-E) Industry, including energy
326	518	651	525	292	514	577	410	244	392	474		(F) Construction
1739	1935	1964	1879	1770	1916	1919	1890	1938	2108	2124		(G-I) Wholesale, retail, hotels, ... (2)
607	632	657	653	644	669	668	685	662	689	688		(J,K) Financial intermediation, ... (3)
849	1055	909	1124	875	1038	887	1007	860	1034	881		(L-O) Other service activities (4)
645	751	844	754	626	736	787	718	652	736	812		Taxes less subsidies on products
-121	-120	-125	-126	-122	-123	-124	-125	-125	-127	-130		FISIM
6129	7142	8024	7164	5950	6997	7486	6823	6197	6994	7718		Gross domestic product
% change at constant prices (growth over same quarter of previous year)												
1998					1999					2000		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	NACE
2.0	-0.4	-9.2	8.9	-19.9	-9.2	-14.8	11.6	7.8	-2.1	0.2		(A,B) Agriculture, hunting and ... (1)
5.4	8.9	13.5	2.0	-7.8	-3.7	-8.6	-10.8	4.8	-4.3	6.0		(C-E) Industry, including energy
26.0	27.5	14.1	7.0	-10.5	-0.6	-11.3	-22.0	-16.2	-23.8	-18.0		(F) Construction
9.9	14.8	5.7	-8.5	1.8	-1.0	-2.3	0.6	9.5	10.0	10.7		(G-I) Wholesale, retail, hotels, ... (2)
1.5	4.6	7.3	7.2	6.1	5.7	1.7	4.9	2.8	3.0	2.9		(J,K) Financial intermediation, ... (3)
14.6	5.5	-1.5	-3.3	3.1	-1.5	-2.4	-10.4	-1.7	-0.4	-0.7		(L-O) Other service activities (4)
8.5	10.0	4.1	-0.9	-2.9	-2.0	-6.7	-4.8	4.2	0.0	3.1		Taxes less subsidies on products
2.3	-2.8	3.1	4.1	0.7	2.3	-0.9	-1.1	2.6	3.4	4.6		FISIM
8.5	10.0	4.1	-0.9	-2.9	-2.0	-6.7	-4.8	4.2	0.0	3.1		Gross domestic product

(1) Agriculture, hunting and forestry

(2) Wholesale, retail, hotels, restaurants, transport services

(3) Financial intermediation; real estate, renting and business activities

(4) Public administration and defense; compulsory social security; education; health and social work; other community, social and personal service activities

GLOSSARY OF ACRONYMS

CFC	Consumption of fixed capital
COFOG	Classification of the functions of government
COICOP	Classification of individual consumption by purpose
CPI	Consumer price index
CSB	Central Statistical Bureau of Latvia
EMTAK	Classification of activities of the Estonian national economy
EMU	European monetary union
ESA 95	European System of Accounts 1995
FIFO	First in, first out
FISIM	Financial intermediation services indirectly measured
GDP	Gross domestic product
GFCF	Gross fixed capital formation
HBS	Household budget survey
HFCE	Household final consumption expenditure
IO	Input-output
ISIC	International Standard Industrial Classification of All Economic Activities
LIFO	Last in, first out
LKAU	Local kind of activity unit
MPS	Material Products System
NACE	Statistical classification of economic activities in the EU
NFC	Non-financial corporation
NPISH	Non-profit institution serving households
NSO	National statistical office
PPI	Producer price index
QNA	Quarterly national accounts
QSB	Quarterly survey of businesses in Lithuania
SL	Statistics Lithuania
SNA 93	System of National Accounts 1993
SOE	Statistical Office of Estonia
STBR	Latvian statistical business register
SPBR	Lithuanian statistical profile business register

Further information and references

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