

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

NON-OBSERVED ECONOMY IN NATIONAL ACCOUNTS

SURVEY OF
NATIONAL PRACTICES



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Preface

The complete coverage of economic production is important in order to ensure good quality national accounts and exhaustive estimates of Gross Domestic Product (GDP). A lot of attention is paid to the possibility of missing economic activities, which often suggests that the GDP figures published by national statistical offices exclude large parts of the economy. It is hard to achieve exhaustiveness since there are great difficulties to account for certain types of productive activities that cannot be observed and measured directly by the official statisticians when the national accounts and GDP are compiled. The groups of activities that are often *non-observed*, in the sense of not being directly observed and measured, are those that are *underground, illegal, informal or undertaken by households for their final use*. Furthermore, some activities may be missed because of *deficiencies in the basic data collection systems*. These five groups of activities comprise the non-observed economy (NOE).

Despite the difficulties, the goal of most national statistical systems is to ensure, as far as possible, that the *non-observed activities* are appropriately measured and included in the GDP estimates. This publication presents an inventory of the current practices of twenty nine UNECE member countries in measuring non-observed economic activities to ensure the exhaustiveness of their national accounts. The material was collected through a survey undertaken by the UNECE Statistical Division during the period September 2001-June 2002. The countries' contributions are synthesized, organized and edited by the UNECE secretariat in order to allow for some cross-country comparisons of the methods used to estimate the size and importance of the different types of non-observed activities. The publication includes a number of numerical examples and estimates provided by the member countries.

The publication refers to the work of OECD and Eurostat in defining the non-observed economy and developing the appropriate framework for producing exhaustive estimates of GDP. In 2002, the OECD released its *Handbook for Measurement of the Non-observed Economy*, which contains a framework for measuring the non-observed economy that introduces the concept of three broad areas of activity: underground, informal and illegal. The term *non-observed economy* is also used by the European Union in connection with its programme to guarantee the exhaustiveness of the GDP. A European Commission (1994) Decision notes that "within the production boundary, national accounts provide an exhaustive measure of production when they cover production, primary income and expenditure that are directly and *not directly observed* in statistical or administrative files".



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INTRODUCTION

Background

In 1991 the UNECE secretariat carried out a survey of national practices in the collection and compilation of statistics on the hidden and informal activities for national accounts. Nine countries responded and their contributions were published by the ECE secretariat in 1993 as an *Inventory of National Practices in Estimating Hidden and Informal Economic Activities for National Accounts*. Almost 10 years after the initial survey, the joint ECE/Eurostat/OECD Meeting on National Accounts held in Geneva from 26-28 April 2000 recommended that the UNECE undertake a new survey aimed at updating the *Inventory*. The survey was undertaken during the second half of 2001 and the first half of 2002.

Twenty-nine UNECE member countries responded. Several contributions included comprehensive details of estimates and methodologies going beyond the more usual measures of the hidden and informal economy to encompass illegal activities, household production for own final use and other activities normally missed by the standard methods of data collection. In so doing, they have covered a large part of the framework for measuring the non-observed economy described in the 2002 edition of the OECD *Handbook for Measurement of the Non-observed Economy*. The Handbook presents a systematic strategy for achieving exhaustive estimates of gross domestic product that are consistent with international standards and, in particular, with the 1993 System of National Accounts. It contains a framework for measuring the non-observed economy, which introduces the concept of three broad areas of activity: underground, informal and illegal. For the current inventory, a number of countries have provided details of estimates that have been made for all three areas.

For many EU countries, work on measuring the non-observed economy (NOE) stems from their involvement in the Eurostat project, launched in the mid-1990s, to improve the exhaustiveness of their national accounts. Furthermore, the EU Candidate Countries were involved in an Eurostat Pilot Project aimed at improving the comparability and exhaustiveness of their GDP estimates. For these countries, the methodologies and classifications of non-observed activities are described in terms of that exercise. It should also be noted that, where possible, the concepts, definitions and terminology as recommended by the OECD Handbook have been used in this publication.

This round of updates contains contributions from many more ECE member countries than in 1991. It is evident from the survey that, during the last few years, experts in many countries of the UNECE region have improved methodologies, developed new approaches and brought new insights to this very complex area. The scope of the present survey is much broader than that of the previous one, which included a simple description of a few practices in the collection and processing of statistics on the hidden and informal activities. Furthermore, in organizing the

2001/2002 survey, member countries were asked to provide estimates of the size of non-observed economy in the GDP estimates putting emphasis on the implications and effects on national accounts and GDP estimates. As different from the 1991 inventory, an attempt is made to present the results of the 2001/2002 survey in a way to allow, as far as possible, for country comparisons.

Against this background, the purpose of the publication is threefold. First, it presents an inventory of current practices in a number of UNECE member countries. Second, it provides a comprehensive and unique base for cross-country comparisons of the methods used to estimate the size and importance of the different types of non-observed activities. Finally, it may serve as a useful reference for countries in their efforts to comprehensively account for both observed and non-observed economic activities, and so improve the exhaustiveness of their national accounts.

Conceptual background

Main definitions

The **Non-observed Economy** refers to all productive activities that may not be captured in the basic data sources used for national accounts compilation. The following activities are included: underground, informal (those undertaken by households for their own final use), illegal, and other activities omitted due to deficiencies in the basic data collection programme. The term ‘non-observed economy’ encompasses all of these activities and the related statistical estimation problems.

The following definitions of the main terms employed in the publication are based on the 1993 SNA.

Underground production: production activities that are legal but deliberately concealed from public authorities in order to avoid paying tax (e.g. VAT or income tax) or social security contributions; meeting statutory standards; or complying with official procedures and regulations such as the completion of administrative forms or statistical questionnaires. As well as “underground”, which is the term most commonly employed, some countries also employ the terms “concealed activities”, “hidden economy” or “black economy” to denote this type of activity.

Informal activities: legal production activities which are characterized by a low level of organization, with little or no division between labour and capital as a factor of production. The informal sector typically functions on a system of unofficial relationships and does not rely on official agreements. It is broadly characterised as consisting of units engaged in small-scale production of goods and services with the primary objective of generating employment and incomes for persons concerned. The definition of the informal sector corresponds with that of household unincorporated enterprises.

Illegal activities: productive activities, which are forbidden by law or which become illegal when carried out by unauthorised persons. The following types of illegal activities are considered

in the inventory: production/import/sale of drugs; prostitution; sale of stolen goods and smuggling of goods.

Eurostat Pilot Project

The Pilot Project “Exhaustiveness of National Accounts” (PPE) which aimed at improving the exhaustiveness of the GDP estimates of the EU Candidate Countries¹ served as a background for their contributions to this publication. In order to ensure a systematic approach to dealing with NOE problems, which will in turn assist in the preparation of exhaustive estimates of GDP, PPE suggests the use of a framework very similar to that used by ISTAT (Italy), from which it was originally derived. The goal of this framework is to link each problem area to statistical problems to be solved. The framework distinguishes between that part of the NOE that arises from statistical reasons from that arising due to economic reasons. The statistical issues are mainly due to non-response bias in surveys and problems in identifying producing units in registers. Economic reasons for the underground are related more to deliberate attempts on behalf of producers to hide part or all of their production. These two broad categories consist of five types of NOE. There are three more types that cover production carried out in households, illegal production, and production for own final use, tips, wages and salaries in kind. In all, the framework classifies the NOE into the following eight problem types (T):

Statistical underground

T1: non-response to surveys

Non-response to surveys is one of the main problems affecting data quality. Non-response by enterprises and households can arise for a number of reasons, including time required to complete questionnaires, belief that information supplied will be used for other than purely statistical reasons, and badly designed or burdensome questionnaires. The main impact of non-response is that bias is introduced into the final statistical results if all non-respondents are considered to have zero output.

T2: out of date registers

Business registers may be out of date because they include enterprises that no longer exist; they do not include new enterprises; changes such as mergers or splits of enterprises are not included; or they may contain incorrect information about types of economic activity, enterprise size or address, etc.

T3: unregistered units due to reasons other than deliberate non-registration

Enterprises may be missing from data sources due to statistical reasons. This can occur where there are high rates of enterprise turnover (which can occur where the share of small production units is particularly high), or as a result of inefficiencies in regulatory or statistical systems.

¹ The EU Candidate Countries that contributed to this report are Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia.

Economic underground

T4: underreporting of production

Even if all relevant units are included in a survey frame, and forms are completed, misreporting may occur. The causes are often deliberate understating of revenues or overstating costs for taxation purposes that the respondent also declares to the statistical office. When misreporting is due to genuine mistakes, the errors may result in either understatement or overstatement of income.

T5: intentionally not registered

Some enterprises may be missing from business registers because the owners have deliberately avoided obligations to register in order to avoid costs such as value added taxes, social security contributions, and costs of compliance with health and safety standards, etc. Whole enterprises may be missing, or one or more parts of a registered enterprise may be omitted.

Informal sector

T6: unregistered units

The informal sector typically comprises small-scale production units (often household units). In some circumstances, non-registration can be a criterion for defining the informal sector, and in these cases enterprises may be missing from registers simply because they are not required to register by any kind of legislation. One of the major kinds of activity that falls under Type 6 is own-account construction.

Illegal production

T7: unregistered units

In most cases illegal production units are not registered. However, in some cases they may be registered but under incorrect activity descriptions. For example, illegal brothels may be described as health-care clubs or massage shops; illegal gambling operations may be described as nightclubs, etc.

Other

T8: other types of undercoverage

This category includes a series of reasons for non-observation of the types of productive activity that are often very significant in transition economies. The main ones are production for own final use, tips, and wages and salaries paid in kind.

The estimation methods and results described by Candidate Countries make reference to the types of NOE mentioned above.

Presentation of countries' contributions

The study summarises the national practices in estimating the different types of non-observed activities of countries. Each country has concentrated its attention on those components of NOE that are of greatest importance to that country. Some numerical examples are given to illustrate the measurement methods and the efficiency of the practical solutions applied by the countries.

In order to present the results of this survey in a comparable way, country contributions have been structured as follows where possible:

- Definitions and concepts;
- Sources and estimation methods;
- Implications for and effects on national accounts and GDP estimates.

MAIN FEATURES OF NATIONAL PRACTICES

General overview

This survey of national practices summarises the experiences in estimating various components of the non-observed economy to ensure the exhaustiveness of national accounts and GDP.

Twenty-nine member countries of the UNECE contributed to this issue:

- Eight countries with developed market economies: Belgium, Canada, Finland, Germany, Ireland, Italy, the United Kingdom, and the United States;
- Nine EU Candidate Countries (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia) and Turkey¹;
- Seven countries from the Commonwealth of Independent States: Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, and the Russian Federation;
- Four countries from South-East Europe: Albania, Croatia, Serbia and Montenegro, The former Yugoslav Republic of Macedonia.

The format of countries' contributions differed – ranging from descriptions of country practices drafted specifically in response to the ECE request, to copies of published articles and publications. The Statistical Division of the Economic Commission for Europe synthesized, organized and edited the various contributions for the purpose of this publication.

Components of the non-observed economy that were considered to a greater or larger degree by individual countries covered all aspects of production activity: underground, informal, illegal, production for own final use, and other forms of production that are often missed in national accounts compilation.

Countries generally have concentrated on estimates of NOE components that are most relevant to their particular situations. For instance, the structure of NOE is likely to differ between the economies in transition and developed market economies. Most contributors were able to provide estimates of the value of all, or parts, of the NOE.

¹ For presentational reasons, Turkey is included here. Turkey was granted the status of applicant for membership in the EU in 1999; accession negotiations have not yet begun.

It should be noted that, while all countries attempt to account for hidden and informal production in their national accounts, not all have set out to classify the non-observed economy in terms of the Eurostat Tabular Framework, or even to separately identify components of the NOE. The estimates for a number of countries were made due to their involvement in the Eurostat project, to improve the exhaustiveness of their GDP estimates. Exhaustive national accounts will, by definition, include the underground economy, but its components will not necessarily be distinguishable in the final estimates. In striving for exhaustiveness, the emphasis is more on comprehensive and reliable data sources that will capture all economic activity, regardless of its source.

Where available, countries have submitted data on adjustments made for non-observed activities and/or exhaustiveness. In many cases the data are presented by industry and institutional sector in addition to total GDP.

Main data sources and methods used

Although a wide variety of sources and methods are employed in estimating the value of the hidden and informal production, there are several sources common to most countries. These are household Labour Force Surveys (LFS), unemployment data, business surveys, Household Budget Surveys (HBS), population censuses, special purpose surveys, business registers, and administrative records such as taxation returns and audits, building permits and various other official records.

As with the data sources, estimation methodologies are common across many countries. The labour input method is widely used for the assessment of hidden employment activities. This involves comparing the supply of labour as obtained from a household Labour Force Survey with estimates of demand obtained from business surveys. The labour input method is an effective way of accounting for unregistered and otherwise hidden labour. Other methods include comparing data on similar activities from various data sources, the commodity flow method, input-output comparisons (including ratios of input to output by industry), the application of known per capita output and value added data to estimates of employment and balancing of national accounts data within a Supply-Use table.

Conclusions from the survey

A number of general conclusions can be drawn from the information and data contained in country contributions.

The major ones are:

- The underground economy is most highly developed in industries that supply the major part of their output to individuals. This applies particularly to trade (wholesale and retail), construction, transport, hotels and restaurants, and

business services. These activities are mostly carried out in relatively small units in the informal economy (i.e. small unincorporated or other enterprises).

- On an institutional sector basis, most adjustments for non-observed activities are made to the Non-financial corporations and the Households sectors. Little underground production occurs in the Financial corporations, General government sectors or Non-profit Institutions Serving Households (NPISH).
- Based on the estimates of countries that classify the NOE according to Eurostat guidelines, it appears that the largest contribution to non-observed activity can be attributed to economic causes, i.e. the deliberate underreporting of revenue (or overreporting of costs). The next most significant contributor is the output of producing units that for various reasons are not included on statistical registers. Underreported output comprised, on average, about 7 per cent of GDP in the EU Candidate Countries, while the estimated output of unregistered units in the same countries averaged 4.8 per cent of GDP.
- On the expenditure side, the largest contribution to the NOE is accounted for by households final consumption expenditure.
- Viewed from the production side, the most significant contributors are trade (wholesale and retail), construction, transport, hotels and restaurants, and other community, social and personal services.

Observations on informal and illegal production activities

Informal activities

The informal economy is more important for CIS countries and EU Candidate Countries than for developed market economies. The transition to a market economy was characterised by substantial growth in small private firms, often owned and operated by individuals, which tend to conduct small-scale (mainly services) activities. A large number of persons are involved in production in the informal sector, which performs a significant role in employment creation and income generation.

The share of informal economy in some countries is considerably high. For example, estimates indicate that the informal economy accounted for more than 25 per cent of Armenia's GDP and more than 38 per cent of GDP for Kyrgyzstan in 1999.

The informal economy is concentrated in the following activities: trade, transport, agriculture, construction, repair and renovation of dwellings, repair of motor vehicles and household appliances, private lessons and other personal services.

Estimates of informal activities have largely been made using data from one or more of the following sources: household budget surveys, labour force data, special purpose surveys and opinion polls, and tax and other administrative data. Each country has tailored its approach to the capacity of its information base and the characteristics of the underground.

Illegal activities

Illegal activities are particularly difficult to measure, as they are usually carried out in ways that attempt to hide them. Efforts to quantify such activities rely on sources such as information from police, health authorities, customs authorities, crime statistics, public opinion polls and other data (internet, radio, TV, newspapers), experts' estimates and assumptions.

Within ECE member countries, estimates have been made for the following illegal activities: the production, import, sale and consumption of illegal drugs; prostitution; trade in illegally produced audio and video products; theft and smuggling. Twelve countries (Bulgaria, Canada, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, The former Yugoslav Republic of Macedonia, United Kingdom and United States) have made estimates of one or more of these, although mainly on an experimental basis. Due to the difficulties of measurement, in most cases the estimates of illegal activities can only be regarded as indicative.

Only five countries include allowances for the illegal economy in their published estimates of GDP. Bulgaria has estimated the value of drug consumption. The Czech Republic includes estimates for prostitution and the sale of stolen goods. Estonia's GDP includes estimates for prostitution, trade in drugs and audio-video products in the households final consumption expenditure aggregate. Slovakia includes estimates for trafficking and distribution of drugs and prostitution, while the GDP estimates for the United Kingdom account for consumption of smuggled alcoholic drinks and tobacco products.

Effects on GDP estimates

As noted earlier, the methodologies adopted by some countries to enhance exhaustiveness in the national accounts will capture informal and other underground activities, even though it may not be possible to identify and classify them separately. This applies particularly to the methods employed in Belgium, Canada, Finland, Germany, Ireland and the United Kingdom.

Due to the difficulties involved in compiling estimates of the NOE, Canada's estimates represent an upper limit to the potential size of the non-observed economic activities, while Italy has indicated a range with likely lower and upper bounds.

In some cases countries have made adjustments for underground and informal activities to all three of the approaches to measuring GDP (i.e. the production, income and expenditure based measures). In general, the GDP expenditure components are adjusted to a lesser extent than the

production-based estimates, implying that expenditure of revenues generated by underground production is more readily captured by standard data collection methods than is the production activity. For example, in 1998 the overall adjustments to the production approach accounted for 17.9 per cent of the GDP of Lithuania while the expenditure components were adjusted only by 4.1 per cent. For Poland the respective figures are 13 per cent and 6.5 per cent. In the expenditure aggregates of GDP the main adjustments occur in households final consumption and gross fixed capital formation, and to a lesser extent in external trade.

Table 1 presents the size of non-observed economic activities relative to GDP for those countries that reported this kind of information to the ECE secretariat. The table also shows the classification of the NOE activities for the same countries according to the Eurostat tabular framework. The EU Candidate Countries specifically classified their estimates in line with the Eurostat Framework, but for all other countries the entries in the table have been classified using ECE interpretations of the information provided. They may not necessarily accord with the individual countries assessments. For this reason *the information in the table, including the percentages of GDP, should be regarded only as indicative.*

The following should be borne in mind:

- Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania and Slovakia have specifically classified their estimates to the Eurostat Framework. For all other countries, the ECE secretariat has indicated estimates to this classification, using information contained in their individual contributions;
- Although the Eurostat Framework defines eight separate types of NOE (see the Introduction), there may be overlaps or mixtures of more than one type accounted for in estimation methods. In addition, not every country will necessarily have the same view of what constitutes a particular type. For example, activities that are illegal in one country may be legal in another;
- Not all countries measure the same kinds of underground or informal activity;
- In some cases the methods used are designed to ensure exhaustiveness in the national accounts, rather than specifically account for underground and informal activity. In these cases, the adjustments to GDP may well be accounting for both the underground and informal economy and deficiencies in data collection that are not related to the NOE. This applies particularly to estimates for Belgium, Canada, Finland, Germany, Ireland, and the United Kingdom.

It can be seen from Table 1 that there are distinct differences between the four country groupings. The highest estimated shares of the non-observed economy in GDP generally occur in the CIS countries, where they range from 12 per cent (Belarus) to 48 per cent (Kyrgyzstan) of GDP. The second highest shares have been reported by the EU Candidate Countries, ranging from 9 per

cent (Czech Republic) to 22 per cent (Slovakia) of GDP. Turkey (2 per cent) does not follow the EU Eurostat tabular framework. The two available estimates for the South-East Europe countries are similar to the EU Candidate Countries, at 8 per cent and 14 per cent of GDP.

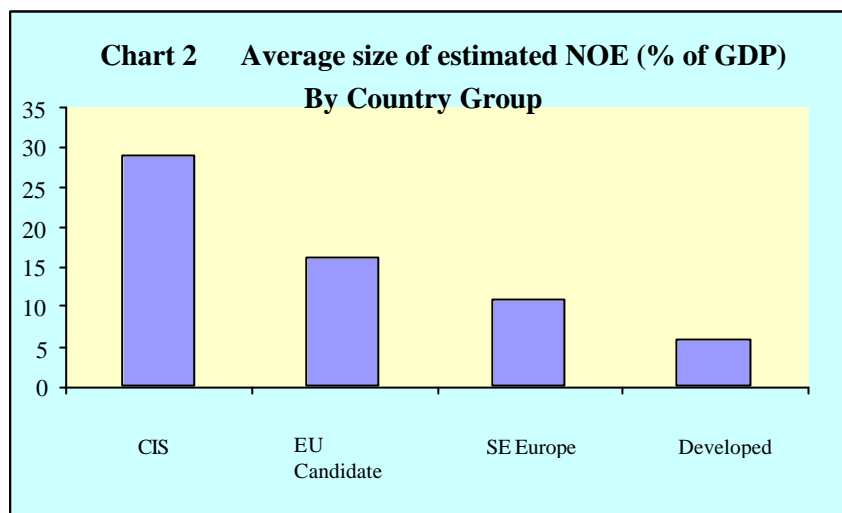
Differences in measurement techniques used, and varying reference years, make it difficult to compare the developed market economies with other countries, or between themselves. However, it is evident that, with the exception of Italy, the share of the non-observed economy in these countries tends towards the lower end of the scale.

Chart 2 presents simple arithmetic averages of the NOE shares of GDP shown in Table 1 for four groups of countries. For the same reasons as stated earlier, these should only be regarded as broadly indicative of the relative importance of the adjustments made in the respective country groups.

Table 1. Adjustments for NOE activities classified to the Eurostat framework*

Country	NOE Share of GDP (per cent)	Year of estimate	T1	T2	T3	T4	T5	T6	T7	T8
EU Candidates										
Bulgaria	16	2000	X	X	X	X	X	X	X	X
Czech Republic	9	1998	X	X	X	X	X	X	X	X
Estonia	Not stated	2001	X		X	X	X	X	X	X
Hungary	16	1997	X	X		X	X	X		
Latvia	17	1998	X	X	X	X		X		X
Lithuania	18	1998	X		X	X		X		X
Poland	13	1998				X	X	X	X	
Romania	Not stated					X	X	X		
Slovakia	22	1998	X		X	X	X		X	X
Turkey*	2	2000					X	X		
CIS Countries										
Armenia	29	1999	X		X	X		X		X
Belarus	12	1999		X	X			X		X
Georgia	34	2001			X	X		X		X
Kazakhstan	27	2000			X	X	X	X		X
Kyrgyzstan	48	1999			X	X	X	X		X
Moldova	31	2000				X	X	X		X
Russian Federation	25	2000			X	X		X		X
South-East Europe										
Croatia	8	1999	X	X	X	X	X		X	X
Serbia & Monten. The Former Yugo. Rep.	Not stated					X	X	X		X
Macedonia	14	1999				X	X		X	X
Developed Market Economies										
Belgium	3-4	1997				X	X	X		X
Canada	3	1992				X	X	X		X
Ireland	4	1998			X	X	X			
Italy	15	1998		X		X	X			
US	1.2	1992				X	X			

* Note: see text. Classification of the NOE types are made by the ECE secretariat. Percentage shares are rounded.



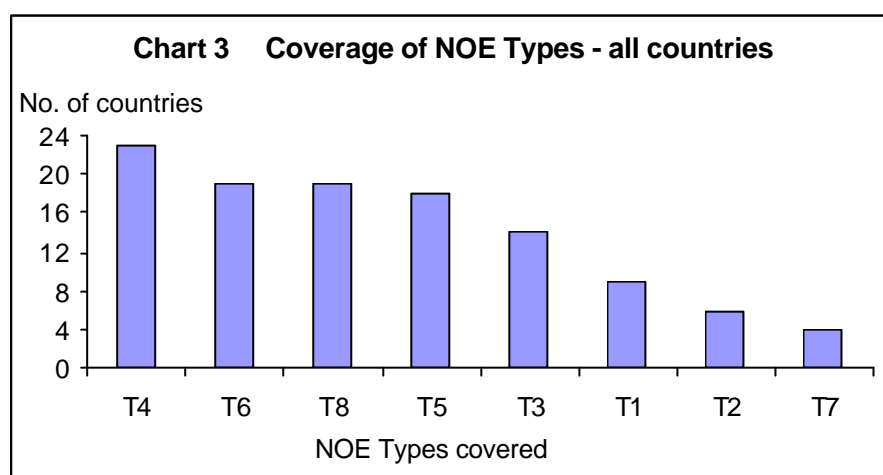
The size of the NOE relative to GDP is not available for all countries in Table 1. Countries included in the Chart are:

- CIS: Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova and the Russian Federation; (Range of estimates: 12 per cent to 48 per cent of GDP);
- EU Candidates: Bulgaria, Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovakia; (Range of estimates: 9 per cent to 22 per cent of GDP);
- South-East Europe: Croatia, The former Yugoslav Republic of Macedonia; (Range of estimates: 8 per cent and 14 per cent of GDP respectively);
- Developed market economies: Belgium, Canada, Ireland, Italy, USA; (Range of estimates: 1.2 per cent to 15 per cent of GDP).

The differences in relative shares between countries and country groups do not appear to be strongly correlated with the number of different NOE types that are accounted for. From Table 1 above, it can be seen that the efforts of most countries have been clustered around Types T4, T5, T6 and T8: deliberate underreporting of output (T4), deliberate non-registration of business (T5), informal sector (T6), and other forms of undercoverage such as tips, wages in kind and household production for own final use (T8). On average, the CIS countries each covered about four NOE

categories, while the EU Candidates each covered, on average, around 7.5 categories, as did the other South-East Europe countries.

Chart 3 shows the NOE categories (Types 1 to 8), classified by the number of countries that have made adjustments for each type as estimated by the ECE secretariat. It should be noted that although most countries have attempted to make estimates of the value of illegal activities, only five countries include estimates in their published national accounts (as discussed earlier).



- T1: non response to surveys
- T2: out of date registers
- T3: unregistered units due to reasons other than deliberate non-registration
- T4: underreporting of production
- T5: intentionally not registered
- T6: unregistered units (informal sector)
- T7: unregistered units (illegal production)
- T8: other types of undercoverage

ALBANIA

Up to now the Albanian Statistical Office (INSTAT) has not established a complete system of national accounts. However, INSTAT, assisted by the IMF, is close to producing the first estimates of GDP for Albania.

One of the main constraints faced in the work undertaken so far is related to the estimation of underground and informal sector production. Despite the efforts of INSTAT staff to estimate the size of the non-observed economy in various activities, it should be noted that this is an “unknown field” in terms of statistics.

Albanian national accountants are well informed about the methods used by other countries, where the most common method is the comparison of information from different sources for the same activity. However, the basic data sources, particularly for the private sector and informal economy are seriously inadequate. Due to the lack of statistical information sources and experience, national accounts staff are, for the time being, using the “expert” method to estimate underground and informal activities.

The office is involved in improving the coverage of unrecorded activities. One of the methods used so far is to break down economic units into three strata (small, medium and large). At the same time the staff are currently working on defining a method to estimate the informal economy using existing data sources. However, even with the best efforts of the statisticians, data generated through statistical observation and administrative records still suffer from incomplete coverage.

The INSTAT expects soon to have additional estimates from statistical observations such as a household budget survey and the census of population. It intends to use the information to improve estimates of the informal economy made so far as well as to improve overall estimates of GDP.

ARMENIA

Sources and estimation methods

General overview

Valuable sources for estimating the underground economy include data from sample surveys of enterprises, labour force surveys and household budget surveys conducted in Armenia. Sample surveys are the most debatable of all the methods used in estimation, but they are nevertheless a main source for measuring the size of the hidden part of the economy. The complexity in observing the hidden economy stems from the fact that it can be difficult to identify non-response, or distinguish between incomplete response and misreporting.

Bearing in mind the incomplete coverage, large degree of non-response and misreporting that exist, the calculations are based on data on output and the number of persons employed in the economy. Indirect macroeconomic methods are also employed, using all possible sources of information. The method used by Armenia is based on an analysis of the supply of, and demand for, labour. The results serve to determine the number of persons engaged in legal productive activities that have not been recorded. Another large category of information comprises data relating to production.

Three rounds of sample surveys that were conducted in Armenia served as the basis for estimating the hidden and informal activities: – Sample survey of 2,500 small enterprises with up to 10 employees carried out in November – December 1997;

- Labour Force Survey of 5,000 urban households in December 1997;
- Sample survey of employers and self-employed in December 1998 – January 1999 which covered 2,046 registered entrepreneurs and 1,800 employers and self-employed.

According to **sample survey of the small enterprises**, of the 2,500 enterprises included in the sample at the time of the survey, 51.6 per cent were not active for various reasons and 10.1 per cent could not be found because their registered addresses and actual place of operation did not match. In all, 34.2 per cent of the sample took part in the survey, with 26 per cent of the active enterprises supplying incomplete data. Only 22 per cent of the active enterprises worked with hired labour. Hired employees accounted for 41.2 per cent of the total number of persons employed, 26.3 per cent of them working without formal labour agreements. At these enterprises 6 per cent of employees were in one-time jobs each month.

The value of own production amounted to 78 million drams (Armenian currency unit, in 1997: US\$1 = 540 drams) while inputs (included in intermediate consumption) totalled 75 million drams, i.e. own production by the enterprises surveyed was underreported by about 40 per cent.

The average monthly wage per employee and also per owner (13,500 drams) was almost on a par with average monthly wages in the Republic as a whole. However, according to interviews with the owners of these same enterprises, average monthly income was at least 56,000 drams.

It should be pointed out that unregistered workers represented about 40 per cent of the labour force of the active enterprises covered by the survey, and in different branches of the economy this figure ranged from 24 per cent (manufacturing) to 58 per cent (transport). Informal employment, moreover, represented 12.2 per cent of the total.

According to the **Labour Force Survey**, about 65.7 per cent of the total number of persons employed were engaged in unregistered economic activities, with 8.6 per cent of employees, or 1 in every 12, working without a formal labour contract (mainly in the private sector). However, at the principal work place there was 8.5 per cent informal employment (without formal labour contract), 27.7 per cent of the workers having an additional or second job.

The phenomenon of hidden employment is more widespread in the sphere of self-employment. At the time of the survey one person in every two was carrying out unregistered activities at the principal work place, just under half describing their occupation as temporary, 28.3 per cent as continuous and 25.9 per cent as seasonal or occasional.

According to the **survey data on employers and self-employed**, 49 per cent of them were in fact carrying out unregistered activities that represented their main work. Unregistered activities were being performed by 81.5 per cent of employers and self-employed as an additional or second job.

Use of survey data to improve the reliability of estimates

Methodological principles for estimating the hidden economy

For the calculations, use is made of data from regular statistical reporting on the number of persons employed in the economy and the number of persons engaged in a production process. These two sets of data are used to determine the total number of persons employed and to measure labour productivity in the relevant branches of the economy.

To calculate the number of persons actually engaged in production, official statistical data sources are supplemented by Labour Force Surveys (in particular, to determine the number of persons on enforced leave, holding several jobs or employed part-time). An average coefficient is calculated from these two sources, and the total number of persons on enforced leave, holding several jobs or employed part-time is determined by applying the coefficient to official data. These data are then allocated by branch of the economy following the pattern established from the labour force survey data.

The number of persons actually engaged in production is used as the basis for calculating labour productivity for the various branches. Value added for the “non-recorded” part of the economy is then determined on the basis of this labour productivity and the total number of persons employed.

Because of the special nature of agricultural production, the results of annual checks on the reliability of data for numbers of livestock and areas sown to crops are used to determine non-recorded output from this branch. These data serve to correct the underestimation of livestock output and crop yields. Overall, the hidden part of the agriculture branch constitutes about 21 per cent of its value added.

Estimating value added from the number of listed unemployed persons with a gainful occupation

The next step in estimating the number of employees is to estimate the number of workers officially recorded as unemployed, but nevertheless engaged in some kind of paid activity. According to the Armenian Employment Service, the number of officially registered unemployed persons was 166,000 (or 11 per cent) of the economically active population in 1997. However, according to data from the sample survey of small enterprises and the Labour Force Survey carried out the same year, the level of unemployment constituted 343,000 persons (34 per cent), which is twice as high as the officially registered number. Nevertheless, it appeared that 22 per cent of officially unemployed persons had a gainful occupation as an employer or self-employed. Unemployment in Armenia has led to the development of activities that are often not properly registered.

Data on labour productivity and the number of persons shown in official records as unemployed (but occupied as employers or self-employed) that have been derived from surveys for the respective branches are used to calculate the gross value added attributable to this category of workers.

Estimates of informal individual activities of households

Methods of determining the scope of the informal activities of households differ across branches, the choice of method depending on the capacity of the information base. The main sources for determining the individual activities of households include Household Budget Surveys, sample surveys and tax statistics.

For industry branches, estimates of output and value added are based on Household Budget Surveys. The adjustment includes production of wine, construction materials for sale, production of handicrafts items and other similar work and services relating to industrial activities.

In construction, informal activities are identified from data in individual housing construction surveys. According to these surveys, the hidden share of individual housing construction constituted about 22 per cent or 14 per cent of the adjustment for “construction”.

Figures for informal activities in agriculture are calculated on the basis of checks on the numbers of livestock and areas sown to crops.

In trade, informal activities are estimated from data on the number of persons engaged in individual entrepreneurship and the number of persons engaged in non-registered activities as derived from labour force surveys.

In transport, informal activities relating to goods and passenger transport are estimated by reference to the share of the private sector in total goods and passenger transport operations.

Informal payments made by patients for health-care services are calculated from data obtained through the specialized Household Health Survey.

For education, a sample survey of students enrolled at higher educational institutions in 1997 served as the basis to calculate total payments made to private tutors, which constituted about 60 per cent of the adjustment for "education".

For housing, informal activities (income from renting individual dwellings) were estimated from household budget survey data.

Overall, informal individual activities of households in 1997 were estimated at 61,671 million drams, or 36 per cent of the household sector.

Implication and effects on national accounts and GDP estimates

Adjustments to GDP for the hidden economy began in 1994. The share of the hidden economy in GDP was found to be about 27 per cent in that year, 31.6 per cent in 1995, 34.3 per cent in 1996, 28.9 per cent in 1997, 25.6 per cent in 1998 and 29 per cent in 1999.

The initial adjustment for the hidden economy in 1997 was, for example, 171 billion drams, but with further adjustment for informal individual activities of households it amounted to 233 billion drams, or 28.9 per cent of total GDP. Of this 28.9 per cent, 18.7 per cent was attributable to the underground economy and 10.2 per cent to the informal economy. It should be pointed out, however, that all estimates have to be treated with some caution given the fact that it is difficult to collect reliable data through the surveys since the respondents are reluctant to admit to any "hidden" activities.

The adjustments for the underground and informal activities in 1999, as recorded in GDP, by branch, are given in the table below.

	Total	per cent Share of adjustment in GDP for		
	Share of adjustment by branch per cent	Number of persons employed	Number of persons unemployed*	Informal activities**
Industry	28.7	76.8	10.4	12.8
Construction	46.1	64.2	20.9	14.9
Transport and communications	21.1	10.7	25.2	64.1
Trade	75.5	52.9	33.8	13.3
Agriculture	21.0	56.1	..	43.9
Other branches	27.1	59.6	1.1	39.3
Total GDP at market prices	28.9	59.0	14.5	26.5

* Including the adjustments at macro-level.

** Informal individual activities of households.

BELARUS

Introduction

Since the 1990s the problem of statistical estimation and recording of the non-observed economy (hidden and informal) in the compilation of macroeconomic indicators has been extremely topical in Belarus, as the size of this part of the economy has been growing dramatically in the course of the implementation of economic reforms and marketisation. This situation has been brought about by the expansion of the private sector as a result of the privatization of state enterprises, and the emergence of new private enterprises. Imperfections in accounting in respect of new sectors of the economy, and the population's need for additional forms of livelihood to maintain standards of living have also contributed to growth in the non-observed economy.

Sources and estimation methods

The non-observed (hidden and informal) economy is the sum of all the respective economic activities that are hidden from statistical observation. Accounting for the non-observed economy takes place in three stages:

- when measuring the output of goods and services of the economy, by branch;
- at the stage of reconciliation (balancing) the main national accounts indicators;
- when compiling input-output tables.

When measuring the output of goods and services by branch, estimates of hidden and informal economic activities are made using the following methods:

- the commodity-flow method (on the basis of input-output tables and balances for the following selected products and services: cement, petrol, alcohol, public catering, transport and communications services);
- combined methods of estimating indicators (alternative calculations of value added);
- indirect methods, involving a comparison of data from various data sources (comprehensive surveys, sample surveys of households and administrative data sources);
- methods of comparative analysis based on an estimation of the relationship between inputs and outputs in various groups of enterprises.

Sample surveys of households are the main source of information on the informal sector of the economy. The surveys provide data on income and expenditure of households for a wide range of goods and services. The sample consists of 6,000 households, or 0.2 per cent of the national total. In order to ensure a representative sample for the country, separate samples were designed for both urban and rural populations.

The provision of services by entrepreneurs is estimated from data on the number of licences issued for private individuals to perform certain kinds of services (such as road transport, medical treatment, concert tours, etc.). The reason for this methodology is that individual entrepreneurs provide a large proportion of these services and collecting objective information from them directly remains problematical.

GDP estimated using the production and expenditure approaches is reconciled at the stage of balancing of the main SNA indicators. Household final consumption expenditure is adjusted for households' consumption of services rendered by individual entrepreneurs. The Ministry of Statistics also compiles input-output tables on an annual basis. These tables provide the basis for reconciliation and balancing the statistical data on flows of goods and services obtained from different sources. Compiling an input-output table reveals any deficiencies in accounting for the supply and use of goods and services, and adjustments are then made to the indicators. Adjustments are most commonly made to data for the non-observed sector of the economy, both hidden and informal activities.

Implication and effects on national accounts and GDP estimates

The share of the non-observed part of the economy (hidden and informal activities) in the GDP of Belarus was estimated to be 11 per cent in 1998. For 1999 it was 11.7 per cent, of which agriculture accounted for 6.9 per cent, trade and public catering accounted for 1.9 per cent, housing construction 1.2 per cent, industry 0.6 per cent and services 0.6 per cent.

BELGIUM

Introduction

In Belgium, the switch from the ESA 1979 to the ESA 1995 was taken as the opportunity to make fundamental changes to the layout of the national accounts¹. The revision concerned both the choice of statistical source material and the actual method of calculation. The method of estimating the underground economy was also totally revised.

Definitions and concepts

The production boundary, as defined in SNA 1993 and ESA 1995, describes the range of productive activities that should be accounted for in the measurement of GDP, and is therefore the boundary relevant to considerations of exhaustiveness.

The conceptual framework for producing an exhaustive measurement of output in the national accounts uses the concept of the underground economy².

The underground economy consists of:

- the black economy, which covers clandestine enterprises and unreported activities;
- the illegal economy, which comprises activities that fall within the production boundary according to the concepts of the national accounts but that are not permitted by law.

“Clandestine enterprises” means production by non-registered producing units. “Non-registered” means non-recording in statistical files of economically active units³. These enterprises do not meet the legal requirements concerning payment of social security contributions, etc. The adjustment made for the purpose of estimating exhaustive value added for clandestine operations is called the adjustment for hidden labour.

¹ The compilation of the national accounts is the responsibility of the National Accounts Institute (NAI). The NAI does not have any staff of its own, but coordinates the work done by the three associated institutions: a) the National Statistical Institute (NSI), which takes charge of collecting the basic data, except for the foreign trade data; b) the Federal Planning Bureau (FPB) which is in charge of compiling the input-output tables and the budget forecasts; c) the National Bank of Belgium (NBB) which is in charge of compiling the annual real and financial national accounts, the quarterly accounts, the regional accounts, the foreign trade statistics (including the collection of basic data) and, jointly with the FPB, the detailed accounts of public authorities.

² The concepts applied by supranational bodies (UNECE, Eurostat) are described in : Willard J.-C., *The Underground Economy in National Accounts*, in: *Guide-Book to Statistics on the Hidden Economy*, UNECE, 1992, pp. 79-103. As we shall see, it is not currently practicable in Belgium to apply all the proposed concepts to the estimates.

³ Decision of the Commission of the European Communities of 24.07.1998 on the treatment for national accounts purposes of VAT fraud.

“Unreported activities” means failure to declare all the activities by enterprises whose production and value added should be included via the estimates based on the registers of production units. The adjustment made for the purpose of estimating exhaustive value added is called the adjustment for tax evasion.

The adjustment for tax evasion consists of Adjustment for under-declared taxable income and Adjustment for VAT fraud. There are two different types of VAT fraud:

- fraud with the complicity of the buyer, i.e. the seller and the buyer agree not to invoice the VAT. The VAT which was payable by law is therefore not the subject of a transaction, and the amount of the fraud therefore does not form part of GDP;
- fraud without complicity, i.e. the buyer pays the VAT but the seller does not pay it over to the authorities. This amount is the subject of a transaction between seller and buyer.

The adjustment for VAT fraud concerns VAT fraud without complicity. In practice, this type of fraud occurs in branches that sell to households as consumers. The VAT is not tax-deductible for households, so the tax authority does not receive any application for repayment of VAT that might lead it to trace the seller. The amount of the VAT fraud without complicity is treated as part of turnover in the Belgian National Accounts.

Sources and estimation methods

An exhaustive figure for GDP is obtained by taking the results of sampling and other surveys and extrapolating them as accurately as possible to the whole population on the basis of registers, applying the definitions of the ESA 1995 as closely as possible and, more specifically, including the underground economy in the methods of calculation⁴.

The calculation of Belgian GDP is based on an exhaustive register of production units. The conceptual differences between the data from administrative sources and the ESA95 definitions are accounted for in detail. An estimate of the black economy is also made at a detailed level⁵. A consistent estimation of GDP according to the output, expenditure and income approaches is obtained by integrating the supply and use table (SUT).

⁴ “In general, we can say that the criteria for completeness are: the existence of an accurately determined reference universe of production units, the possibility of determining whether units are missing, the possibility of making adjustments for missing units and the existence of general systematic adjustments for evasion and undeclared labour.”

GNP Committee, CPNB/166 (Eurostat), Report to the Council and The European Parliament on the application of the Council Directive on the determination of GNP at market prices, 1995, §2.4.

⁵ No adjustment is made as yet for illegal activities.

Production units and principal data sources

Repertory

To a significant extent, the estimate of GDP is based on the Business Register maintained by the National Statistical Institute (NSI). This database contains all economic agents active in Belgium⁶. The basic information for compiling the register is supplied by a number of government agencies (VAT, Department of Social Security [DSS], National Register), which maintain partial records of units for their own purposes (namely enterprises registered for VAT, businesses employing staff and legal entities). By linking the identifiers in these source files, the NSI produces the Business Register.

On the basis of this register, the National Bank of Belgium (NBB) constructs a “*repertory*” each year, containing for all enterprises (companies, self-employed persons, NPIs) identification numbers and characteristics relevant to the national accounts.

By using a combination of the following characteristics it is possible to calculate in a detailed and standardised manner the administrative aggregates (e.g. turnover, purchases, wages):

- Eurostat NACE code (determines the branch to which the unit belongs);
- category (determines which basic source⁷ is used to estimate the activity of the unit);
- institutional sector code (determines the institutional sector in which the unit is included).

The aggregation of variables available in the different source files is always based on the characteristics (NACE code, sector code) entered in the repertory. This method ensures that the results obtained via the various sources are mutually comparable. The basic aggregates at national level are always calculated by branch and by institutional sector.

Principal basic sources⁸

The method of calculation makes maximum use of administrative data. The principal administrative sources are the annual accounts filed by non-financial companies, the VAT returns of VAT-registered enterprises, and the DSS and the DSSPLPS⁹ returns submitted by employers.

⁶ Enterprises which are not registered for VAT, do not have legal identity and do not employ staff are currently missing, but the intention is that these producers should also be included in the register in the near future.

⁷ The categories used in the case of non-financial enterprises help to determine the selection of the preferred basic source for calculating the administrative aggregates.

⁸ The description of the source material and the method of calculating value added is confined to those sectors for which adjustments for the underground economy are relevant, namely non-financial corporations (S11) and households (S14).

⁹ Department of Social Security for Provincial and Local Public Services

Annual accounts filed by non-financial companies

In Belgium, virtually all limited liability companies have to publish their accounts in accordance with a standardised format laid down by law.

Large companies¹⁰ are required to file accounts using the “full” format; small and medium-sized enterprises (SMEs) are allowed to use the “short” format. These reporting formats are in fact data extracts from the internal accounts of the enterprises, with large companies having to supply more information than SMEs. The annual accounts file is therefore the preferred source for estimating the ESA95 aggregates for the Production and Primary Generation of Income Account for non-financial companies.

All enterprises with a turnover of more than EUR 500,000 must adhere to the “Minimum Standardised Accounting System”. The accounting laws specify the content of the various headings in the balance sheet and profit and loss account (revenue and expenses). In this way, the accounts prepared for bookkeeping purposes can be translated into the classification of transactions according to the ESA95.

VAT returns

The activities of most non-financial enterprises (supply of goods and services) are subject to the VAT rules. Only a small number of activities are exempt from VAT (legal services, medical services, letting of property).

The VAT returns can be used to deduce turnover (proxy for Output-P1), current purchases of goods and services (proxy for Intermediate consumption-P2) and purchases of investment goods (proxy for P51). The information on turnover and current purchases is used in most branches to estimate the value added of units registered for VAT included in the Household sector (S14), and to produce an additional estimate for the activities of companies for which no (usable) annual accounts are available .

DSS and the DSSPLPS returns

All employers established in Belgium must submit a quarterly return to the Department of Social Security (DSS) or the Department of Social Security for Provincial and Local Public Services (DSSPLPS). The amounts of the social security contributions due are calculated on the

¹⁰ An enterprise is regarded as large for the purpose of company law if: a) the average size of its workforce on an annual basis exceeds 100, or b) it exceeds more than one of the following thresholds: b1) annual average workforce: 50, b2) annual turnover (excluding VAT): EUR 6,250,000, b3) balance sheet total: EUR 3.125.000. An enterprise with separate legal identity, which does not fulfil these criteria comes under the SMEs (small and medium-sized enterprises).

basis of DSS and DSSPLPS returns. From the information stated in these returns, it is possible to calculate compensation of employees (D1).

In some branches of service activities, the wage bill is used to estimate the value added of companies with no annual accounts and NPIs placed in the Non-financial corporations sector (S11).

Calculation of the value added of non-financial enterprises

The calculation comprises two stages:

- Compilation of a Production Account and a Generation of Income Account for each branch (NACE 3 or 4 digits) and institutional sector in accordance with administrative/commercial concepts;
- Summing of these figures to give a higher level of aggregation (SUT-branches) and conversion to the concepts and valuation methods of the national accounts (ESA 1995).

The output and income approaches are estimated simultaneously and in an integrated manner. This ensures that the consistency between value added and its components (compensation of employees, non-product-linked taxes on production, non-product-linked subsidies and gross operating surplus) is monitored right from the start of the calculations.

Calculation of “administrative” aggregates

In the first phase, the administrative aggregates are calculated in detail via the characteristics recorded in the repertory. Calculation at the detailed level also permits quality checks at this level, and the correction of any anomalies.

Non-financial corporations (S11)

The figures are calculated at NACE 3 or 4-digit level by summing the results for the underlying sub-populations (categories):

- large enterprises filling “full format” annual accounts (category A1). All relevant variables are available for the enterprises in this category;

Operating income

Code, annual accounts	Description
70	Turnover
71	Change in stocks of produced goods (increase +, reduction -)
72	Own produced fixed assets
74	Other operating income
740	Operating subsidies
741/9	Miscellaneous operating income ¹¹

Operating expenses

Code, annual accounts	Description
60	Consumption of merchandise, raw materials and auxiliary materials
600/8	Purchases of merchandise, raw materials and auxiliary materials
609	Changes in stocks of purchased goods (increase -, reduction +)
61	Purchases of services and miscellaneous goods (not recorded under 600/8)
62	Remuneration, social security charges and pensions
64	Other operating expenses
640	Business taxes
641/8	Miscellaneous operating expenses
649	Operating expenses capitalised as restructuring costs (-)

The following “administrative”¹² aggregates can be derived from the above:

Aggregate	Code, annual accounts
Production	70 + 71 + 72 + 74 - 740
Intermediate consumption	60 + 61 + 641/8
Gross value added	70 + 71 + 72 + 74 - 740 - 60 - 61 - 641/8
Staff costs	62
Net business taxes	640-740
Gross operating surplus	70 + 71 + 72 + 74 - 60 - 61 - 62 - 640/8

¹¹ 741/9 means the sum of accounts 741 to 749.

¹² These are intermediate aggregates/balances which in this phase are still entirely in accordance with the conventions and valuation rules of commercial accounting as specified in the legislation on accounting.

- large enterprises without usable¹³ annual accounts (category A2). For the enterprises falling in this category the following information is known: turnover (purchases) according to the VAT returns and wages calculated on the basis of the DSS records. The wage data are taken over as they stand. The other items are estimated either via turnover (this applies to the majority of branches) or via wages (in the case of a number of service branches)¹⁴;
- small and medium-sized enterprises (SMEs). In this case the information is less detailed.

Code, annual accounts	Description
70	Turnover <i>(optional information)</i>
60/61	600/8 + 609 +61 = consumption of goods and services <i>(optional information)</i>
62	Remuneration, social security charges and pensions
640/8	640 + 641/8 (other operating expenses including business taxes)
70/61	70 +71 + 72 + 74 - 60 - 61: if the gross margin is > 0
61/70	70 + 71 + 72 + 74 - 60 - 61: if the gross margin in < 0

In the case of SMEs using the abbreviated format and stating turnover and purchases (population B1), the most important items are known (particularly turnover and consumption of goods and services). The missing items are derived from the known items or estimated on the basis of structural ratios known for large enterprises in the same branch.

The data for SMEs using an abbreviated format, without stating turnover and purchases (population B2), are estimated by taking the B1 figures and multiplying them by the ratio of gross margin B2/gross margin B1. The wage figures stated in the annual accounts are used.

The data for SMEs without usable annual accounts (population B3), and for NPIs included in S11 (population H), are estimated either via the VAT turnover or via the DSS wages on the basis of the structure of B1+B2. The DSS wages calculated for this category are taken as they stand.

The populations A2, B3 and H for which no annual accounts are available and the activities of which need to be estimated via other sources represent only about 9 per cent of the total value added of S11.

¹³ Annual accounts are regarded as not usable (for further statistical processing) if the financial year does not coincide with the calendar year and the financial year data cannot be converted to calendar year data. Corporations with annual accounts which are not “usable” are treated in the same way as corporations with no annual accounts.

¹⁴ The structure of A1 is transferred to A2 using the ratio of VAT turnover A2/annual accounts turnover A1, or the ratio of DSS wages A2/annual accounts wages A1.

Enterprises without legal status included in the household sector (S14)

Depending on the activity, various sources are used to estimate the value added (and mixed income) of self-employed persons.

The calculations for **agriculture, forestry and fisheries** make use of specific sources such as the statistics of the Centre for Agricultural Economics¹⁵.

For **self-employed persons registered for VAT**, value added is estimated via the VAT returns.

For **self-employed persons not registered for VAT** and heads of businesses (directors and business managers), personal income tax returns are used. The disadvantage of this source is that the final data do not become available until late (final data for income year t are available at the end of $t + 2$). For the medical professions, data from the National Institute for Sickness and Disability Insurance are also used.

Housing services (rent and imputed rent) are estimated according to the stratification method prescribed by a European Union decision. An econometric method is used to calculate the rent paid for the stock of rented housing, as a function of the housing characteristics (type of housing, age, location, amenities). The total output of housing services can be calculated by applying the rent paid to all housing within a housing stratum.

The value added of **private households with employees** (NACE 95) coincides with the wages paid by households to workmen, gardeners, cleaning ladies, etc. Since most of these services are performed without being declared, official sources are limited.

Conversion from administrative aggregates to the national accounts aggregates

By definition, an exhaustive estimate of GDP is also obtained by applying the ESA 1995 definitions correctly. In estimates from the output point of view, this is achieved by means of a detailed estimate of all transitional components between the administrative aggregates and the aggregates according to ESA 1995.

To achieve exhaustiveness, specific adjustments are made for wages in kind, tips, and the black economy.

¹⁵ Indeed, this source is also used to estimate the aggregates for agricultural enterprises operating in the form of a corporation (S11).

Non-financial corporations (S11)

In the first phase, the administrative aggregates are calculated per branch (NACE 3 or 4 digit level) and by sector. These interim results are then totalled at a higher aggregation level (120 SUT-branches).

In the second phase, the administrative variables are converted to ESA 1995 aggregates for each SUT branch (and separately for S11 and S14). Gross value added (B1g) and gross operating surplus (B2g) are obtained from this as a balance.

<u>Administrative aggregates</u>		<u>ESA 1995 aggregates</u>	
70+71+72+74-740	?	Output	P1
600/8 + 609 + 61 + 641/8	?	Intermediate consumption	P2
62	?	Compensation of employees	D1
640	?	Other taxes on production	D29
740	?	Other subsidies on production	D39

The adjustments made for the purpose of calculating the ESA 1995 aggregates from administrative aggregates include: merchandise, basic price adjustment, elimination of capitalised R&D from output and investment, recording of non-capitalised expenditure on software as investment, elimination of current gains and losses from operating income and expenses, property rent paid, transfer of some bank costs to intermediate consumption, discounts for cash payment, non-life insurance premiums and benefits, wages in kind, tips, grossing up of commission work, and estimated additions for the black economy.

There is a contra entry for all adjustments and reclassifications, which may appear in the Production Account or Generation of Income Account or elsewhere. This ensures that the budget identity is maintained at the global level of the sector account.

The information needed to calculate these adjustments is available either from the annual accounts, or from the structural survey, or as exogenous data in the accounts of General Government (S13) (taxes on production and imports, and subsidies) and Financial Corporations (S12) (insurance premiums received and claims paid).

Households (S14)

The administrative aggregates are also converted to ESA 1995 aggregates for sole traders/self-employed persons. Since information about such operators is much scarcer, adjustments are only calculated on account of merchandise, banking costs, insurance premiums, tips and the underground economy.

Estimate of the underground economy

In practice, there is some overlap between hidden labour and tax evasion. A registered enterprise may commit fraud by using undeclared labour: overtime performed by registered staff, or work performed by staff not registered by the enterprise. A non-registered enterprise, which (by definition) uses only hidden labour, is simultaneously committing tax evasion. Note that it can be assumed that the VAT fraud committed in this case is purely VAT fraud with complicity. If the VAT fraud were committed without complicity and the purchaser were entitled to reclaim the VAT, the underground enterprise would run the risk of being discovered¹⁶.

At present it is not possible to make a separate estimate of tax evasion exclusive of VAT fraud as all types of fraud are combined.

Since no information is available to permit a separate adjustment for value added resulting from unregistered labour, under-declared taxable income and VAT fraud without complicity, an overall adjustment is estimated per SUT branch¹⁷. The overall adjustment per SUT branch is calculated by applying percentages to turnover and purchases for S11 enterprises and S14 enterprises separately, in accordance with the NACE classification deemed relevant within an SUT. If an SUT branch is composed of NACE branches for which different percentages are applicable in respect of the underground economy, the percentages for turnover and purchases respectively for the SUT branch are calculated as turnover/purchase-weighted averages of the NACE components.

For some branches, both turnover and purchases are adjusted (e.g. construction). For others, it is only necessary to adjust the turnover (e.g. legal services). For most branches, turnover and purchases are adjusted by the same percentage (as producers who commit fraud ensure that the ratio between declared turnover and purchases remains acceptable to the tax authority).

As in most other European countries, the underground economy is most highly developed in branches that supply the major part of their output to individuals. This applies, for instance, to the building industry (especially building installation and finishing work), the retail trade, maintenance and repair of motor vehicles, hotels and restaurants, and services to individuals.

In SUT branches - 45D1 building installation and 45E1 building completion, part of the total adjustment relates to non-registered labour.

¹⁶ Conversely, it is not necessarily true that all VAT fraud with complicity is committed by clandestine enterprises.

¹⁷ Note that, since all producing units are registered, an adjustment for hidden labour corresponding to the adjustment for clandestine enterprises is not relevant.

Integration in the Supply and Use Table

An integrated calculation of GDP from the point of view of output, expenditure and income takes place in the framework of the SUT, which covers 120 branches and 320 products. The SUT is compiled for the reference years 1995 and 1997, and for each year from 1999.

In view of the integration of data from various sources, the Supply and Use Table is the most appropriate method of obtaining an exhaustive estimate of GDP. The efforts to improve exhaustiveness will therefore be developed further primarily within this framework.

In some countries, the calculation of GDP is more or less based on employment data. On the basis of these data the value added for a number of enterprises is extrapolated for the branch as a whole.

In the Belgian national accounts, employment plays no role in the calculation of value added. The results obtained are therefore tested only indirectly against the employment figures obtained from the employment statistics, namely by assessing the value added per employee and/or self-employed person for each branch (in future to be on a full-time equivalent basis). By examining the consistency between output, compensation of employees and employment, any problems can be tracked down.

A tax audit, which attempted to estimate the adjustment ratios for the underground economy, did not produce any usable results in Belgium. In investigating tax evasion, the tax authority does not aim to derive any ratios which might be representative for a complete NACE category, and which could therefore be used to estimate the underground economy. The selection of the enterprises to be inspected takes no account of representativeness per NACE category, and is also dependent on fluctuating political sensibilities.

Implications and effects on national accounts and GDP estimates

The exhaustiveness adjustments applied for 1997, before integrating the SUT, are summarised below.

The value added figure was increased by EUR 4.0 billion, or 3.4 per cent of the total value added generated by non-financial corporations (S11).

For the Households sector (S14), an explicit adjustment of EUR 33.3 billion was made. The calculation of the value added for the SUT branches 01A1 Agriculture, 02A1 Forestry and 05A1 Fisheries is based on detailed quantity and price data obtained from the Centre for Agricultural Economy, so that the adjustment for the underground economy was implicitly included. For SUT 95A4, Private households with employees, an average hourly wage was applied to an estimated number of hours' work, so that here, too, an adjustment for the underground economy was implicitly taken into account.

To allow for wages in kind, turnover in Non-financial corporations sector (S11) was increased by EUR 1.3 million for produced goods and services, provided as wages in kind. Intermediate consumption was reduced by EUR 492 million so that purchased goods and services made available as wages in kind could be transferred to wages¹⁸.

In some branches (hotel & catering, hairdressers, taxis), turnover was increased to take account of tips. In the Non-financial corporations and Household sectors the figures used were EUR 208 and 104 million respectively.

The total correction made for the underground economy, after balancing the Supply and Use Table, was estimated at between 3 per cent and 4 per cent of GDP.

¹⁸ In the case of financial institutions, benefits in kind in the form of preferential rates of interest were estimated at EUR 21 million. This figure was also included in Indirectly measured services of financial intermediaries (FISIM), but since the whole of the FISIM is recorded as intermediate consumption, it has no effect on GDP.

BULGARIA

Introduction

The Bulgarian NSI has adopted the Eurostat tabular classification, which defines the NOE in accordance with the 1993 SNA and ESA 95. The Eurostat classification is explained in the Introduction chapter.

Measurement and estimation methods

Statistical underground

The main part of the statistical underground is accounted for by enterprises that do not respond to statistical surveys, i.e. non-response (NOE Type T1). A standard method for estimating the value is applied. The number of non-response enterprises, their numbers of employees and the branches to which they are classified are identified from the statistical register. Average values of sales per employee are calculated from the reports of other enterprises belonging to the same branch and having similar numbers of employees. These values are then used to estimate the data for the non-response enterprises.

Economic underground

To ensure exhaustiveness in the national accounts it is important to find the most appropriate method of measuring the economic underground component of the non-observed economy. To this end, careful analysis and comparisons of different kinds of information, including independent surveys, is undertaken, as follows:

- Comparison of the ratio of intermediate consumption and gross output at the 4-digit level of the branch classification for the last 3 years, in both the private and public sectors. The economic underground arises from efforts by private enterprises to not reveal the full size of their sales (in order to avoid paying taxes and fiscal duties). Data are therefore adjusted on the basis of the above ratios to achieve balanced estimates that allow for under reporting.
- Comparison of employment data obtained from enterprise surveys with data derived from the Labour Force Survey (LFS). Comparisons and subsequent adjustments are carried out by type of activity at a high level of aggregation. Indicators obtained from regular business surveys are used to estimate the output of unregistered employees identified from the comparison of the two data sources mentioned above.

- Data from independent investigations which involved obtaining opinions from enterprise heads on the extent of concealed turnover. The results of those investigations showed that 50 per cent of enterprises do not provide the true values of their sales. It is estimated that between 25 and 50 per cent of sales are not reported. The main activities in which this occurs are trade, transport, hotels, restaurants and other services.
- Information from customs declarations for imports and exports are compared with data on receipts and expenses obtained from regular enterprise surveys. There are large differences between these two sources. Adjustments are made to the main groups of activities where the differences are most significant.
- Experts' estimates and Supply and Use Tables are used to gauge the correct share of production costs in gross output of products and activities. This indicator is important in estimating the extent of underreported sales.
- Volume indexes of output and intermediate consumption are also used. Deficiencies in data quality are indicated if the volume index of costs is higher than the volume index of output. In these cases it is assumed that the estimates of intermediate consumption are correct, and output values are adjusted accordingly.

Informal activity and household production for own final use

The household sector is mainly characterized by unincorporated enterprises. The output of these activities is estimated on the basis of the Household Budget Survey, surveys of and administrative data on the number of construction permits. In the output approach the adjustments cover agriculture, construction, rent, education and health care services. On the expenditure side, adjustments are made to household final consumption and gross fixed capital formation.

Illegal activities

According to the 1993 SNA, the output from illegal activities falls within the production boundary. However, systematic methods of measuring the illegal economy have not been defined in the general recommendations for achieving exhaustiveness in the national accounts. According to the information from the Ministry of Health, the estimated value of drug consumption in Bulgaria in 2000 was 500 millions leva (1.86 per cent of GDP and 2.4 per cent of the actual individual consumption of households).

Implications and effects on national accounts and GDP estimates

The tables below contain estimates of the non-observed economy for the years 1998, 1999 and 2000. Estimates are presented for both the output and expenditure approaches.

Output approach

The total share of the estimates of the non-observed economy in GDP was about 12 per cent in 1998 and 1999 (at current prices). The estimate in 2000 is larger than the estimates during the previous two years -16,3 per cent, the reason being the increased share of value added accounted for by the private sector. The largest NOE category showing the largest contribution to GDP was the *economic underground* (concealed production), which accounted for 40 to 46 per cent of all adjustments. The concealed production occurred mainly in trade, transport, construction and manufacturing.

Tables 1 to 3 show the estimated breakdown of the NOE by NACE and the Eurostat T1-T8 classification.

Table 1. Share of the non-observed economy in GDP: 1998

Activities (NACE)	Share of GDP - per cent			Total
	Statistical	Economic	Informal	
	underground (?1-?3)	underground (?4-?5)	and other (?6-?8)	
Agriculture (A, B)			2.29	2.29
Industry (C, D, E)	0.05	0.90		0.95
Construction (F)	0.76	0.82	0.25	1.83
Trade, Hotels and restaurants, transport and communications (G, H, I)	2.60	1.82		4.42
Real estate and business activities (J, K)	0.47	1.10	0.54	2.11
Other sections (L to P)	0.27	0.32	0.07	0.66
Total	4.15	4.96	3.15	12.26

Table 2. Share of the non-observed economy in GDP: 1999

Activities (NACE)	Share of GDP - per cent			Total
	Statistical underground	Economic underground	Informal and other	
	(?1-?3)	(?4-?5)	(?6-?8)	
Agriculture (A, B)	..	..	2.31	2.31
Industry (C, D, E)	0.04	0.80		0.84
Construction (F)	0.82	0.18	0.41	1.41
Trade, Hotels and restaurants, transport and communications (G, H, I)	2.24	2.69		4.93
Real estate and business activities (J, K)	0.28	0.87	0.88	2.03
Other sections (L to P)	0.08	0.28	0.15	0.51
Total	3.46	4.82	3.75	12.03

Table 3. Share of the non-observed economy in GDP: 2000

Activities (NACE)	Share of GDP - per cent			Total
	Statistical underground	Economic underground	Informal and other	
	(?1-?3)	(?4-?5)	(?6-?8)	
Agriculture (A, B)	..	..	2.14	2.14
Industry (C, D, E)	0.18	2.47		2.65
Construction (F)	0.52	1.17	0.30	1.99
Trade, Hotels and restaurants, transport and communications (G, H, I)	3.27	2.92		6.19
Real estate and business activities (J, K)	1.06	0.56	0.84	2.46
Other sections (L to P)	0.16	0.50	0.21	0.87
Total	5.19	7.62	3.49	16.30

Expenditure approach

In the expenditure estimates, the total share of the NOE in GDP was estimated at 11.5 per cent, on average, for the three years from 1998 to 2000. The most significant adjustments were made to household final consumption expenditure. Other adjustments were made to gross fixed capital formation.

Table 4. Share of the non-observed economy in GDP: 1998-2000

	Share of adjustment - per cent			Share of GDP - per cent		
	1998	1999	2000	1998	1999	2000
Final consumption expenditure	12.06	11.40	11.55	10.00	10.01	10.05
Gross capital formation	9.72	9.85	6.93	1.64	1.77	1.27
Balance (exports - imports)	..	..	..	..	..	..
Total adjustments				11.64	11.78	11.32

CANADA

Introduction

Statistics Canada presented two papers outlining work done in the nineties relating to the informal economy for Canada from which the presentation below is extracted. The paper titled “Assessing the Size of the Underground Economy: The Statistics Canada perspective” (1994) is a summary of the more extensive study “The Size of the Underground Economy”. The study was undertaken after the GST, a form of value-added tax, was put in place in Canada and there was speculation that a large proportion of the economy had been driven underground. The approach of the study was to establish a statistical range of what may be missing from GDP due to underground activity to compare it to previous work done on the same basis.

The definition employed in the paper is “the market production of goods and services, legal or illegal, hidden from the statistical system”. Not all hidden activity is missing in measured GDP. Because GDP is measured from all three approaches in Canada and balanced through an annual Input-Output Table, much of the hidden economy is unearthed in the balancing process and accounted for in the final estimates. No single approach is thought to be underreported or hidden from sources and where those sources are augmented by balancing to other sources:

- Household renovation and repairs are activities where there is potential for cash transactions hidden from either commodity/income taxation or production surveys. An annual household survey of household renovation and repair expenditures is combined with the commodity balance for construction materials to arrive at the benchmark and incomes and production levels are adjusted to the higher estimate.
- Reported net incomes from rental properties that are typically underreported in the taxation system are imputed using a household survey of rents paid multiplied by official estimates of the number of rental units in the housing stock to arrive at gross rents. Expenses estimates are also imputed using a similar method.
- Consumption of Alcohol and Tobacco are estimated using commodity balances and surveys estimating usage habits. In the early nineties, when the commodity taxation shift lead to increased smuggling activity, this approach was used to impute imports of smuggled tobacco and alcohol (mostly tobacco) and net income from smuggling. The smuggling subsided after tax rates on tobacco were reduced. Small amounts are still built into consumption estimates but the study needs to be updated.

- Childcare services is another area where balancing of household expenditures from the annual survey of household spending is used to impute income and production of childcare services.

In Canada, no attempt is made to explicitly account for illegal activities outside of tobacco and alcohol smuggling. Laundered income from illegal activities such as drug smuggling and prostitution will appear as higher net income in service industries where establishments may be used as laundering facilities because tax data are heavily used in the annual benchmarking process. These will be balanced by the household expenditure supported by the illegal incomes. No attempt is made to quantify this on an ongoing basis.

Periodically, every ten years or so, studies like the one included here are implemented to monitor the official estimates. There has not been overwhelming evidence of an increased problem over the years; however, there is anecdotal evidence that marijuana crops are becoming substantial in Canada and this is an issue which will be addressed in the near term.

Definitions and concepts

GDP, illegal production and underground production

In principle, GDP includes all production without regard to its legality. In practice, illegal activities such as the sales of narcotics, although deemed productive in an economic sense in that they satisfy a demand expressed on the market, are left out of official statistics because there is no way of measuring them with sufficient reliability. Official measures of GDP thus refer, by and large, to legal production.

Available figures for Canada indicate that illegal production represents at most 1 per cent of GDP. Work undertaken some years ago within Statistics Canada suggested that the value added generated by drug trafficking could have ranged between \$1.3 billion and \$2.7 billion, or between 0.3 per cent and 0.6 per cent of GDP in 1984. Another study (McCracken, 1987) estimated that sales of drugs could have reached \$2 billion to \$3 billion in 1985, or about 0.5 per cent of GDP. There are no statistics on prostitution, but a calculation based on the extreme assumptions of half a million customers each spending \$5,000 a year would yield \$2.5 billion, less than 0.4 per cent of GDP in 1993.

On the basis of the classification of productive activities (market versus non-market; legal versus illegal), four alternative definitions of the underground economy can be formulated, depending on what is meant by 'total economy' and on who is observing it:

- market production of *legal* goods and services that escapes measurement in the official estimate of GDP;

- market production of goods and services, whether legal or illegal, that escapes measurement in the official estimate of GDP;
- market production of goods and services, whether legal or illegal, that escapes detection by the tax authorities;
- market and non-market production of goods and services, whether legal or illegal, that escapes measurement in or is purposely excluded from the official estimate of GDP.

The first three definitions all pertain to transactions that give rise to tax evasion and differ only in scope. The first corresponds, by and large, to what official GDP measures, the second, to what GDP should measure in principle, while the third definition is closer to that of the tax base, since the tax authorities also draw no distinction between legal and illegal income. Finally, a fourth, seldom-employed, definition broadens the underground economy to include non-market activities, notably household work and volunteer work, which do not involve tax evasion.

Unreported versus unmeasured transactions

The focus of the System of National Accounts is economic production. This is why, with respect to measurement, the primary concern is with underground production rather than with untaxed transactions. In fact, a significant proportion of underground production is de facto captured in official GDP. Because GDP is measured from all three approaches in Canada and balanced through an annual Input-Output Table, much of the hidden economy is unearthed in the balancing process and accounted for in the final estimates. The fact that income is not declared does not imply that it is missed in GDP. Unreported, undeclared or untaxed transactions are not necessarily synonymous with unmeasured transactions.

From the perspective of the national accounts, the only underground transactions that need to be measured in GDP are those relating to market-based economic production, whether legal or illegal. Among those, some are already captured in official GDP and others are 'missing'. The study considered primarily those transactions that escape measurement in GDP, not those that escape detection by the tax authorities (which are either missing or captured in GDP). It largely ignores illegal activities, just as they are left out from the official GDP estimates. The focus is primarily on the first definition outlined above.

Estimation of underground production potentially missing from the 1992 GDP

The analysis takes into account which areas of the economy are most likely to be subject to underground activity, and which ones are least well measured in the national accounts. The approach of the study was to establish a statistical range of what may be missing from GDP due to underground activity. The intent is to establish an upper bound estimate for the possible size of the underground economy. Like the measurement of GDP itself, the question can be addressed from the angles of income, expenditure and value added. An analysis centred on missing income is fraught with difficulties, because business income (profit, net income of unincorporated businesses) is essentially residual, both in business accounts and in national accounts. An examination of final

demand, on the other hand, offers a twofold advantage: the estimates of final demand, broken down into one hundred categories, are far more detailed and are expressed in both volume and value terms. For these reasons, the estimation of underground activity is best approached in terms of expenditure.

On the expenditure side of GDP, only investment in residential construction and personal expenditure on goods and services could be significantly underestimated due to underground transactions. Imports and exports would be marginally affected. The other components of GDP, i.e. government expenditure, business investment in plant and equipment and inventories, are not ones which lend themselves to underground activity.

Imports and exports of goods and services

Imports

Imports of goods are understated, at a minimum, by the value of the tobacco and alcohol smuggled into the country. As imports are deducted from GDP, the non-measurement of smuggled goods entering the economy does not necessarily result in an understatement of GDP. Rather, to the extent that domestic expenditure on the imported goods is captured elsewhere in final demand, GDP may be overstated.

The example of cigarettes could be used to illustrate the impact of smuggling on Canada's GDP. The cigarettes smuggled into Canada are largely manufactured in Canada. They have been exported legally and have been counted as part of exports: nothing is missing from Canada's GDP on that account. However, the black market value of contraband cigarettes is likely to be omitted from personal expenditure, while their import value is omitted from imports. Since personal expenditure enters GDP with a positive sign, and imports with a negative sign, what is missing in GDP due to smuggling is the difference between black market value and import value.

For 1992, Statistics Canada estimated sales of contraband tobacco to consumers at \$1,057 million, contraband imports at \$619 million and the reduction in contraband inventories at \$15 million, for a net positive effect on GDP of \$423 million, equivalent to 0.06 per cent of GDP. Corresponding figures for 1993 were \$1,868 million for sales to consumers, \$1,095 million for contraband imports, \$26 million for the reduction in contraband inventories and \$747 million for GDP, reflecting a 75 per cent increase in a year, but still only 0.1 per cent of GDP.

Alcohol smuggling has existed for a long time and there is evidence that it has been on the increase. The Liquor Control Board of Ontario (LCBO) claims that illegal imports of spirits cost it \$500 million in lost sales in 1993. These imports are valued at legal prices (which include taxes and the LCBO mark-up), not at the lower black market prices at which they would be valued in GDP. Pegging the black market prices at 60 per cent, on average, of LCBO prices yields illegal imports of spirits of about \$300 million in Ontario. If smuggling were as widespread in the rest of

the country, the figure for Canada as a whole would be about \$800 million in 1993. The import value of this alcohol would be much less, anywhere from 40 per cent to 60 per cent of its black market value. The net effect on GDP would be equal to the smuggler and retailer mark-ups in relation to these sales.

Exports

Merchandise exports may be underestimated through smuggling or through under-valuation of declared transactions. But there are few goods or services for which underground transactions relating to exports are evident or suspected, and there would appear to be no example of a Canadian product smuggled out of the country on a large scale.

Trade in services comprises five categories: travel, freight and shipping, business services, government transactions and other services (mainly spending of foreign students). Only business services, bringing in about 40 per cent of total service receipts, lend themselves to underestimation due to underground transactions, through non-reporting or under-valuation. However, within that broad category, most of the market belongs to large, well-established and often regulated companies, which are not engaged in underground production. For example, in 1992, about 70 per cent of business service receipts came from insurance, air transport, tooling, airplane rentals, computer services, brokerage services, gold refining, communications and royalties and patents. An under-valuation of the remainder by 10 per cent, a higher proportion than for merchandise exports to reflect that service receipts are easier to hide, would add up at most to \$300 million which, combined with the potential \$800 million in hidden merchandise trade transactions, would yield \$1.1 billion, less than 0.2 per cent of GDP in 1992.

Investment in residential construction

The construction of new dwellings and home renovations ('alterations and improvements' in the national accounts), along with minor repair and maintenance work, are considered prime areas where underground transactions occur.

New residential construction

The estimation of the value of new housing construction combines housing starts, average values of building permits and coefficients related to work put in place. Estimates of work put in place are based on the month of start, province and type of dwelling, and the volume of work on an average 'start' usually carried out in each construction period. In the case of single dwellings, 50 per cent of the work is normally done in the first quarter, about 40 per cent in the second quarter, with the remainder in the third quarter after commencement. The value of work put in place in a given period is calculated by applying the estimates of work put in place to the value of housing starts for the current and previous periods, and summing. The value of construction work on conversions (from one type of dwelling to another) and on cottages is based on building permits, and that of mobile homes, on manufacturers' shipments.

An estimate of costs other than for the construction itself is added on separately. These costs include legal, architectural and mortgage fees, land development fees imposed by municipalities and Goods and Services Taxes (GST) not reflected in building permit values.

Values reported on building permits are subject to understatement. Builders have a twofold interest in understating the cost of construction: to facilitate the hiding of income and to save on the cost of the permit itself, which is usually proportional to the cost of construction, excluding overhead costs and profit. However, municipalities will not issue a building permit for a house with a value that is unreasonably low. The price of new homes on the market is also well advertised, and is a good gauge of their construction cost. Building permits issued by municipalities are thus in some sense already 'adjusted' for under-valuation, although builders may still undervalue a dwelling at the margin, perhaps by 10 per cent or 15 per cent at the most.

In addition, Statistics Canada makes another upward adjustment to average building permit values to reflect the builders' margin, under-valuation and omitted material costs such as landscaping. These blow-up factors vary by type of dwelling and province. In 1992, for Canada as a whole, the factors were 9 per cent for single dwellings, 10 per cent for semi-detached dwellings and 19 per cent for row housing and apartments.

The underestimation could be much higher for conversions from one type of dwelling to another. Unlike new dwellings, conversions can be hidden.

A total of 3,500 conversion permits were issued in 1992, with a total value of \$103 million, at an average cost of \$29,000. A ratio of two hidden conversions for a reported one is conceivable. The hidden conversion, usually the addition of an apartment, is a case where the average cost of the work is lower since it is on a smaller scale than the conversion of a double dwelling into a single one. It is more difficult to hide a large-scale conversion from municipal inspectors. If this is the case, a hypothetical adjustment of 200 per cent would reflect a ratio of hidden to reported conversions higher than two to one, and could be considered an upper limit. It would yield another \$206 million in 1992.

Some supplementary costs do not give rise to underground transactions (GST, land development fees, mortgage fees and insurance). Other costs under that heading (essentially legal and architectural fees and surveying costs) are mainly incurred for new dwellings and are not subject to widespread hidden transactions. They are estimated as a percentage of the value of construction work put in place and as a result could be underestimated in the same proportion, roughly by 10 per cent, or \$111 million in 1992.

The underground transactions related to residential construction possibly escaping measurement in the official GDP could amount at most to \$1,883 million in 1992, broken down as follows:

	\$ millions
Single dwellings	1 112
Semi-detached dwellings and row housing	127
Apartments	159
Mobile homes	12
Cottages	156
Conversions	206
Supplementary costs	111
<i>Total</i>	1 883

Alterations and improvements

The estimation of spending on 'alterations and improvements' to existing dwellings relies on two sources: the annual Homeowner Repair and Renovation Expenditure Survey (HRRES) and statistics on building permits. Homeowners account for over 80 per cent of this type of spending, while landlords account for over 10 per cent, and cottage owners and tenants the remainder.

The HRRES, with a sample of 25,000 households in 1992, is the source of information on homeowner spending and is believed to yield unbiased results. Homeowners are asked to report separately the cost of the materials purchased and the cost of contract work, which includes both materials and labour.

The assumption of a 20 per cent underestimation is not purely conjectural. An underestimation of 10 per cent is deemed a plausible upper limit in construction of single dwellings, and also for contract work on renovations. The proportion of households who reported spending on contract work dropped by 10 per cent in 1991 (from 20.8 per cent to 18.7 per cent as shown in Table 1). If that drop reflected growing underground activity, then the 10 per cent upper limit would be too low and should logically be revised to about 20 per cent.

A portion of what is reported for contract work is spent on building materials. The implied underreporting of the value added (wages and profit) in contract work under this assumption would thus be higher than 20 per cent on average, and this percentage is applied to amounts reported by homeowners, not by contractors. In addition, survey results appear quite plausible at face value: the \$10,420 million total in 1992 translates into almost \$1,600 per homeowner, or \$4,460 on average for the 35.5 per cent of homeowners who reported any spending. Homeowners do not make large capital improvements every year. Amounts recorded in GDP under this heading are five times the value of building permits issued for renovations. This difference in itself does not solely reflect underground transactions, since many capital improvements (replacing the furnace and installing wall-to-wall carpeting for instance) do not require a building permit. It does suggest, however, that homeowners are less reluctant to respond to the HRRES than to request a building permit, and lends credibility to the survey results.

Another way of looking at survey results is to assume that contract work passed under the table is not reported at all, while purchases of materials, made openly, are all reported and relate to the contract work passed under the table. As purchases of materials add up to \$3.2 billion (including GST and PST), or about \$2.8 billion excluding taxes, and the relationship between the value added and the material content is close to 50/50, the maximum value of hidden contract work would be about \$2.8 billion. But according to the Time Use Survey, 183 million hours were spent on renovation work to houses and garages in 1992, with virtually all work done by homeowners. Valued at \$10 an hour, this work translates into \$1.8 billion, and at \$15 an hour, into \$2.7 billion. These independent estimates of time spent doing renovation work are consistent with the amount reported in the HRRES for direct purchases of materials, excluding taxes. In other words, if the assumption that homeowners were purchasing materials for contract work passed under the table as well as for their own renovation work was correct, reported purchases of materials would be much higher. The assumption of \$2.8 billion of unreported contract work would therefore seem to be too high.

The fact that contract work passed under the table may be on the increase need not imply that underreporting in the survey is on the increase. One suspects that if it were, the proportion of homeowners reporting purchases of materials, or the ratio of these purchases to total spending, would be increasing, but it is not, as shown in Table 1. The overall decline in the proportion of homeowners reporting any spending coincided with the recession and with the higher relative price of renovations attributable to the introduction of the GST. A good proportion of spending on renovations is discretionary and can be postponed. But if it is assumed that this decline reflects an increase in non-reporting due to growing underground activity, then 40 per cent of households, (roughly the same proportion as in 1987, 1988 and 1989) could be expected to incur expenditure, instead of 35.5 per cent. The total spending of these additional 296,000 households, at an average of \$4,460, would amount to \$1,320 million in 1992. The \$1,438 million estimated above does indeed appear to be an upper limit.

Estimates of spending on renovations by cottage owners are based on the Family Expenditure Survey (Famex) and projections are based on building permits for intervening years. The amount reported in the 1992 Famex under that heading was \$777 million. As the HRRES and the Famex are similar household surveys, the downward bias in the results, if any, should also be similar. Therefore, under the same assumptions as above (20 per cent underreporting of the share of contract work to total spending), the underestimation would amount at the most to \$104 million.

In the case of spending on renovations in rented dwellings (by landlords and tenants), there is a measurement problem due to lack of data sources rather than as a result of underground activity. A benchmark established on the basis of information from a US survey and input-output tables has been extrapolated using building permit values for apartments. While some landlords will abstain from getting a permit or understate their costs to avoid paying higher property taxes, substantial renovations in large apartment buildings are difficult to undertake without a permit. Such expenditure is also tax deductible and serves to justify rent increases, making it less likely to be

concealed. In addition, some capital improvements not requiring a building permit, such as replacement of major appliances, will automatically be captured in GDP, perhaps as current expenditure instead of investment. For completeness, an upward adjustment of 10 per cent on account of underground transactions in renovations to rented dwellings was taken as an upper limit, amounting to \$153 million in 1992.

Table 1. Homeowner Expenditures on Additions, Renovations and New Installations

	1987	1988	1989	1990	1991	1992
1. Purchase of materials (\$millions)	2 775	2 754	3 140	2 831	2 620	2 810
2. Contract work (\$millions)	4 480	4 819	6 344	6 132	5 257	5 620
3. Total spending (\$millions)	7 255	7 573	9 484	8 963	7 877	8 430
4. Purchase of materials / total spending, (in per cent)	38.2	36.4	33.1	31.6	33.3	33.3
5. per cent of households reporting purchase of materials ¹	27.2	26.8	26.9	24.3	23.8	23.8
6. per cent of households reporting contract work ¹	21.0	20.8	21.4	20.8	18.7	18.0
7. per cent of households reporting any spending ¹	40.0	39.1	40.3	38.5	35.9	35.5

1: The percentages in lines 5 and 6 do not add up to those in line 7 because some households reported spending on both materials and contract work.

Source: Homeowner Repair and Renovation Expenditure in Canada, Catalogue No. 62-201, Table 1.

Underground transactions related to home renovations that may escape measurement in official GDP estimates could thus have added up to \$1,695 million in 1992, made up of owner-occupied housing, \$1,438 million, cottages, \$104 million, and rented housing, \$153 million. This amount, combined with an estimate of missed transactions in new construction of \$1,883 million, would raise the published estimate of \$30.9 billion for residential construction (excluding GST and transfer costs) by \$3.6 billion, to \$34.5 billion, an increase of 11.6 per cent.

If all of the \$3.6 billion that may escape measurement corresponded to value added (that is, consisted solely of wages and profits, a very plausible assumption), unmeasured value added in residential construction would represent 40 per cent of the recorded value added of \$9.0 billion (or 1.5 per cent of GDP at factor cost in current dollars). Undeclared valued added in residential construction would amount to \$5.9 billion (\$3.6 billion unmeasured, and \$2.3 billion already captured¹, if the 1991 figure was used as a proxy for 1992), and would be equivalent to 47 per cent of the true value added of \$12.6 billion (\$9.0 plus \$3.6). These estimates must therefore be considered an upper limit.

¹ Imputation for hidden net income, made by National Accounts for 1991, i.e. \$2.3 billion, represents the gap between National Accounts estimates for net income of unincorporated construction business (\$3.5 billion) and the corresponding amount declared to Revenue Canada (\$1.2 billion).

Personal expenditure on goods and services

Personal expenditure on goods and services accounts for about 60 per cent of GDP. Along with residential construction, sales to households are the other major area where underground transactions take place. Alcohol, tobacco and domestic services are examples of goods and services that can be purchased ‘under the table’. GDP could also be underestimated as a result of what is known as ‘skimming’ of receipts on the part of legitimate businesses. In relation to hidden transactions (sales under the table and skimming), personal expenditures fall into three categories:

- those where such transactions are absent;
- those where they have little or no effect on the estimation of GDP; and
- those where they result in an underestimation of GDP (tobacco, alcoholic beverages, repairs, meals in restaurants, etc.).

Many goods and services cannot be purchased under the table and, as a rule, businesses selling or providing them do not understate their receipts. This is the case for new motor vehicles, motor fuel, heating fuel, electricity, gas, water charges, medical and hospital care, telephone, postage, cable television, urban transit, tickets from the provincial lotteries, insurance.

Skimming

The phenomenon known as ‘skimming’, whereby legitimate businesses fail to declare a part of their business income, and presumably do not report it to Statistics Canada either, has probably always existed. Businesses engaged in skimming are not necessarily operating underground like smugglers, and often do so without the knowledge of their customers. But skimming does constitute tax evasion, and can lead to an underestimation of GDP at the margin.

The qualification ‘at the margin’ is important. A business may avoid declaring some receipts, but will likely be detected if it hides too much income in relation to its operating costs, or in comparison to other businesses. Similarly, in the national accounts, since the total supply of a commodity is made equal to the total demand for it in input-output table compilation, a large and systematic underreporting of sales would also be detected and corrected.

It is extremely unlikely that large businesses engage in skimming. It would be very complicated, if not impossible, for large retail organizations, often provincial or national in scope, with hundreds or thousands of employees, to do so. The damage to their reputation should the fraud be discovered would be far greater than any benefit they may gain from it. One may safely assume that skimming of receipts is limited to small businesses.

In order to estimate how much the skimming of receipts potentially can amount to, it is assumed that there is average underreporting of 25 per cent of gross receipts in services, and 15 per cent for taxicabs and most of retail trade (25 per cent for vending machine operators, direct sellers

and repair shops, classified to retail trade). Department stores are deemed not to be skimming at all. So are liquor, wine and beer stores: liquor stores are government-owned, and the sale of wine and beer is regulated. To avoid double counting, no estimates of the value of skimming are calculated for goods and services which are not subject to underground transactions, or for which separate estimates of underground transactions are made elsewhere.

Skimming percentages should only be applied to the value of receipts from sales to households, not from sales to other businesses, as 'intermediate' skimming, just like intermediate sales, is already captured in GDP.

Not all businesses engage in this type of fraud. If as many as 50 per cent did, the implied skimming would be 30 per cent of gross receipts in retail trade and 50 per cent in services. Even if all small firms were defrauding, the skimming percentages adopted are extremely high, if not completely unrealistic. This becomes readily evident when skimming is expressed as a percentage, not of gross receipts, but of 'true' net income, defined as the declared net income plus the hidden receipts, as is done in Table 2. The conclusions that emerge from the table are valid for all small businesses (and for large ones as well), since profit margins are not dramatically different between the various types of business (small or large, incorporated or not, selling to households or to other firms). The skimming percentages adopted would imply that all small businesses are hiding, at the minimum, 50 per cent and perhaps as much of 70 per cent, of their 'true' net business income. The true margin on gross receipts would be 19 per cent in retail trade (instead of the declared margin of 6-7 per cent), and 37 per cent in services (instead of the declared margin of 20-21 per cent).

Table 2. Potential Skimming of Receipts Expressed as a Percentage of Net Income

	Retail trade		Services	
	1990	1991	1990	1991
1. Declared gross receipts (\$millions)	18 225	17 898	12 545	13 732
2. Skimming in per cent of declared gross receipts	15	15	25	25
3. Skimming (\$millions) 1 * 2	2 734	2 685	3 136	3 433
4. Declared net income (\$millions)	1 243	1 145	2 678	2 816
5. "True" net income (\$millions), 3 + 4	3 977	3 830	5 814	6 249
6. Skimming in per cent of true net income, 3/5	69	70	54	55
7. "True" gross receipts (\$millions), 1 + 3	20 959	20 583	15 681	17 165
8. True net income in per cent of true gross receipts, 5/7	19.0	18.6	37.1	36.4
9. Declared net income in per cent of declared gross receipts, 4/1	6.8	6.4	21.3	20.5

Source: Lines 1 and 4: Revenue Canada, Taxation Statistics, Table 9.

Tobacco

All transactions relating to the legal manufacturing and export of tobacco products are captured in GDP. At the time of June 1994, revision of the national accounts estimates of the value of imports of, and personal spending on, contraband cigarettes on the expenditure side of GDP, and the net income they give rise to on the income side were incorporated. These estimates go back to 1987 and are calculated monthly in the national accounts, as follows.

Exports of cigarettes are assumed to have been at a normal level in 1986, that is, one which did not reflect any smuggling. After that date, when legal exports started increasing, the 'normal' level of exports is set as the same percentage of the total production of cigarettes as in 1986. Broadly speaking, the gap between the 'normal' volume and the actual volume of exports constitutes the estimated volume of cigarettes entering the country in contraband. This volume is then valued at black market prices and at import prices, the gap between the two being equal to the smuggling mark-up.² Legal and estimated illegal sales of Canadian cigarettes in volume terms are reproduced in Table 3. The effect of tobacco smuggling on GDP in 1992 and 1993 appears in Table 4. included in the volume and value of the legal and estimated contraband sales are not only manufactured cigarettes, but also fine cut tobacco made into cigarettes. These estimates are reliable and can be considered complete.

Table 3. Legal and Estimated Contraband Sales of Canadian cigarettes, in Volume

	1986	1987	1988	1989	1990	1991	1992	1993
	(Billions cigarettes)							
1. Legal sales	63.6	61.1	60.3	56.4	52.9	46.7	41.3	34.8
2. Estimated contraband sales	0	0.6	0.6	1.3	1.8	6.6	9.8	15.6
3. Total consumption	63.6	61.7	60.9	57.7	54.7	53.3	51.1	50.4
4. Market share of contraband, in per cent	0	1.0	1.0	2.3	3.3	12.4	19.2	31.0
5. Index, legal sales, 1986=100	100	96.1	94.8	88.7	83.2	73.4	64.9	54.7
6. Index, total consumption, 1986=100	100	97.0	95.8	90.7	86.0	83.8	80.3	79.2

Source: National Accounts .

Alcoholic beverages

Underground transactions in this area comprise illegal manufacturing of wine and smuggling of spirits. Contrary to cigarettes, smuggled spirits are not generally produced in Canada and therefore

² In reality, contraband cigarettes are not all resold in the same month in which they enter the country and smugglers have inventories, just like other retailers. The smugglers' margin is therefore equal to their sales, less imports, less the change in their inventories.

Table 4. Effect on GDP of Underground Transactions Related to Tobacco, 1992 and 1993

INCOME-BASED GDP	1992		1993		EXPENDITURE-BASED GDP	1992		1993	
	Million dollars		Million dollars			Million dollars		Million dollars	
Net income, smuggler mark-up	423	747	Personal expenditure, contraband	1 057	1 868	Change in inventories, contraband	-15	-26	
Gross Domestic Product	423	747	Contraband imports	-619	-1 095	Gross Domestic Product	423	747	

Source: National Accounts

the volume estimates of the contraband are more speculative. The same is also true of illegally manufactured wine. For illustrative purposes, it is assumed that figures provided by the Liquor Control Board of Ontario (LCBO) and the Association of Canadian Distillers (ACD), which are similar in value, are accurate and constitute an upper limit of what is imported or manufactured illegally.

Illegally manufactured wine is apparently sold in various retail outlets and not all consumed as a beverage, but rather extensively used in cooking. A portion may also be sold in restaurants as 'house wine'. The LCBO pegged its loss on this account at \$320 million in the fiscal year ending March 31, 1994 (calculated as 40 million litres sold at an average legal price of \$8.00 a litre). As the purpose was to estimate an upper limit to underground transactions, the same volume was deemed to have been sold at the same price in 1992. At a black market price of \$4.80 a litre (60 per cent of the legal price), this would represent \$192 million. If the phenomenon is as common in other provinces, the corresponding figures for Canada, on the basis of population (Ontario's share is 37.3 per cent), become 107 million litres and \$515 million.

For the smuggling of spirits, the LCBO estimates serve as the basis for the calculation and the assumption made for wine is applied as well. This yielded for Canada as a whole an estimated smuggled volume of 51.2 million litres, which, at an average price of \$15 a litre, would have fetched some \$768 million on the black market in 1992.

Contraband alcohol is not all sold directly to consumers. Part of it finds its way behind the counter in bars and restaurants. The split between sales to consumers and those to licensees (licensed hotels, bars and restaurants) is not known. It can, however, be approximated. For Canada as a whole, this approximation would put the upper limit of contraband sales to licensees at \$154 million in 1992.

The licensee mark-up on the liquor, at around 300 per cent in the upper range³ could add another \$462 million to personal expenditure under the heading of 'service portion of alcoholic beverages'. If licensees report their total alcohol receipts, regardless of the source of supply, the mark-up on contraband alcohol will automatically be captured in GDP, even if the purchase of this alcohol is not, because it is calculated residually by deducting the legal purchases of licensees through liquor commissions. If this were the case, the measured margin would increase: not only is it higher for contraband alcohol, but the overall margin, both on legal and illegal purchases, is in effect calculated only in relation to legal purchases. This possibility should not be discounted: the average mark-up on alcohol sold by licensees, as calculated in the national accounts, did indeed go up, from 1.26 in 1988 to 1.40 in 1989 and 1.45 in 1990, which suggests that some of the mark-up on contraband alcohol is already captured in GDP.

Because taxes on wine are not as high as on spirits, the potential gains for licensees purchasing illegally manufactured wine are not as great. These products would also be in competition with inexpensive foreign wines. For this reason, it is assumed that only 10 per cent of the estimated illegal volume is sold to licensees, against 20 per cent for spirits. The average mark-up would also be smaller, probably around 150 per cent, and 200 per cent in the upper range. Under these assumptions, the licensee mark-up on illegal wine would amount to \$103 million in 1992.

The import value itself of the contraband liquor (i.e. its cost to the smuggler) would range anywhere from 40 per cent to 60 per cent of its black market value, and was deemed equal to 50 per cent, or \$384 million in 1992. The higher the cost of importing to the smuggler in relation to the black market price of the alcohol, the lower the profit and the smaller the amount potentially missing from GDP.

Table 5. Effect on GDP of Potential Underground Transactions Related to Alcoholic Beverages, 1992

Income-based GDP		Expenditure-based GDP	
	Million dollars		Million dollars
Net income, illegal wine	515	Personal expenditure, illegal wine	515
Net income, smuggler mark-up on spirits	384	Personal expenditure, contraband spirits	768
Net income, licensee mark-up on contraband spirits	462	Personal expenditure, licensee mark-up on contraband spirits	462
Net income, licensee mark-up on illegal wine	103	Personal expenditure, licensee mark-up on illegal wine	103
		Imports of contraband spirits	-384
GROSS DOMESTIC PRODUCT	1 464	GROSS DOMESTIC PRODUCT	1 464

³ According to the national accounts, the average mark-up on alcohol sold in licensed outlets (including tips) was 145 per cent in 1990, the last benchmark year. If one removes 10 per cent for tips, the 145 per cent mark-up becomes 132 per cent, or \$34 on a bottle of liquor of \$26, for a total of \$60. If the contraband bottle bought at \$15 is sold at the same price, the mark-up is \$45, or 300 per cent.

The effect of all these mostly underground transactions on GDP, as illustrated in Table 5, is as follows. The sales of illegally produced wine, estimated at \$515 million, would result at the most in an increase of the same magnitude in personal expenditure and in net income of unincorporated business. The black market sales of the smuggled liquor, estimated at \$768 million, would lead to an identical increase in personal expenditure, offset by a \$384 million increase in imports. To this should be added the licensee mark-ups, \$462 million on spirits and \$103 million on wine, for a net effect on GDP of \$1,464 million, or 0.2 per cent of GDP in 1992. This would be balanced on the income side of GDP by an equivalent increase, most of which would probably be recorded under net income of unincorporated business.

Rent, room and board

Because rents in GDP are calculated as the product of the average rent and the stock of rented dwellings, any undercount in the stock will lead to an understatement of rents. Such an undercount can be related to the underground economy when apartments are overlooked by census enumerators for the very reason that they were purposely hidden (dwellings with a concealed entrance, or no separate entrance for instance) by owners who rent them on the black market.

Statistics Canada was able to calculate a net undercount (undercount less overcount) of the population and of households through a procedure known as a reverse record check after the 1991 Census results. The number of missed households was estimated at 227,000, and the number of missed tenant households, the ones relevant here, at 174,000. Most of these households lived in dwellings which had been properly enumerated, but erroneously classified as vacant. Although the number of actual dwellings missed was not verified directly, it is estimated to range between one quarter and one third of the number of missed households.

For the purpose of calculating the underestimation of rents on account of underground transactions, the number of purposely hidden rented dwellings was simply deemed equal to half of the estimated number of tenant households missed in the 1991 Census. This undoubtedly constitutes an upper limit. It is up to twice as many as the number of dwellings that Statistics Canada believes was missed. Moreover, close to 40 per cent of the missed households lived outside census metropolitan areas, where covert rentals would be infrequent. Finally, it is likely that a large number of dwellings were simply missed by error, while the assumption made is that all were missed because they were purposely hidden.

The stock of hidden rented dwellings in 1991 was multiplied by an average rent set as an upper limit at 90 per cent of the average space rent,⁴ to reflect the fact that these apartments are small and are usually rented below the market rate. This yielded the potential underestimation of paid rents. However, these hidden rented apartments are located in houses erroneously enumerated

⁴ Space rent excludes landlord expenses on utilities, janitorial services, etc. which are accounted for separately in personal expenditure. In recent years, it has been estimated at about 85 per cent of gross rent.

as single dwellings or duplexes and counted in the stock of owner-occupied dwellings. The rent imputed to an owner-occupied dwelling in the national accounts is deemed equivalent to the average rent for a tenant-occupied dwelling, adjusted by a coefficient reflecting the difference in the average area of each type of dwelling. The space coefficient attributed to houses with a hidden apartment occupying the basement or the upper floor would have been too high, and their imputed rent should be reduced accordingly by about 30 per cent, to derive the overestimation of imputed rents. The adjustment to GDP is the net result of deducting the overestimation of imputed rents and adding the amount of underestimation for the hidden rented dwellings.

The calculations in Table 6. pertain to 1991 and are shown for Canada; the actual calculations were done by province and yielded a slightly higher result of \$211 million (\$437 million for paid rents, less \$226 million for imputed rents), which was adjusted to a 1992 level by the increase in paid and imputed rents. The upper limit of what could be missing from GDP on account of covert rentals was \$220 million (\$454 million for paid rents, less \$234 million for imputed rents) in 1992, or 1.1 per cent of paid rents.

This maximum net amount should not be confused with undeclared rental income, which could be much higher. The gap between national accounts estimates and amounts declared to Revenue Canada with respect to net rental income grew from \$573 million in 1988 to \$1,680 million in 1991.

Table 6. Potential Underestimation of Rents Due to Covert Rentals, 1991

1. Missed households (thousands)	227
2. Missed households living in rented dwellings (thousands)	174
3. Missed rented dwellings, 50 per cent of L2 (thousands)	87
4. Average annual gross rent, (\$535 * 12) (dollars)	6 420
5. Average annual space rent, 85 per cent of L4 (dollars)	5,457
6. Average annual space rent, covert rentals, 90 per cent of L5 (dollars)	4 911
7. Paid rents, missed rented dwellings (\$million), L3 * L6	427
8. Average number of rooms, owner-occupied dwellings	7.0
9. Average number of rooms, rented dwellings	4.5
10. Rent blow-up factor, owner-occupied dwellings, L8 / L9 1.	56
11. Average annual space rent imputed to owner-occupied dwellings, L5 * L10 (dollars)	8 489
12. Owner-occupied dwellings affected, repeat L3 (thousands)	87
13. Rents imputed to owner-occupied dwellings affected, L11 * L12 (\$million)	738
14. Corrected rents imputed to owner-occupied dwellings affected, 70 per cent of L13 (\$million)	517
15. Overstatement of rents imputed to owner-occupied dwellings affected, L13 - L14 (\$million)	221
16. Net effect, i.e. effect on paid rents less effect on imputed rents, L7 - L15 (\$million)	206

Sources: 1991 Census for lines 1, 2, 4, 8 and 9; National Accounts for line 5.

Any hidden rentals of cottages and garages would have virtually no effect on GDP because a market rent is recorded in GDP for all of them, whether they are occupied by the owner or rented out. Hidden rents are de facto captured (cottages and garages cannot be hidden like basement flats), unless the imputation made is too low to cover rents actually paid.

A similar situation exists for rooms rented out in owner-occupied dwellings. The average market rent for a room is likely to be higher than the average rent imputed per room in owner-occupied dwellings. Any increase in estimated expenditure on 'lodging' to account for hidden rentals would be partially offset (in the proportion of about 75 per cent) by a drop in imputed rent on owner-occupied dwellings, leaving only the 25 per cent mark-up of the landlord to be added to GDP. As an upper limit, it is assumed that lodging paid is underestimated by 50 per cent, which implies that only 25 per cent of that amount is actually missing. Since about 60 per cent of the amount recorded under this heading is for rent in non-profit homes for the aged, which is not subject to underground transactions, the adjustment was applied to the remaining portion only, yielding \$35 million in 1992. Board paid is a similar case. Spending on food by all households has already been accounted for. What would be missing, again, is only the mark-up of the household providing board. Under the same assumptions as above (also applied to only 40 per cent of the recorded amount to account for board in non-profit homes for the aged), the maximum missing amount would be \$14 million.

Tips

Tips are calculated in the national accounts as a fixed percentage of gross business receipts, varying by industry and type of service provided (3 per cent for accommodation, 10 per cent for meals in restaurants, alcoholic beverages and hairdressing and 15 per cent for taxis). The upper limit of tips missing from GDP due to underground transactions can be calculated directly by applying the above percentages to the estimated value of skimming of receipts by these establishments, and to the sales of illegally manufactured wine and contraband liquor in licensed establishments. The resulting total is \$312 million, or 15 per cent of the \$2.1 billion recorded as the value of tips in Canada's GDP for 1992 as shown in Table 7.

Childcare

Childcare is an area where underground activity is considered to take place. However, national accounts estimates of spending on childcare are already adjusted considerably for under-coverage (by over \$1 billion in 1992).⁵ One way to assess the validity of these estimates is to compare them with the amounts captured in the Family Expenditure Survey (Famex) under this heading. Two adjustments were made to bring the datasets onto a comparable basis. First, estimates

⁵ It would be inappropriate to consider all income from babysitting in the home as undeclared or unreported. Most of it is not declared simply because it is below the taxable threshold. In addition, neither Statistics Canada nor any other Government department or agency collects data on income earned from babysitting. As a result the national accounts adjustment is for under coverage, rather than under reporting.

Table 7: Potential underestimation of tips due to underground transactions, 1992

	Total	Meals	Alcohol	Rooms
Potential understatement of receipts				
	Millions dollars			
1. Hotels and motor hotels	224	56	22	146
2. Motels	171	43	17	111
3. Licensed restaurants	820	697	123	
4. Unlicensed restaurants	829	829		
5. Taverns, bars and night clubs	236		236	
6. Illegal wine, licensed establishments (\$52+\$103)	155		155	
7. Contraband, spirits, licensed establishments (\$154+\$462)	616		616	
Sub-total, accommodation and food services	3 051	1 625	1 169	257
8. Barbers and beauty shops	373			
9. Taxicabs	30			
Applicable percentage of tips				
		Percentage		
10. Hotels and motor hotels		10	10	3
11. Motels		10	10	3
12. Licensed restaurants		10	10	
13. Unlicensed restaurants		8		
14. Taverns, bars and night clubs			10	
15. Illegal wine, licensed establishments			10	
16. Contraband, spirits, licensed establishments			10	
17. Barbers and beauty shops	10			
18. Taxicabs	10			
Potential underestimation of tips				
	Millions dollars			
19. Hotels and motor hotels	12	6	2	4
20. Motels	9	4	2	3
21. Licensed restaurants	82	70	12	
22. Unlicensed restaurants	66	66		
23. Taverns, bars and night clubs	24		24	
24. Illegal wine, licensed establishments	15		15	
25. Contraband, spirits, licensed establishments	62		62	
Sub-total, accommodation and food services	270	146	117	7
26. Barbers and beauty shops	37			
27. Taxicabs	5			
28. Total, potentially missing tips	312			

of government subsidies paid in respect of daycare were deducted from the national accounts total, since the figures recorded in the Famex pertain only to what is spent directly by households.

Second, a misclassified amount of \$750 million was transferred out of the national accounts estimates.

Table 8. Spending on Child Care: National Accounts versus Famex, 1992

	<u>FAMILY EXPENDITURE SURVEY</u>			<u>NATIONAL ACCOUNTS</u>
	Spending \$millions	Households reporting per cent	Households reporting thousands	Spending \$millions
1. Day-care centres and day nurseries	1 165	5.2	530	n/a
2. Week-day care in the home	553	2.4	245	n/a
3. Sub-total, week-day child care	1 718			
4. Other child care outside the home	638	4.1	420	n/a
5. Other child care in the home	280	8.7	890	n/a
6. Sub-total, other child care	918			
7. Total, child care	2 636	14.5	1 480	4 262
8. Less: subsidies -				500 ²
9. Less: amount to be transferred to domestic services -				750 ²
10. Comparable total, child care (7 - 8 - 9)	2 636			3 012

n/a Not available

Note 1. The percentages of households reporting are not additive because some households report spending in more than one category.

Note 2: National accounts estimate.

Source: **Family Expenditure in Canada, 1992**, Catalogue No. 62-555 and National Accounts..

The Famex figures, shown in Table 8 above, look quite plausible at face value: \$1,718 million for spending on week-day childcare (\$1,165 million in day-care centres and \$553 million in the home) plus \$918 million in other childcare expenses, for a total of \$2,636 million, yielding an average of \$1,780 for the 14.5 per cent of households (about 1.5 million) who reported any spending. The amount of \$1,718 million for week-day childcare in 1992, both in terms of the number of households reporting (a maximum of 775,000, since households may spend both under lines 1 and 2) and average spending (\$2,220), was consistent with the amount of \$1,585 million claimed as income tax deductions for child care expenses by 666,000 households (an average of \$2,380 per household) in 1991.

It is reasonable to assume that the other 800,000 or so households who reported any expenditure to the Famex, often only for occasional childcare, did not spend as much on average as those who needed week-day child care and had receipts for tax purposes. Thus the average

spending spread over 1.5 million households is lower than for those who claimed the tax deduction. The total recorded in the Famex still exceeds that based on taxation statistics by about \$1 billion.

The taxation statistics also reveal that a total of 4.8 million households claimed personal exemptions for children under 18 in 1991. Of those, over 1.1 million were lone parent families with a median income of \$21,000, who would find it difficult to spend \$1,780 annually on childcare. Among the 3.7 million husband-wife families with children, over 1.1 million had a total income before tax below \$40,000, leaving 2.6 million relatively well-off families with children under 18. Only a portion of these families would have young children who might require childcare. The 1.5 million households who reported in the Famex as having spent an average of \$1,780 on child care would represent 31 per cent of all families with children under 18, and close to 60 per cent of those with children under 18 and an income over \$40,000.

The national accounts estimates, by comparison, are roughly 15 per cent higher than those from the Famex. This translates into either 15 per cent more families (225,000) spending \$1,780 each annually, or the same number, 1.5 million, spending on average \$2,047. There are no doubt underground transactions relating to childcare, but it would appear at face value that the under-coverage adjustment already incorporated in GDP is sufficient to account for them. The \$137 million estimated as skimming of receipts by day-care centres and day nurseries would raise to 19 per cent the gap between the national accounts estimates and the figures recorded in the Famex, and should be considered the upper limit of what may still escape measurement due to underground transactions relating to childcare.

Summary

In total, it was estimated that, as a maximum, underground transactions relating to personal expenditure on goods and services could have amounted to \$14,830 million in 1992, or 3.8 per cent of spending without taxes, and 3.5 per cent of spending including taxes. This total is distributed as shown in Table 9.

The share of 3.5 per cent for underground transactions in personal expenditure is quite high, and essentially reflects the unrealistic assumptions made for skimming (15 per cent and 25 per cent respectively of gross receipts of small businesses in retail trade and services). A more plausible assumption for skimming would be in the order of 10 per cent of gross business receipts in retail trade (or 15 per cent for repair shops in retail trade) and 20 per cent in services. It would imply potentially hidden receipts of \$7,824 million (instead of \$10,836 million), and would further reduce the estimate of tips by \$47 million, bringing down the estimated underground transactions potentially missing in personal expenditure to \$11,771 million, or 2.8 per cent of the total.

Table 9. Upper Limit of Underground Transactions Potentially Missing from Personal Expenditure, 1992

	Underground transactions	Published estimates	Proportion
	Million dollars		per cent
1. Skimming of receipts by businesses selling to households	10 836		
2. Contraband tobacco	1 057		
3. Contraband spirits	768		
4. Illegally manufactured wine	515		
5. Licensee mark-ups on illegal alcohol	565		
6. Rent, room and board	269		
7. Tips	312		
8. Professional services	208		
9. Food	50		
10. Domestic and household services	250		
11. Sub-total	14 830	393 053	3.8
12. GST and provincial sales taxes	0	26 483	
13. Total	14 830	419 536	3.5

Overall results

Under the various assumptions outlined earlier, the maximum underestimation of GDP in 1992 on account of underground transactions not recorded on the expenditure side would be \$18.5 billion, or 2.7 per cent of GDP, derived as shown in Table 10. On the income side of GDP, this amount would all be recorded either as wages and salaries, corporate profits or net income of unincorporated business, with the largest part probably as net income, given the type of activities commonly associated with underground production (smuggling, home renovations and household services).

It should be noted that the total of \$18.5 billion shown in Table 10 is an estimate of the potential maximum upper limit, based on plausible but extreme assumptions, of the value of transactions not captured in the national accounts. The 'true' amount of under-estimation would be less than this total.

Table 10. Upper Limit of Underground Transactions Potentially Missing from Expenditure-based GDP, 1992

	<u>Underground transactions</u>	<u>Published estimates</u>	<u>Proportion</u>
	Million dollars		per cent
1. Personal expenditure on goods and services	14 830	419 536	3.5
2. Government current expenditure on goods and services	0	148 377	
3. Government investment	0	16 508	
4. Business investment in fixed capital	3 578	113 440	3.2
5. Residential construction	3 578	43 992	8.1
6. New residential construction	1 883	20 934	9.0
7. Alterations and improvements	1 695	12 153	13.9
8. Transfer costs	0	10 905	
9. Non residential construction	0	30 189	
10. Machinery and equipment	0	39 259	
11. Business investment in inventories	-15	-2 558	-0.6
12. Exports	1 100	181 948	0.6
13. Merchandise	800	156 567	0.5
14. Non-merchandise	300	25 381	1.2
15. Less: Imports	1 003	185 751	0.5
16. Merchandise	1 003	147 588	0.7
17. Non-merchandise	0	38 163	
18. Gross Domestic Product at market prices	18 490	688 541	2.7
19. Final domestic demand (1 + 2 + 3 + 4)	18 408	697 901	2.6

CROATIA

Introduction

A research study on the underground economy in Croatia for the period 1990 to 2000 was undertaken by the Institute of Public Finance in cooperation with the national accountants from the National Statistical Office of Croatia. The description that follows is an abstract from the findings of this project.

In 1996 the Institute of Public Finance carried out research of the underground economy in Croatia for the period 1990 to 1995. At that time it was believed that in all industries there is a part that is not included in the official economy, i.e. its economic activities do not form a part of official statistics. The size of, and changes in, the underground economy are important, because they can be a source of changes in the economy and can have an effect on the direction and strength of economic policy. It is most likely that the share of the underground economy in the GDP of Croatia in 1995 was at least 25 per cent. Estimates by sector ranged from 8 per cent of gross product in industry to 68 per cent of gross product in trade. In the 1990-1993 period, the share of the underground economy in GDP was estimated to be higher. In the 1994-1995 period it was impossible to make any final judgment, because although most of the indicators suggested a fall, some important indicators actually pointed to an increase in the scope of the underground economy over this period.

During 2001, the Institute of Public Finance re-started the previous research and the following information is based on a number of papers created during this new research.

Defining the underground economy

The common definition of the underground economy differs: it may include illegal activities, i.e. forbidden production and distribution, unreported activities (especially when tax regulations are violated), and other activities, not necessarily illegal in nature, that are not recorded in the national accounts. Of course, activities often overlap and it is not always easy to distinguish between them.

Measurement of the underground economy

Various approaches have been used to measure the underground economy, such as balancing national accounting identities, monetary methods, Labour Force Surveys and tax evasion studies. Attempts have also been made to evaluate the underground economy in individual industries, e.g. in agriculture, industry and trade, tourism and foreign trade.

Comparisons of results obtained by different methods are considered risky. For example, experience has shown that the measurement of the underground economy via balancing

discrepancies in the national accounts always gives relatively low results, unlike monetary methods, which always give relatively high results. Apart from this, a number of specific problems in Croatia should also be taken into account.

In Croatia, the period from 1990 to 2000 was marked by considerable changes in the statistical system (in both methods and concepts), discontinuity in statistical research, the creation of numerous new units which placed low priority on statistics collection, and the disappearance of large business systems. In addition, high rates of inflation occurred in the earlier years.

The changes in the quality and scope of data from 1990-2000 make it difficult to be able to conclude with any certainty whether the sudden reduction in the value of the underground economy was a real reduction, or simply the result of a better coverage of the official economy as a consequence of improved national accounts statistics. It is difficult to determine the effect of statistical practice on the results, at least partly because of lags in updating the input-output tables.¹

Measurement of the underground economy at the level of the economy as a whole

Measurement by discrepancy in the national accounts

The data up to 1995 incorporate revised data from the previous research, based on later estimates that were compiled from improved coverage of individual components in Croatia's GDP. For the period up to 1998 the method of estimating personal consumption on the basis of the total supply of goods was applied, while for later periods the results of surveys of household consumption carried out by the National Statistics Office were used. In order to assess the consistency of the results obtained from the two methodologies, 1995 and 1998 were examined using both methodologies. The discrepancies in the results obtained were negligible.

It was estimated that the underground economy in the 1990-1995 period amounted to an average of 25.4 per cent of GDP, which is within the limits of earlier estimates. For the 1996-2000 period, the share of the underground economy was estimated at an average 10.4 per cent of GDP.

It should be stressed, however, that the method of balancing the national accounts gives lower estimates of the underground economy than most other methods. Although it has a number of drawbacks, the method does provide a general picture, and it can be considered the lower limit for the share of the underground economy in GDP. It is a very good point of departure for comparison with alternative methods of estimating the value of the underground economy.

Measurement using monetary methods and the consumption of electricity method

Monetary methods of the estimate of the underground economy are relatively straightforward to implement, but are questionable because of the assumptions concerning the

¹ In Croatia, input-output tables for 1987 are the latest available.

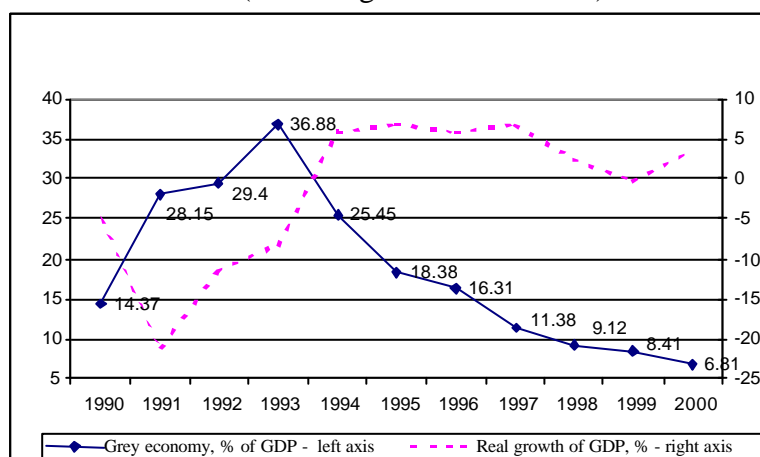
determinants of demand for cash that underlie them. They do not give an estimate of the absolute level of the underground economy but can be used for an evaluation of its dynamics. It should be stressed that widespread dollarisation² and the use of foreign cash in the underground economy constitute particular obstacles to the reliability of monetary methods as estimators of the underground economy.³

It is considered that in Croatia there are a number of problems that stand in the way of the application of monetary methods to measuring the underground economy, e.g. the short time series available and data deficiencies. Nevertheless, attempts to estimate the underground economy have been made using the following methods:

- the simple Gutmann approach (ratio of domestic cash and deposits). The results over the period from 1995 to 2000 vary between 25 per cent and 34 per cent of GDP, and show a rising trend;
- estimates based on the amounts of foreign cash in circulation. The results using this method vary between 22 per cent and 27 per cent, and also show an upward trend;
- the electricity consumption method. The results vary between 24 and 30 per cent, the trend again being upwards.

If all three approaches are compared, the inter-year variations are very high, but the underground economy shows a consistently rising trend (Figure .1-3).

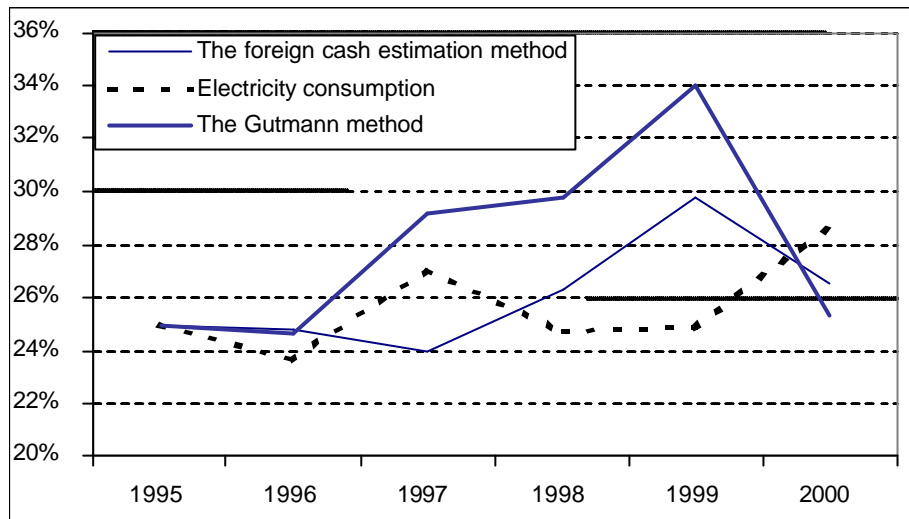
Figure 1. Share of the underground economy in GDP
(Percentage of official GDP)



² Here the unofficial dollarisation is considered as distinct from the official acceptance of a foreign currency as a lawful means of payment. This is the use of a foreign currency (not necessarily the dollar, but also the mark or the euro) as money in the local economy.

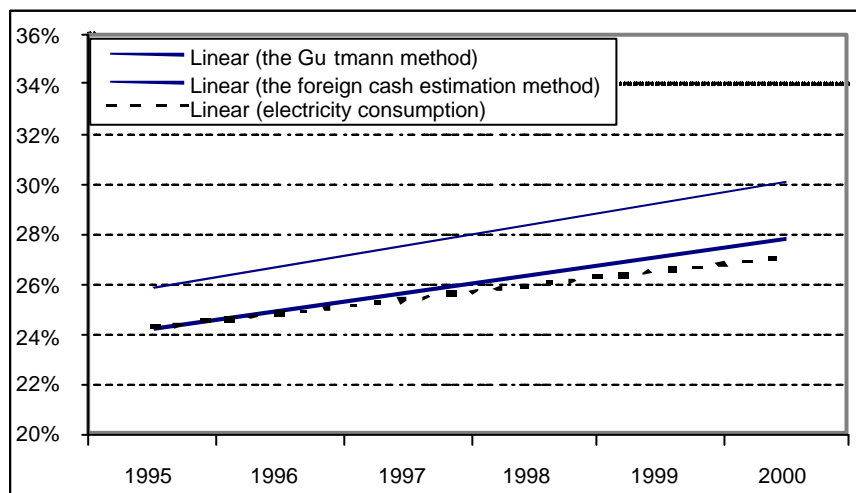
³ See Chapter 12 of the OECD *Handbook for the measurement of the non-observed economy* for an explanation of the problems associated with monetary methods of estimating the hidden economy.

Figure 2. Evaluation of underground economy dynamics



Source: Sosic and Faulend (2001).

Figure 3. Evaluation of underground economy dynamics, linear trends



Source: Sosic and Faulend (2001)

Measurements using the Eurostat method⁴

Estimation of the underground economy according to the Eurostat method has also been made. Under this method, employment data from official sources and Labour Force Surveys are compared. The methodology covers illegal activities such as prostitution, drug dealing and so on. The difference between the officially recorded and the expected rates of activity of the population is analysed. The expected rates are based on rates recorded in reference years (when it is assumed there was no underground economy) or in reference countries with a similar economic structure.

Using the Eurostat method, the value of the underground economy in 1998 was estimated to be 12.2 billion kuna, or 11.1 per cent of gross value added GVA and 8.9 per cent of GDP, and in 1999, 11.5 billion kuna, or 10.1 per cent of GVA and 8.1 per cent of GDP.

The major part of the underground economy in Croatia (around 65 per cent) is related to non-reported labour, which in 1998 accounted for 8.2 billion of the 12.2 billion kuna, and in 1999 for 7.4 billion of 11.5 billion kuna. The total underground economy in 1999 fell compared with 1998, in line with a fall in unregistered employment, the most significant element in the estimates of the underground economy.

The observations of the share of the underground economy in individual industries, as a percentage of GVA, are as follows: the greatest share in 1999 was attributable to trade (retail and wholesale), with a 25 per cent contribution; this was followed by healthcare, with a 14 per cent share; construction, with 13 per cent; and fishing, at 12 per cent. The lowest shares were attributed to electrical supply (1.4 per cent); agriculture and forestry (0.4 per cent); and public administration (0 per cent). In absolute terms, the greatest shares of GVA were accounted for by trade - 3.0 billion kuna; manufacturing - 2.5 billion; and transport and communications - 1.1 billion kuna.

The Eurostat method differentiates between several forms of unrecorded activity within the underground economy, for example, unrecorded due to statistical reasons, unrecorded for economic reasons, informal, illegal and so on. Within the category of unrecorded statistics due to economic reasons, there is a distinction between under-reporting (of, for example, income, to evade taxation) and non-reporting (i.e. not registering as an enterprise).

In Croatia the main component of the underground economy is unreported employment associated with the black market, but under-reporting is not unimportant either.

⁴ In 2001, the National Statistics Office of Croatia in collaboration with the Economic Institute Zagreb, began a project to estimate the underground economy in Croatia according to the Eurostat methodology. The methodology and first results of the research are described here. An attempt has been made to link the Eurostat approach with classical scientific methods so that interested readers should find it easier to see the differences and similarities of different scientific and statistical approaches during establishment of the scope of the "grey" economy in Croatia during the 1998-1999 period.

Estimates of the underground economy in individual industries

Agriculture

The results of the estimates are very stable for the whole of the 1990-1999 period, with an average lower limit of 6.8 per cent and an upper limit of 16.9 per cent.

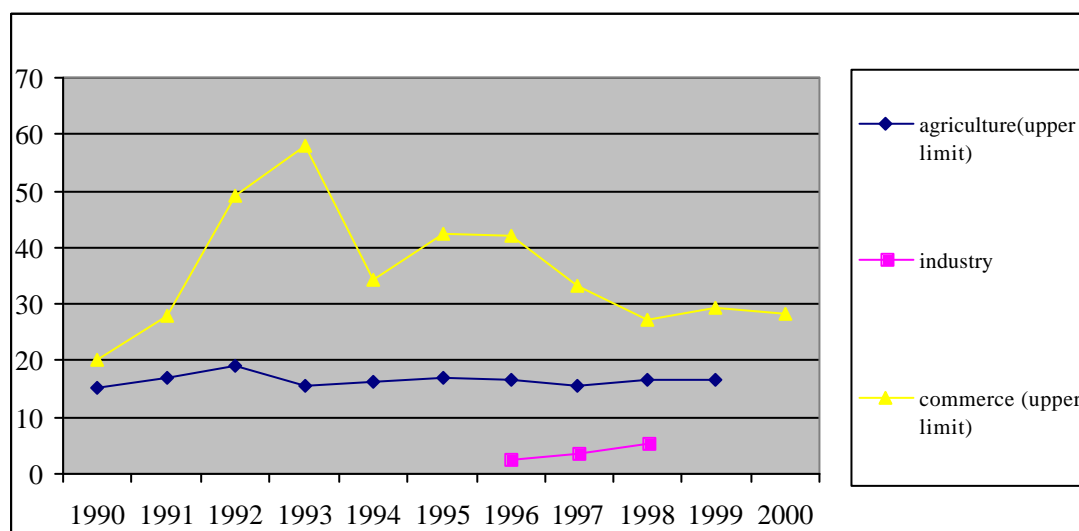
Industry

Industry is a branch with a relatively low, though growing, proportion engaged in the underground economy, from 2.3 per cent in 1996 to 5.2 per cent in 1998. The results are lower than in other branches, but one should recall the statement that the speed of the transition determines the growth of the underground economy. Small business and private initiatives emerged earlier and were more widespread in trade and other service industries, and have therefore experienced stronger growth in underground activities. With the development of competition and the establishment of large businesses, the underground economy starts to fall.

Trade

The results of estimates of the underground economy in trade vary a good deal, with sudden growth in 1990-1993, a sudden fall in 1993-1994, followed by mild declines or stagnation from 1995 on. A negative correlation between GDP and the underground economy is noticed in trade in some years, indicating that careful attention to this phenomenon is warranted.

Figure 4: The underground economy in agriculture, industry and trade
(Percentage)



Source: Mikulic and Madzarevic (2001)

The relationship between the three industries agriculture, industry and trade was the same for the whole decade – the underground economy is largest in trade, smaller in agriculture, and smaller still in industry (Figure 4). The trends, however, are essentially different: the underground economy is lowering in trade and stagnating in agriculture, but rising in industry. The explanation is fairly simple – the relative speed of the transition within sectors, the development of a number of new, mainly small business units and the number of employees, and the relative weakening of the importance of large businesses. In short, the transition was most rapid in trade and slowest in industry – with corresponding growth rates in the underground economy.

Tourism

Estimates of the underground economy in tourism were made using various approaches. The results are not comparable with the previous (1997) research, due to the use of different methodologies.

By comparing the results of similar research in countries that are the main source of tourists to Croatia (Austria, the Czech Republic, Germany, Italy, Slovakia and Slovenia) with registered bed-nights in Croatia, it was calculated that the underground economy in 1998-2000 ranged from 18.6 per cent to 28.8 per cent of the registered total foreign bed-nights. This translates into forgone tax receipts of the government rising from 0.4 per cent to 0.6 per cent of GDP in 1998 to 0.5 per cent to 0.8 per cent of GDP in 2000.

Using an analysis of water consumption in and out of season, estimates of the underground economy in tourism in 1998 ranged from 33 per cent to 39 per cent of the total bed-nights in private lodgings, while in 2000 it ranged from 12 per cent to 22 per cent. Expressed as a percentage of GDP, the forgone tax receipts lie between 0.10 per cent and 0.12 per cent in 1998, and 0.05 per cent and 0.10 per cent in 2000.

These results should be viewed with caution, as they are preliminary and involve a number of pioneering approximations. While they provide a basic insight into the magnitude of the hidden activity, further research is needed to complement the work carried out to date.

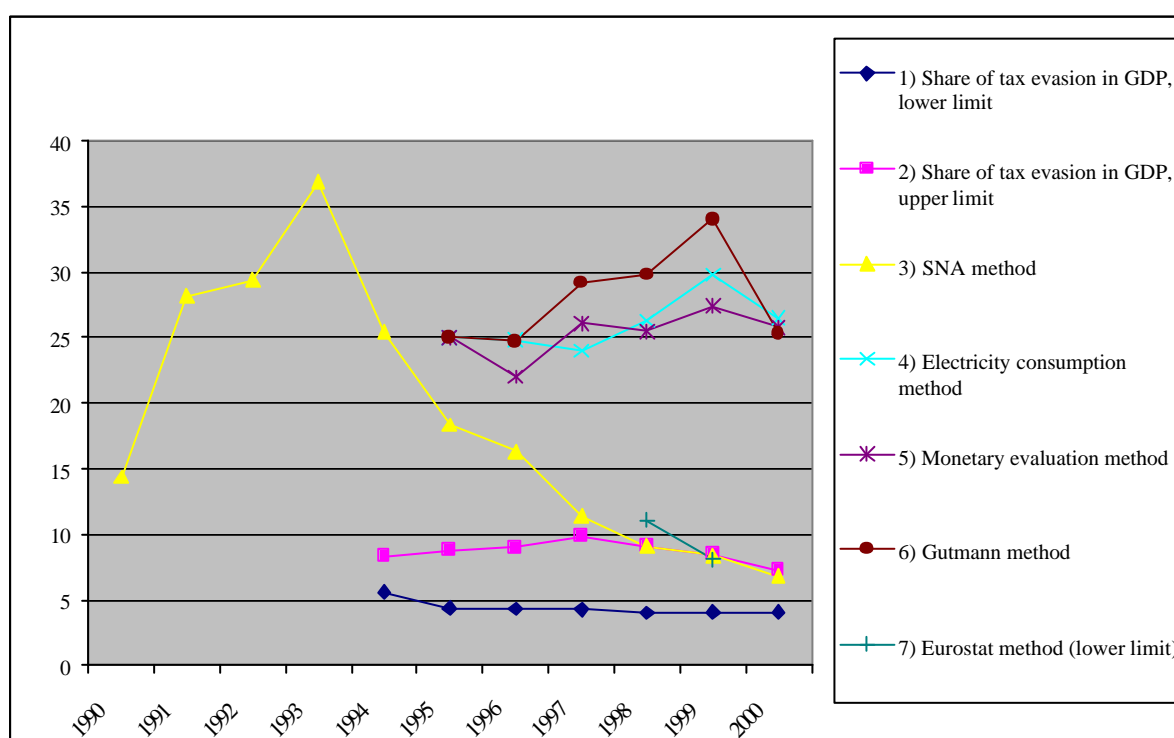
Estimates based on electricity consumption and the inflow of cash and cheques have not provided useful results, due to problems with data quality. However, with continuing improvements in the quality of the statistical sources, these methods would also be expected to provide useful indicators in the future.

Results of measuring the size of and changes in the underground economy in Croatia

Measured by reconciling discrepancies in national accounting aggregates, the underground economy grew in the period from 1990 to 1993, reaching a peak of almost 37 per cent of GDP. After 1993 it recorded constant falls, to less than 7 per cent of GDP in 2000. During the period from 1990 to 1995, the underground economy averaged about 25 per cent of GDP, while in the

1996-2000 period it averaged about 10 per cent of the value of GDP. The results appear consistent with the circumstances at the time – the war, hyperinflation, the beginning of the transition and reform in the earlier years, followed by increasing stabilisation and strengthening of the ethical and legal system in the later years. Although the overall trend is very likely well reflected, the extent of the underground economy has probably been overestimated for the first period and underestimated for the second period. Estimates based on the Eurostat method, for which only two years' results have been obtained, also largely coincide with those obtained from the method involving reconciliation of discrepancies in the national accounting balances (8.9 per cent as against 9.1 per cent in 1998, and 8.1 per cent as against 8.4 per cent in 1999) (Figure 5).

Figure 5. Estimate of the underground economy by various methods
(Percentage)



Source: Lovrinčević, Mikulić and Nikšić-Paulić (2001), Madžarević-Sujster (2001), Madžarević-Sujster and Mikulić (2001), Sosić and Faulend (2001).

The estimates derived from monetary methods (the ratio of domestic cash and deposits and estimates of foreign cash in circulation) and the electricity consumption method are quite different.

The size of the underground economy as measured by these methods ranged from 22 per cent to 34 per cent of GDP over the period 1995 to 2000.

The observed differences in results may be due to shortcomings in the monetary methods, which do not account for the particular circumstances faced by economies in transition.

As noted earlier, the observed decline in the underground economy over the last decade may in fact be a reflection of improvements in the quality and coverage of official statistics, rather than an indication of a reduction in underground activity. It is also likely that as the transition process continues, the structure of the hidden economy may be shifting from being characterised by non-registered enterprises to underreporting by registered enterprises.

CZECH REPUBLIC

Definitions and concepts

The Central Statistical Office (CSO) of the Czech Republic took part in the Pilot Project on Exhaustiveness (PPE) launched by Eurostat for EU Candidate Countries. The experience gained in the work on this pilot study was used in the assessment of the exhaustiveness of the 1998 national accounts and in making adjustments to ensure the comprehensiveness of production, income and expenditure-based GDP estimates for 1998.

Adjustments of two kinds are made to the national accounts. The first type are referred to as methodological and conceptual adjustments, the main ones being for:

- own-account consumption of agricultural products;
- individual house construction;
- imputed rent;
- holding gains / losses;
- financial lease payments;
- consumption of fixed capital for budgetary units;
- adjustments to output and intermediate consumption.

The second type of adjustment is made to ensure the exhaustiveness of the national accounts, and relates to the non-observed economy. The exhaustiveness adjustments made to the 1998 national accounts are classified according to the Eurostat tabular framework.

The description that follows refers to exhaustiveness adjustments. Estimation of the methodological and conceptual adjustments is not considered here.

Sources and estimation methods

Statistical underground (non-response)

The grossing-up calculations for non-responding units are based on information from the Business Register (BR). Enterprises that did not respond were investigated to determine whether or not they were active. Incomplete questionnaires or those filled in improperly so that they were not usable for further statistical processing were regarded as part of the non-response count. Economically active units are units which existed in the Business Register on a legal basis (according to the BR) and performed economic activity for at least one day during the reference period (1998). Inactive (dormant) units and units that had been de-registered were considered to be outside the target population for the survey.

As part of the estimation the estimates for non-response are added to the whole population

automatically, and are not treated separately when the national accounts are compiled. However, information concerning non-response reveals weaknesses in the data that are taken into account when final balancing and adjustments, if any, of the figures for individual industries are made.

Statistical underground (non-updated register)

Quantification of under-coverage due to non-updated registers was carried out for the first time within the PPE framework for 1997 and estimates were also included in the 1998 estimates. The significance of this type of non-observed activity for 1998 is significant, especially in trade and construction.

The number of missing units was quantified by the administrators of the Business Register with reference to the survey "PANEL 1998" (PANEL PROJECT did not cover agriculture, forestry, general government or non-profit institutions). Estimates of production for the missing units were based on the average figures for the activity of surveyed units in the same industry and size category.

Statistical underground (not registered, not surveyed)

The Business Register does not contain details of individuals engaged in artistic activities (e.g. sculptors, painters, writers), or journalists, professional sportsmen and some others. The Register of Health and Social Insurance Payers plays no role for identifying these units either, because if the origin of the individual's income is author's royalty or rent, then registration for social insurance is not needed. Neither is there any need to register for health insurance if the individual's income is from rent only.

Data on the extent and nature of activities not recorded in the Business Register for the reasons mentioned above, but officially reported in tax returns (especially author's royalties, incomes of artists and sportsmen, income from rent, income from gardening services and from a number of other similar activities) were taken from the tax returns as reported. Intermediate consumption was estimated with reference to similar reported activities.

The estimate does not directly include under-threshold production activities, which are not obliged to submit tax returns, nor does it include intentionally concealed activities, for which there are only indirect indicators. On the other hand, it can be assumed that the above items would be partially included in national accounts via the adjustments made in the balancing of the commodity flows.

Economic underground (underreporting)

Underreporting is a widespread phenomenon. Usually reporting units understate their income in order to diminish their base for tax assessment and social and health insurance

contributions. Within the framework of the Pilot Project “Exhaustiveness of the Czech National Accounts”, a survey especially focussed on this phenomenon was carried out in 1999. The results were used in national accounts compilation for 1997 and 1998.

Due to the nature of the investigated phenomenon, respondents to the survey remained anonymous. A variety of experts, mostly accountants, tax and financial advisors and auditors were approached for estimates.

The questionnaire asked that data be broken down by CZ-NACE classification categories, by number of employees. Information on the extent and nature of underreporting was requested. The resulting estimates were classified following four items: concealed sales/revenues, overstated material costs, overstated costs of services and concealed wage costs.

Based on the responses to the survey, a set of 135 “fictitious” units, defined by type of activity (CZ-NACE) and size (number of employees), was generated. A cross table of average values (adjusted for outliers) was constructed for each item mentioned above. The calculated rates of misreporting of data (per cent of understatement or overstatement of the reported item) are listed in Table 1.

Table 1. Estimated rates of misreporting of data, per cent

CZ-NACE categories	Sales*	Materials**	Services**	Wages***
A+B	12.28	2.60	0.54	3.05
C+D+E	5.41	2.98	3.11	1.00
F+I	9.90	8.42	8.39	2.99
G+H	23.08	9.50	12.15	7.85
J+K+L+M+N+O	2.56	5.38	10.88	0.34
TOTAL	8.74	4.40	7.69	2.63

* Understatement

** Overstatement

*** Concealed

The rates in Table 1 were then applied to the respective categories of statistically observed units. For small entrepreneurs (Household sector-S.14), misreported rates were calculated as arithmetic averages of the first and second size groups (i.e. 0 to 19 employees). The calculations for output and intermediate consumption used in the 1998 national accounts compilation are shown in Tables 5 and 6.

Only the output of small and medium-sized private non-financial enterprises and individual entrepreneurs was adjusted for underreporting. The share of adjustments in reported output and intermediate consumption was 5.6 per cent and 4.5 per cent respectively, on average.

Economic underground (intentionally not registered)

Non-registration of small businesses was quite prevalent in the past, but at the beginning of the 1990s its extent was restricted by new legislation which made it possible and easy for small entrepreneurs to obtain licences.

However, the number of non-registered units has been rising again recently. According to observations in the districts of Southern Moravia, various types of non-registered business activities have re-emerged in both rural and urban areas. This is due to considerably high unemployment, out-of-date legislation and overall low efficiency of the regulation of activity. Some small entrepreneurs intentionally avoid registration so as not to lose social benefits (if registered as unemployed) and to evade paying taxes and social and health insurance contributions. Craftsmen do not see advantages in being registered for business, and there is no risk of audits and fines for non-registration.

No estimates of the number and types of unregistered units, their size or the nature of their activities have been made so far. It is expected that these activities will be quantified when the labour balance method of estimating output is introduced.

Informal sector

Only some of the production activities of households are included in the informal sector. Intentionally unregistered business activities are allocated to Economic underground and part of secondary employment and service activities are classified to Statistical underground. Only occasional household production activities in agriculture (i.e. activities which are not reported to tax authorities because the income generated by them is under the determined threshold), and household personal services, are included in the informal sector.

Non-reported income from sales of agricultural products is estimated on the basis of tax returns for similar kinds of activity.

Illegal activities

To estimate illegal activities, use is made of several sources of information. These are crime statistics, non-governmental humanitarian organizations, information from the press and technical publications. The estimates of illegal activities, except for prostitution and the sale of stolen goods, are still experimental and therefore only the estimates for prostitution and the sale of stolen goods are incorporated into the national accounts.

Sales of smuggled goods

Illegal imports of goods for resale is a widespread phenomenon, especially with regard to

tobacco products, alcoholic beverages, motor fuels, clothing, footwear, second-hand (frequently stolen) cars, etc. The prices of these goods are considerably below the price of comparable, legally traded products. Explicit estimates for sales of smuggled goods are not made, although crime statistics do provide figures on smuggling and customs duty evasion. It is assumed that these sales are part of the sales of small retailers (particularly stall-holders), for which estimates of concealed incomes are made elsewhere.

Production, trade and consumption of drugs

The consumption of drugs was estimated using data on both supply and demand. Since the calculations are experimental ones and refer only to 1999 they were not incorporated into the 1998 national accounts. Future plans are focussed on obtaining regular information and the parallel estimation of production, exports, imports and final consumption of different kinds of drugs. A brief description of the experimental estimation and results are presented below.

The supply side estimate was based on information on seized amounts, the proportions intended for use in the Czech Republic, and purity of imported (manufactured) drugs and of drugs sold in the street, provided by the National Anti-drug Headquarter Police and the General Directorate of Customs. The average price of drugs sold in the street was obtained from experts dealing with the prevention and treatment of drug addiction. The results of the calculations are shown in Table 2.

Table 2. Estimate of final consumption of drugs from the supply side, 1999

Drug	Seized amount (g or pcs)	Rate of seizure (per cent)	Rate of destination for use	Purity of imported drugs (per cent)	Purity of drugs sold in street (per cent)	Price of drugs sold in street (CZK per g/pc)	Final consumption (mil CZK)
Heroin	96 830.8	6.500	0.33	85	20	1 000	1 954
Pervitin	21 400.0	3.800	0.95	85	20	900	1 969
Cocaine	131 488.9	50.000	0.05	85	60	2 500	23
LSD	18.0	0.004	0.50	1	1	280	63
Extáze	673.0	0.065	0.50	1	1	280	145
Marihuana	21 863.4	0.500	0.80	65	20	250	2 828
TOTAL	x	x	x	x	x	x	6 981

The estimate from the demand side was based on the number of drugs users, average consumption by kind of drugs per month/year and the street prices of drugs. The data were provided by the Hygienic Station of Prague, non-government organizations engaged in the prevention and treatment of drug addiction and crisis centres. The results are presented in Table 3.

Table 3. Estimate of final consumption of drugs from the demand side, 1999

Drug	Number of drugs users	Street price (CZK per g/pc)	Average annual consumption (g or pcs)	Final consumption (mil CZK)
Heroin	5 400	1 000	360	1 944
Pervitin	12 000	900	180	1 944
Cocaine	300	2 500	30	23
LSD	2 000	280	100	56
Extáze	5 100	280	100	143
Marihuana	150 000	250	75	2 813
TOTAL	174 800	x	x	6 922

Prostitution

Prostitution services are mostly provided by domestic prostitutes; however, as the major part of the services is provided to non-residents, both domestic and exported services are involved. The estimate of the value of prostitution services in 1998 was 5.7 billion CZK. Use was made of reports about the number of prostitutes (19,000), months worked per year (10 months) and average monthly income (30,000 CZK). The amount accounted for by exports was estimated to be 4.7 billion CZK, while the remaining 1 billion CZK represented services to residents. It was assumed that intermediate consumption was equal to 20 per cent of the value of the services provided.

Sales of stolen goods (fencing)

Thefts from dwellings, houses and shops, from trucks and passenger cars and subsequent resale are a common phenomenon at present. It can be assumed that almost all stolen goods are intended for resale through middlemen (fences).

The theft itself is not a productive activity and should not be recorded in the national accounts. However, the activity of middlemen and the subsequent monetary transactions should be recorded in the accounts. It can be expected that some of these monetary transactions have been already captured in the national accounts by way of normal estimation procedures, and that some stolen goods are sold legally on the open market.

The trade margins of middlemen dealing with stolen goods were estimated only for the case of passenger cars. It was based on crime statistics data and was determined at 10 per cent of the value of stolen vehicles (or about 0.4 billion CZK for 1997). Sales of other stolen goods have not been explicitly taken account of as yet, since a large number of the sales of stolen goods occur in what are, under current legislation, legal business activities.

Corruption (bribery)

When selling goods, companies frequently consider bribes as commission for mediation or as other expenditure to be included in intermediate consumption. Experts in crime statistics on the basis of offences proved estimate the amount of bribes. Bribes frequently occur in banking, where they are considered to be equal to 3 to 5 per cent of loans provided. Inclusion of bribes in national accounts has not yet been considered.

Other criminal offences

Problems in legislation and enforcement have enabled the rise of a number of illegal activities such as tax evasion by the following methods: by not paying taxes at all, applying inappropriately advantageous rates of income tax, collecting excessive VAT amounts on the basis of fictitious business transactions with non-existent companies, and not transferring deducted social and health insurance contributions and wage tax advances to the treasury.

The national accounts record all of these transactions as they appear in enterprises' accounts. Only transactions with non-existing companies can affect the balance; the other criminal offences have no influence. A failure to pay taxes or social and health insurance contributions is reflected in the national accounts as an increase in obligations towards the state. The provision of fictitious services increases fictitious output as well as fictitious intermediate consumption by the same amount and has therefore no influence on GDP. Stripping through sales and purchases of financial assets and liabilities for "agreed" prices will show itself by fluctuations in the revaluation account of respective sectors or sub-sectors. Crime statistics provide information on the extent of this activity - about 7.4 billion CZK. Even so, this activity was not imputed into the national accounts, as the extent to which the transactions are already included in enterprises' books, and consequently in national accounts, cannot be identified explicitly.

Other types of under-coverage

Other types of under-coverage, which include wages and salaries paid in kind and tips, are mostly accounted for in the process of balancing the source data. While adjustments have been made to income estimates for payments in kind, no explicit adjustments have been made for tips (although they are implicitly covered in estimates for non-reported income).

The balancing adjustments and other corrections to primary source data are carried out on the basis of analyses for each sub-sector and, within the sector, for each industry at the CZ-NACE three-digit level. In particular, the following indicators are examined:

- ratio of intermediate consumption to output;
- ratio of social insurance contributions to gross wages;
- average monthly wages of workers;
- value added per worker.

The share of intermediate consumption in output is compared not only for different years, but also between sectors and sub-sectors. It is assumed that the production technology in separate industries will not differ very much from one non-financial sub-sector to another.

When analysing social security contributions, deviations from the rates determined by law are examined and data by sector and sub-sector are balanced with the data on total revenues from contributions provided by the Ministry of Labour and Social Affairs and Ministry of Finances.

Employment measurement

There are two independent sources of data on the number of employees:

- Employment statistics based on surveys carried out within enterprises; and
- Labour Force Sample Surveys (LFS) conducted in households.

Data on wages and salaries and the calculation of compensation of employees in the national accounts are closely related to employment statistics. For that reason data on employment produced by labour statistics and data obtained from the statistical survey of the labour force (or labour costs) are compared with the national accounts aggregates. The comparison is undertaken not only at the level of national economy as a whole but also by sector and by industry.

Employment as measured by the labour statistics was used as a starting point for the 1998 calculations. Data are available for the average numbers of registered employees and the number of working owners of companies and working members of household enterprises for whom the enterprise represents their primary activity. Data are broken down by sub-sector and to the three-digit level of the CZ-NACE classification.

Labour statistics figures were further supplemented with information for the non-civilian sector - i.e. on the number of policemen and members of the armed forces, who are not included in the employment statistics.

Hidden employment, consisting of unregistered employed persons, self-employed persons working without the required registration and persons engaged in the informal economy, was then estimated using the method described below.

The number of unregistered employees (T4) was estimated by analysing national accounts data for the non-financial corporations sector and individual entrepreneurs. The analysis was made by industry, at the three-digit CZ-NACE level. Particular attention was paid to average wages, the ratio of intermediate consumption to output and value added per worker. These indicators were compared with 1997 data. The results of this analysis were used to adjust the labour statistics data, mainly to account for unregistered persons providing services. The numbers employed in part-time

work were converted to full-time equivalents. The number of owners of companies, for whom the business is not a principal activity, was estimated by comparing value added per worker in private non-financial corporations.

The estimation of the number of self-employed, which are not captured in the Business Register (T3) and the number of persons engaged in informal economy (T6) was based on the estimates of the output produced by them and on labour productivity in similar activities. The former (T3) comprise in particular persons with independent professions (artists, sportsmen, etc.) and all persons who have income from author's royalties and renting dwellings. The latter (T6) include persons engaged in own-account production of agricultural products (mostly as a secondary job), selling small quantities of agricultural products or performing construction/home renovations activities on a self-help basis.

Estimates were not made in respect of moonlighters – i.e. persons who intentionally avoid business registration (T5).

The output of units which emerged in the year but which were not included in the survey population (T2) was estimated for the first time in 1998.

The Labour Force Survey, carried out within households, is managed by the CSO's Household Surveys Statistics Department. The LFS provides the following information: the number of employees in primary jobs (either full-time or part-time); own-account workers and family workers; second and multiple jobholding; unemployed persons and persons economically inactive. The LFS data were reduced by the number of residents working abroad, and the number of employees with secondary jobs is enumerated. The data also include members of the armed forces. The results are recorded in the labour estimates and are published by industry. The results of this process were very similar to the estimates derived by the National Accounts Department for 1998.

Experimental estimates of total employment have been made on the basis of a Labour Force Survey, but in order to compare fully the LFS and employment data from other sources, the following issues need to be resolved:

- availability of data on the number of employees and employers consistent with ESA 95 definitions and methodological requirements;
- conversion of employee numbers to full-time equivalent units;
- comparability of the data across units, at the sector, sub-sector and industry levels and data relating to populations.

To ensure that the data on the number of employees and employers match the ESA95 methodological requirements, the following is required:

Table 4. Estimate of the number of workers, 1998

NACE	Number of employees (actual persons)	Working owners of companies	Adjustments			National accounts total	LFS Persons	LFS Full-time equivalent
			Employees	Owners	T3 +T6			
A Agriculture	215 066	33 751	-145	3 400	41 763	293 835		
B Fishing	1 989	118	77		8	2 192		
C Mining	72 270	198	5 814	73	70	78 425		
D Manufacturing	1 307 019	121 986	41 67	7 585	33 798	1 511 455		
E Electricity	81 243	411	2 197	95	18	83 964		
F Construction	333 627	98 057	18 861	10 262	6 401	467 208		
G Trade, repair	493 429	211 632	41 049	-29 736	5 303	721 677		
H Hotels, restaurants	139 187	43 603	-509	-3 186	1 807	180 902		
I Transport, communications	312 455	37 440	20 877	6 996	576	378 344		
J Finance	82 478	9 469	-167	-2 102	24	89 702		
K Real estate, business services	290 282	114 902	-341	17 009	20 141	441 993		
L Public administration	309 343	249	9	36		309 637		
M Education	329 759	6 037	-1 299	668	498	335 663		
N Health, social work	286 018	22 650	-22 041	816	1 196	288 639		
O Other services	127 252	30 244	4 603	19 482	20 508	202 089		
P Private households					1 800	1 800		
Total	4 381 417	730 747	110 052	31 398	133 911	5 387 525	5 254 500	5 198 300

- more precise definition of the description of the categories and indicators used in statistical questionnaires, such as employers, owners of companies and working members of households;
- extended coverage of the survey of the number of employees in order to cover other employed persons, e.g. regular members of the armed force, members of Parliament, judges, etc.

The number of working owners of companies and working members of households for whom the work for the company is their main economic activity, obtained from the surveys, includes partners in limited liability companies, who work for the company, in addition to self-employed persons. Such data are not comparable with the surveyed data on wages and salaries. Working co-owners of companies receive wages (recorded separately in enterprises' accounts) and reporting units include them in the number of employees.

For the 1998 adjustments, the numbers of workers were allocated to industries using a combination of wages and average wages from the labour costs survey.

Implications and effects on the national accounts and GDP estimates

Attempts have been made to ensure that concepts have been followed, and adjustments made, in order to ensure that as much as possible of the national economy is reflected in the national accounts. The adjustments made to 1998 national accounts data, by type of non-observed activity and by industry, are presented in Tables 5-9 below for each of the three approaches to measuring GDP.

Production approach

Taking into account both the availability of data sources and the conceptual and exhaustiveness adjustments performed, it is considered that the production-based estimates of GDP are the most developed. The adjustments for exhaustiveness made to the Production Account aggregates, by type of adjustments and by industry, are presented in Tables 5 to 7 below. The adjustments were equal to 10.0 per cent of gross value added, and 8.9 per cent of GDP in 1998.

While independent estimates for the whole of income approach were not compiled, explicit adjustments were made to wages and salaries, as shown in Table 8.

Data on employers' social contributions were taken from the statements provided by the reporting units, but subsequently adjusted according to data submitted by the institutions collecting the social contributions. These adjustments are included in type T8 "other type of GDP under-coverage".

Expenditure approach

The breakdown by different type of adjustments in the expenditure (T1 to T8) was limited to gross capital formation, because both the data sources and data-processing procedures are similar to those used for the estimation of the production and income aggregates. Table 8 shows the adjustments made to gross capital formation.

Table 5. Adjustments to gross output, by type of adjustment and industry, 1998
(Million CZK)

NACE	Statistical underground			Economic underground		Informal sector	Illegal activities	Other under-coverage	Total adjustments (T1 – T8)		TOTAL output	
	Non - response	Not updated register	Not registered	Under reporting	Not registered				Mln CZK	per cent		Mln CZK
	T1	T2	T3	T4	T5				T6	T7		T8	10=9/11	11
A Agriculture	7 497	12	1 280	5 300		631		540	15 260	9.1	166 803	
B Fishing	155		2					-18	139	8.8	1 571	
C Mining	663	53	27					94	837	1.3	62 689	
D Manufacturing	44 050	6 344	616	7 283				-435	57 858	3.2	1 809 773	
E Electricity	1 609	87	11					-1	1 706	0.7	239 702	
F Construction	8 222	2 637	683	11 686				-2	23 226	5.4	432 552	
G Trade, repair	26 265	4 940	3 013	25 532			381	-2 764	57 367	12.9	446 156	
H Hotels, restaurants	2 477	591	966	6 495				1 087	11 616	14.5	79 955	
I Transport, communications	10 454	764	197	3 127				12 593	27 135	8.5	318 642	
J Finance	17	43	30					-201	-111	-0.1	159 592	
K Real estate, bus. services	20 846	2 084	10 717	938				-193	34 392	7.8	442 714	
L Public administration	100	5	48					-1 602	-1 449	-1.1	136 647	
M Education	406	59	113	53				1 056	1 687	2.2	75 811	
N Health, social work	1 001	43	367	426				-4	1 833	1.7	106 120	
O Other services	4 805	320	7 307	199			5 700	11	18 342	14.8	124 045	
P Private households						173			173	100.0	173	
Gross output - Total	128 567	17 982	25 377	61 039		804	6 081	10 161	250 011	5.4	4 602 945	

Table 6. Adjustments to intermediate consumption, by type of adjustment and industry, 1998
(Million CZK)

NACE	Statistical underground			Economic underground		Informal sector	Illegal activities	Other under-coverage	Total adjustments (T1-T8)		TOTAL intermediate consumption	
	Non - response	Not updated register	Not registered	Under reporting	Not registered				Mln CZK	per cent		Mln CZK
	T1	T2	T3	T4	T5				T6	T7		T8	10=9/11	11
A Agriculture	5 242	13	255	-705		125		21	4 951	5.2	96 011	
B Fishing	133			-5					128	13.1	980	
C Mining	419	46	4	-52				-93	324	0.9	34 154	
D Manufacturing	33 107	7 125	116	-6 427				-4 892	29 029	2.1	1 351 348	
E Electricity	1 232	95	2	-168				-9	1 152	0.7	171 105	
F Construction	6 641	3 036	135	-7 004				-28	2 780	0.9	315 722	
G Trade, repair	15 415	3 599	601	-5 677			76	1 674	15 688	7.4	210 586	
H Hotels, restaurants	1 558	706	192	-2 077				-383	-4		48 206	
I Transport, communications	8 804	906	38	-2 816				2 216	9 148	5.2	175 290	
J Finance	7	61	6					304	378	0.6	66 598	
K Real estate, bus. services	13 944	1 723	2 143	-4 023				3 207	16 994	7.4	228 501	
L Public administration	57	1	10					-34	34	0.1	44 281	
M Education	270	36	22	-85				-132	111	0.5	24 485	
N Health, social work	558	30	74	-111				-75	476	1.0	48 607	
O Other services	2 754	311	1 461	-852			1 140	387	5 201	6.6	78 296	
P Private households FISIM											68 923	
Total	90 141	17 688	5 059	-30 002		125	1 216	2 163	86 390	2.9	2 963 093	

Table 7. Adjustments to gross value added, by type of adjustment and industry, 1998
(Million CZK)

NACE	Statistical underground			Economic underground		Informal sector	Illegal activities	Other under-coverage	Total adjustments (T1 – T8)		TOTAL Value added
	Non - response	Not updated register	Not registered	Under reporting	Not registered				Mln CZK	per cent		Mln CZK
	T1	T2	T3	T4	T5				T6	T7	T8	9	10=9/11	11
A Agriculture	2 255	-1	1 025	6 005		506		519	10 309	14.6	70 792
B Fishing	22		2	5				-18	11	1.9	591
C Mining	244	7	23	52				187	513	1.8	28 535
D Manufacturing	10 943	-781	500	13 710				4 457	28 829	6.3	458 425
E Electricity	377	-8	9	168				8	554	0.8	68 597
F Construction	1 581	-399	548	18 690				26	20 446	17.5	116 830
G Trade, repair	10 850	1 341	2 412	31 209			305	-4 438	41 679	17.7	235 570
H Hotels, restaurants	919	-115	774	8 572				1 470	11 620	36.6	31 749
I Transport, communications	1 650	-142	159	5 943				10 377	17 987	12.5	143 352
J Finance	10	-18	24					-505	-489	-0.5	92 994
K Real estate, Bus, services	6 902	361	8 574	4 961				-3 400	17 398	8.1	214 213
L Public administration	43	4	38					-1 568	-1 483	-1.6	92 366
M Education	136	23	91	138				1 188	1 576	3.1	51 326
N Health, social work	443	13	293	537				71	1 357	2.4	57 513
O Other services	2 051	9	5 846	1 051			4 560	-376	13 141	28.7	45 749
P Private households						173			173	100.0	173
FISIM											-68 923
Total, Mln CZK	38 426	294	20 318	91 041		679	4 865	7 998	163 621	10.0	1 639 852
per cent	2.3	0.0	1.2	5.6		0.0	0.3	0.5	10.0		100.0

Table 8. Adjustments to wages and salaries, by type of adjustments and industry, 1998
(Million CZK)

NACE	Statistical underground			Economic underground		Informal sector	Illegal activities	Other under-coverage	Total adjustments (T1 – T8)		TOTAL	
	Non - response	Not updated register	Not registered	Under reporting	Not registered				Mln CZK	per cent		Mln CZK
	T1	T2	T3	T4	T5				T6	T7		T8	9	10=9/11	11
A Agriculture	1 182	3		614				1	1 800	6.8	26 465	
B Fishing	33			6				-6	33	11.5	287	
C Mining	80	10		10				7	107	0.7	14 585	
D Manufacturing	5 216	855		1 180				-638	6 613	3.5	187 399	
E Electricity	108	10		21				12	151	1.0	15 220	
F Construction	852	329		1 251				300	2 732	5.3	51 146	
G Trade, repair	4 136	1 047		3 821				333	9 337	12.3	75 680	
H Hotels, restaurants	442	84		576				370	1 472	10.9	13 556	
I Transport, communications	641	72		318				267	1 298	2.6	49 859	
J Finance	3	5		1				49	58	0.3	21 844	
K Real estate, bus. services	2 978	415		107				-33	3 467	7.1	49 077	
L Public administration	15								15		49 885	
M Education	185	11		8					204	0.6	35 789	
N Health, social work	206	8		14					228	0.7	30 817	
O Other services	479	43		13				133	668	3.8	17 596	
P Private households						173			173	100.0	173	
Total	16 556	2 892		7 940		173		795	28 356	4.4	639 378	

Table 9. Adjustments to gross fixed capital formation, by type and industry, 1998
(Million CZK)

NACE	Statistical underground			Economic underground		Informal sector	Illegal activities	Other under-coverage	Total adjustments (T1 – T8)		TOTAL	
	Non - response	Not updated register	Not registered	Under reporting	Not registered				Mln CZK	per cent		Mln CZK
	T1	T2	T3	T4	T5								T6	T7	T8
	1	2	3	4	5	6	7	8	9	10=9/11	11	
A Agriculture	2 200							917	3 117	22.3	13 977	
B Fishing	36							9	45	43.3	104	
C Mining	162	5						72	239	3.2	7 455	
D Manufacturing	6 520	658						1 077	8 255	7.0	118 681	
E Electricity	740	32						1 822	2 594	4.6	56 466	
F Construction	880	84						2 557	3 521	13.2	26 626	
G Trade, repair	8 462	967						1 244	10 673	21.3	50 026	
H Hotels, restaurants	548	46						-427	167	3.5	4 813	
I Transport, communications	980	49						-19 228	-	-22.0	82 545	
J Finance	54	-1						7 702	18 199	48.7	15 934	
K Real estate, bus. services	9 744	135						10 398	7 755	33.8	59 986	
L Public administration	94							17 530	20 277	38.4	45 923	
M Education	52	2						-5 331	17 624	-131.8	4 003	
N Health, social work	144	2						-8 665	-5 277	-103.3	8 249	
O Other services	846	34						235	-8 519	5.7	19 698	
P Private households									1 115			
Total	31 462	2 013						9 912	43 387	8.4	514 486	

ESTONIA

Definitions and conceptual solutions

The Statistical Office of Estonia took part in the Pilot Project on Exhaustiveness launched by Eurostat for EU Candidate Countries. In 1999, it carried out a pilot study of the non-observed economy (NOE) in accordance with the Eurostat framework, using 1997 as the reference year. The findings of this study were taken into account in the compilation of statistics on the underground and informal economy.

Adjustments are made for non-response, non-registered units, under reporting, informal activities, income in kind and tips, etc. In estimating the NOE, it has been assumed that there is no, or very little, non-observed production taking place in the financial corporations and general government sectors. Adjustments are therefore made only for non-financial corporations, households and non-profit institutions serving households (NPISHs).

It is also assumed that illegal activities (related to prostitution, illegal trade in audio-video products and the drugs trade) are confined to the household sector.

Estimates of the non-observed economy have been made at a detailed activity and product level, and have been incorporated into the production and expenditure approaches in the GDP estimates.

Sources and estimation methods

Production approach

The production approach to measuring GDP is based on statistical surveys, enterprise bookkeeping reports, administrative records, special surveys and expert estimations.

Underreporting appears mainly in the activities where cash payments are common (e.g. in trade, hotels and restaurants, and other community services industries in the production approach) and households final consumption in the expenditure approach. Underreporting of output also occurs in the forestry, fishing, manufacturing and construction industries. Estimates are based on the studies mentioned above and expert estimates made by accountants and bookkeepers who are familiar with these activities. Overreporting of intermediate consumption takes place where wages and salaries in kind are recorded as intermediate consumption rather than compensation of employees. Estimates of the amounts involved are collected from enterprises. The adjustment in these cases is made by reallocating the overstated proportion of intermediate consumption to gross value added.

Estimates of hidden units and employment are made on the basis of analysis and comparison of Tax Office records, the Labour Force Survey and the statistical register.

Supply and Use tables, first published in 2000, were used to estimate underground and informal economic activities for national accounts purposes. The Supply-Use tables provide a detailed overview of the relationships between product flows in the national accounts. By comparing the supply side (output and imports) and the use side (consumption and exports) by product group, the weaknesses and inaccuracies that were not apparent at the aggregate level were possible to identify. The Supply and Use tables, for example, showed that the use of timber (especially for exports) substantially exceeded supply. This was due to underestimation of hidden output on the supply side.

Before the first Supply-Use tables were compiled, exhaustiveness adjustments included only four kinds of activities: construction; trade and repair; real estate, renting and other business activities; and other community services. Using Supply-Use tables, the structure was adjusted for underground and informal activities by economic activity. Adjustments by institutional sector were made for the following activities:

- non-financial corporations sector: forestry, fishing, manufacturing, construction, trade and repair, hotels and restaurants, transport and communications, real estate, renting and other business activities, education, health and social work, and for other community services;
- households sector: forestry, manufacturing, construction, trade, hotels and restaurants, transport and communications, real estate, renting and other business activities, and other community services.

The biggest share of adjustments in non-financial corporations sector are applied to trade and repair, manufacturing and other community services, while in the households sector trade and repair, construction, and transport and communications are the most affected.

The employment method is not used. However, since 2000, the frequency of the Labour Force Survey has become more regular, and it is expected that in the future it will provide a more complete picture of the non-observed economy.

Expenditure approach

In order to compile exhaustive estimates, additional adjustments are made for the expenditure components of GDP except for changes in inventories, exports and imports of services, and general government consumption expenditure because it is assumed that there is no hidden economic activity in these components.

The consumption of alcohol, tobacco, education and dwelling services is generally underreported. Adjustments are also made for those services provided by units/persons that are not obliged to register. Corrections for undercoverage include also estimation of income in kind, gifts and other transfers. Estimates of income in kind are based on both the Household Budget Survey and entrepreneurship data. Adjustments for gifts are made on the basis of information obtained from Balance of Payments statistics.

Household consumption

The Household Budget Survey is the main data source for private household consumption estimates. Adjustments are mainly made for the consumption of services of an occasional or temporary nature. Adjustments for non-registered units providing services are also made. Another important source is a retail trade survey, which provides information for estimating the sales of non-registered units.

The consumption of illegally produced or imported goods and services, namely prostitution, trade in drugs and trade in pirated audio and video products is included in the private household consumption estimates. Special investigations, crime statistics data, expert estimates, etc. are used as data sources for these activities.

Data collected from the police and medical institutions, data on service charges published in newspapers, expert opinions, etc. are the sources used for estimating prostitution. The number of institutions through which prostitutes provide their services (brothels, sauna and massage services providers and hotels), their average turnover (using the number of prostitutes, prices and the number of clients) and other estimated data serve as the basis for calculations.

A commodity flow approach is used to estimate the value of drugs trading. It is based on seized quantities, average street prices, and domestic consumption (the estimate of the number of addicts, based on data from the police and medical services, is combined with standard international consumption rates).

Adjustments for tips are based on the number of employees (barmen and other service workers) and working days. Expert opinion is used to estimate approximately the average size of tips.

Non-profit institutions serving households

Adjustments are made mainly on the basis of expert opinion and investigations, including estimates for “envelope salaries”, wages and salaries in kind, and adjustments for non-registered small unions, etc.

Exports and imports

The Bank of Estonia estimates adjustments to account for the evasion of Russian customs duty and of Estonian excise tax or customs duties. The amount of imported illegal audio and video material, based on information from the Customs Board, is also taken into account

In 1993, when the Statistical Office of Estonia began to break down the NOE data by economic activity, adjustments were made for only four kinds of activities. The adjustments have now been allocated to 11 kinds of non-observed activities. This more accurate split of the non-observed economy by economic activity resulted from significantly modified and revised GDP time-series estimates produced by the statistical office in 2001.

FINLAND

Definitions and concepts

The statistical base for the Finnish national accounts has grown during the last ten years. Structural Business Statistics (SBS) have more information on enterprises than did the earlier enterprise statistics; in particular, the coverage is better than before due to the use of the Business Tax Register (BTR) for statistical surveys conducted by Statistics Finland. This, together with improvements in other basic statistics, such as the redesign of the Business Register (resulting in quality improvements from 1996 onwards) provides a good base for GDP data.

The Finnish national accounts are mainly compiled using the production approach. The main source data for calculations (the Business Register and Structural Business Statistics) are complete in their coverage of registered economic units. Though these sources provide comprehensive coverage there are some problems due to random errors and other reasons.

The following activities may not be covered by the main sources:

- non-reported data from registered units that will not be captured using the normal methods;
- casual (or small) units, and units that remain unregistered for the purpose of tax evasion.

The above groups are targeted in the estimation of the underground economy in the national accounts. Estimates are made by using special studies, employment comparisons between the Labour Force Survey (LFS) and the national accounts and tax audit data. On the basis of such studies, the incidence of the underground economy in Finland is not very marked. The sources and methods used to calculate GDP ensure that the parts of the hidden economy attributable to construction and housing services are included in the national accounts. Tax audits give only an indication of the extent of non-observed activity, as the audits are not representative samples.

In aiming for exhaustiveness of the Finnish GDP, Statistics Finland has also made calculations of the discrepancy between theoretical VAT and actual VAT.

Due to the nature of the methods used, an exact assessment of the hidden economy is not feasible.

Adjustments for activities of the illegal economy are not included in the Finnish national accounts.

Sources and estimation methods

The use of tax audit data

The tax audit data have been available as special surveys since 1996. Due to the methods of selection for auditing, the results are difficult to incorporate into the national accounts. The audits have been almost exclusively of companies where taxation irregularities have been revealed. There have been only two cases (taxis and restaurants) where more general audits have been conducted. For other industries, the audit material gives only an approximation of a likely upper limit of the underground economy.

Due to the limitations of the tax audit method, it can only be used to produce a broad estimate. The tax audit data have therefore been used with other sources of information. Tax audits are concerned with three kinds of income: hidden wages, hidden income and the so-called hidden distribution of dividends. The compilation of the Finnish national accounts is mainly based on the production approach. In this approach the most important of these three components is hidden income, because it increases total income and output. The other two components form parts of the distribution of value added, which are important in the income approach.

Examples of methods of calculating underground and informal activities

Building construction

The output of construction of buildings by households consists of three parts: output of own-account workers, self-built construction, and own-account workers in the so-called hidden economy. Self-built construction is output entirely for own final use. Other household construction is termed market output.

The output of self-built construction is derived from imputed hours worked in the construction industry and hourly rates for construction work. The hours worked are taken from a survey of the hidden economy in construction from 1990 to 1996, carried out by a private consultant. The imputed rate for self-built construction is the average hourly rate for employees engaged in the construction of buildings, excluding employer social contributions and supplemental wage and salary costs. The value added of self-built construction consists of the value of own-account work calculated in the above manner. After 1996, the output of self-built construction was valued by means of the annual growth in the value of single-family house construction and annual repairs. Compensation of employees and consumption of fixed capital are not calculated for self-built construction. Output is the sum of value added and intermediate consumption, the proportions of which are estimated to be 35 per cent and 65 per cent respectively.

The base year output of hidden economy own-account workers is estimated by applying hourly rates to imputed working hours. The working hours were obtained as residuals from data in

the LFS. Own-account worker income per hour is the same as the hourly wage for self-built construction, and output is calculated as for self-built construction. The intermediate consumption share of output is presumed to be 25 per cent, i.e. output consists mainly of value added, or in this instance the value of work done, because capital consumption is not calculated for hidden economy own-account workers. It is presumed that own-account work is carried out mainly by households, which acquire the building supplies needed. In the national accounts, annual growth in the output of hidden economy own-account workers is calculated in accordance with annual growth in self-built construction.

Wholesale and retail trade

According to experts, the underground economy does not represent a large part of total sales in wholesale and retail trade. The main reason is the concentration of trade around large corporations and the marginal market share of independent small shopkeepers. Based on a 1995 survey by the Federation of Finnish Commerce and Trade, it was concluded that the share of the underground economy in trade is between 1 and 5 per cent. Its possible value in retail sales was estimated to be between FIM 1.4-7.0 billion in 1995. Value added was estimated to be roughly FIM 140-700 million. These figures do not include undisclosed repairs of motor vehicles, household appliances and the like, which could raise estimates of the underground economy by a few hundred million marks.

According to the Tax Administration's auditing statistics, the total value of the underground economy amounted to FIM 740 million, based on findings for 1997. The trade sector amounted to 17 per cent of this, or FIM 126 million. Additions to the income of a business as a result of the Tax Administration audits is a key source for national accounts estimates. Hidden income can reduce the output of trade sector industries and thereby reduce value added. Undisclosed income of employees or hidden dividend distributions to own-account workers, which are part of the value added of the industry, are not as problematic for Finnish national accounts as concealed income. The reason is that the GDP level is determined by the production method, which permits an industry's value added to be calculated once its output level and share of intermediate consumption are known.

A consultancy firm has made estimates of the possible size of hidden income and its influence on measured output, on the basis of the Tax Administration auditing data. Concealed income (additions to the income of businesses) is correlated by branch of activity to the turnover of the audited cases. Multiplying the share of turnover for any concealed income in the audited cases by the turnover data for the population of equivalent industries results in the so-called imputed starting value of the industry as a whole. These values produce an estimate which is too high for undisclosed income since the majority of businesses manage their affairs appropriately. It is presumed that the real undisclosed income, or missing turnover, of the industry is closer to 20-40 per cent of the imputed starting value of undisclosed income.

The share of output attributed to concealed income is high in certain trade sectors (car sales, repairs, outdoor markets, etc.). Bypassing the cash desk is easy in such industries because most of the customers are private individuals. According to the estimates made by consultants (based on Tax Administration auditing), imputed concealed income in the trade sector was between FIM 222–444 million in 1997. This would amount to roughly 0.3 to 0.6 per cent of output in the trade sector.

Implications and effects on national accounts and GDP estimates

When the national accounts were compiled in accordance with ESA95, comparisons were made with the estimates that were compiled using SNA68. The comparisons take into account the new concepts of ESA95 and the adjustments for exhaustiveness, including, where it was identifiable, the adjustments that specifically relate to the NOE. The Table 1. shows the comparison with respect to 1995, including the adjustments for the hidden economy that were made for selected industries.

Construction

The hidden economy in construction was estimated to 2,424 millions. This estimate was based on better source statistics for the construction activity (new Construction Statistics) and the use of comparisons between different basic data sets.

Trade

Hidden economy adjustments in trade are made for motor vehicle trade and repairs (one third) and retail trade (two thirds). Only 2 per cent of the adjustments were accounted for by the wholesale trade. Changes in the proportions of intermediate consumption are also made. The adjustments are based on broader use and comparison of source statistics, and a consultant's study. Crosschecks for consistency between trade and manufacturing are also made.

Hotels and restaurants

The main correction for exhaustiveness is made for the restaurant branch, with only about 15 per cent of the adjustment attributed to hotels. Relative shares of intermediate consumption were also changed. Information from tax audits of 35 restaurants in two small coastal towns in 1997 were used in estimating the total hidden economy for this industry.

Transport and communication (market activities)

Adjustments were made in road transport and taxi traffic, totalling 1,235 million FIM for output. Intermediate consumption is estimated using the stock of vehicles and average costs, so that it includes intermediate consumption resulting from hidden production without any extra

adjustments. The estimates were based on tax audits carried out for all taxis and taxi firms (about 230) in three towns in respect of 1996.

Summary results

Table 1. Estimates of hidden output in selected industries, 1995
(Million FIM)

Industry	New	Old	Difference	Hidden incl. tax audit	Coverage changes (+,-)	Other
Construction, buildings						
Output	44 037	45 154	-1 117	2 424	- 1 117	
Intermediate consumption	27 312	25 596	1 716		1 716	
Value Added	16 725	19 558	-2 833		-2 833	
Transport and communication						
Output	81 842	71 411	10 431	1 235	-711	9 907
Intermediate consumption	33 744	29 188	4 556		-560	5 116
Value Added	48 098	42 223	5 875	1 235	-151	4 791
Trade						
Output	83 289	76 548	6 741	1 551		5 190
Intermediate consumption	33 576	31 677	1 899	727		1 172
Value Added	49 713	44 871	4 842	824		4 018
Hotels, restaurants						
Output	20 318	20 760	-442	636	1 181	-2 259
Intermediate consumption	12 612	12 662	-50	447	675	-1 172
Value Added	7 706	8 098	-392	189	506	-1 087
Personal services						
Output	3 789			548		
Intermediate consumption	1 436					
Value Added	2 353			548		
Total economy						
Output at basic prices	1 033 464					
Intermediate consumption	542 808					
Value added at basic prices	490 656					

GEORGIA

Introduction

In the Georgian economy, especially in the business sector, the share of the non-observed economy is quite high. According to 2000 data, NOE accounts for one third of the total output and about 56 percent of the output of the business sector. Because this phenomenon occurs on such a large scale, it is essential to assess the extent of the NOE as accurately as possible. The adequacy of national accounts aggregates strongly depends on the quality of these assessments.

Sources and estimation methods

General overview

The analysis of NOE shows that among the non-statistical reasons for its existence, the low level of accounting in small enterprises and the informal sector are the most important ones.

In the informal sector a part of production is often for own final use. Therefore, determining the real volume of production is one of the most difficult problems in measuring the non-observed economy.

Due to the large share of the informal sector in the national economy, this issue is especially important in Georgia. According to the latest estimates, in recent years the share of the informal economy in total output is more than 35 per cent.

It is often difficult to cover completely small and individual enterprises with regular statistical surveys. In these cases, indicators obtained from regular surveys are extrapolated to the whole population on the basis of comparison of enterprises' employment data, covered by regular surveys, and data derived from the Labour Force Survey (LFS). The comparison is carried out by type of activity. However, it often occurs that the detailed classifications of the labour force and business surveys do not correspond to each other. In practice, the labour force statisticians often run into difficulties in allocating relevant codes. For this reason the adjustments are made at a higher level of aggregation than desired. In the meantime, attempts to improve the quality of the classification and questionnaire applied in the LFS are being made.

Calculations of average productivity and wage levels in small enterprises and average incomes of self-employed persons provide useful information for estimating the production of small enterprises and the informal sector. Under this approach, managers of enterprises, owners of sole proprietorships and those engaged in the informal sector are surveyed as experts in their business. In particular, they are asked to express their opinions on productivity, acceptable wage levels and maximum profit levels in their field of activity. Using the estimates thus obtained, it is possible to

calculate the real level of output, costs, wages, and profit, and in conjunction with employment indicators, to determine the value of the NOE.

To determine the other components of NOE, arising from incomplete and misreported information on production, incomes, expenditure and other key indicators, one of the main approaches used in Georgia is balancing the supply and use of goods and services. From comparisons of data obtained from different sources - Business survey, Household Budget Survey (HBS), Foreign Trade Statistics - the reasons for imbalances are analysed, and adjustments are made for the components attributable to non-observed activity.

It should be noted, however, that this method is often used only with other adjustment methods. Its use becomes difficult when several institutional sectors contribute to either supply or use and it is necessary to take account of all of the components. In such cases it is often impossible, based on regular surveys, to obtain reliable estimates of one or more components.

Special surveys

Carrying out special surveys is an effective method of obtaining adjusted estimates. Such surveys are planned and carried out in specific fields, where either the quality of data obtained by current statistical surveys is low, or there are no data at all and a preliminary analysis indicates a possible high rate of NOE.

Within the framework of the TACIS program, and with the help of national accounts experts from the Statistical Offices of the Netherlands, Greece and Poland, a number of special surveys have been conducted. The surveys enabled essential adjustments to be made in the national accounts, particularly in the production and income accounts.

Survey of tobacco consumption

Comparison of the results of this survey with business statistics data showed that the value of tobacco imports should be increased 1.2 times, while the value of tobacco production should be increased 1.5 times. The evaluation of the volume of tobacco consumption (242 million Georgian Lari (GEL)) sharply exceeded (by 4.5 times) the consumption figure of the same commodity obtained from the Household Budget Survey. In the production account, the adjustment added about one percent to gross output. Corresponding adjustments were made in the distribution of income account.

For GDP calculated by the expenditure approach, the estimate of increased tobacco consumption added about 3.2 percentage points to the total.

Survey of restaurants, cafes, bars and other similar establishments

Information obtained from the survey on the number of customers and average cost of services indicated that the actual output of these establishments exceeded by 3.8 times the figure reported in the regular statistical surveys. This suggests that 75 percent of the actual volume of restaurant services is not observed.

Corresponding adjustments in the main macroeconomic indicators, based on the survey results, were also made. In particular, the total output of this industry increased 3.4 times. Adjustments were also made to the expenditure side.

Survey of construction activities

According to the final results of the survey, which was carried out in Tbilisi, the total volume of construction and related activities was 145.1 million GEL, more than twice the amount reported in 1999 in the regular business survey. The results from the same survey also showed that investment in construction was 197.4 million GEL, 2.1 times higher than that reported earlier. The results suggest that 50 percent of all construction works performed are not observed.

Survey of health care services

The results from the survey showed that in the first quarter of 2000, households obtained at least 4.3 times more health services and purchased 3.1 times more medicines and medical appliances than declared in official sources.

The estimate of the quarterly value of health care services was 87.1 million GEL, exceeding by about 6.8 times the same indicator obtained from the HBS.

The estimate of households' expenditure on medicines was 72.9 million GEL, 3.1 times higher than the figure obtained from the HBS.

The comparative analysis of supply and use of medicines showed that the total supply should be increased by a factor of at least two, i.e. imports, exports and production needed to be adjusted accordingly.

In total, the summary effect of the adjustments to final use categories, obtained on the basis of this survey, equalled 3.4 percentage points. This estimate almost coincides with the adjustments that were made to the estimates of GDP that were compiled using the production approach.

Survey of education services

According to the results of the survey, household expenditures were 1.9 times higher than those reported by educational institutions.

Households expenditures on schooling items exceeded by 2.2 times (or 64.8 million GEL) the corresponding figure obtained from the HBS. Moreover the survey also enabled, for the first time, an estimate of households expenses on education abroad - 45.2 million GEL.

In the production accounts, the adjustments to output and value added indicators due to the increased volume of education services amounted to 59 million GEL, or 1.0 percent of GDP in 2000.

The total adjustment made to education services, including expenditure on schooling items and on education abroad, was 152 million GEL, equal to 2.6 percent of GDP in 2000.

All the above-mentioned results affected the national accounts aggregates, leading to adjustments to corresponding data in both the production and final consumption accounts. The adjustments to production, use, imports and exports, based on the special surveys, resulted in an overall GDP adjustment of more than 10 per cent.

It is clear that the special surveys on the NOE are very important for the compilation of accurate national accounts. They enable estimates of the share of non-observed output to be made for various types of activities. The surveys, combined with additional employment data, provide well-founded estimates of the non-observed economy.

Implications and effects on NA and GDP estimates

The share of NOE has varied little over the last several years and remains very high as shown in Table 1. The chart that follows reflects more clearly the scale of NOE in the whole economy and in the business sector. Table 2 shows estimates of NOE in the national accounts.

Table 1. Share of NOE in the Georgian Economy, per cent

	1996	1997	1998	1999	2000	2001
Non-observed / total output of the economy	26.9	27.4	28.3	29.2	33.2	33.7
Non-observed / total output of the business sector	56.8	54.7	54.3	54.2	56.1	57.8

Share of NOE in the Georgian Economy

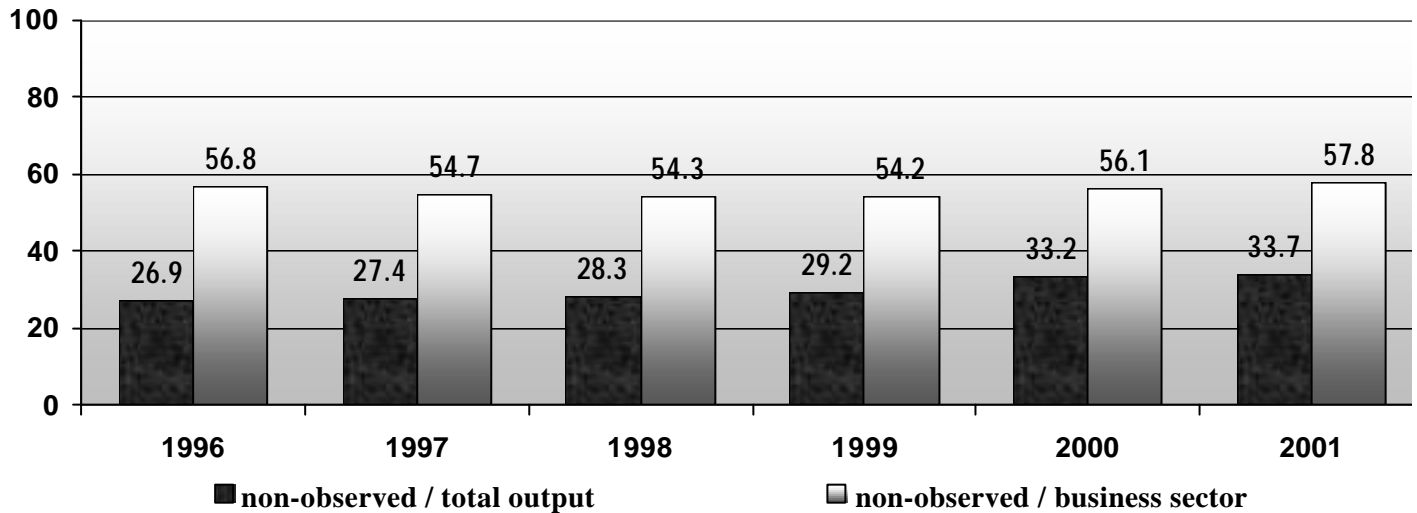


Table 2. Share of non-observed output, by main economic activity

	1996	1997	1998	1999	2000	2001
	Share of non-observed output in the total output of the corresponding activity, per cent					
Industry	46	43	40	39	41	41
Agriculture, Forestry, Fishing	9	9	9	9	11	9
Construction	18	35	33	33	45	52
Transport	38	35	36	37	36	37
Communications	23	23	19	24	21	25
Trade	66	60	57	56	56	57
Hotels and restaurants	62	61	60	64	69	75
General Administration, Defence	..	..	..	..	..	..
Other	24	27	31	33	41	38

GERMANY

Definitions and conceptual solutions¹

According to both the rules of the European System of Integrated Economic Accounts, (ESA), 1979, and those of the new ESA 1995, hidden/informal economic activities are included in the concept of production and, consequently, have to be included in GDP. Production activities to be covered by GDP therefore include activities performed illegally or without the knowledge of taxation, social security, statistics or other authorities. According to international convention, own-account housework is not included in production in the context of national accounts.

The Federal Statistical Office (FSO) uses various measures to produce GDP figures that are as comprehensive as possible:

- Explicit imputations are made especially in those areas where large-scale censuses are conducted only at long intervals (e.g. the census of crafts, and the census of distributive trade and the hotel and restaurant industry). Special calculations are also performed for own-account construction and tips.
- In many cases, implicit coverage of hidden/informal economic activities is ensured by the calculation method itself. For instance, agricultural production is determined on the basis of areas under cultivation and the relevant average yields. Also, rents are calculated through the stock of dwellings – broken down by size and other characteristics – and the relevant rents per square metre. Whether or not the incomes thus calculated and included in the GDP figure are declared for tax purposes is neither known nor considered relevant for an exhaustive coverage of such production activities.

Therefore, the frequently voiced opinion that the GDP does not include hidden/informal economic activities is incorrect.

Sources and estimation methods

Major steps to ensure GDP exhaustiveness

Obtaining exhaustive results is a major goal of national accounting. Ensuring the exhaustiveness of gross domestic product (GDP) and gross national income (GNI) measures was a major goal of the national accounts revision undertaken in Germany in 1999 when implementing the ESA 95. To that end, a set of measures was implemented, which are summarised below for the production and expenditure approaches.

¹ The description gives an overview of the processes for improving exhaustiveness.

Comparison of employment data

A large-scale project was carried out with the goal of checking the exhaustiveness of GNI on the basis of employment data. Extensive comparisons were performed between employment data from population statistics and those from statistics for specific industries (where they are included in GDP calculations), in order to identify possible undercoverage.

Comparison with turnover tax statistics

To further improve the basis of the calculations, comparisons were performed with results of turnover tax statistics for all areas of the GDP production approach. A problem in this method is that it is not always possible to compare data, due to differences in industry classifications between data sources.

Integration of large-scale censuses

General GDP exhaustiveness was improved by integrating various large-scale censuses and other multi-annual surveys at the time of the latest national accounts revision. They included in particular the 1993 censuses of distributive trade and the hotel and restaurant industry, the 1995 census of crafts, the 1996 census of the crafts-related industry and various multi-annual cost structure statistics (back to 1987).

Comparison with household budget surveys

As part of the work undertaken for the Eurostat Task Force on "Using household surveys for national accounting", the final consumption expenditure of households was checked for exhaustiveness. For final consumption of households, a detailed comparison was performed between the data from household surveys (sample survey of income and expenditure) and the data obtained from the supplying-sector approach (sales to households as derived from economic and taxation statistics). Results from that comparison were used to make adjustments in the 1999 benchmark revision, especially in the area of the distributive trade and the hotel and restaurant industries.

Comparison with investors approach

The data on product-oriented gross fixed capital formation in construction and in machinery and equipment were compared with the results based on investment data from investors, leading to adjustments in some cases. However, for some service branches, there are still gaps in the investor approach which have to be bridged by estimates.

Production-turnover comparison

As part of calculating fixed capital formation in machinery and equipment by the commodity flow method, checks are made to determine whether any investment services have to be included in addition to the (material) production covered by production statistics. Such additions are based on a comparison between production and turnover statistics.

Checks and special calculations

In addition to the above-mentioned checks for exhaustiveness, separate exhaustiveness studies were performed for many areas of both the production and expenditure approaches, particularly by comparison with specific, and in part non-official, data sources. Calculations included those regarding own-account construction, prostitution, private lessons, tips and income in kind. Also, supplementary estimations are performed for statistics not collected due to cut-off limits. Finally, valuation at purchasers' prices was done on the basis of computed turnover tax rates.

Input-output comparison

Revisions also arose from integrating information obtained from input-output computations of previous years, which generally are not available early enough to be included in current-year GDP calculations. Corrections resulting from that analysis are made to the levels of household final consumption expenditure, output and intermediate consumption.

As a consequence of the checks for exhaustiveness, imputations for undercoverage are calculated for various GDP aggregates. Explicit imputations covered various kinds of undercoverage such as own-account construction, tips and remuneration in kind, evasion of taxes and levies and statistical cut-off limits. As not all relevant information is available, a further break down by individual causes was not possible.

Separate estimations of hidden/informal economic activities

For the following reasons, the Federal Statistical Office does not compile separate estimates of hidden/informal economic activities as part of national accounting:

- The main goal for national accountants is to represent as exhaustively as possible economic activities according to ESA 95 concepts. For GDP exhaustiveness it is irrelevant whether or not a specific economic activity is legal or illegal or otherwise hidden;
- There is no international definition of the hidden/informal economy. Sometimes this just refers to uninvoiced sales and repairs or own-account construction, and sometimes to illegal activities, i.e. activities liable to prosecution. In addition,

the existence of cut-off limits in statistical collections reduces the coverage of that part of the economy;

- To the extent that hidden/informal economic activities are covered implicitly by the calculation methods already in place, it would be necessary to remove these from independent estimates (to avoid double-counting). However, information on their volume is not available.

Therefore, the Federal Statistical Office does not intend to carry out separate estimates of hidden/informal economic activities. The FSO considers that the issue of separately identifying the non-observed economy is subsumed by the need for overall reliability, objectivity and scientific verifiableness in official statistics.

International comparability of GDP data

After the EU Commission had, for various reasons, questioned the exhaustiveness of the national product data of the Member States in 1992, Member States thoroughly revised their national accounting systems. In Germany, that revision resulted in a rise of the GDP and national product levels for the period from 1988 to 1997 (by 0.5 to 1.5 percent in nominal terms).

HUNGARY

Introduction

In Hungary various estimates have been published by researchers and research institutes in the past on the size of illegal activities and the underground economy. The investigations have usually defined these phenomena in a much broader sense than the 1993 SNA. However, the estimates derived from these research works cannot easily be incorporated into the national accounts, as they do not conform to the standard industry, sector and transactions classifications of the SNA. In addition, the estimation methods cannot be repeated regularly as is required for official statistical publications.

Definitions and concepts

In principal, the definitions related to concealed production and underground economy are based on 1993 SNA par. 6.34-6.36, and on the definitions and classifications in the OECD Handbook for the Measurement of the Non-Observed Economy.

The concept of the non-observed economy (NOE) is a broad one, defined as all productive activities that are likely to be excluded from the basic statistical data collection programme because they involve one or more of the following:

- illegal production;
- underground production;
- informal sector production;
- household production for own final use; and
- other productive activities missed due to deficiencies in the basic statistical data collection programme.

In the mid-1990s Eurostat launched the Pilot Project on Exhaustiveness (PPE) for the EU Candidate Countries. The Eurostat framework defines eight types of NOE (T1-T8), defined in the introduction to this publication. The final report of Hungary on the PPE was finished in April 2000, with 1997 as the reference year. The current description refers to the results of that study.

Sources and estimation methods

The Hungarian National Accounts (HNA) do not make estimates for illegal transactions. In 2000, an experimental study began on possible data sources and methods to estimate the size of production/sales/imports of illegal drugs and illegal activities associated with prostitution, but there are no exact estimates as yet. The HNA do not contain estimates of illegal productive activities or transactions. The HNA contain estimates only of deliberately concealed legal activities, which are defined here as activities belonging to the underground economy.

Output approach

Of the three approaches to compiling national accounts, the output approach is the most important in Hungary. The main data sources for the estimation of output are related to institutional sectors.

- General Government sector: the main data sources, which consist of taxation and other administrative reports, are collected and controlled by the Ministry of Finance and by the Treasury.
- Financial Corporations sector: the Central Bank and the supervisory bodies of the concerned units (financial institutions, insurance companies and security dealers) collect data and forward it to the Hungarian Central Statistical Office (HCSO). It is not considered necessary to check the exhaustiveness of General Government and Financial Corporations data because all units in these sectors comply with their obligations to submit their reports to the supervisory entities.
- Non-financial Corporations sector: The main data sources are: registers, administrative data in the form of tax declarations, and statistical survey results.

Statistical underground (NOE types T1 and T2)

In Hungary different business registers are maintained by the Tax Office, Court of Law and HCSO. The administrative register, also referred to as the Tax Office Register (TOR) is the responsibility of the Tax Office. It covers corporations and unincorporated units (sole entrepreneurs), except for agriculture and independent units¹. Secondary self-employed activities which are secondary to main employment are also covered in the TOR.

The HCSO's Business Register (BR) is regularly updated with data from the administrative register and statistical surveys. In 1997 a new classification² of activities was introduced, and a special survey undertaken for the purpose of reclassifying the units of the register was used to check the status of units (active / non-active³). This can be considered to be a NOE type T2 correction.

The tax file provided by the Ministry of Finance contains information about corporations in the administrative register. It is cross-checked with the HCSO Business Register and only units

¹ Independent units, in this context, comprise all persons performing scientific, intellectual or artistic activities on their own account and without employees. They are considered to be part of the households sector.

² In line with the NACE rev.1.

³ A unit is active if it has submitted a tax declaration or if it took part in any statistical survey that year. It is non-active if it has not submitted any tax declaration and not answered any statistical survey, even though it has not submitted notification of winding up.

common to both registers are included in the Enterprises Data Base (EDB) used by national accounts.

There are two possible reasons for differences between the files:

- A unit is included in the TOR and not included in BR: only after a special investigation into the reason for the inconsistency can the unit be included in the EBD. In view of the late recording of births of businesses in the BR, the missing unit is compared with the most up-to-date version of the BR and if it is not included, it will not be considered for national accounts purposes.
- If one unit is included in the BR but has not filled an administrative declaration, it is kept in the file and considered for national accounts purposes.

This procedure can be considered as a NOE T1-T2 type correction. No other corrections are made concerning the number of enterprises missing from any registers, as there are no obvious signs of their existence.

Economic underground (NOE type T4)

For NOE type T4 underreporting, the methods used differ according to the size and legal form of the enterprises concerned.

In the case of large and medium-sized corporations, the adjustment is implemented as explained below:

The original data collected from the tax file, industrial surveys, labour surveys, and from the statistical survey for the largest companies, are compared and any corrections are entered into the Enterprise Data Base. In the case of large differences, separate checking is necessary before adjustments are made, usually to net sales and gross output. The same procedure is not possible for intermediate consumption. Adjustments are based on the analysis of the growth rate between period n and $n-1$, and enterprises are contacted directly in extreme cases.

Within the group of unlimited liability companies (quasi-corporations), which are mainly the smallest corporations, two accounting standards are applicable according to the level of net sales. For the smallest size group, single entry bookkeeping is allowed, and an extremely low level of income is declared in the corporation tax declaration. Comparison with similar enterprises which use more reliable double-entry bookkeeping has led the HCSO to conclude that, while incomes are correctly declared, costs (a mixture of intermediate and final consumption) are over-reported. A complex method of adjustment is applied to these costs: coefficients are calculated using data from the limited liability corporations - the reference group - on size, classification of activities at the 4 digit level (505 activities) and regions (20 regions). Based on time series analysis, it has been

concluded that the ratio of intermediate consumption to gross output of the group subject to the adjustment should be more or less 70 per cent of the limited liability companies.

The Annual (and Sub-annual) Survey of Economic Statistics for the most important enterprises (those with more than 50 employees) includes questions on salaries paid in cash, salaries in kind arising from own-account production, and purchased products provided to employees as salaries in kind⁴. The information derived from the survey is compared with the corresponding information obtained from tax data. The comparison makes it possible to calculate salaries in kind and make imputations for them.

Household sector

The household sector is divided into two groups:

- Unincorporated enterprises (sole proprietors);
- Activities like construction and agricultural production for own consumption and for the market under a defined limit (related to the taxation rules), own-account construction of dwellings and housing services of owner-occupied dwellings.

Unincorporated enterprises (sole proprietors)

Units are regarded as registered unincorporated enterprises if they declare any kind of activities to the tax authorities. The number of units is estimated on the basis of registers and the number of units submitting tax declarations.

Low quality and low reliability are both present in the data. The low quality is corrected by substituting the per capita output of unincorporated enterprises with corresponding data derived from the tax reports of incorporated enterprises. After careful investigations the average per capita figures of limited liability corporations with less than 10 employees, and with 0-20 million HUF annual turnover, were taken as the reference amount. In order to omit extreme figures, only corporations working for more than one year were included in the sample. The estimate is made at the level of 505 activity classes. It is assumed that, on average, one unincorporated enterprise performs one job.

Further, it is assumed that unincorporated enterprises work with less intermediate input, but with higher labour input than incorporated enterprises. An expert estimate of 65 per cent of intermediate consumption of limited liability companies was accepted as the indicator for intermediate consumption of unincorporated enterprises. The implication is that unincorporated enterprises generate a higher share of gross value added relative to intermediate input.

⁴ Although in some cases such items are accounted as IC – for example, business cars or telephones.

Although this adjustment falls into all of NOE types T1-T6, it can be classified mainly as NOE T4 (underreporting).

Informal economy

The estimation for the second part of the household sector's activity belongs to the informal economy (NOE type T6). Specific methodologies are used for specific activities. A brief description of the most important cases is presented below.

- Non-registered agricultural production

The output and value added of agricultural activities are estimated by the commodity flow method. The data are also broken down by sectors. Output and value added from agricultural activities in the non-financial corporations sector are included in the total - primary and secondary - output of corporations; output and value added of small agricultural units are accounted for in the household sector. These activities may be market production (sold mostly on open markets), or non-marketed production used mostly for consumption by the producers' households. The estimation methods do not differentiate between underground (deliberately concealed) and production that is not concealed, but not registered.

- Construction of dwellings on own account

The number of permits to start construction and the number of licences for finished new dwellings is obtained from local administrative sources. Unlicensed construction is not common. Data about the average size and quality of dwellings are also available. Different cost figures are imputed for large-scale construction of dwellings and for small family houses. The numbers of permits and cost figures are used to estimate the total value of fixed capital formation in dwellings. The difference between this value and the output of registered enterprises specialising in housing construction is taken as the value of non-observed own account construction of dwellings.

- Tourist accommodation

The letting out of rooms to tourists by private households is organised partly through tourism companies and the figures for these services are known. Households may also organise the letting out of rooms privately. The HNA records the value of these services from expert estimates based on tourism statistics. It is assumed that although the major share of income derived from these kinds of services is concealed from the tax office (i.e. is part of the economic underground), it is captured in the HNA as part of the estimate of the total supply of tourism services.

- Tips

There are several services in Hungary where tips are usually paid. Taxi drivers, waiters in restaurants and hairdressers, etc. receive about 10 per cent of the bills as tips. Tips are taxable, but

the available data sources do not separate details of them, whether declared or not. As a result, the proportion of undeclared tips is not known.

Separate estimates for tips are not made in the HNA. Employers and employees both regard tips as a part of "normal" wages and salaries; and they should therefore be included in the output and compensation of employees. As the basic statistics do not provide data classified by activity, there are no estimates of the value of output by activity which could be used as a starting point to estimate the share of tips in output. Tips may in fact be included in the expenditure data coming from the Household Budget Survey, implying an inconsistency between the estimates of output and consumption of these services. Where tips are common, consideration is being given to how they may be identified on the basis of the Hungarian classification of activities (TEAOR 98).

Health care is the only activity where non-compulsory but socially accepted payments are accounted for. It is customary that doctors, nurses and other medical staff working in public health receive additional payments in cash or kind from the patients they treat. The data for the estimates are derived from the annual Household Budget Survey, although the figures may still be underreported.

Non-Profit Institutions Serving Households (NPISH)

For NPISH, the rate of non-response is very high (nearly 50 per cent of the total number of units). However, there are 10 units that represent nearly 90 per cent of their total value added. For the non-response units, imputations are based on data for units with similar characteristics (the units are stratified according to the type of activity, municipality and legal form).

Expenditure approach

Household final consumption expenditure

The main sources are the Households Budget Survey (HBS) and Retail Trade data.

The HBS has a very low rate of response, although there has been improvement in the last available year (the rate of response increased from nearly 55 per cent in 1996 to close to 80 per cent in 1997). The survey shows a significant problem with the reliability of the results, due to systematic non-response by households with higher incomes.

In the mid-1990s a micro-simulation model was built to correct for this non-response bias in the survey. The modelling results are compared with the Retail Trade Survey, although this latter source is not the final determinant of the estimates of Household Final Consumption.

The estimation of household final consumption is carried out in steps. First, products consumed are grouped according to income class. Based on analysis of consumption behaviour, an

average adjustment of about 30 per cent has been made. Products allocated to food and beverage classes (and only these classes) are balanced by way of input-output tables (in physical terms) and the reconciliation is done using aggregate data from the Retail Trade Survey.

Final consumption expenditure of general government and NPISH

No adjustment is made for general government. The adjustment procedure for non-response in NPISH is described in the previous section.

Gross Fixed Capital Formation

Estimates are based on quarterly and annual surveys (the latter being more detailed).

Enterprises with fewer than 5 employees are not surveyed (estimates for their capital formation are made). The quarterly survey covers enterprises with more than 50 employees and the annual survey covers enterprises with:

- more than 20 employees – exhaustively surveyed;
- more than 5 and less than 20 employees - surveyed by sampling methods.

Agriculture is a special case, where gross fixed capital formation is calculated from agricultural statistics. The reconciliation of quarterly and annual figures is not always straightforward and the quarterly figures are usually adjusted on the basis of the annual data.

Changes in inventories

The calculation of changes in inventories is not fully based on statistical surveys, because small enterprises are not asked to report this information. The method used for the surveyed enterprises is to calculate the difference between the closing stocks of two consecutive years. Adjustments between the production and demand sides are also included in this item.

Exports and imports of goods and services

Exports and imports of goods are based on customs data. Although the HCSO does not carry out coverage adjustments, customs do so in some cases.

Exports and imports of services are taken from the Balance of Payments estimates, also without any adjustment. Flows related to tourist expenditure should be treated with caution, as there are some indications that these figures could be unreliable.

Income approach

Compensation of employees

Wages and salaries are calculated from surveys conducted with respect to the different sectors. Three types of sources are used: fiscal data, the Annual Survey of Economic Statistics for Enterprises, and data from the Labour Force Department. Given discrepancies between the different sources, the average of the three sources is sometimes used for estimates related to private enterprises.

Adjustments are made for unincorporated enterprises where comparison with salaries paid by corporations of similar size and activity indicate that the data for unincorporated enterprises are underreported. In such cases, the average salaries of the corporate sector are used for the unincorporated units. Different methods are used for the following cases:

- enterprises with employees: adjustments are introduced which reclassify intermediate consumption to wages and salaries;
- own-account workers: intermediate consumption is reclassified to households' final consumption;
- incorrect figures in fiscal declarations: ratios from the Labour Force Survey are used.

Implications and effects on national accounts and GDP estimates

The adjustments and imputations related to the improvement of the exhaustiveness of the national accounts are an integral part of the estimation process and the methods used do not normally enable the explicit identification of those related to the non-observed economy. The adjustments made for 1997 as a result of the work done within the framework of Eurostat PPE project in 1999-2000 are shown in the table below.

There are 3 types of future plans for improving the estimation of underground and informal activities in the National Accounts of Hungary:

- continuous monitoring and improvement of the methods used;
- development and improvement of global methods to ensure exhaustiveness: these are the employment method; reconciliation; use of registers;
- estimation of the illegal economy.

**Table 1. Summary of exhaustiveness adjustments, by type (legal activities) – 1997
(Billion HUF)**

	Billion HUF	Million EURO ⁵	per cent of GDP
T1 – Statistical underground (non-response)	31.2	121	0.3
T2 – Statistical underground (not-updated registers)	31.2	121	0.3
T3 – Statistical underground (not registered)	0.0	0	0.0
T4 – Economic underground (underreporting)	501.3	1 943	4.8
T5 – Economic underground (not registered)	584.9	2 267	5.6
T6 – Informal sector (not registered, underreporting)	522.2	2024	5.0
T8 – Other GDP under-coverage	0.0	0	0.0
Total	1 670.8	6 476	16.0

⁵ Exchange rate used: 1 Euro=258 HUF.

IRELAND

Definitions and concepts

In the Irish National Accounts, two independent estimates of GDP are compiled using the income and expenditure approaches. The compilation system is designed to ensure that all relevant transactions are captured and included at their appropriate value in the two estimates. Illegal activities are not covered but the accounts are designed to include items which, while legal in themselves, are not reported to the fiscal authorities. The description below summarises some of the principal methods used to ensure that such activities are captured.

Sources and estimation methods

When a data source is partial or incomplete, adjustments are made to include figures for the missing elements. Although every effort is made to ensure the reliability and comprehensiveness of the income and expenditure based figures, the two approaches still produce different results. The estimates therefore still include coverage and measurement errors, some of which are probably the result of transactions being recorded at different times on the two sides of the account. Since there is no reason to believe that one or other of the estimates is superior or more comprehensive, the average of the two results is taken to be the definitive version of GDP.

In the Irish accounts, most of the explicit adjustments made to ensure the exhaustiveness of GDP are made on the income side of the account because the data sources used for the income estimates are considered to be less complete than those used for the expenditure based measure. All the adjustments made to ensure comprehensiveness were reviewed and updated in 1998 as part of a special work programme undertaken to ensure the exhaustiveness of the national accounts. The relevance and adequacy of the existing adjustments were verified and a number of new adjustments were introduced when data sources were found to be inadequate. The net impact of the changes made on that occasion was to increase the level of GDP by about 4 per cent. GDP estimates back to 1988 were recalculated to incorporate the new adjustments. In this report, the figures relate in the main to a special examination of the 1996 national accounts and are given in Irish pounds (IR£). In 1996, GDP was estimated at IR£45.7bn.

Final balancing procedure

The income and expenditure estimates, incorporating the adjustments described in later sections, are compared and the average is taken as the definitive version of GDP. The income-based estimate is generally lower than the expenditure based figure but not in all years. On balance, the primary data sources and estimation procedures used for the expenditure based estimate are considered more comprehensive and should not be subject to the same degree of understatement or evasion as some of the components in the income based estimate. Nevertheless, there is ongoing concern about the potential impact on the expenditure based GDP measure of even small errors in

the measurement of the External Trade statistics, given the scale of the gross flows involved. In Ireland, the combined value of Imports and Exports is equivalent to about 160 per cent of GDP and even small discrepancies in the trade data can therefore generate significant errors in the overall GDP. It is therefore considered best practice to take the average of the income and expenditure based measures to be the definitive version of GDP. A balancing adjustment equal to half the difference between the two measures of GDP is then included in both the income and expenditure measures.

Verification of the transactions of large companies

As an additional check on the reliability and comprehensiveness of data for large exporting companies, a special Unit within National Accounts compares, on an ongoing basis, the consistency of all the data for those companies that are used in the national accounts. The returns which are the subject of this exercise include:

- imports and exports of goods (Intrastat and SADs)
- turnover (Monthly industrial turnover inquiry)
- service imports (Balance of Payments inquiry)
- profits (Balance of Payments inquiry)
- profits (taxation returns used in estimating gross operating surplus)
- census of Industrial production
- index of industrial production (monthly inquiry)

A limited number of variables are compared each quarter but the more detailed examinations are only possible on an annual basis since the detailed Census of Production results and tax accounts for each company are available only yearly.

The majority of the large companies are exporters and also import most of their raw materials. It is therefore possible to build up a coherent picture of each company, equating (a) turnover with exports; (b) purchases with imports; (c) research and development costs, royalties and other large service payments with Balance of Payments service imports, through to (d) value added and (e) operating surplus. This exercise helps ensure the exhaustiveness and consistency of the import and export data and related components of the GDP estimate.

The companies, whose transactions are individually validated for correctness and consistency each year account for over half of all exports, over a third of imports and about half of the operating surplus of corporations.

Income-based estimates

The income-based estimate of GDP is calculated by estimating and combining the separate components of income, namely Compensation of Employees and Operating Surplus. Adjustments are made to ensure the exhaustiveness of these two income elements.

Compensation of employees

Use of the Quaterly National Household Survey based employment totals

In the Irish Accounts, Compensation of Employees is calculated by assigning a wage to all employees in the Quarterly National Household Survey (QNHS, previously the Labour Force Survey). This survey is considered to be a reliable source of information on employment. This was confirmed in a special one-off exercise undertaken as part of the Labour Force Survey in 1996, which was designed to assess objectively the employment status of persons officially registered as unemployed. A one per cent sample of persons on the official unemployment register (the Live Register) was added to the LFS sample and the standard survey questionnaire was also completed for these additional households. The results showed that about twenty per cent of persons officially registered in social security records as unemployed had full-time or part-time jobs and were recorded as such in the LFS. The following table shows the ILO based employment status of the Live Register sample.

Table 1. ILO Employment status of the Live Register based on a sub-sample of the LFS, 1996

ILO Economic activity status	Number	As a per cent of the total
Employed, full time	167	11.4
Employed, part time:	146	10.0
<i>Not underemployed</i>	<i>107</i>	<i>7.3</i>
<i>Underemployed</i>	<i>39</i>	<i>2.7</i>
Unemployed	724	49.5
Marginally attached to the workforce	66	4.5
Others, not economically active	359	24.6
Total	1 462	100.0

The estimates of employee numbers from the QNHS are based on the International Labour Organization (ILO) definition of employment. This definition captures all persons who were at work for one hour or more during the week prior to the survey. The QNHS questions concerning the ILO definition ask for information on hours worked in main jobs (full-time or part-time) and in

second jobs. This allows the conversion of part-time main jobs and of second jobs to full-time equivalents (FTE).

The calculation of FTE from the QNHS is carried out for each activity branch. However, the information on FTEs can only be used in the remuneration calculations for a branch provided that the basic remuneration data are reported on a FTE basis, or alternatively that the data source distinguishes between full-time and part-time work and earnings. The statistical surveys used as the sources of the earnings information are being systematically updated to include this split. Sources with the required breakdown include:

- Census of Industrial Production;
- Annual Services Inquiries;
- Direct returns for the education and health branches;
- Annual National Accounts national income survey.

Adjustments to capture all elements of remuneration

Every effort is made to ensure that the remuneration allocated to each individual in the QNHS is appropriate and complete. The industry group to which the individual is classified in the QNHS determines the remuneration rate that is assigned. Information on average remuneration rates in the different industry groups is collected primarily in the statistical surveys of businesses undertaken by the Central Statistics Office (CSO). Some of these surveys collect full details covering almost all of the components of compensation of employees. However, some are less detailed and only collect information on basic wages and salaries. Elements of remuneration such as benefits in kind will therefore not be covered. In such cases the information collected is adjusted upwards to include the missing remuneration elements. These additions are estimated also from statistical surveys and especially from the four-yearly Labour Costs survey that provides details of all elements of remuneration paid by employers.

One element of remuneration not captured in the adjustments described in the previous paragraphs is gratuities or tips, which are associated with employment in certain industries. These are not paid directly by employers and they will not be included in adjustments based on the Labour Costs Survey. The scale of tipping is assumed to be between 5 per cent and 10 per cent of sales depending on the activity. This represents a much higher proportion of wages and salaries.

Operating surplus and mixed incomes

Estimates of operating surplus in the Irish National Accounts are largely based on the income and corporation tax records of the self-employed and companies. However, statistical surveys are used in preference to tax files to estimate the operating surplus of financial enterprises located in the International Financial Services Centre (IFSC). In the case of the Agriculture and Rents of Dwellings branches, value added is estimated using the output-based approach and tax records are not used.

Considerable adjustments are required in order to calculate operating surplus from the tax-based information. These include the conceptual adjustments that are needed to ensure that the definition of operating surplus complies with that in the ESA95. In addition a number of adjustments are needed because the basic sources are sometimes incomplete and the reported incomes may be understated. These latter adjustments which are needed to ensure the exhaustiveness of the operating surplus estimates are described in the following paragraphs.

Use of the QNHS employment totals for self-employed

Employment numbers from the QNHS are used as the control totals for numbers of self-employed in the calculation of mixed incomes. Since QNHS based control totals are also used to calculate employees' remuneration, this means that an income is effectively assigned to each person classified as "At work" in the QNHS.

In the case of the self-employed, tax files are used to calculate an average value of mixed income for each of the industry groups. These average incomes are then applied to the numbers of self-employed in each industry, as estimated from the QNHS (or its predecessor the LFS, back in 1996). In aggregate, the total numbers recorded as self-employed in the survey exceeded those on the tax files by some 37,000 (30 per cent) in 1996.

Including tax-exempt activities and excluding double counting

Certain activities and incomes are exempted from income and corporation tax and some special adjustments are, therefore, also made to ensure that these incomes are captured in the national accounts. There are also some small overlaps and double counting between tax files and the output-based value added estimates for Agriculture and these have to be removed.

The 1998 exhaustiveness study included a detailed examination of the Corporation and self-employed Income Tax systems in order to identify any relevant enterprises and incomes that were missing from the tax system and not captured elsewhere in the compilation process. It was discovered that a small number of enterprises and activities were being omitted. These included entities such as charities, credit unions (essentially mutualised personal savings clubs) harbour authorities and amateur sports bodies.

It was also found that certain incomes were being missed. These included items such as employment grants that were exempt from tax. Some on-farm incomes were also being omitted from GDP. To avoid duplication, the profits of self-employed persons classified in the Agriculture Branch were being excluded from the estimates of self-employed incomes derived from the Income Tax files. However, the profits thus omitted included some non-farming income such as tourism revenue, which was not included in the output-based estimate of agricultural income.

The integration of the tax-based estimates with the output based estimate of farming and fishing also gives rise to some double counting. While farmers and fishermen are excluded from the tax-based estimates of mixed income, some company farms and fish farms are included in the Corporation Tax based estimates of operating surplus so there is some duplication of income with the output based estimates.

Adjustments are made to ensure that these omissions and double counts are corrected for. In 1996, the additions and deductions to the income based estimate of GDP were as shown in Table 2 below:

Table 2. Operating surplus & mixed income of tax exempt activities and incomes, 1996

		Ir£ million
Adjustment Item		Value in 1996
Adjustment for employment grants which are exempted income for tax purposes		44
Adjustment for operating surplus of corporate bodies exempted from Corporation Tax:		
- Charity shops		3
- Credit Unions		-35
- Housing Finance Agency		-2
- Commercial ports		15
- Amateur sports bodies		2
- Irish Intervention Agency		13
- Other exempt corporate bodies not covered elsewhere, including National Rehab lottery, Irish Horseracing Authority etc.		3
Adjustment for non-agricultural income of farms		35
Adjustment for operating surplus of companies covered in the output based estimate for Agriculture and fishing		
- Farm income		-9
- Fish farms		-10
Total		59

Underreporting of incomes

Adjustments are also made for underreporting of incomes in the tax files. In the case of the self-employed the uplifts are applied to mixed incomes net of capital consumption of fixed assets. The adjustment rates are based on evidence from the Revenue Commissioner's programme of audits supported by comparisons with income information from the CSO's Household Budget Survey (HBS).

The incomes reported by larger companies to the tax authorities are considered reliable and are used in the accounts without adjustment (apart from the conceptual adjustments needed to convert the tax-based definition of profits to operating surplus). However, the accounts of smaller companies are sometimes not audited and they are therefore thought to be liable to the same degree of understatement as the incomes of the self-employed. An upward adjustment for understatement of incomes is therefore also made to the smallest companies.

Comments on specific industries

Agriculture and fishing

In Ireland, the Agricultural and Fishing industries consist mostly of unincorporated enterprises. Many of these are small and are not liable for the payment of tax. The tax records are therefore not a good basis for estimating operating surplus in these two industries. Value added in Agriculture and Fishing is estimated instead using an output-based approach. The estimates of gross output in agriculture are considered reliable. Sales of the principal agricultural products tend to be calculated from the demand side so they are independent of information provided by farmers. For instance, the output of milk is estimated using information on milk intake by dairies, supplemented by information on the value of milk consumed on farms without sale. The gross output of the fishing industry is calculated mostly using information on fish landings. This information is provided by the enterprises engaged in fishing and is grossed up by one third to allow for under-reporting.

Rents of dwellings

An output-based method is also used to calculate the value added of the Rent of Dwellings branch. The methodology used imputes a rent and value added to owner-occupied accommodation. Estimates for a benchmark year are based on a full enumeration of both rented and owner-occupied accommodation and are therefore fully comprehensive. This complete enumeration is conducted as part of the Census of Population and is repeated every ten years.

Construction, Distributive Trades and Hotels, Restaurants and Catering

The black or hidden economy is likely to be more prevalent in some industries than in others. The three branches Construction, Distributive Trades and Hotels, Restaurants and Catering are generally recognised as being especially difficult to record comprehensively in GDP. As part of the exhaustiveness exercise undertaken in 1998, the income-based estimates of value added for these three branches, for a number of years in the mid-1990s, were compared with a number of alternative measures. These included output-based estimates of value added. These had to be especially constructed by the CSO since an output-based measure of GDP is not yet routinely compiled.

The checks undertaken for these branches generally confirmed the reliability of the income-based value added estimates. A few minor amendments were made to the methodology used for the income-based GDP calculations, including an increase in the percentage adjustment made for the underreporting of income in the self-employed tax files.

Childcare

In the Irish GDP calculations a specific adjustment is made to include income earned for childcare services that would otherwise not be captured in the compilation system. In Ireland, a considerable amount of childcare is arranged informally and the resulting employment and income may not be captured in official records. An adjustment is made to the estimates of mixed income to cover babysitting and care in the childminder's own home. These are the situations most likely not to be captured elsewhere in the compilation system. The adjustment made is calculated on the basis of the estimated household expenditure on these two services. Expenditure on babysitting services is based on the Household Budget Survey results. The value of mixed income is taken to be equal to expenditure since intermediate consumption is negligible. Estimates of the expenditure on childminding in the carer's own home were also made using the HBS. However, alternative estimates, which were slightly higher, were available from a dedicated survey of childminding services undertaken by the Economic and Social Research Institute (ESRI) in 1996. The average of the two estimates was taken to be the definitive figure. In calculating the related income, the intermediate consumption is again assumed to be zero. However, some part of this activity will be captured in the tax system. In calculating the adjustment, it is assumed that some 90 per cent goes unrecorded. The calculations for 1996 are summarised in Table 3.

Table 3. Calculation of unrecorded income for childcare services in 1996

	Expenditure on childcare		Ir£ million
	Babysitting	Childcare in minder's home	Unrecorded mixed income
	(A)	(B)	(A) + 90 per cent of (B)
1996	24	65	82

Correction for VAT fraud

The final explicit adjustment made to the income-based estimate of GDP is in respect of income corresponding to VAT fraud without complicity. This is intended to cover the case where a trader collects VAT from a customer but does not pay the VAT over to the Tax Office. This results in higher operating surplus for the trader and this extra income would not have been specifically captured in the underreporting adjustments described above. A special calculation is therefore

made each year to estimate the amount of VAT fraud without complicity, using a methodology set out in EU legislation.

The methodology involves calculating the theoretical amount of VAT that should have been collected on all transactions recorded in the national accounts and comparing this with the actual amount of non-deductible VAT paid to the Tax Authorities. The difference between the two is an estimate of VAT evasion. This then has to be split into cases where both parties to the transactions agreed to avoid VAT and cases where traders actually collected VAT but never forwarded it to the tax office. The assumption is made that in the latter case the traders will be registered for VAT whereas traders evading VAT with the mutual agreement of customers will not be on the tax files. In calculating the adjustment in the Irish national accounts, it is assumed that VAT evasion with the agreement of customers relates to self-employed traders recorded as employed in the QNHS but not making self-employed Schedule D income tax returns. In 1996 an amount of Ir£50 million was included as an estimate for VAT evasion without purchaser's agreement.

Expenditure based estimates

When compiling the expenditure-based GDP measure, every effort is made to ensure that all relevant economic activity is captured. The explicit exhaustiveness adjustments that are made to the expenditure-based GDP components are not as extensive as those needed on the income side because the primary basic data sources and compilation procedures used result in more complete coverage of the economy. Most of the basic data on which the estimates are based will already have been edited and checked for completeness. For instance, all statistical surveys will have been grossed up to ensure that estimates cover the entire population. The following paragraphs outline some of the checks and adjustments made to ensure that the various elements of the expenditure-based GDP estimate are comprehensive.

Final Consumption Expenditure of Households

Estimates of household consumption expenditure are calculated using commodity flows based on production and trade information, fiscal data reported by the tax office, the Household Budget Survey and administrative data and direct surveys.

Most of the basic information from statistical surveys used in the household expenditure estimates will already have been checked for reliability and exhaustiveness by the compiling branches before it is incorporated into the national accounts. For example, Household Budget Survey results will have been grossed up to ensure that the estimates cover all private households. This grossing corrects for differential non-response. The reliability and comprehensiveness of the production and external trade data that are used in the commodity flow estimates will also have been checked and verified by the compilers of the basic statistics. The adjustments made to the basic statistics include an upwards adjustment to the merchandise imports corresponding to about 3 per cent of EU arrivals.

Specific aspects of the household expenditure calculations designed to ensure exhaustiveness include the following:

Rents of dwellings

A figure is imputed for rents paid for owner-occupied accommodation, in compliance with ESA95. This is based on the rental levels payable for similar types of rented accommodation. The rent levels are calculated from the Census of Population and the Quarterly National Household Survey. The Census of Population is used to benchmark the rent calculations every ten years and collects comprehensive information on all rented and owner-occupied accommodation. This includes details of actual rents paid and information on the size, location and amenities of both rented and owner-occupied accommodation (e.g. number of rooms, availability of central heating, etc.). Estimates for years between Censuses are compiled by projecting forward the estimate for the benchmark year to take account of changes in the volume of the housing stock and in the levels of rents. Information on rent levels is collected in the QNHS.

Repair work on dwellings

As mentioned above, the construction sector, particularly the part covered by small firms, is one of the activities generally considered to be most difficult to cover comprehensively in the National Accounts. Household expenditure on everyday repairs and maintenance can be understated because of this. However, in Ireland a special monthly survey carried out by the Economic and Social Research Institute (ESRI) captures household spending on both current and capital type repair and maintenance. Households are asked for amounts spent on all minor repairs and maintenance in the previous 2 months and on all major work undertaken in the last 12 months. Comparisons were made between the results of this survey and the 1994-95 HBS. The expenditure estimates in the ESRI survey for day-to-day repair and maintenance of dwellings were considerably in excess of those in the HBS. The ESRI survey showed Ir£565 million compared to Ir£300 million in the HBS. On this basis the ESRI survey was regarded as comprehensively covering the small construction companies and has been used as the basis of the household expenditure estimates from 1996 onwards, in preference to the HBS.

Nursing Homes

Estimates of expenditure on private nursing homes are obtained from the Department of Health, as this type of expenditure would not be covered in the Household Budget Survey.

Childcare services

The initial estimate of expenditure on childcare services is based on the results of the 1994-95 Household Budget Survey. This estimate is then increased to allow for underreporting in the

HBS. The upwards adjustment is based on a benchmark comparison of the HBS results with information collected in a special survey of the childcare industry undertaken by the Economic and Social Research Institute in 1996. This comparison suggested that the HBS understates household expenditure on childcare services provided in the carer's home. In 1996, the upwards adjustment for underreporting was Ir£11 million.

Service charge for pension funds

The ESA95 requires that a service charge must be imputed in respect of the management of occupational pension funds owned by households. The statistical information available for autonomous pension schemes in Ireland is limited and does not permit the direct calculation of the management charge. Some of the pension funds are organised by insurance companies and their service charges are captured as part of the administration fee imputed for insurance. An additional adjustment has to be made to ensure that Household Consumption also includes an imputed service charge for the other pension funds. Global estimates of these service or administration charges are made using information provided by the Irish Association of Investment Managers (IAIM), supplemented by information from CSO's own Balance of Payments Division in respect of funds managed by non-IAIM members. In 1996, the value of the additional adjustment for pension management charges was Ir£146 million.

Consumption of home grown produce on farms

The Agriculture Division of CSO estimates the value of produce produced and consumed on farms without sale. These estimates are based on information collected in the Household Budget Survey and the National Farm Survey conducted by Teagasc, a state sponsored agricultural research institute. All produce is valued at farm gate prices. The value of these items in 1996 is shown in Table 4.

Table 4. Farm produce and fuel consumed without a process of sale, 1996

Ir£ million	
Product	Value
Meat	15
Milk, cheese, eggs	16
Fruit	1
Vegetables	14
Farm turf	21
Total	67

Private Non-Profit Institutions (PNPIs)

Separate estimates for PNPIs are not compiled in the Irish national accounts. Final consumption expenditure of PNPIs is instead combined with Household Consumption Expenditure.

Specific entries are included for final consumption on that part of the output of PNPIs which corresponds to the compensation of employees (COE) working in these organizations. Values are based on the estimated values of COE calculated in the income-based account. Indirect allowances are also made for final consumption on that part of the output of PNPIs which corresponds to their intermediate consumption. For instance, estimates based on the HBS are grossed upwards, usually by about 3 per cent, to cover the intermediate consumption of PNPIs.

Government Final Consumption Expenditure (GFCE)

By definition, the Central Government Sector consists of public units that are mostly financed and answerable to Government. As part of the Exhaustiveness study undertaken during 1998, the employment figures underpinning the remuneration element of GFCE were compared with independent employment data from the Labour Force Survey. Because of definitional problems, valid comparisons were not possible in all cases. However, the comparisons that could be made largely confirmed that the coverage of public units in the General Government Sector was complete. The one exception was in the area of Public Health where it was discovered that a large number of voluntary agencies funded by the State had been excluded with the result that their output was not included in GFCE. This omission was corrected and the estimates of GFCE are now considered to be fully comprehensive. This employment comparison will be repeated regularly to ensure the ongoing comprehensiveness of the results.

Capital Formation

The basic estimates of Capital Formation are also considered to be reasonably comprehensive. The main sources used in the compilation of GFCF are administrative and fiscal data, surveys, direct information and trade and production data in the commodity flow method. The Department of Environment and Local Government (DELG) produces a Construction Industry Review and Outlook (R&O) each year that is used to estimate GFCF on building and construction in the State. For the most part, these estimates are not based on information provided by builders and are considered to be reasonably reliable and comprehensive. For instance, new house construction is based on the number of house completions. These are estimated using information on new electricity connections. Expenditures by households on capital type improvement works, such as extensions, are measured using the special household survey undertaken by the ESRI as described above. The estimate of Capital Formation also includes the value of transfer costs incurred in the sale of land and buildings. The total value of transfer fees on land and buildings in 1996 was Ir£321 million.

Imports and exports

Merchandise imports and exports are compiled mostly using the Intrastat surveys for trade with EU member states and customs declarations for trade with countries outside the EU. Estimates

of trade in services are compiled mostly from Balance of Payments direct surveys. The following paragraphs describe adjustments made for exhaustiveness.

Intrastat

In Ireland, the full Intrastat system applies to traders whose exports to EU countries in the previous year exceeded £500,000 or whose imports from EU countries exceeded £150,000. About 95 per cent of the traders surveyed respond and these also account for 95 per cent of total EU trade.

Results for large traders are verified against other information available from the statistical records and tax files of these companies. The results are also grossed up to include estimates for non-respondents and below threshold traders. All traders are required to record the total value of goods imported from and exported to other EU member states on their VAT returns and this information is used to estimate total EU trade for traders below the Intrastat thresholds and for non-respondents above the thresholds. These VAT returns are also used for maintaining the register for the Intrastat survey.

Traders not registered for VAT and private individuals who move goods within the EU have no obligations under the Intrastat system and their trade is therefore not included in the statistics. However, an overall upward adjustment is made to imports in order to compensate for these and other imports missed in the Intrastat system. This under-coverage adjustment is equivalent to almost 3 per cent of Intra-EU arrivals. Experience with the Intrastat system suggests that imports tend to be understated and that some upward adjustment is needed to the reported figures. The level of adjustment applied in Ireland was determined after an examination of mirror statistics and macro-economic trends soon after the introduction of the Intrastat system. It has been retained pending the completion of a more up-to-date Supply and Use Table, which will permit additional analyses.

SAD Trade System

The SAD Trade System captures all imports and exports that are subject to the normal Customs declarations. These cover most of the trade with non-EU countries. However, the statistics have to be supplemented with estimates for certain special categories of trade not covered by the normal Customs regime, namely parcel post, non-EU low-value transactions, and the imports and exports of companies operating in the Shannon Free Zone.

Other unrecorded trade

A largely conjectural estimate is included for net unrecorded trade and smuggling. Cross-border shopping by Irish residents in Northern Ireland and vice versa has been a feature for many years. The levels and direction of such activity can vary from year to year depending on the underlying price levels, differences in indirect taxes and changes in exchange rates. The effect of this adjustment in 1996 was to add a net Ir£60 million to Imports.

Exports and Imports of Services

Exports and imports of services are largely based on the Balance of Payments Statistics, which are also compiled by the CSO. The estimates are based on direct surveys conducted by the Office and are generally comprehensive. Whenever necessary, the survey results are grossed upwards for non-response or non-coverage.

ITALY

Introduction

In the early 1990s the European Commission promoted research on the harmonisation of gross domestic product among member countries¹. This research has wide-ranging goals, of which the main ones are comparative analysis of the sources and calculation methods used in national accounting and achieving exhaustiveness in national accounts estimates.

Within the above framework, the Italian national accountants adopted methodologies in the most recent revision of the national accounts to assist in identifying the so-called “underground economy”. The underground economy represents legal production that is not directly observed due to both economic and statistical reasons. These definitions are in accordance with the SNA 93 and ESA 95².

Definitions and concepts

General overview

In Italy, that part of the underground economy that arises for economic reasons is identified as resulting from the use of unregistered labour, the underreporting of legal production and the over-estimation of intermediate costs by enterprises. The underground economy that arises due to statistical reasons is attributable mainly to the difficulty of maintaining the coverage and updating registers of production units in the face of the large number of small production units and the growing participation in the production process of freelancers and others who are difficult to find with the usual enterprise-based survey techniques.

The methods used for measuring the statistical and economic underground are mainly the following: a) survey techniques that make it possible to measure the significance of unregistered work; b) correction of the underreporting of income by enterprises, through adjustments to the per capita production and value added values declared by small production units (fewer than 20 employees); and c) checks of consistency in economic aggregates through the balancing of resources and investments made at the industry level. The integration of statistical sources with administrative data and indirect estimate methods make it possible to minimise the problems of identifying active enterprises and their structural changes.

¹ EC Council Directive 89/130 Euratom.

² According to the definitions adopted internationally, the underground economy is a part of the non-observed economy. In particular, the non-observed economy comprises all the productive activities that can be classified into the following areas: a) underground; b) informal; c) illegal. For more detailed information and definition of the three areas, see U.N., Eurostat, etc. (1993).

ISTAT framework for the non-observed economy (NOE)

The ISTAT framework was elaborated at the end of the 1980s and was further developed in the 1990s within the European Union during technical assistance activities with transition and developing countries³.

The framework shows the relationship between NOE problems and associated statistical measurement problems. In the framework, the eight types of NOE are classified into three broad categories: unregistered units, non-response, and underreporting.

Unregistered units

Unregistered units can be a statistical or an economic problem. The former is due to difficulties in defining and updating an exhaustive register of units to be included in enterprise surveys, or as individuals or households. The latter is due to deliberate decisions of owners to avoid obligations to register and, as a consequence, the additional costs of value added taxes, social security contributions, costs related to compliance with health and safety standards, etc. Non-registration may involve the entire enterprise or one of its local units or the workers employed in that enterprise or local unit.

Non-response

Non-response is mainly a statistical problem generated by enterprises and households that do not answer questionnaires because of the time involved or because they have concerns that the information they provide will be used for administrative purposes.

Underreporting

Even if all units are included in a survey frame and questionnaires have been filled in there may still be a problem of misreporting. When misreporting is deliberate, the usual effect is to understate incomes and value added in order to avoid tax, social charges, etc. Misreporting can take the form of overstated costs or understated revenues. In these cases, declarations to both the fiscal authorities and to the statistical office are expected to be false.

In the Italian system, the NOE is addressed through improvements in basic data collection, and the use of the labour input method for particular activities. The labour input method is considered the most effective supply-based procedure. Three important steps are at the core of the Italian method:

³ A detailed description of the Italian framework is provided in the OECD Handbook (2002).

-
- Estimates are obtained of the supply of labour inputs to GDP, for selected industries and enterprise sizes, from a household Labour Force Survey and/or other demographic source (e.g. the Population Census);
 - Using regular or special purpose surveys, estimates are derived of output per unit of labour input, and value added per unit of labour input, for the similar industry and size classes;
 - The labour input estimates are multiplied by unit ratios to compile output and value added classified by industry and size of production units.

In each activity by size of enterprise classification, the labour input estimates provide weighting factors to gross up enterprise survey-based estimates of output and value added. This procedure can be expected to give a more exhaustive coverage of inputs to production if the household survey data gives a more complete coverage of labour input to GDP than does enterprise survey data. There are two reasons to suppose that this is likely:

- Household-based surveys pick up labour inputs in enterprises that are not included in enterprise surveys, either because the enterprises are too small to be registered in the business files or because they are too small to be included in enterprise surveys;
- Individuals may report their labour input in the household survey, whereas enterprises may conceal those same inputs in order to evade taxes or administrative regulations.

Employment measures

The approach used for quantifying the input of labour within the national income statements consists of extrapolating base year estimates by surveys and administrative data. The current base year for the employment series is 1991.

With respect to 1991, reconciliations were carried out on employment data from administrative, sampling and census records. The reconciliation took into account who provided the information (enterprises, institutions or households). As noted above, the base-year employment levels are updated with information from ISTAT surveys and administrative sources.

Methods of estimation

Through the use of consistent definitions of employment in labour surveys and in other national accounts surveys that also provide employment estimates, differences between the measures produced by each type can be quantified and analysed.

Unregistered employment

According to the ESA, in addition to legal productive activities, those classified as illegal and informal are considered to fall within the production boundary. No specific estimates of illegal production activities are included in the national accounts

The informal sector is characterized by productive activities mainly undertaken to generate employment and income for the persons concerned. They usually operate at a low level of organization, on a small scale, and with little or no division between the factors of production, poor or non-existent separation among the production factors. Labour relations are based mostly on personal relationships. In Italy, the informal sector operates mainly in the agricultural and building sectors.

The Italian approach to the estimation of the total input of labour consists of calculating full-time equivalent jobs for legal labour (defined as registered with appropriate authorities), unregistered resident labour, and registered and unregistered non-resident labour. Estimates are arrived at by a process of comparing the various available data sources.

Estimates of labour input are designed to achieve exhaustiveness in the national accounts by ensuring that all productive labour is taken into account. The principle steps in obtaining a comprehensive measure of full-time equivalent employment inputs are:

- harmonisation and integration of the different sources of employment information, with respect to concepts and definitions, in order to obtain a first estimate of labour input;
- comparison of separate estimates of labour supply and demand to obtain indicators of the various types of employment, such as registered, unregistered multiple job-holdings;
- use of additional sources such as special surveys and administrative records to capture data not collected in the standard data sources of the categories of employment not directly observable from the sources of information;
- conversion of the employee data to full-time equivalent basis

Harmonisation of data sources

To ensure consistency in comparisons across aggregates at the geographic, industry and institutional level, international definitions are used for domestic employees, jobs and full-time equivalent units ⁴.

The definition of domestic employment is different from that of national employment since domestic employment does not include residents who work in producing units not located in the

⁴ See Eurostat (1996).

domestic economic territory, while it does include non-residents working in resident producing units. The concept of national employment includes all resident people employed in both resident and non-resident producing units, and excludes non-resident workers.

The concept of employment used in household surveys is very close to that of national employment. The full harmonisation of the definition of employment in the Labour Force Survey (LFS) with the national accounting definition also requires the inclusion of workers permanently in an institution, conscripted forces and the military. Table 1 shows the steps taken in the derivation of total employment for national accounts purposes from the LFS and other sources.

Provided consistent definitions and time periods are used across the data sources, comparisons of the results will enable the identification of the same registered employment in each source. The remaining difference will then be indicators of the amount of employment not captured in the standard surveys.

Table 1. Derivation of domestic employment for national accounts purposes⁵

	Number of employed people (Labour Force Survey, annual average)
+	Foreign workers present on the national territory for a period longer than one year, but not included in the registers of the population
+	Seasonal foreign workers that work in the country for a period less than one year not included in the registers of the population
+	Members of the country's armed forces in the rest of the world
+	Staff in charge of national embassies located abroad
+	Resident workers living permanently in an institution
+	Conscripted forces
-	Resident frontier workers that work in non-resident establishments
+	Non-resident frontier workers that work in resident establishments
+	Trainees not paid within enterprises
+	Employed individuals with an age of less than 15 years
+	Workers employed in underground productive activities not considered by the Labour Force Survey
+/-	Integration with other sources
=	Number of domestic workers in national accounting (annual average)

Labour supply and demand

In estimating labour inputs, both the labour supply and labour demand are compared.

⁵ The table was submitted as part of the work of the Eurostat Task Force "ESA Employment" and for the meeting of the "National Accounts" Work Team that took place in Luxembourg, 16 – 17 December 1999.

For labour supply, the main data sources are the Population Census for 1991 and the quarterly household Labour Force Survey. The major information sources for labour demand statistics are the Industry, Services and Institutions Census, the Agriculture Census, and Ministry of Finance VAT data.

Additional data sources

Other periodic surveys are used to supplement the basic information or fill in gaps in the data. These include a survey of income of enterprises with fewer than 20 employees, and a survey of ordinary and extraordinary maintenance of residential buildings.

In addition, various administrative sources provide direct estimates of employment. These sources include the Social Security Institute and the Ministry of Interior (for information on permits for foreign workers). Table 2 shows the sources used to estimate the numbers and categories of employees.

Full-time equivalents

For the purpose of measuring the input of work as a factor of production, ESA95 suggests estimating the total number of hours worked or, as an alternative measure, the number of the full-time equivalent units. The total of full-time equivalent units is obtained by the sum of (primary and secondary) full-time jobs and part-time jobs, transformed into full-time units. Part-time jobs (primary and secondary) are transformed into full-time equivalents by means of coefficients based on the ratio of hours worked in part-time jobs to hours worked in full-time jobs.

The underground economy in the output estimates

The preceding section focused on estimating total employment in the economy, with a view to compiling comprehensive accounts for the macroeconomic aggregates. This type of process results in final estimates that take account of the statistical and economic underground, including that arising in the informal sector.

While such processes assist in obtaining more accurate estimates of total output, they do not necessarily result in more accurate accounts at detailed levels. In order to measure correctly the contributions of the various factors of value added it is necessary to carry out in-depth reconciliation, by way of input-output analysis, of the supply and use of resources.

Adjustments to reported values

The adjustments made to initial national accounts estimates to account for non-observed production can be summed up by the following equation:

$$NA = SUR + \mathbf{DCLA} + \mathbf{DRE} + \mathbf{DUNR} + \mathbf{DESA} + \mathbf{DBAL}$$

Where:

<i>SUR</i>	=	value added and production from standard surveys
<i>CLA</i>	=	adjustments for understatement of output by registered employment (1)
<i>RE</i>	=	adjustments for understatement of revenue or overstatement of costs (2)
<i>UNR</i>	=	adjustments for costs and output associated with unregistered labour (3)
<i>ESA</i>	=	adjustments for other under coverage, such as self-developed software and payments in kind (4)
<i>BAL</i>	=	adjustments arising from balancing supply and use in the input-output framework

- (1) – Compiled by multiplying total registered full-time equivalent employees by estimates of per capita output for each type of activity. Adjustments for undeclared incomes of owners are also made, based on ratios of average hours worked by owners to average hours worked by employees.
- (2) – Based on relationships between output and intermediate input in each activity. Costs and revenues are also adjusted in accordance with the results of income and output analysis referred to in (1) above.
- (3) – Based on per capita output and wages for unregistered employees. Costs and value added are both adjusted.
- (4) – These items are estimated from special data collections

Quantifying the underground economy

Using the above methodologies, experimental estimates of the lower and upper bounds of the value of the underground economy have been made. In doing so, the assumption has been made that the main reason for the existence of the economic underground is the desire to evade taxes.

Mechanisms that are created for tax evasion may be particularly complex and, very often, involve a combination of factors. However, there are three main ways in which tax evasion is carried out:

- concealment of all production;
- under-declaration of sales revenues;
- over-declaration of costs.

Concealment of production is accounted for by the adjustments to intermediate inputs, output and value added attributable to unregistered labour. This method implicitly assumes that production is hidden through the non-declaration of some or all employees and therefore not declaring the production or costs associated with the employees.

Table 2. Main sources of information for the estimation of labour input

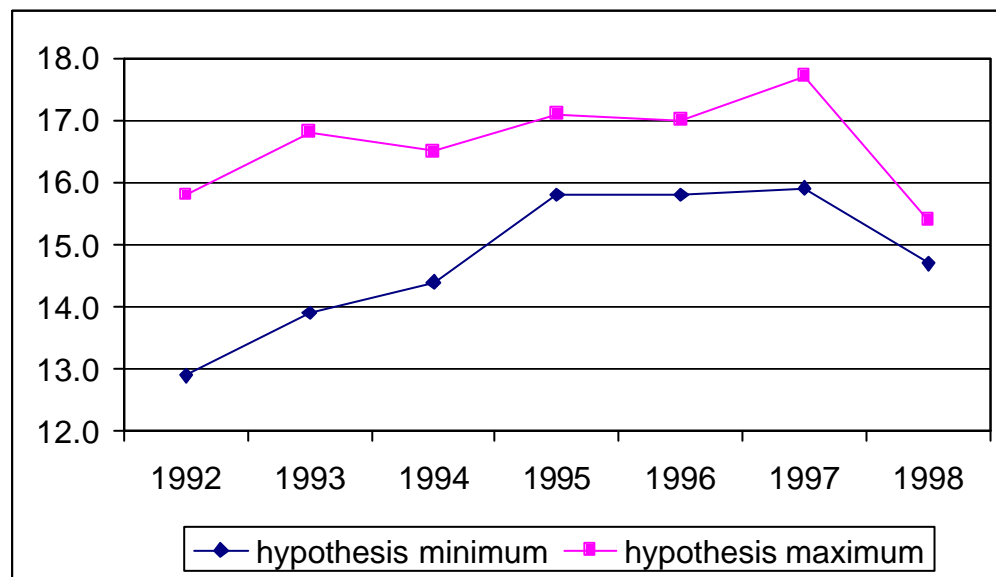
Sources		Typology of Information	Data for 1991	Data for Current Year
Households and enterprises				
A	Population Census	Resident employed individuals and per working place	X	
B	Labour Force Survey	Resident employed individuals	X	X
C	Multi-purpose Survey	Domestic Sector		X
D	Industry, Service and Institutions Survey	Registered employment, main and secondary activities	X	
E	Agriculture Census	Agricultural sector, main and secondary activities	X	
F	Tax Register	Enterprises and employed individuals with VAT	X	X
G	ISTAT Register of Productive Enterprises (A.S.I.A.)	Number of people employed at industry level		X
H	Social Security Institute (data on employees and family workers)	Employees from households and enterprises, part-time registered workers, registered foreign workers	X	X
I	ISTAT surveys of the accounts of enterprises	Up to 19 employees, 20 or more employees, more than 500 employees		X
L	Balance sheets for specific business sectors	Energy, tobacco, railways, post offices, telephone and communications, credit, insurance	X	X
M	Periodical ISTAT surveys of sectors prone to underground production	Ordinary and extraordinary maintenance of homes		Casual
N	Administrative data and statistic surveys on specific typologies of employees	Non-resident foreign workers, temporary lay-off workers	X	X
O	Administrative data for specific business sectors	Transport of goods and passengers on the road, research and development, private education	X	X
Institutions				
P	State General Accounting Office, Ministries and other Public Institutions		X	X
Q	ISTAT surveys of public institutions	Municipalities, mountain communities, provinces, regions		X
R	Social Security Institute data for Private Social Institutions (NPHI)	Sectors of Association Organizations and other	X	X

The overstatement of costs or under statement of revenues is adjusted by the balancing of supply and use statistics. However, the adjustments resulting from the balancing process will inevitably include elements of both the economic and statistical underground.

In the methodology used, the adjustments for non-declared output, overstated costs or understated revenue, and output of unregistered employment are designed to account for the economic underground (i.e. deliberate actions on the part of producing units for the purpose of evading tax or other social contributions). Adjustments arising from the input-output balancing process on the other hand include both the economic and statistical underground (i.e. non-observed production due to non-response to surveys and deficiencies in registers used for survey purposes). It can be assumed therefore, that the former estimates represent the lower bound of the likely size of the non-observed economy, while the latter represent an upper bound.

Figure 1 shows the experimental estimates of the lower and upper bounds as a percentage of Italian GDP from 1992 to 1998. In 1998 the lower bound was around 14.8 per cent of GDP, while the upper limit was about 15.4 per cent.

Figure 1 – Share of adjustments for the underground economy in GDP



KAZAKHSTAN

Sources and estimation methods

General overview

A lack of primary statistical information makes the measurement of the non-observed economy difficult.

The estimation methods currently being used in Kazakhstan to compile statistics on hidden and informal activities may be grouped as follows:

- implicit estimates of non-recorded activities, for example, the estimation of crop production using data on areas sown, average yields and average prices;
- indirect methods of estimation based on a comparative analysis of data obtained from various sources;
- the balance method, involving the reconciliation of supply and use statistics.

Broadly speaking, adjustments for the non-observed economy are made by the National Statistical Agency in two stages:

- First: calculation of output using branch statistics;
- Second: (a) estimation of output and gross value added by branch in the national accounts;
(b) reconciliation of the main national accounts indicators.

The adjustments made in the GDP calculations for hidden and informal activities rely mainly on indirect methods, based on a comparative analysis of data obtained from various data sources and data from closely related branches - for example, construction and the construction materials industry. Estimates are compiled by analysis of information about incomes, compensation of employees and costs.

The balance method involves compiling balances of supply and use for selected goods. The method is used for determining adjustments to output for agriculture, trade and other branches. The Statistical Agency is also experimenting with the commodity-flow method, which helps to track flows of goods and services from the producer to the consumer and to compare supply and use data, not only for individual branches, but also for the economy as a whole.

A special quarterly sample survey of production is the main source used to estimate the informal activities of households. The survey provides indicators of the industry structure of households' activities. The volume of production per household in each industry is estimated and the results are grossed up according to the industry structure.

Registered enterprises

The data are characterised by underreporting of output and operating surplus and over-reporting of intermediate consumption, mainly with a view to hiding income for taxation purposes. Table 1 shows the contribution of the economic industries to the GDP and the share of taxes paid.

Table 1. Structure of GDP by industry and tax payments to the budget, 1999

	Structure of GDP (Percentage)	Share of taxation payments (Percentage)
Total	100.0	100.0
Production of goods	38.1	75.4
- Industry	28.2	65.7
- Construction	4.7	6.3
- Agriculture, forestry and fishing	9.9	3.4
Production of services	61.9	24.6
- Transport and communications	12.1	13.3
- Trade	14.2	4.0
- Real estate activities	12.0	3.3
- Other activities	23.6	4.0

The data in Table 1 show that hidden activities are observed in those branches of the economy where goods and services are supplied mainly for cash, and the degree of unreliability in the officially reported information. In the case of trade, which accounts for more than 14 per cent of GDP, the share of taxes entering the budget is a mere 4.0 per cent. The service industries as a whole, while constituting nearly 62 per cent of GDP, transfer less than a quarter of all taxes to the budget.

Unregistered enterprises

Given the legislation in force in the Republic concerning the registration of legal entities, unregistered corporations are a rare exception.

Unincorporated enterprises

Unincorporated enterprises include households, family units or associations and individual entrepreneurs. The problems that arise in this sector are as follows:

- underreporting by registered unincorporated enterprises;
- a large number of non-registered unincorporated enterprises;
- non-registered employees in unincorporated enterprises.

Obtaining reliable statistical information on informal production in the various branches, including agriculture, trade, construction and services, can be arranged only through systematic sample observations.

Illegal production

Because of the lack of an appropriate methodology to account for and measure this aspect of the non-observed economy, estimates of illegal activities are not made in the Kazakhstan.

Implications and effects on national accounts and GDP estimates

The recent developments of hidden and informal activities for the country as a whole are shown in Table 2:

Table 2. Share of hidden and informal activities (per cent of GDP)

	1997	1998	1999	2000
Total	37.9	30.3	27.4	26.8
of which:				
Hidden activities	15.5	11.2	12.2	12.4
Informal activities	22.4	19.1	15.2	14.4

Confronting the data at different levels enables adjustments and corrections to be made at detailed levels. Many of the adjustments account for hidden or informal activities not covered in the primary data sources. However, as they are indistinguishable within the overall estimates the specific types of hidden and informal economy included in national accounts estimates cannot be separately identified. The magnitude of the adjustments can be seen, however, from comparisons with data from the primary sources. The results of the corrections for 1999 and 2000 are set out in Tables 3 and 4.

Table 3. Share of informal and hidden activities in GDP by industry, 1999

	1999		
	Share of informal sector (<i>households</i>) of GDP, per cent	Share of hidden economy (<i>adjustments</i>) of GDP, per cent	Total share of GDP, per cent
Agriculture	6.50	0.10	6.60
Industry	2.30	0.10	2.40
Construction	1.30	0.10	1.40
Trade	1.30	2.80	4.00
Hotels and restaurants	0.04	0.12	0.16
Transport	2.50	0.30	2.80
Education	0.50	1.10	1.60
Real estate, renting and business activities	0.40	5.60	6.00
Health and social work	0.30	0.20	0.60
Other community, social and personal service activities	0.10	1.70	1.80
Gross value added, total	15.20	12.20	27.40

Table 4. Share of informal and hidden activities in GDP by industry, 2000

	2000		
	Share of informal sector (<i>households</i>) of GDP, per cent	Share of hidden economy (<i>adjustments</i>) of GDP, per cent	Total share of GDP, per cent
Agriculture	5.70	0.10	5.60
Industry	2.10	0.20	2.30
Construction	1.40	0.20	1.60
Trade	1.30	2.60	3.80
Hotels and restaurants	0.05	0.14	0.19
Transport	2.10	0.40	2.50
Education	0.70	1.20	1.80
Real estate, renting and business activities	0.40	5.70	6.10
Health and social work	0.40	0.30	0.70
Other community, social and personal service activities	0.30	1.70	2.00
Gross value added, total	14.40	12.40	26.80

KYRGYZSTAN

Introduction

The existence of the non-observed economy in Kyrgyzstan is an accepted fact. It is generally recognized that the widespread nature of hidden economic activities has a substantial impact on the major macroeconomic indicators, including GDP. Without taking account of hidden economic activities it is impossible to build an objective picture of the size of the national economy and especially the absolute and relative size of some of its components that are particularly prone to non-observed activity, such as trade and services.

Sources and estimation methods

In the country's statistical definition, the term non-observed economy includes both hidden and informal activities.

Adjustments for hidden and informal economic activities are based on the results of either sample surveys or expert estimates and other estimates drawing upon supplementary information from various sources.

In the compilation of the national accounts, adjustments for informal and hidden economic activities are made to production, income and expenditure-based estimates of GDP. It is considered that the overall measure of GDP is therefore reasonably correct. However, there is some imprecision in the definition of indicators for the non-observed part of the economy itself and in distinguishing between hidden and informal production.

On the production side, adjustments are made to indicators of industrial output, construction, transport, trade and marketed consumer services, including financial services. So to a certain extent, adjustments are made to the indicators for all main branches producing market goods and services. Informal production in agriculture is also estimated, but it is recorded separately, rather than included in the total for hidden or informal production.

On the income side, the adjustments by branch focus on mixed income.

On the expenditure side, the main adjustments are made to final consumption expenditure of households, which is linked to output measures because it is calculated from trade data. A small adjustment is made for fixed capital formation, mainly in respect of the construction of private dwellings. Official Customs Committee data are used for exports.

Adjustments for hidden and informal activities by industry

The following methods are used to make adjustments for hidden and informal production:

Industry

The adjustments for informal and hidden output in industry are not very large. They mainly concern handicraft production carried out by households. These production activities are largely concentrated in the food industry and to a lesser extent in clothing, jewellery and some other industries. Data for the adjustments are obtained from a special survey. In general this type of production is confined to the informal sector, and there is a degree of hidden production that results from some handicraft producers deliberately not reporting income in order to avoid taxes.

In addition to corrections for informal handicraft production, adjustments are made for misreporting by enterprises. Underreporting of gross value added in industry may result either from concealment (total or partial) of the amount of industrial output or from a deliberate overestimation of the share of intermediate consumption (inputs). Both these actions reduce the tax base and generate illegal income.

Construction

Some construction activities in Kyrgyzstan are carried out not by professional and formally organized building firms but by informal and temporary construction teams or directly by residents. Such activities are included in the informal sector. These activities are taken into account by collecting data on the registration of constructed buildings and dwellings from the local authorities. The information obtained in this way is sufficiently reliable to accurately reflect the physical volume of new construction.

However, the value of many structures may be understated at the time of registration. A similar situation applies with individual housing construction. For example, the actual value of one square metre of housing in Bishkek, the capital of the country, is estimated by experts to be US\$ 150 to US\$300, whereas the recorded value per square metre does not exceed 300-600 soms¹, which is about 10-15 times lower.

Trade

Hidden economic activities are mainly concentrated in Trade. Trade is also the second largest branch after agriculture in which households' informal activities are concentrated. Hidden economic activities include trade and catering enterprises that have not been duly registered. The data for these enterprises are adjusted on the basis of branch averages obtained from special one-off surveys. Additional surveys and checks are conducted to correct for misreporting by trade enterprises that, for example, overreport intermediate consumption.

Informal trade activities are studied by carrying out systematic sample surveys of informal markets throughout the country. Data from surveys of informal markets are widely used, not only

¹ The national currency of Kyrgyzstan is som. In 1999, US\$1 = 46 soms.

for calculating trade as a branch of the economy, but also for calculating households' consumption of consumer goods and services, as they are regarded as a more objective source of data than, for example, the Households Budget Survey.

In addition, reconciliation of the balance between supply and use is also employed with respect to certain consumer goods, such as alcohol and cigarettes. The level of recorded sales is compared to reasonable consumption levels for such goods and, where necessary, adjustments are made. In accordance with established practice, the entire volume of trade activities in informal markets is assigned to the informal sector.

Transport

Individual producers provide a significant part of transport services in Kyrgyzstan. Calculations of production are based on indirect information. The basis for the calculation is State Motor Vehicle Inspectorate data on the number of serviceable lorries and buses owned or hired by private individuals, and details of average distances travelled, average loads carried, average earnings from transport operations, etc. Calculations for passenger transportation by taxis are made using a broadly similar method, i.e. on the basis of data for licences issued. As the holding of licences is checked not only by the road transport authorities but also by the drivers themselves, who are keen to avoid additional competition, this is considered to be an objective and reliable method of estimation. The adjustment is allocated entirely to informal activities.

Foreign trade

Foreign trade transactions undertaken by persons engaged in "shuttle trade" are recorded on the basis of customs documents and special surveys of long-distance trains that have been conducted quarterly since 1997. The activities of "shuttle traders" taking goods out of the country in small quantities in their hand luggage are estimated on the basis of observation at railway stations, whereas traders bringing goods into the country in their hand luggage are required to declare them. The overall adjustments currently made for "shuttle trade" are quite large, although it is evident that they are still understated.

Hidden income

Households' hidden income is calculated by the method of balancing supply and use. The aim of this methodology is to compare households' recorded income with their expenditure on final consumption, capital formation and net acquisition of financial assets. As a rule, the expenditure is found to be considerably higher than declared income. The difference may be considered to represent hidden income.

Household sector accounts, which contain estimates of disposable income and expenditure on final consumption and capital formation, are used in this approach.

In accordance with the 1993 SNA guidelines, net acquisitions of financial assets should be included in the financial account for the Households' sector. The National Statistical Committee is not yet in a position to compile a financial account for any of the institutional sectors, but it does have the information needed to estimate approximately the net acquisition of financial assets for the Households sector. In arriving at estimates of the net acquisition of financial assets by households, the following items are taken into account: increases in ready cash in households, increases in deposits in financial institutions and securities, increases or decreases in outstanding wages and salaries and pensions, and increases in available foreign currency. The latter has been calculated as the difference between expenditure on the purchase of foreign currency and income from its sale, with allowances for expenditure by "shuttle traders" on informal imports.

The second part of households' hidden income comprises part of the transactions involving the informal production of goods and services, i.e. it constitutes the hidden part of mixed income. No further calculations are needed for its quantification; it suffices to use the value added already calculated for the hidden part of informal production. It is assumed that no taxes or wages and salaries are paid from this part of value added. Value added therefore equals mixed income. The total for hidden income is the sum of hidden income and the hidden part of mixed income.

Use of income for consumption from hidden and informal sources

Households' expenditure on consumption from informal sources directly corresponds to the adjustments made for the production-based estimates of informal trade. Use is also made of information from household budget surveys, which, in addition to a general question concerning expenditure on goods and services, contain a question on goods and services purchased from private individuals. The hidden part of goods turnover corresponds to consumption by households from hidden sources.

Consumption of own-account production is also included in informal consumption. The indicator is derived from mixed income in kind obtained by households engaged in informal agricultural production. The indicator is regularly compiled by the National Statistical Committee when preparing the national accounts.

The hidden part of capital formation is represented by the underestimated value of construction of private dwellings and offices. Such underestimation in value is quite common and represents investment of hidden income. This figure is matched with the relevant adjustments for production-based estimates of hidden construction activities.

The most significant adjustments are made for hidden and informal imports of consumer goods by "shuttle traders". The National Statistical Committee indicates in its regular publications the size of the informal "shuttle trade", based on official data from the Customs Committee.

Because it is considered that the official Customs Committee data understates the true amount of informal imports, a further adjustment is made by using the commodity-flow approach for the main consumer products involved, in physical and value terms. Average market prices are used to value the imports.

Implication and effects on national accounts and GDP estimates

The results of the calculations for hidden and informal activities are set out in Tables 1-5.

Table 1. Value of hidden and informal economic activities

	(Million soms)				
	1995	1996	1997	1998	1999
Value added resulting from hidden and informal production, of which:	7 623.8	12 762.6	15 684.3	16 637.3	23 356.2
Informal production complying with regulations	6 362.9	11 044.5	13 175.4	13 395.4	18 865.0
Hidden production	1 260.9	1 718.1	2 508.9	3 241.9	4 491.2
hidden part of informal production	819.3	1 078.8	1 763.2	2 710.0	3 702.5
hidden production in non-financial sector	441.6	639.3	745.7	531.9	788.7
Hidden and mixed income, of which:	7 852.7	13 862.0	14 415.0	23 894.8	26 882.2
Mixed income complying with regulations	6 362.9	11 044.4	13 175.4	13 395.4	18 865.0
Hidden income	1 489.7	2 817.5	1 239.6	10 499.4	8 017.2
hidden part of mixed income	819.3	1 078.8	1 763.2	2 710.0	3 702.5
other hidden income	670.4	1 738.7	-523.6	7 789.4	4 314.7
Use of income for consumption from hidden sources*, of which:	9 697.9	15 829.6	17 521.5	27 350.8	34 009.4
Consumption from informal sources	6 005.7	10 991.3	11 162.1	18 707.8	22 099.2
Consumption from hidden sources	3 692.2	4 838.3	6 359.4	8 643.0	12 000.2

* Excluding smuggling.

Table 2. Share of hidden and informal economic activities in GDP

	(Percentage of GDP)				
	1995	1996	1997	1998	1999
Value added resulting from hidden and informal production, of which:	47.2	54.5	51.1	48.7	47.9
Informal production complying with regulations	39.4	47.2	42.9	39.2	38.7
Hidden production	7.8	7.3	8.2	9.5	9.2
hidden part of informal production	5.1	4.6	5.7	7.9	7.6
hidden production in non-financial sector	2.7	2.7	2.4	1.6	1.6
Hidden and mixed income, of which:	48.6	59.2	47.0	69.9	55.1
Mixed income complying with regulations	39.4	47.2	42.9	39.2	38.7
Hidden income	9.2	12.0	4.0	30.7	16.4
hidden part of mixed income	5.1	4.6	5.7	7.9	7.6
other hidden income	4.2	7.4	-1.7	22.8	8.9
Use of income for consumption from hidden sources*, of which:	60.1	67.7	57.1	80.0	70.0
Consumption from informal sources	37.2	47.0	36.4	54.7	45.3
Consumption from hidden sources	22.9	20.7	20.7	25.3	24.6

* Excluding smuggling.

Table 3. Calculation of hidden income of households

	(Million soms)				
	1995	1996	1997	1998	1999
Disposable income of households (1)	13 433.2	19 405.9	24 038.8	25 277.4	34 858.1
Expenditure on consumption and capital formation (2)	12 976.0	20 090.5	22 255.9	31 424.9	37 736.4
of which:					
Expenditure on final consumption (3)	11 761.7	18 703.2	20 559.4	29 759.5	36 208.1
Fixed capital formation and inventories (4)	1 214.3	1 387.2	1 696.5	1 665.4	1 528.3
Difference between income and expenditure (1-2)	457.2	-684.6	1 782.9	-6 147.5	-2 878.3
Net acquisition of financial assets (table 2.2) (6)	1 127.6	1 054.1	1 259.3	1 641.9	1 436.4
Total used (7)=(2+6)	14 103.6	21 144.6	23 515.2	33 066.8	39 172.8
Difference between income and its use (hidden income) (1-7)	-670.4	-1 738.7	523.6	-7 789.4	-4 314.7

Table 4. Net acquisition of financial assets of households

	(Million soms)				
	1995	1996	1997	1998	1999
Increase in ready cash in national currency (1)	913.2	412.7	152.0	418.4	1 007.3
Increase in money available in foreign currency, total (2)	523.3	1 231.6	1 027.0	778.6	1 201.9
Net shuttle-trade imports (3)	396.8	703.5	400.4	167.9	519.0
Increase in foreign currency, adjusted (4 = 2-3)	126.5	528.1	626.6	610.8	682.9
Increase in deposits in banks (5)	88.1	59.5	502.5	365.2	75.6
Increase in outstanding wages/salaries and pensions (6)	0.0	40.1	-54.8	182.3	-349.3
Increase in value of securities held by households (7)	-0.1	13.7	32.9	65.2	19.9
Total net acquisition of financial assets (1+4+5+6+7)	1 127.6	1 054.1	1 259.3	1 641.9	1 436.4

Table 5. Hidden income of households

	(Million soms)				
	1995	1996	1997	1998	1999
Hidden income (1)	670.4	1 738.7	-523.6	7 789.4	4 314.7
Mixed income from activities relating to hidden economy (2)	819.3	1 078.8	1 763.2	2 710.0	3 702.5
Total hidden income of households (1+2)	1 489.7	2 817.5	1 239.7	10 499.3	8 017.2

LATVIA

Definitions and concepts

The compilation of national accounts requires the careful analysis of data consistency between different surveys used in the calculations. Inconsistencies between main aggregates identified when balancing the system of national accounts indicate that existing data sources need to be analysed and verified. If statistical surveys and available administrative data sources do not provide satisfactory information on existing economic activities, implicit estimation techniques are required. In Latvia this type of estimation has been performed since the National Accounts were first compiled. The estimation procedure was initially aimed mainly at the compilation of Production Account data for the Households sector. Continuous refinement and expansion in data sources and methodologies for making adjustments means that estimates are now also used in compiling accounts for the non-financial corporations sector. The adjustments are made annually, at the time the balancing of the national accounts takes place.

The methods used at present for the calculation of underground and illegal activities in the economy have been developed in cooperation with experts from ISTAT and Eurostat. The participation in the Eurostat Pilot Project on Exhaustiveness, with 1997 as the reference year, also assisted in bringing about improvements in the national accounting practices.

All indirect adjustments to national accounts aggregates are related to the evaluation of legal transactions that are not covered by the usual statistical data sources. So far, estimates of illegal activities estimates have not been included in official national accounts data.

Sources and estimation methods

Production approach

Careful attention is paid to ensuring the fullest possible coverage of all economic activities in the national accounts, including production undertaken by non-registered enterprises and those not usually included in surveys. The main data sources used for both the calculation of the aggregates in the Production Accounts and adjustments made for non-observed production are shown in Table 1.

Adjustments for non-response, non-updated registers and underreporting are based on the analysis and validation of survey data.

Table 1. Data sources used for NA calculations and exhaustiveness adjustments

NACE code	Data sources for NA calculations	Adjustments made to survey data	Implicitly adjusted data for non-surveyed activities
A			
01	Surveys of large enterprises, sample surveys of private farms	No	No
02	Annual surveys, budgetary data	Adjustments for non-response and underreporting	Adjustments for non-registered activities
B	Annual survey, quantity data	Adjustments for non-response and underreporting	Adjustments for non-registered activities
C	Annual survey	Adjustments for non-response and underreporting	No
D	Annual survey, special register survey	Adjustments for non updated register, non-response and underreporting	Adjustments for non-registered activities
E	Annual survey, quantitative data	Adjustments for non-response and underreporting	No
F	Annual survey, special register survey, Household Budget Survey	Adjustments for non updated register, non-response and underreporting	Adjustments for non-registered activities
G	Annual survey, special register survey, Household Budget Survey	Adjustments for non updated register, non-response and underreporting	Adjustments for non-registered activities
H	Annual survey, special register survey, Household Budget Survey	Adjustments to eliminate non updated register, non-response and underreporting	Adjustments for non-registered activities
I	Annual survey, special register survey, Household Budget Survey	Adjustments to eliminate non-response and underreporting	Adjustments for non-registered activities
J	Profit and loss accounts of banking institutions and insurance companies, annual survey	Adjustments for non-response and underreporting	No
K	Annual surveys, budgetary data	Adjustments to eliminate non-response and underreporting	Adjustments for non-registered activities
L	Annual surveys, budgetary data	Adjustments to eliminate non-response and underreporting	No
M	Annual surveys, budgetary data	Adjustments to eliminate non-response and underreporting	Adjustments for non-registered activities
N	Annual surveys, budgetary data	Adjustments for non-response and underreporting	Adjustments for non-registered activities
O	Annual surveys, budgetary data	Adjustments for non-response and underreporting	Adjustments for non-registered activities

Adjustments for non-response

The adjustments are based on comparisons with previous annual or quarterly enterprise surveys, supplemented, where possible, by direct contact with units. Branch specialists estimate the adjustments. By ensuring that only active units are included in the Statistical Business Register, the incidence of non-response can be identified. Non-response problems are limited to medium-sized (50-250 employees) and small units (under 50 employees). Non-response is not a problem with budgetary institutions.

Adjustments for out-of-date registers

A special survey is conducted to cover lags in updating the business register. Newly created enterprises and enterprises that have been identified as active, but have not been surveyed during the year, are surveyed using a short survey form. The survey collects information on only the main indicators of activity (net turnover, production costs, number of employees and some others). Data for the previous three years is also requested.

The methods of adjustment for underreporting differ depending on whether they relate to large or small enterprises.

Underreporting in large enterprises

Audit checks, which include investigations of changes in data compared to previous years' results, are undertaken for all enterprises with net turnover of over 45 000 Lats per year. Enterprises are required to inform the Central Statistical Bureau of reasons for changes from previously completed surveys. Adjustments arising from this methodology were significant in 1997, but were much reduced in the following year.

Underreporting in small enterprises

Special attention is paid to the analysis of survey data for small enterprises. While the importance of small enterprises in the national economy is increasing, their survey responses are not audited and the primary data are often not of good quality.

Drawing on Italian experience, a special procedure for estimating the possible underreporting of wages and profits in small units (fewer than 20 employees) is implemented. First, using labour and wages data from the small enterprise surveys, average monthly wages per enterprise are calculated. If the calculated average is below the lowest level permitted by law, underreporting is assumed, and the results for these enterprises are adjusted. Second, analysis of profit and loss accounts for small companies, together with the survey data on wages and salaries, indicates that owners' profits should at least equal the average wage of employees in the same enterprise, or in enterprises engaged in the same kind of activity. Enterprise survey data that show

profits less than the average wages of employees are adjusted. For 1996 these calculations were carried out for only a few kinds of activities (trade, construction and transport). For 1997, data from all surveys of units with fewer than 20 employees were analysed using this method and adjustments for under reporting were made. In the process, a sample of about 2 200 profit and loss accounts and survey results was analysed. The analysis provided coefficients by type of activity, which were used to gross up estimates to obtain overall totals. For enterprises with 20-50 employees it was assumed that the share of potential underreporting was similar to that for small units. For 1998, the detailed method was also applied to companies with 20-50 employees, resulting in complete coverage of all enterprises. The final adjustments were quite small - about 2 per cent of total GDP, but in relation to the activities of small units, they were significant.

Adjustments for non-registered enterprises in the informal sector

The employment method is used to account for this category of production. As a first step, the total number of persons employed in the national economy is calculated from all available sources of employment data. At present the following data sources are available:

- Survey of employed persons and wages. The survey collects data on full-time and part-time employment, and wages;
- The Labour Force Survey (LFS), which has been conducted twice each year since November 1995. The LFS is a household survey which provides detailed information on the number, employment status and occupation of working persons;
- Administrative data on social tax payers;
- Registered unemployment data;
- Surveys of agricultural farms;
- Statistical data on employment by branch;
- Demographic data on the total number of persons of working age.

From the above sources, employment related to the national accounts is calculated, at the level of the total economy and by type of activity classified by NACE sections. Estimates of the total numbers employed are also converted to full-time equivalents. Comparison of these results with data on labour, wages, employment status and type of activity from enterprise surveys identifies the fields where non-registered labour is most likely being used. The results of the comparison for 1998 are presented in Table 2.

It is assumed that non-registered full-time employees are mainly working in small private units that are registered in the Administrative Enterprise Register but are not identified as active in the Statistical Register. Estimates of this employment are made using statistical survey data of small enterprises engaged in corresponding kinds of activity.

Non-registered self-employed persons are considered to be mainly working in the Household sector. Estimation of the associated private activities (except in the case of agriculture)

is based on small enterprise surveys and data from a special Household Budget Survey designed for this purpose. Households are asked to show their expenditure on services or goods purchased without receiving invoices. Using the data from this survey coverage adjustments are made to the recorded output of construction, transportation and other types of services rendered by private individuals. Private consumption expenditure is also adjusted, as expenditure for non-registered activities is often not covered by the standard Household Budget Survey.

Total adjustments to the main aggregates of the Production Account are shown in Table 3.

Income approach

The calculation of GDP using the income approach is based on the same data sources used in the production approach. Therefore, total GDP calculated by either approach is the same. Adjustments to incomes reflect changes between the relative shares of wages and salaries and gross operating surplus. In wages and labour surveys, all remuneration received as payment for work, including payments in kind, are recorded as wages and salaries for national accounts purposes. The Labour Costs Survey conducted in respect of public manufacturing enterprises in 1997 showed that wages in kind are insignificant in that type of productive activity.

The main adjustments to income components in the national accounts are in relation to “envelope” salaries. It is considered that many private companies do not report the full amount of wages and salaries paid, in order to reduce social tax payments and thereby share more profits with employees. Indirect calculations, based on experts’ valuations, are used for these “envelope” salaries adjustments. The estimates for 1997 showed that “envelope” payments were equal to 252 mln Lats and covered 19 per cent of the total wages and salaries recorded in the non-financial corporations sector of the national accounts. In 1998 the amount was 234 mln Lats, or 20 per cent of wages and salaries. For 1999 a special question about “envelope” salaries was incorporated in the special Household Budget Survey mentioned earlier. Results of this survey for 1999 were consistent with those obtained for 1997 and 1998.

Expenditure approach

The calculation of GDP using the expenditure approach is based on different data sources from those used in the production approach. The results of the two approaches are compared, and discrepancies are analysed and reconciled. Reconciliation starts with the evaluation of results identified as less reliable through the process of comparing the current and previous years’ returns. In recent years the reconciliation of supply and use by main product groups has also become more important. Data sources used for calculation of the main GDP expenditure aggregates and sources of adjustments are presented in Table 4.

Table 2. Average number of employed persons in 1998 (thousands persons)

	Number of employed persons	Of which		Non-registered employed persons	Of which		Per cent of non-registered employed persons in total (per cent)
		Employees	Self-employed		Employees	Self-employed	
Total	1 043.0	836.1	206.9	137.0	107.4	29.6	13.1
Of which							
Agriculture, hunting, forestry (A)	178.2	39.0	139.2	17.9	10.9	7.0	10.0
Agriculture, hunting and related service activities (A01)	163.8	29.2	134.6	16.8	10.0	6.8	10.3
Forestry, logging and related service activities (A02)	14.4	9.8	4.6	1.1	0.9	0.2	7.6
Fishing (B)	5.5	4.8	0.7	3.0	2.8	0.2	54.5
Industry (C, D, E)	192.4	179.6	12.8	24.1	17.6	6.5	12.5
Mining and quarrying (C)	1.7	1.7		0.3	0.3		17.6
Manufacturing (D)	171.7	159.2	12.5	23.8	17.3	6.5	13.9
Electricity, gas and water supply (E)	19.0	18.7	0.3	..	..	..	..
Construction (F)	63.4	54.9	8.5	22.1	18.9	3.2	34.9
Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods (G)	168.5	141.3	27.2	30.7	22.3	8.4	18.2
Hotels and restaurants (H)	22.4	21.1	1.3	3.3	3.0	0.3	14.7
Transportation, storage and communication (I)	90.0	86.5	3.5	15.4	14.2	1.2	17.1
Financial intermediation (J)	15.3	15.1	0.2	2.7	2.7	..	17.6
Real estate, renting and business activities (K)	47.1	44.5	2.6	0.4	..	0.4	0.8
Public administration and defence; compulsory social security (L)	63.6	63.6	..	2.9	1.6+1.3	..	4.6
Education (M)	89.9	89.3	0.6	2.2	2.0	0.2	2.4
Health and social work (N)	61.7	59.3	2.4	8.3	7.6	0.7	13.5
Other community, social and personal service activities (O)	45.0	37.1	7.9	4.0	2.5	1.5	8.9

Table 3. Adjustments to Production Account aggregates by type of adjustment
(thousands of Lats)

1997

Type of adjustments	Gross output	Intermediate consumption	Value added (VA)	Share of VA adjustments in GDP, per cent	Share of adjustments in total VA adjustments, per cent
Non-response	75 704	54 032	21 672	0.66	4.15
Not updated register	61 544	41 907	19 637	0.60	3.76
Underreporting	248 323	58 965	189 358	5.78	36.25
Not registered	764 076	477 981	286 095	8.73	54.78
Other GDP undercoverage	5545	0	5 545	0.17	1.06
Total	1 155 192	632 885	522 307	15.95	100.00

1998

Type of adjustments	Gross output	Intermediate consumption	Value added (VA)	Share of VA adjustments in GDP, per cent	Share of VA adjustments in total VA adjustments, per cent
Non-response	87 150	62 789	24 360	0.68	4.05
Not updated register	148 512	82 439	66 073	1.84	10.97
Underreporting	32 112	-56 923	89 035	2.48	14.78
Not registered	780 240	364 285	415 955	11.59	69.06
Other GDP undercoverage	6 864	0	6 864	0.19	1.14
Total	1 054 878	452 590	602 287	16.78	100.00

At present, retail trade data do not provide comprehensive and detailed information on private consumption expenditure. The Household Budget Survey and data from large producers of particular goods/services comprise the main data sources. Retail trade data are used for crosschecking purposes for particular items.

The adjustments to the GDP expenditure aggregates by type of adjustments are shown in Table 5.

Table 4. Data sources and adjustments to expenditure aggregates – expenditure approach

Expenditure aggregates	Data sources used for calculations	Indicators for exhaustiveness adjustments
Private consumption expenditure of households	Household Budget Surveys, data of main producers of particular goods, retail trade data.	Volume of alcoholic beverages consumed, numbers of first-time registrations of private cars, special survey of households consumption of non-registered services
Final consumption expenditure of NPISH	Annual survey	No exhaustiveness adjustments made
Final consumption expenditure of General Government	Budget data, data on imports of services financed by international organizations	No exhaustiveness adjustments made
Gross fixed capital formation	Statistical survey of investment	Quantitative data on investment in Household sector
Changes in inventories	Annual survey data	No exhaustiveness adjustments made
Exports and imports of goods	Customs documents, surveys of trade in electricity and natural gas	Differences in prices in customs warehouses
Exports and imports of services	Enterprise survey of foreign settlements	Transit cargo data

The value of non-observed gross fixed capital formation in the Household sector is estimated indirectly. Investment in buildings is calculated using adjusted data on the output of construction, and quantitative indicators of changes in the number of private farms and newly constructed private residential houses. Investment in machinery is also estimated from quantitative indicators (for example, the number of tractors in private ownership) and data on imports of machinery.

Adjustments for exports of services refer to payments for services provided to non-residents which are not included in the Balance of Payments surveys. Adjustments are based on comparisons of changes in transit cargo turnover with enterprise survey data on receipts from exports of services.

Adjustments for exports of goods aim to eliminate undervaluation of goods which enter customs warehouses from Latvian sources and are subsequently exported. These goods are valued at the prices applying at the time of entry to the customs warehouses.

**Table 5. Adjustments to GDP expenditure aggregates by type of adjustment
(thousands Lats)**

1997

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

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

Adjustments for underreporting of private consumption expenditure are mainly determined as the difference between grossed up Household Budget Survey results for particular items and the estimates recorded in the national accounts. HBS data are not used in estimating the consumption of items calculated from enterprise surveys data (for example, consumption of electricity or natural gas).

The following additional information is used to make adjustments in respect of selected items of consumption expenditure:

- Consumption of alcoholic beverages - data on consumption in decilitres based on industrial production, external trade data and expert estimates on per capita consumption. Experts from different institutions, including Health authorities, are involved in the calculation;
- Purchases of cars – data on the number of privately owned registered cars;

- Repairs to dwellings, transportation services, repairs to cars and household appliances, and other services rendered by private individuals – data from a special additional survey of households.

Illegal activities

The first experimental calculations aimed at evaluating illegal activities, such as prostitution, and the drug trade, were undertaken for 1997 and 1998.

According to police information, about 2,500 persons could be considered as regularly working as prostitutes. Assuming that average earnings per "working day" could be 33 Lats and that number of "working days" is 250 per year, a total annual earnings figure from prostitution of 20.6 mln. Lats was obtained. This amount remained unchanged for 1997 and 1998 .

The estimate of intermediate consumption in the production of illegal activities is very low because it is assumed that the main part of intermediate consumption could be already included implicitly in the national accounts. It is possible that small private businesses registered in the Administrative Enterprise Register as performing legal activities (for example hotels or saunas) could provide prostitution services. In this case the incomes derived from survey data and tax declarations may consist of legal income only, but the expenditure data would also cover the illegal activities. In addition, expenses related to dwellings (rent, heating and communal services) are included in private consumption expenditure on private flats regardless of the uses to which they are put. Prostitutions services are mainly provided (70-80 per cent) to non-residents.

Based on Police Department data on drug prices and health authorities' data on drug addicts and drug usage, the total cost of drugs usage in 1998 was estimated to be 28.2 mln. Lats. Information for 1997 was not as detailed as for 1998; however, from general data on changes in drugs consumption between 1997 and 1998, it was estimated that in 1997 consumption expenditure on illegal drugs was about 20 mln. Lats. Taking into account that market prices are on average twice as high as "wholesale" prices, the earnings from the trade in drugs were estimated to be about 10 mln. Lats in 1997 and 14.1 mln. in 1998. Therefore, the total estimated value of the output of illegal activities (prostitution and drugs) was 30.6 mln.Lats in 1997 and 34.7 mln.Lats in 1998.

LITHUANIA

General overview

The first attempt at estimating the hidden economy was made in the middle of the 1990s.

In 1996, a pilot survey of the non-observed economy was carried out in Lithuania. It was financed by the World Bank and involved methodological assistance from other international organizations. The results of the survey were incorporated into the national accounts estimates together with other improvements when a revision of the national accounts time series was undertaken.

The results of the survey were presented in the publication "Non-observed economy: concepts, surveys, problems," released in 1998. The report provided information about economic phenomena such as unrecorded turnover of enterprises, "envelope" salaries, rendering of services without invoicing, the use of unofficial labour, and some types of illegal activities. The conclusions of the surveys were based mostly on the opinion of specially invited experts from Tax authorities and the Social Security system, supplemented by questions in the Household Budget Survey. Based on these sources, adjustment coefficients for the official statistical data were determined.

A second stage of investigations involved participation in the Pilot Project on Exhaustiveness (PPE), launched by Eurostat (1998-2000). In this project, common methodological requirements, in accordance with the European Commission Decision 94/168/EC, were followed by all EU Candidate Countries that participated in it.

Illegal activities are not included in the official GDP of Lithuania as yet, although estimates are available.

The types of NOE and their size were estimated for each of the three approaches to measuring GDP (production, income and expenditure). As the production approach is considered the main one in Lithuania, most attention was paid to determining adjustments to gross output and value added in respect of the various NOE activity types.

The overall adjustment in the production approach accounted for 17.9 per cent of GDP in 1998. Information on the types of adjustment and their effects on GDP are shown in the Table 1.

The GDP expenditure components were adjusted to a lesser extent - 4.1 per cent for 1998.

Table 1. Exhaustiveness adjustments of legal activities in 1998: production approach

Type of adjustment	Million ECU	per cent of GDP
T1 Statistical underground (non-response)	116	1.2
T2 Statistical underground (not updated register)	..	..
T3 Statistical underground (not registered)	138	1.4
T4 Economic underground (underreporting)	1 297	13.6
T5 Economic underground (not registered)	..	..
T6 Informal sector (not registered, underreporting)	117	1.2
T8 other GDP under-coverage	39	0.4
TOTAL	1 707	17.9

POLAND

Definitions and concepts

The transition period to a market economy was characterised, initially, by a substantial growth in the number of private firms, particularly small firms owned by individuals (which are not limited liability or joint stock companies). The latter largely fit the definition of the informal sector. They are engaged in the production of goods or services, with small capital, often using their own labour, employees are hired without formal labour contracts, and as a rule they generate small income.

A proportion of these businesses also meet other criteria of the informal sector in that they do not keep a complete set of accounts. These are units that carry out small-scale production in about one hundred kinds of activities. While they exhibit the characteristics of the informal sector, not all meet all of the criteria to be included in this sector. From a statistical point of view that takes account of conditions in Poland, it was decided that the most adequate criterion is the size of the production unit. Under this criterion, the smallest enterprises (those which employ 5 persons or fewer) are all included. In the majority of cases they also satisfy other criteria for inclusion in the informal sector.

The hidden economy in Poland includes two types of production:

- Concealed production, and
- Illegal activities.

In the category of concealed production the following are singled out:

- Underreporting of activity by registered economic units, and
- Non-registered economic activity conducted on own-account

Illegal activity includes all kind of production that is forbidden by law. Estimates have been made for the following types of illegal activities: production and sale of drugs, prostitution, theft and fencing and smuggling of goods.

Although estimates of the hidden economy in Poland have been made for both concealed production and illegal activities, only data on concealed production is included in the published national accounts. Estimates of the value of concealed production have been made since 1994, and for illegal activities since 1995.

Estimation methods for concealed production and illegal activities in respect of 1998 are described below.

Sources and estimation methods

The following estimation methods are used:

- Direct method;
- Labour market survey;
- Consumer survey;
- Supply and Use Tables.

Estimates of concealed production have been made for each of the three approaches to measuring GDP: the production approach, expenditure approach and income approach.

Direct method

The direct method is used to estimate concealed production of registered units (Table 1).

It is assumed that large enterprises keep reliable accounts and that they correctly report their economic activity. Attention is therefore centered on evaluating the concealed production of small economic units (up to 5 persons) and medium-size private enterprises (excluding co-operatives) in which the number of employees does not exceed 20 persons (50 persons in industry). In the Polish National Accounts small units are included in the households sector and medium units are included in the non-financial corporations sector.

The core of the direct method consists of estimating average sales and average remuneration. These factors are used to estimate gross output, intermediate consumption and gross value added. Experts from the Kielce Statistical Office developed this method, which is known as the “Kielce method”.

The “Kielce method” is based on the following general assumptions:

- Average labour productivity should be of a level that ensures the profitability of a given activity;
- Small enterprises can adapt to changes in the market;
- Wages and salaries paid to persons employed in these enterprises are essentially the same as the average received within medium-sized enterprises in the same branch of the economy and in the same locality;
- The income of the owner is above the average wage.

When calculating revenue estimates for small firms, for each NACE section (or group of sections), nine levels of representative revenues per person employed were established.

Table 1. Gross value added created by concealed production in 1998

Sections of the NACE	Data according to:		Difference 2-1 = hidden economy	Scale of concealed production 3/2 per cent
	Statistical surveys	Direct method		
	(million zlotys)			
	1	2	3	4
Total (small and medium units)				
Total	90 083.5	142 921.0	52 837.5	37.0
Industry (C, D, E)	21 284.4	28 053.8	6 769.4	24.1
Construction (F)	7 805.8	12 968.5	5 162.7	39.8
Trade (G, H)	42 612.0	68 416.7	25 804.7	37.7
Transport (I)	4 659.2	7 645.6	2 986.4	39.1
Real estate and business activities (K)	9 683.4	18 452.5	8 769.1	47.5
Other sections (A, B, M, N, O)	4 038.7	7 383.9	3 345.2	45.3
Small units				
Total	48 232.5	86 891.6	38 659.1	44.5
Industry (C, D, E)	6 781.5	8 987.7	2 206.2	24.5
Construction (F)	4 521.0	7 391.2	2 870.2	38.8
Trade (G, H)	26 857.1	48 845.4	21 988.3	45.0
Transport (I)	3 644.5	6 075.6	2 431.1	40.0
Real estate and business activities (K)	4 606.1	10 641.2	6 035.1	56.7
Other sections (A, B, M, N, O)	1 822.3	4 950.5	3 128.2	63.2
Medium units				
Total	41 851.0	56 029.4	14 178.4	25.3
Industry (C, D, E)	14 502.9	19 066.1	4 563.2	23.9
Construction (F)	3 284.8	5 577.3	2 292.5	41.1
Trade (G, H)	15 754.9	19 571.3	3 816.4	19.5
Transport (I)	1 014.7	1 570.0	555.3	35.4
Real estate and business activities (K)	5 077.3	7 811.3	2 734.0	35.0
Other sections (A, B, M, N, O)	2 216.4	2 433.4	217.0	8.9

The highest level of revenue per person employed was assumed for the group comprising 1-2 persons per firm, on the assumption that in these cases almost all those employed are owners (or co-owners) and that their productivity is higher than that of salaried staff. A somewhat lower level of revenue per person was assumed for the group comprising 3-4 employees and lower still for firms with 5 employees.

The estimates of monthly normal revenues and wages per person employed obtained from this approach were then assessed by experts in fiscal and social insurance agencies.

Estimation of the basic national data for economic units with up to 5 employees requires knowledge of the particular situations applying in individual provinces. In all, 22 revenue tables were constructed to represent groups of provinces with similar properties.

For the population of economic units employing more than 5 persons, revenue estimates were made for NACE sections, types of localities and the number of persons employed. Consequently, nine levels of representative revenues were obtained for industry (up to 50 employees per establishment) and six levels for the other sections (up to 20 employees). No distinction between provinces was made for these larger enterprises.

Following the first experimental studies, a special regular survey was introduced in 1998 to update the base revenue tables. Samples of small and medium-sized units are chosen from 4 or 5 provinces (new provinces are selected each year). The owners are asked to provide information on the levels of income, wages and salaries, trade margins and costs, which enable them to achieve reasonable profits. The results of these surveys are compared with labour productivity measures and the new revenue tables are constructed.

The resulting estimates are compared with data obtained directly from enterprise surveys for small and medium units.

Labour market survey method

Estimation of employment in the hidden economy

The Central Statistical Office (CSO) has applied two methods of estimating the number of the persons employed in the hidden economy, based on three sources of information. The three sources are: the Labour Force Survey (LFS) (a household survey); employment statistics based on the records of enterprises; and data on registered unemployment obtained from labour offices.

The first method compares the number of employed persons according to the LFS with the number of employed persons reported in enterprise statistics, which cover only persons formally employed. Employment in the hidden economy is calculated as the number by which the LFS estimate exceeds that derived from enterprise statistics.

In practice, the application of this procedure is complicated by differences in the scope of the two information sources. The LFS is conducted exclusively in respect of private households. That part of the working population that lives in collective households is therefore not covered by the survey. Neither does the LFS include persons working abroad for Polish employers, who are to be included in the employment measure. On the other hand, the LFS counts apprentices undertaking on-the-job training as employed, providing they receive payment, and also includes persons working on commission agreements.

Therefore, before estimating hidden employment by this method, the LFS data are adjusted to make them consistent with the reported enterprise data. The difference between the two sources is then interpreted as the number of persons working in the hidden economy as shown in the table below.

Adjustment for hidden employment, 1998

Civil employment besides agriculture by LFS (thousands)	12 826.0
persons working abroad	+38.5
apprentices	-184.6
commission agreement	-143.0
persons hired by households	-7.0
members of armed forces living in private households	-58.0
employed persons living in collective households	+86.5
Total	12 558.0
Civil employment by enterprise surveys (thousands)	11 698.0
Total less enterprise survey total	860.0
(persons employed in hidden economy)	

The second method arises from the quite common conviction that a part (perhaps even the majority) of those registered as unemployed with the labour offices are in fact employed as hidden labour. According to legal regulations in Poland, person registered as unemployed can work and still remain on the register of unemployed provided that the income from work does not exceed 50 per cent of the minimum wage. This category of unemployment will not be captured in the LFS, as it uses the ILO recommendation that defines unemployed persons as those who do not engage in any work.

In this methodology, the differences between the definitions of unemployment in labour office data and the LFS form the basis for estimating the number of unemployed who in fact work in the hidden economy. This is possible as the LFS also collects information on persons registered as unemployed in labour offices.

According to the second method, the number of persons working in the hidden economy in Poland was almost three times higher than the number obtained using the first method. This is convincing evidence of the difficulties encountered in estimating the size of the hidden labour market.

Survey on unregistered employment

The methods described above provide estimates of the total number of persons employed in the hidden economy. To gain more information about unregistered employment, the CSO developed an additional module on non-registered work in the LFS. The special survey was conducted in August 1995 and repeated in the August 1998 LFS.

- Design of the survey

The main goal of the survey on unregistered employment was to gauge the effect of labour market conditions on the extent of the hidden economy. Information was obtained about the scale of involvement in unregistered employment, the range of services provided by persons performing unregistered work, and employment by households. Unregistered employment was defined in the survey as:

- Work performed without entering formal labour relationships between the employer and employee, regardless of the sector to which the enterprise is classified;
- Own-account work where financial obligations to the state are not paid (e.g., taxes).

A distinction also made between persons who worked only in the hidden economy, and those for whom the unregistered employment was in addition to their main employment.

The survey covered about 11,000 households, which amounted to 25,300 persons aged 15 and over. This represented one half of the population selected for the quarterly LFS. The survey sample was drawn from persons who had previously contributed to the LFS.

The response rate for the survey was 91.2 per cent. Only 1.8 per cent of respondents refused to participate, while the remaining 7.0 per cent were absent from home at the time of the survey.

- Survey results

The most often mentioned reason for engaging in unregistered employment was insufficient income (60.3 per cent). The second most important reason was inability to find an official job (41.7 per cent). Finding work in the official labour market was more difficult for the rural population.

From January to August 1998 at least 1,431,000 persons were employed in the hidden economy. Unregistered work was performed in all months of that year, although the majority of persons worked in July (757,000), June (638,000) and August (568,000).

Men work in unregistered employment to a much larger degree than women, constituting almost 70 per cent of hidden employment.

Representatives of all age groups worked in the hidden economy, the largest being the 25-44 age group, which made up 49 per cent of hidden employment.

The common perception is that employment in the hidden economy is associated with low qualifications and simple jobs. Persons with basic vocational education accounted for almost 42 per cent of the estimated hidden employment. The second largest group in the hidden economy comprises people with primary and incomplete primary education (almost 32 per cent).

For 85 per cent of those surveyed, unregistered work was incidental and relatively short-term, not exceeding 5 days. About 30 per cent (423,000) worked in the hidden economy for that number of days. Unregistered employment was a permanent job for 21 per cent of the survey population (permanent was defined as employment of four months duration or more during the survey period).

Compared to the results of the survey on the unregistered employment conducted in 1995, a significant decrease in the unregistered labour market was observed in the 1998 survey. Employment in the hidden economy dropped by 2.8 percentage points from 7.6 per cent to 4.8 per cent of total employment, while the number of persons who admitted to holding unregistered jobs fell by 768,000.

Unregistered work was additional to the main job in about 54 per cent of the cases, although the survey results also indicated that over 0.5 million people worked in non-registered employment. Unregistered employment held by women tends to be their main job, while this type of employment is more likely to be additional to a main job for men.

For the majority of the youth group (aged up to 24 years), unregistered employment was their only employment. The other age group in which the majority were employed exclusively in the hidden economy was those aged 60 years and more.

Another important variable that was investigated was the distribution of the type of work performed in non-registered employment. The largest share of employment in an individual activity that was attributed to the hidden economy was in gardening and agricultural activities (20.3 per cent of its total), partially as a result of seasonal nature of such jobs (table 2.).

Unregistered employment generally occurs in the private, rather than public, sector. The majority of those employed in the hidden economy were hired by individual employers, mainly for gardening and agricultural activities or within neighborhood services (table 3.). Unregistered work undertaken for individuals was often in addition to registered employment.

Unregistered employment in private companies more often comprised main jobs than additional ones. The major activities included construction and installation services, maintenance and repairs, trade, manufacturing, and gardening and agricultural activities.

The third largest group of hidden employed were own-account workers, and in these cases the work was more likely to be additional to the main employment. The most common activities were trade, gardening and agricultural activities and construction and installation services.

Table 2. Persons employed in the hidden economy, by types of activities
(percentage of the total employed in each activity)

Type of activities	(per cent)				
	Share of Total Employed	Share of Men Employed	Share of Women Employed	Share of Urban Employment	Share of Rural Employment
Trade	5.8	2.9	12.6	7.8	3.7
Construction and installation services	15.9	22.4	0.7	17.2	14.5
Construction and installation repairs and Maintenance	14.5	20.5	0.7	16.0	13.2
Car repairs and maintenance	5.3	7.6	..	5.6	5.2
Transport services	5.2	7.1	0.7	4.9	5.5
Repairs of electrical and technical devices	1.2	1.7	..	1.4	1.0
Medical and nursing services	1.4	0.1	4.4	1.7	1.1
Hairdressing and beauty services	0.7	0.1	1.9	0.7	0.6
Tourist and catering services	2.5	1.1	5.8	3.8	1.3
Accounting and legal advice	1.3	0.6	3.0	2.1	0.6
Private lessons	3.2	1.8	6.5	4.9	1.5
Translations	0.1	..	0.2	0.1	..
Tailoring services	4.4	0.4	13.7	5.1	3.6
Housekeeping	3.8	1.2	9.8	5.8	1.7
Child/elderly person care	4.5	0.2	14.4	5.3	3.7
Security services	0.6	0.8	0.2	0.8	0.4
Gardening and agricultural activities	20.3	22.2	15.6	11.8	29.0
Manufacturing	3.3	2.6	4.9	3.5	3.1
Neighbourhood services	17.3	19.5	12.3	11.9	22.6
Other activities	3.2	3.9	2.5	3.1	3.5

Table 3. Persons employed in the hidden economy: share by type of employer

Type of employers	Total	Men	Women	Urban	Rural
Total	100.0	100.0	100.0	100.0	100.0
Individual	68.9	69.1	68.4	63.9	74.0
Private company or co-operative	16.8	16.7	17.0	20.4	13.2
Public or municipal company	1.7	1.7	1.9	2.4	1.0
Own-account work	12.6	12.5	12.7	13.3	11.8

Unregistered employment takes two forms: persons employed without a formal contract in the formal sector of the economy, and casual employment, as occurs in the informal (or household) sector. In Poland, households have a relatively high demand for unregistered labour.

In 1998 over 1.4 million households were engaged in unregistered employment, i.e. 12 per cent of the total number of households. This phenomenon was observed more frequently in rural areas (16.8 per cent of households) than in urban areas (9.5 per cent of households).

The types of jobs and services performed informally for households differed in rural and urban areas. In urban households, unregistered labour was most in demand for construction and installation and maintenance and repairs (47 per cent of households employing non-registered labour). The next largest share was accounted for by housekeeping, which accounted for 22 per cent of unregistered jobs performed for households. The third most important area of unregistered employment by households was in childcare or elderly person care (18.8 per cent of households employing non-registered labour). Rural households most often sought gardening and agricultural activities (68 per cent of households hiring informally), then neighbourhood services (about 43.2 per cent of households), followed by construction and installation and maintenance and repairs (21.4 per cent).

Estimation of income from non-registered work

The estimated number of persons working in the hidden economy is converted to full-time equivalents and allocated to activities in accordance with the shares of non-registered employment shown in table 2. (apart from gardening and agriculture which is estimated separately).

Estimates of income generated by non-registered employees are calculated by multiplying the estimated number of working days within the year by average remuneration rates for each type of activity. Different rates are used for persons whose unregistered employment is their main occupation and those for whom it is secondary employment.

Table 4. shows the number of employed persons and gross value added from non-registered work, estimated using the labour market survey method.

Consumer survey

The consumer survey method is used to estimate the size of those parts of hidden economy that cannot be evaluated by the direct method or the labour market survey. The consumer survey collects information about households expenditure on services from the hidden economy (defined as services paid for without invoices).

The Central Statistical Office carried out a consumer survey of approximately four thousand households in October 1998. The questions asked related mainly to households' expenditure on

Table 4. Gross value added from non-registered work, 1998

NACE Sections	Persons employed (thousands)	Gross value added (million zlotys)
Total	258	20 702.0
Industry (C, D, E)	7	890.2
Construction (F)	81	7 038.7
Trade (G, H)	5	6 831.7
Transport (I)	12	1 428.4
Real estate and business activities (K)	8	579.6
Other sections (B, M, N, O)	98	3 933.4

services commonly rendered by the hidden economy, such as construction and renovation of houses, garages and other farm buildings, the renovation of apartments and emergency repairs, automobile servicing and repairs, tailoring services, tourist services, the cleaning of dwellings, baby-sitting, and the renting of houses and apartments.

The study also sought information from self-employed persons, i.e. owners of private establishments who, in their professional capacity, have a good knowledge of the operations of the hidden labour market. They were asked for their evaluation of likely income from hidden work.

Table 5 shows households final consumption as measured in the official statistics and the adjustments for the hidden economy based on the consumer survey.

Supply and Use method

Supply and Use Tables are used for balancing the estimates in the national accounts. Adjustments to data on gross fixed capital formation (and associated intermediate consumption) are based on data confrontation in the Supply and Use tables. Where units wish to hide income, capital formation is typically underreported, while costs are over-reported.

The Supply and Use method involves comparison of data from the two sources of information on capital formation: financial statistics on investment, and production statistics that form the basis for Supply and Use tables.

Table 5. Households final consumption created by the hidden economy, 1998

Specification	Data according to		Difference = hidden economy	Relative share of the hidden economy (per cent)
	Official statistics	Consumer survey		
	(million zlotys)			
Households final consumption	337 657.5	346 935.0	9 278.5	2.7

The results of the Supply and Use method indicate that the value of gross fixed capital formation is higher than that obtained from financial statistics. On the other hand, the analysis also shows that intermediate consumption is lower than reported in financial statistics. Results from the direct method described earlier, which also addresses the value of intermediate consumption, are taken into account in these estimates.

Table 6 compares the value of capital formation obtained from financial statistics with that obtained using the Supply and Use method. The difference is taken to represent the value of non-observed gross fixed capital formation.

Table 6. Gross fixed capital formation in the hidden economy, 1998

Specification	Data according to		Difference = hidden capital formation	Relative share of the hidden economy (per cent)
	Financial statistics	Supply and Use Tables		
	(million zlotys)			
Total economy	120 126.1	139 204.5	19 078.4	15.9
Non-financial corporation sector	78 617.8	85 811.1	7 193.3	9.1
Households sector	9 866.5	21 751.6	1 885.1	54.6

Non-registered exports and imports

In the national accounts, the values of exports and imports are calculated from customs declarations, Balance of Payments statistics from the National Bank of Poland and estimates of the value of purchases made by tourists.

Purchases made by tourists are estimated on the basis of a survey of border traffic and expenditure of foreigners in Poland and Poles returning from abroad. It covers land borders and seaports but not airports. The survey, which is conducted at selected border checkpoints on the same days each summer and winter, enables estimates to be made of unrecorded trade and foreign trade turnover for the national accounts. The survey is conducted by means of personal interviews or questionnaires completed by respondents before customs clearance and passport checking. The questionnaire contains questions about expenditure on goods purchased in Poland by foreigners for 17 product groups, of which 8 are food, and expenditure by Poles abroad for 19 product groups, of which 8 relate to food. Foreigners are also asked about their expenditure on accommodation and restaurants.

Foreigners travelling by car also provide the number of persons crossing the border in each car, the distance of their residence from the border the distance from the border where they made their purchases. Information collected by Border Guards on number of foreigners, by country and by means of crossing the border, is also used.

Estimates based on the survey are used to extrapolate the value of expenditure for all foreigners leaving Poland and Polish residents returning from abroad (Table 7).

Estimation of illegal production

Estimates of illegal production have been made for the production and sale of drugs, prostitution, theft, fencing and smuggling of goods. The estimates should only be regarded as experimental. They have not yet been incorporated into the officially published GDP figures.

Drugs

Since the beginning of the 1990s, increasing consumption of drugs has been observed in Poland. Some of the drugs are imported but production of “Polish heroin” and raw materials – poppy straw and cannabis plants - also takes place. The scope of activities includes producers, traders and drug smugglers. In accordance with national accounting practice, the following transactions should be estimated: output (production and trade margins), intermediate consumption (consumption in production and trade), salaries (of traders and smugglers), gross operating surplus (income of organisers of the production and trade), imports, exports and consumption.

Information included in a document titled "National programme against drugs 1999 – 2001", prepared by the Health and Social Assistance Ministry in August 1999, together with information from the police, Internet, radio, TV and newspapers form the basis of estimates of the value of activities associated with drugs.

Table 7. Expenses of foreigners and Poles by groups of goods, borders and character of land border traffic in 1998
(thousand zlotys)

Specification	Foreigners				Poles			
	Total	Purchase of goods		Other expenses	Total	Purchase of goods		Other expenses
		Food	Non-foods			Food	Non-foods	
Total	10 547.5	2 536.3	6 383.4	1 627.8	4 523.7	1 712.2	1 560.8	1 250.7
Seaports	155.9	53.0	41.8	61.1	143.0	55.4	31.5	56.1
Land border	10 391.6	2 483.3	6 341.6	1 566.7	4 380.7	1 656.8	1 529.3	1 194.6
North-east	3 120.3	706.3	2 285.3	128.7	128.0	61.5	37.6	28.9
South	1 685.8	273.0	1 326.1	86.7	1 835.8	666.2	187.8	981.8
West	5 585.5	1 504.0	2 730.2	1 351.3	2 416.9	929.1	1 303.9	183.9
Character of land border traffic:								
Motorised	8 070.2	1 754.3	4 909.6	1 406.3	3 294.2	1 106.3	1 144.1	1 043.8
Pedestrian	1 725.4	640.4	1 000.1	84.9	765.8	478.1	282.4	5.3
Railway	596.0	88.6	431.9	75.5	320.7	72.4	102.8	145.5

Number of drug users

In estimating the number of drug users, two groups are identified: regular addicts and occasional users, depending on the quantity of drugs used. According to estimates of the Health and Social Assistance Ministry, there are about 25-40 thousand regular drug addicts. For the purposes of estimation, the total number of addicts was assumed to be 45,000 in 1998.

The number of addicts, by kind of drugs used, was established by reference to number of persons treated in hospitals in 1995 and 1996. The structure from 1996 was applied to 1998, with adjustment for usage trends. The number of occasional users was estimated on the basis of a sample taken in 1997 among adults in Warsaw who had admitted to taking drugs during the previous year. Data on age structures among users and regional differences in patterns of drug consumption were collected.

Supply and prices

Police statistics on the quantity of confiscated drugs, the number of illegal drugs manufacturers and illegal poppy and cannabis plantations were used to estimate supply.

Data on drug prices were obtained from the police. An average of the lowest and the highest prices for 1997 was used as a base for estimating prices, which were then estimated for 1998 from movements in the consumer price index.

Value of production

The supply of drugs (domestic production and imports) and demand for them (household consumption and exports) were estimated, and balanced in quantity terms. Values were then estimated from the information on prices. The final estimates for six groups of drugs are shown in the Table 8.

Table 8. Main drugs transactions, 1998
(current prices in thousands zlotys)

Specification	Output	Intermediate consumption	Gross value added	Salaries	Gross operating surplus	Imports	Household consumption	Exports
Total	772 500	37 900	734 600	135 100	599 500	496 100	594 000	674 500
Polish heroin	102 300	1 600	100 700	10 200	90 500	0	76 100	26 200
Marijuana and hashish	201 800	10 200	191 600	31 600	160 000	113 600	128 400	187 100
Heroin	63 500	3 200	60 300	13 300	47 000	69 400	30 000	102 700
Cocaine	211 000	13 700	197 300	44 100	153 200	230 300	96 300	345 000
Amphetamine	70 000	1 100	68 900	7 000	61 900	0	56 500	13 500
Ecstasy	75 000	4 900	70 100	17 700	52 400	51 100	126 100	0
LSD	48 900	3 200	45 700	11 200	34 500	31 700	80 600	0

Prostitution

For national accounts purposes, the relevant aggregates are output (value of services provided by domestic prostitutes), imports (value of services provided by non-residents in Poland) and consumption.

The only source for estimating the value of prostitution services was a police report concerning one town in 1996. Using this information, the approximate number of prostitutes in Poland in 1998 was estimated to be 26,000. It was assumed that 25 per cent were non-residents.

The annual supply of prostitution services was estimated based on assumptions for the services provided per day, and the number of working days each month. No distinction was made between resident and non-resident workers. The supply of services estimated was compared with estimates of demand, calculated on the assumption that five per cent of the male population between

the ages of 18 and 60 use prostitution services¹. Information on prices, in respect of 1996, was obtained by interview. Movement in the consumer price index was used to estimate prices for 1998. The results of the estimation are shown in the Table 9.

Table 9. Estimate of the value of prostitution services

Specification	1998
Total number of services available per year	12 704 400
Of which:	
Resident	9 284 000
Non-resident	3 420 400
Price per service (zl):	
resident	120
non-resident	50
Value of services: (output in thousands zl)	1 114 100
Imports (thousands zl)	171 000
Households' consumption (thousands zl)	1 285 100

Smuggling

Smuggling mainly concerns alcohol products, cigarettes, cars and drugs. The aggregates for national accounts purposes are trade margins of intermediaries and traders in the domestic market; intermediate consumption; gross value added; salaries; imports; households consumption and exports.

Estimates for smuggled goods were compiled from Central Customs Office data and from newspaper reports. As a starting point, data on customs seizures of cars, alcohol, cigarettes, drugs and other goods were obtained. In the absence of any other information, it was assumed that seizures represent 10 per cent of smuggled goods (based on customs experience of seized goods).

Trade margins on imports and exports of smuggled goods were estimated using customs statistics and information from enterprise surveys. As the prices of smuggled imports do not need to cover customs duties, other border taxes, VAT or excise tax, the trade margins tend to be higher than for legally traded imports.

Customs statistics and survey data indicate that the expected trade margin is about 50 per cent for cars (compared with the official trade margin of 11 per cent), 70 per cent for alcohol (official trade margin also being 11 per cent), 85 per cent cigarettes (official trade margin is 9 per cent) and 50 per cent for other goods. The same margins were applied to exports.

¹ The percentage was obtained from an earlier study by P.Lith, entitled *Illegal goods and services commodities in Finland's national economy*.

Incomes arising from the smuggling of goods comprise of persons directly involved in smuggling and bribes made to customs clerks responsible for border controls. According to a newspaper report, bribery in 1998 amounted to 11-12 per cent of the value of smuggled goods. For the purposes of estimation it was assumed that the value of bribes amounted to 8 per cent of the value of smuggled goods. It was assumed that incomes accruing to other persons involved in smuggling were about 2 per cent of the value of the goods. Total incomes were therefore estimated at 10 per cent of the value of smuggled goods. In the absence of information about intermediate consumption, it was assumed to be zero (Table 10).

Table 10. Trade margins and value added for smuggled goods

Specification	1998 (thousands zł)
Trade margin	712 150
- On imports	695 300
Cars	217 500
Alcohol	228 600
Cigarettes	47 600
Others	201 600
- On exports	16 850
Alcohol	100
Cigarettes	16 700
Others	50
Intermediate consumption	0
Gross value added	712 150
Salaries	122 810
Gross operating surplus	589 340
Imports	728 550
Households consumption	1 423 850
Exports	38 100

Theft and fencing

Theft is difficult to measure in the national accounts. The value of stolen goods should be recorded as "other flows" (i.e. changes in the value of assets) rather than as transactions if they pass from one institutional sector to another or when it is money transaction. No values for theft are recorded in the households sector accounts.

Estimates of the value of theft were made on the basis of data from police statistics, payments of insurance claims, information from newspapers and data on prices. Due to lack of information it was necessary to make assumptions about the percentage of thefts that are not reported and the average prices of some types of goods.

Values for stolen vehicles were calculated using data on the number of vehicles taken, numbers of vehicles recovered, type of vehicle (passenger cars, lorries, vans, buses, and minibuses) and average prices for each type. The values estimated were compared with claims paid in respect of stolen vehicles by insurance companies.

Estimates of the value of theft for other goods were made separately for private and public property, using data on the number of thefts and average prices.

To estimate trade margins and value added, it was assumed that those responsible for theft retain all of the value of stolen vehicles and money stolen from banks, and 20 per cent of the value of the remaining theft, with 80 per cent transferred to traders (Table 11).

Table 11. Estimates of the value of sales arising from theft

Specification	1998 (thousand zł)
1. Total value of sold goods coming from thefts (2+5)	3 768 200
2. Stolen cars	1 788 400
3. From which destined to market Domestic (50 per cent)	894 200
4. Foreign (50 per cent)	894 200
5. Other thefts	1 979 800
6. Trade margin (7+8+9)	421 500
7. On sold cars on domestic market (10 per cent)	89 400
8. On sold cars on foreign market (15 per cent)	134 100
9. On sold other goods (10 per cent)	198 000
10. Intermediate consumption	0
11. Gross value added (6-10)	421 500
12. Salaries (10 per cent of trade margin of sold cars)	22 400
13. Gross operating surplus (11-12)	399 100
14. Consumption	1 437 000
15. Exports	447 100

Implications and effects on national accounts and GDP estimates

Output approach

The total estimated share of the hidden economy in the production-based measure of GDP is 13.3 per cent in 1998 (Table 13). Registered units carrying out concealed economic production accounted for 9.5 per cent of this amount. Concealed production occurred mainly in trade (4.7 per cent of GDP), industry (1.2 per cent of GDP) and construction (0.9 per cent of GDP) - Table 14.

The sector responsible for the largest part of concealed production is the households sector (made up of units with up to 5 employees). Concealed production in this sector is valued at 6.9 per cent of GDP. The rest of the hidden economy (2.6 per cent of GDP) is created by non-financial corporations sector (all registered units).

3.8 per cent of GDP in 1998 was generated by non-registered employment. The non-registered work was carried out mainly in construction and trade performed in the households sector (Table 15).

Summary

The consolidated results of estimates for types of illegal activities are shown Table 12.

Table 12. Value of illegal activity (all types), 1998
(thousands zł)

Specification	Total	Drugs	Prostitution	Smuggling of goods	Theft and fencing
1. Output	3 020 250	772 500	1 114 100	712 150	421 500
2. Intermediate consumption	37 900	37 900	0	0	0
3. Gross value added	2 982 350	734 600	1 114 100	712 150	421 500
4. Salaries	280 310	135 100		122 810	22 400
5. Gross operating surplus	2 702 040	599 500	1 114 100	589 340	399 100
6. Imports	1 395 650	496 100	171 000	728 550	0
7. Consumption	4 739 950	594 000	1 285 100	1 423 850	1 437 000
8. Exports	1 159 800	674 600	0	38 100	447 100

Table 13. Share of the hidden economy in GDP in 1998,
(production approach)

Specification	(Percentage)
	1998
GDP	100.0
Hidden economy	13.3
- Registered units (underreporting)	9.5
- Not registered work	3.8

Table 14. Share of the hidden economy in GDP by industry, 1998

NACE	(Percentage)		
	Total	Registered units	Not registered work
Total	13.3	9.5	3.8
Industry (C, D, E)	1.4	1.2	0.2
Construction (F)	2.2	0.9	1.3
Trade (G, H)	5.9	4.7	1.2
Transport (I)	0.8	0.5	0.3
Real estate and business activities (K)	1.7	1.6	0.1
Other sections (A, B, M, N, O)	1.3	0.6	0.7

Table 15. Share of the hidden economy in GDP by institutional sectors, 1998

Sectors	(Percentage)		
	Total	Registered units	Not registered work
Total	13.3	9.5	3.8
Non-financial corporation sector (S11)	2.6	2.6	..
Households sector (S14)	10.7	6.9	3.8

Expenditure approach

The total share of the hidden economy measured using the expenditure approach was 6.5 per cent of GDP in 1998. The expenditure components of the hidden economy related to households consumption, gross fixed capital formation, and exports and imports.

Table 16. Share of the hidden economy in GDP, 1998
(expenditure approach)

Specification	(Percentage)
	1998
GDP	100.0
Hidden economy	6.5
Private households consumption	1.6
Gross fixed capital formation	3.4
Exports minus imports	1.5

Impact of the estimates of illegal activity on Gross Domestic Product

Table 17 shows the value of GDP at current prices before and after allowing for illegal activities, and the share of illegal activities in GDP. Both the value and growth rates of GDP were little affected by the inclusion of illegal activities in the estimates.

Table 17. GDP excluding and including illegal activities, 1998

Specifications	1997	1998	Index
			1997=100
GDP without illegal activities	469 372 100	549 466 700	117.1
Total illegal activities	2 581 570	25 982 350	115.5
Drugs	620 400	734 600	118.4
Prostitution	1 025 200	1 114 100	108.7
Smuggling of goods	605 070	712 150	117.7
Theft and fencing	330 900	421 500	127.4
Share of illegal activities in GDP	0.55	0.54	98.2
Drugs	0.13	0.13	100.0
Prostitution	0.22	0.20	90.9
Smuggling of goods	0.13	0.13	100.0
Theft and fencing	0.07	0.08	114.3

REPUBLIC OF MOLDOVA

Introduction

The Department of Statistics and Sociology has carried out significant work in the last few years on the fundamental reform of techniques, general methodology and organization of statistics in the context of socio-economic developments. The main outcomes of these activities include the introduction of the System of National Accounts and the associated main macroeconomic aggregates.

Some consistency has now been achieved in data sources, providing a higher degree of precision and quality in the national accounts aggregates, which have been prepared for the period since 1989.

To ensure more complete coverage in the national accounts, estimates have been developed for both registered and non-registered units (including private individuals engaged in economic activity).

The informal economy is defined according to the international definition adopted in 1993 by 15th ISLS, and included in the 1993 SNA. The informal sector includes the output from individual household plots and from small farms, handicraft production and the activities of a large number of own-account workers.

Sources and estimation methods

Using available information, and methodologies that have been developed, the Department of Statistics and Sociology takes into account to a varying extent all components of the non-observed economy in the estimates of GDP, with the exception of illegal activities. The methods used to determine the value of the non-observed economy vary for different economic activities. The choice of method depends on the available information and the characteristics of the activities concerned.

Estimates of tax evasion by producing units obliged to complete a balance sheet and income declaration

For legal units and persons comprising, the non-financial corporations and quasi-corporations sector, and the households sector, the State Tax Inspectorate provides information on:

- The number of enterprises audited, by kind of economic activity, in which breaches have been discovered in the calculation of value added tax, operating surpluses and excise duties;

- The sum of additional charges to be made (after audit) in respect of taxes and excise duties;
- The sum of administrative sanctions (fines and penalties).

Goods or services producing enterprises, exempted under national legislation from the payment of value added tax, are excluded from the list of active enterprises in the reference year (as recorded in the business register). Under the Value Added Tax Act, the tax is calculated at the general rate of 20 per cent of taxable turnover, based on prices and tariffs exclusive of value added tax or excise duties. This tax is applied at the rate of 16.67 per cent of turnover to enterprises engaged in retail trade or catering and enterprises carrying out intermediation activities.

Based on the additional charges calculated from the results of checks by the State Tax Inspectorate, and on information about operating surplus and rates of value added tax, an estimate was made of the concealed output, by kind of activity, of the enterprises audited. The output estimates were grossed up to cover all the active enterprises selected from the register. The shares of intermediate consumption derived from official reporting for the respective economic activities were also used in calculating the intermediate consumption of these units. The results of the calculations are shown in Table 1.

Table 1. Estimation of concealed activities arising from tax evasion

Kind of economic activity	Hidden gross value added as per cent of							
	Gross value added for the respective activity				Gross Domestic Product			
	1997	1998	1999	2000	1997	1998	1999	2000
Agriculture	8.7	16.1	2.3	0.6	2.2	5.1	0.6	0.2
Mining and quarrying				3.9				0.0
Manufacturing/processing	19.4	10.3	3.9	1.2	3.5	1.8	0.5	0.2
Electricity, gas and water supply	0.7	2.1	0.4	0.2	0.0	0.2	0.0	0.0
Construction	3.7	6.2	8.0	2.9	0.2	0.5	0.3	0.1
Wholesale and retail trade	17.8	7.0	24.3	9.6	1.5	1.1	3.7	1.2
Hotels and restaurants			19.1	7.0			0.2	0.0
Transport and communications	4.5	6.4	6.1	4.6	0.3	1.4	0.3	0.2
Financial intermediation	1.4	1.0	2.8	4.4	0.1	0.1	0.2	0.2
Real estate, renting and business activities	13.1	8.2	15.5	4.0	0.3	0.2	0.7	0.2
Education			1.4	0.3			0.1	0.0
Health and social security			9.7	9.4			0.3	0.2
Other community, social and personal service activities	5.4	8.0	15.0	4.2	0.1	0.3	0.2	0.1
Total	11.9	13.0	8.0	2.9	8.2	10.7	7.0	2.6

Estimates of the activity of non-registered producers

Incomes of non-registered producers (dressmakers, teachers giving private lessons, street traders, private vehicle owners, medical practitioners) are estimated from statistical sources specific to each activity.

Manufacturing. The number of women of a given age, with a breakdown between the urban and rural population, was used to estimate the non-declared income of dressmakers working at home. Estimates of gross output were made from the average price for making one item and the number of items produced per year. Intermediate consumption was estimated from expenditure on electricity.

Construction. An adjustment for investment in individual construction was made to account for deliberate under estimation of the value of individual dwellings (as registered by the owners with the respective local authority). The adjustment was based on actual expenditure on construction and market prices for particular sized living spaces.

Wholesale and retail trade. The informal market includes sales by private individuals in special marketplaces of goods produced domestically or brought into the country from the rest of the world (so-called informal imports). The turnover of the informal market was determined on the basis of household budget statistics, which enabled comparison of households total spending on consumer goods with data on trade turnover for all registered trade enterprises in the respective period.

Household Budget Survey data enable the estimation of ratios applicable to purchases of goods from individuals in the formal sector. This ratio is used in conjunction with trade statistics to gross up total sales of goods to households in the formal market, from which estimates of sales in the informal market are derived. Gross output, measured by trade margins, is estimated using observed shares for officially registered trade enterprises.

Transport. According to the Traffic Police Department data on lorries owned by private individuals and State Transport Inspectorate data on entrepreneurs holding licences for transport activities, only 18 per cent of individual owners have licences to transport goods on a commercial basis. Their commercial goods transport operations are estimated quantitatively on the basis of responses to questions in weekly sample surveys introduced by the Department of Statistics and Sociology in 1998. The calculation takes into account the number of weeks in the reporting period, average goods transport operations per week and the number of private lorries.

In determining income, use is made of the average charge per tonne-kilometre, calculated from aggregate data on income from freight transportation by legally registered road transport enterprises and freight turnover. This information is used to estimate hidden income from unlicensed activity in the transportation of goods.

Health care. Services rendered to households by medical practitioners in state-run health care institutions and paid for in cash (illegal payments) are estimated from anonymous questionnaires.

Education. Data for the non-observed economy for this activity cover the non-declared income of teachers giving private lessons. The number of students enrolled at higher and special secondary education institutions, by speciality, was determined from statistical records. The price for one hour of teaching and the number of hours of lessons given over the respective period were established from non-official surveys.

Responses to labour force questionnaires introduced in 1999 are also used to estimate the incomes of non-registered units.

The results of the calculations for the economic activities mentioned above are set out in Table 2.

Table 2. Value added produced by non-registered producers

Kind of economic activity	Hidden gross value added as per cent of							
	Gross value added				Gross Domestic Product			
	1997	1998	1999	2000	1997	1998	1999	2000
Mining and quarrying				1.3				0.0
Manufacturing/processing	9.4	4.1	13.8	12.2	1.6	1.0	1.8	1.7
Construction	28.6	11.8	13.6	28.0	1.4	0.3	0.5	0.8
Wholesale and retail trade	33.7	22.0	14.6	27.3	2.8	2.2	2.2	3.4
Hotels and restaurants				1.4				0.0
Transport and communications		4.6	12.8	4.1		0.1	0.6	0.2
Other business activities				5.9				0.1
Education	4.7	5.1	9.7	4.0	0.3	0.4	0.5	0.2
Health and social security	11.1	11.1	9.2	7.7	0.4	0.4	0.2	0.2
Recreational, cultural and sporting activities				6.4				0.1
Other service activities			11.5	18.1			0.2	0.0
Total	15.9	12.1	13.1	14.8	6.5	4.4	6.0	6.7

Production of households for own final use

Non-market activities in the household sector demand particular attention. These activities include the production of goods by households for their own consumption. In developed market economies, such activities are not significant in quantitative terms, but they are extremely important for Moldova in areas such as the output and processing of crops and livestock products.

Included in the household sector, under “Agriculture”, is the output of:

- Individual household plots;
- Private farmers;
- Collective gardens and orchards.

Calculations of output from individual household plots and collective gardens and orchards are based on sample surveys of households, comprehensive annual records kept by rural administrations concerning livestock numbers within households, one-time studies, surveys and censuses. Crop and livestock production in physical terms is also obtained from the same data sources.

Output of private farms is calculated using indicators from annual statistical reports concerning these units’ activities. At least 10 per cent of the farms are sampled and the average results are grossed up to the whole population.

In value terms, crop and livestock production for each household category is obtained by direct estimation. The quantity of production of the main agricultural products in the reference year is valued using the relevant average sale prices.

The output of goods in the household sector included under “Manufacturing” is calculated on the basis of sample Family Budget Survey data for the following groups of goods: wine and wine-making materials; dairy products; vegetable and fruit preserves; meat and meat preserves and vegetable oil.

Output is estimated on the basis of the following information:

- Output of processed products in physical terms (average quantities for the number of families surveyed);
- Average family size;
- Unit price of the product;
- Annual average population.

For the informal sector a calculation is also made of the value of individual dwellings (from statistical records) and services of owner-occupied dwellings.

The results of the calculations relating to the informal activities of the households sector are shown in Table 3.

The results of the calculations indicate that in recent years the hidden and informal economy has accounted for more than 30 per cent of GDP of the Republic of Moldova.

Table 3. Gross value added produced by the informal activities of the household sector

Kind of economic activity	Hidden gross value added as per cent of							
	Gross value added for the respective activity				Gross Domestic Product			
	1997	1998	1999	2000	1997	1998	1999	2000
Agriculture	49.6	67.0	76.9	75.0	12.8	17.0	18.1	19.0
Manufacturing/processing	14.8	22.0	11.3	6.1	2.7	3.2	1.5	0.9
Construction	19.0	14.1	6.6	4.6	1.1	0.5	0.2	0.1
Real estate	15.0	16.2	32.2	75.1	0.0	0.0	1.6	2.0

ROMANIA

Definitions and concepts

One of the main tasks in compiling the national accounts of Romania is the identification of production that falls within the SNA production boundary but is not recorded in the standard statistical or fiscal records. The main areas are: underground activities, informal activities and illegal activities. These three areas, referred to collectively as the non-observed or unrecorded economy, are not necessarily mutually exclusive.

Production in the unrecorded economy refers to activities that are legal but are either not registered with administrative and fiscal authorities or are not reported (or underreported) for various reasons. The reasons include evasion of tax or social security obligations, to hide non-compliance with standards defined by law, or to avoid completing administrative or statistical documents.

The industries in which unrecorded activities mainly occur are: wholesale and retail trade, transport, construction, the repair and maintenance of vehicles and domestic appliances, clothing and footwear production and repairs, tourism, hotels and restaurants, real estate, education, health, and business and personal services.

The institutional sectors most directly involved are the non-financial corporations sector and households sector. Measurement problems in respect of the non-financial corporations sector are due to incomplete coverage in registers, non-response to requests for data and especially misreporting of data. These measurement problems (particularly misreporting) are often due to actions taken by business owners to avoid tax. For the households sector, the main measurement problems are caused by undercoverage of producing units and misreporting. The National Institute of Statistics (NIS) makes estimates of both underground and informal activities.

No estimate of illegal activities is included in the Romanian National Accounts.

Sources and estimation methods

Unrecorded activity in the non-financial corporations sector

The main efforts directed at identifying unrecorded activities in the non-financial corporations sector have been concentrated on concealed activity, arising either from evasion of tax, or as a result of production carried out by unregistered labour.

Estimation of tax evasion (VAT)

Estimates of the degree of tax evasion by corporations and quasi-corporations belonging to the non-financial sector, and unincorporated enterprises, are made using the results of official investigations.

The Ministry of Finance conducts an annual audit of approximately one third of enterprises that are obliged to complete accounting statements and taxation returns. The audits cover all types of taxes (taxes on wages, social security contributions, VAT, etc.). Patterns of tax evasion revealed by these audits are extrapolated to the population as a whole. The data from the audits also enable the NIS to make estimates of underreported production and sales.

Estimation of undeclared activity in the non-financial corporations sector

In addition to tax evasion, estimates are also made of legal production undertaken by unregistered labour in the non-financial corporations sector and not recorded in the national accounts. The method involves the analysis of labour supply and demand.

Estimates of labour supply

The supply of labour is estimated using information from the population census and the Labour Force Survey (LFS). The LFS is a household survey. It provides an indication of the amount of labour that is not registered in official sources and is therefore not available from other data on employment. The LFS, which has been conducted since 1994, covers 14,000-15,000 households. Since 1996 it has been conducted on a quarterly basis. Information about the following items is obtained from the LFS:

- The number of persons who declare that they were employed during the reference period;
- Full-time employees by industry, enterprise and profession;
- Part-time employees;
- Primary work;
- Secondary work.

Estimates of the total labour supply are compiled and converted to a full-time equivalent basis.

The integrated households' survey provides monthly information about persons employed by industry, including details of part-time employment. This survey was the main information source about employment prior to 1996, when the LFS was conducted only annually. The quarterly LFS data are regularly compared with the data from the integrated households' survey.

Estimates of labour demand

The most important data source used to determine labour force demand is the annual structural enterprise survey, which collects information on numbers of employees by type of activity. The structural enterprise survey provides the following information, by industry:

- Number of employees working full-time;
- Number of employees working part-time;
- Number of other persons engaged, including consultants and persons on short-term contracts;
- Other non-regular workers.

Comparison of labour supply and demand

Comparison of the differences between the estimates of labour supply and demand provides an indication of the amount of unrecorded labour in each industry. As the analysis covers only non-financial corporations and quasi-corporations, the two data sources need to be on a consistent basis. Therefore, before comparisons are made, the numbers related to self-employed persons and informally employed family labour are excluded from the LFS data.

As part of the estimation method, supply and demand estimates are cross-checked with complementary activities. For example, labour data related to restaurants is compared with data on the restaurant trade, and labour in weaving activities is compared with data on output of ready-made clothes.

Using the structural enterprise survey, the national accounts aggregates for output, value added and compensation of employees are calculated on a per capita basis. Output from undeclared activity is then estimated by multiplying the estimated per capita output by the number of persons constituting the difference between labour supply and demand. A similar calculation is made for value added and compensation of employees. In the case of compensation of employees, the minimum per capita wage used is equivalent to the average wage for the relevant industry.

Separate estimates for non-recorded activity are not made for agriculture. It is considered that the data sources normally used in the national accounts, such as agricultural balances and various agricultural reports, adequately cover the unrecorded economy in this industry.

Estimates of unrecorded activity in the formal economy have been included in estimates of GDP since 1993.

Unrecorded activity in the household sector

The informal sector typically functions on a system of unofficial relationships and does not rely on contractual labour arrangements.

Estimates of activities in the informal sector have been made using existing administrative, fiscal and statistical data sources. The actual methods vary according to the type of unit.

Non-registered units

Estimates have been made on the basis of information from the integrated households survey and the LFS, for the following industries: construction, hotels, real estate, education, health and other services.

LFS labour data are compared with enterprise labour data and the difference in employee numbers is assumed to represent employment in unregistered units. The output is valued by reference to amounts paid for services, as obtained from the integrated households survey.

Units registered with the fiscal authorities

This group comprises unincorporated enterprises that are registered with the fiscal authorities which, although they declare details of their operations to the fiscal authorities, are likely to understate revenue and overstate costs (for reasons of tax evasion). Estimates of unrecorded production are made for the branches that include trade, transport, hotels and tourism. The estimates are made using both official fiscal sources and supplementary statistical data sources.

The main fiscal data source is a summary table prepared by the Ministry of Finance showing the tax paid by unincorporated enterprises, classified by kind of activity.

Enterprises make declarations of expected income at the beginning of the year. It is assumed that this estimate is based on actual income earned in the previous year. Therefore the previous year's declared income is replaced with the current year's expected income. The difference between the income actually declared in the previous year and the amount declared as expected income in the current year is assumed to represent the income subject to tax evasion in the previous year.

A second correction, using statistical data sources, is made to account for undeclared incomes earned by households. Information regarding employment, average numbers of employees and average wages, by kind of activity, is used. As is done for the non-financial corporations sector, wages earned in the informal sector are assumed to at least equal the average wage for the corresponding formal component of any particular industry.

RUSSIAN FEDERATION

Introduction

Estimation of the value of the non-observed economy is of great importance in the Russian national accounts due to the large scale of the phenomenon in the Russian Federation. One of the main features of the transition period is that the organization and operation of the economic infrastructure has lagged behind the rapid transformation that has occurred in the economy.

Definitions and concepts

When compiling macroeconomic indicators, the Goskomstat¹ of Russia takes underground and informal production into account. These types of producing activities are legal, but are not fully recorded in economic statistics, either because of concealment or understatement by the producers, or because the informal nature of production leads to their omission. The inclusion in the Russian national accounts of estimates for economic activities that are illegal has not yet been considered. In 2000, the upward adjustment for non-observed economic activities was equal to between 22 per cent and 25 per cent of GDP.

Adjustments for non-observed economic activities are required for each of the three approaches to measuring GDP: the production approach, income approach and expenditure approach. The most developed methods for estimating the non-observed economy in Russia national accounts relate to output.

Sources and estimation methods

General overview

Accounting for the non-observed economy takes place in three areas:

- In the measurement of the output of individual industries;
- In the reconciliation (balancing) of the main national accounts aggregates;
- In the compilation of Supply and Use tables.

In accordance with the 1993 SNA guidelines, output by industry is measured by way of sample surveys. The sample results are grossed up to obtain estimates of the output of the entire population, classified by size of enterprise (large, medium, and small). In addition, industry output measured by the surveys is increased to take account of the output produced by individual unincorporated businesses and by households for their own final consumption and sale at farmers' markets.

¹ Goskomstat: the National Statistical Agency of the Russian Federation.

In determining the output of unincorporated enterprises, use is made of data on the number of officially registered enterprises in each field of economic activity, together with values of the average output per person employed in small enterprises engaged in similar activity. The estimation methods for the informal sector vary depending on the type of economic activity.

Underground and informal activities occur in the following categories of manufacturing industry: legal production by economic entities that is not reported; production of goods by households and services rendered by individuals. The volume of these hidden and informal activities is determined on the basis of sample surveys, for goods, and indirect estimates for services.

Household production of goods, both for own consumption and sale, is estimated from the Household Budget Survey for the following commodity groups: meat and meat products; alcoholic beverages; milk and dairy products; vegetable oil; and bread and bakery products. Quantities are valued at average market prices.

The volume of services produced by individuals, both registered with the tax authorities and unregistered, is estimated on the basis of the Labour Force Survey and the average productivity rates in small enterprises engaged in similar types of activity. This method is used for estimating the value of services such as the repair of shoes, clothes, furniture, household equipment and appliances, etc.

The non-reported component of the output that is produced by registered enterprises is estimated using the results of tax audits.

Estimates and adjustments by industry

Agriculture

The total output of agricultural products (including hidden output) is calculated as a sum of the output of three types of producers: incorporated agricultural enterprises, households (family plots), and private farms. The share of agricultural output produced by households is very high in Russia. For example, 90 per cent of potato production is attributable to households.

The volume of agricultural products produced by households is estimated using the following data sources: special sample surveys of rural households; administrative records of Rural District Administrations; and information from the Committees of Land Resources and Management. Use is also made of agricultural censuses conducted in respect of family plots every 10-15 years. The censuses provide information on livestock and cultivated land.

The output of agricultural enterprises is estimated from a comprehensive survey of incorporated agricultural enterprises, adjusted for non-recorded output. The adjustment is made

using indicators to indirectly quantify production volumes. For example, livestock output is estimated from data on average production amounts per unit of fodder used. Data on seed sown by agricultural enterprises and average quantities sown per hectare in various regions are used to indirectly estimate the production of cereals and other crops.

Agricultural output from private farms is estimated on the basis of sample surveys. A sub-register known as "Peasants' farms" is used to select the sample. The sample is stratified by variables such as 'land under main crops' and 'livestock population, by type'. Periodically, comprehensive censuses of agricultural production by private farms are also conducted.

The results of the sample survey are extrapolated and adjusted by a coefficient calculated for agricultural enterprises to provide estimates of total output.

In addition to the above methods, balancing of Supply and Use tables is also used to estimate output for the following main agricultural products: cereals, processed cereal products, potatoes, vegetables, melons, fruits, meat and meat products, milk and dairy products, and eggs.

Trade

The development of the private market in the Russian Federation has led to significant growth in trade activity. The share of trade in the Russian GDP is more than 20 per cent. Small businesses and individuals, without appropriate registration and licenses, generate almost half of the value added in this industry.

The output of the trade industry is estimated at the regional level. The estimates are based on known wholesale and retail turnover data for large, medium, and small incorporated enterprises, and on the volume of sales of both registered and unregistered individual entrepreneurs. As a rule, the activities of individual entrepreneurs are concentrated at market places specialising in food and other semi-durable or durable goods for personal consumption. Estimates of turnover at the regional level are made using sample surveys and balancing of supply and use data.

Comprehensive statistical collections are undertaken for large and medium-sized enterprises, while sample surveys are used for small enterprises. In view of the fact that reported turnover could be understated, the survey results are also compared with banked trade receipts and information on household purchases of food and other goods.

The volume of sales of consumer goods at specialised market places is estimated by way of special surveys of one or two city market places in each region. The total volume of sales at these market places is compiled by multiplying the number of sellers, average receipts per seller per day, and the number of trading days.

In order to estimate more accurately the total wholesale and retail turnover, supply and use statistics for 100 high-demand consumer commodity groups are balanced. Sales, which are determined in volume terms, are valued at average market prices. The estimate of the value of total sales is obtained by applying an adjustment coefficient to the sales estimated for the 100 commodity groups. The coefficient is based on the structure of household expenditures derived from input-output tables.

Services

The output of services such as education, healthcare, legal services, etc., where direct statistical observation is not used, is estimated using data from Household Budget Surveys and information obtained from sociological studies about the household expenditures on educational, medical and other services.

Adjustments arising from balancing national accounts aggregates

The use of income account is reconciled with adjusted household final consumption expenditure. The adjustments are made for goods purchased at farmers' markets and the consumption of own-account production. When compiling the Balance of Payments accounts the Bank of Russia makes adjustments to imports and exports to account for foreign trade transactions that are not captured in customs statistics.

Data confrontation is also carried out with respect to the production and consumption of goods and services, at an industry level. Resulting adjustments are generally confined to the production side of services, as information collected from consumers of services is usually more reliable than that collected from producers.

In addition to adjustments to the production and expenditure sides, an adjustment is also made for hidden income. For a number of reasons, but mainly for tax evasion purposes, considerable amounts paid to employees by enterprises, organizations, and private employers are not reported.

Once the income and expenditure estimates have been balanced, hidden income is estimated as the difference between total household expenditure, including changes in households' financial assets, and reported incomes.

Adjustments arising from the compilation of Supply and Use Tables

Compiling Supply and Use tables enables the identification of discrepancies between the production and use of various products. Supply and Use tables are compiled for 100 industries. The process of balancing the supply and use of products produces more accurate estimates of the production and use of resources in the national economy. In the compilation of Supply and Use

tables, the most substantial adjustments are usually made to estimates of trade activities, transport margins, the production of crude oil and oil products, gas, and electricity. When trade activities and transport margins are estimated, careful attention is paid to the relationship between purchasers' prices and producers' prices for each type of production. In doing so, specific features of the commodity flow mechanism from producers to purchasers are taken into consideration. For some commodities the "chain" from producer to final user includes up to 30 intermediaries. The intermediaries are usually small enterprises not subject to comprehensive statistical observation; "one-day" firms, which are impossible to observe using standard statistical methods; or large vertically integrated companies whose accounting processes are not transparent. In these situations, Supply and Use tables represent the only tool available to estimate the size of trade margins for specific commodity groups and to assess the incomes of trade intermediaries.

When the Supply and Use tables are completed, the national accounts aggregates are adjusted appropriately.

Implications and effects on national accounts and GDP estimates

Estimates for the non-observed economy in the Russian Federation for 2000 are presented in Table 1.

A large part of the non-observed economy is generated by unincorporated enterprises in the households sector. To further investigate the extent and scope of these informal types of production, Goskomstat has developed recommendations for methods of measuring employment in the informal sector of the economy. The recommendations cover the following issues: definition of units in informal sector; the principles of classification of informal sector enterprises and persons employed in this sector; and methods of estimating employment from labour market surveys.

As part of the collection of additional information on the range of non-observed economic activities, expert opinions are sought from other agencies, for example officers of the tax authorities and economic departments of the regional administrations, auditors, heads of enterprises and recruitment agencies. In particular, they are asked to provide quantitative assessments of the scale of non-observed economic activities in various fields in the economy. The results of these investigations are used in determining the size of the adjustments made to estimates of production.

Table 1. Gross Value Added (GVA) generated by the non-observed economy in 2000

	Share of GVA by industry, accounted for by the non-observed economy.	of which:		Structure of GVA generated by non-observed economy	
		Underground production: (Share of GVA generated by unrecorded transactions of legal entities in the total GVA of the respective industry)	Informal production: (Share of GVA generated in household sector in the total GVA of the respective industry)	Underground (Unrecorded transactions of legal entities)	Informal (Household sector)
	per cent	per cent	per cent	per cent	per cent
Production of goods	16.3	4.2	12.1	13.7	53.2
of which, by industry:					
Industry	6.8	4.5	2.3	10.2	6.8
Agriculture	71.0	2.4	68.6	1.1	42.2
Construction	10.7	4.6	6.1	2.4	4.2
Production of services	31.6	22.6	9.1	86.3	46.8
of which, by industry:					
Transport	13.8	12.0	1.8	6.3	1.3
Trade and Catering	54.8	40.0	14.8	66.4	33.2
Commercial activities on the maintenance of market performance	52.0	52.0	0.0	11.6	0.0
Other community and personal services	28.1	8.5	19.6	0.1	0.3
Health services, sports and recreation and social security	13.8	7.8	6.0	1.2	1.2
Education, culture and art	5.6	3.3	2.3	0.6	0.6
Other	18.3	0.2	18.1	0.1	10.2
TOTAL	24.8	14.2	10.6	100.0	100.0

SERBIA AND MONTENEGRO

Introduction

The Federal Statistical Office compiles the main national accounts aggregates for the institutional sectors in accordance with the 1993 SNA. Estimates have been compiled, in current price only, for 1997, 1998, 1999 and 2000.

The main data sources are: annual financial statements for all legal entities, statistical surveys of private sector activities conducted by the National Accounts Section, and other data obtained from economic statistics and Balance of Payments accounts.

As yet, no separate estimates have been made for non-observed activities. However, as a result of the methods used to estimate GDP, some activities of the non-observed economy are included as a matter of course.

Sources and estimation methods

In compiling the national accounts, the accounts for each institutional sector are prepared and then integrated to present the complete set of accounts for the economy. During the compilation, the data are analysed and some imputations and corrections are made.

The value of rent is imputed in the household sector estimates. The imputations are based on the total living space in flats, obtained from construction statistics. Rent is estimated per square metre of living space, and in the absence of price data, the rates are derived using expert knowledge and analysis. In past years, for ease of statistical computation, the value of rent has been stated in Deutsch Mark. However, problems in the exchange rate conversions resulted in an overall estimation of the value of imputed rent.

For estimates with respect to 2000, improved methods of exchange rate conversions were introduced, resulting in significantly higher estimates than in previous years. In 2000, the share of value added in Real estate, renting and business activities (Section K - ISIC Rev 3) represented 8.5 per cent of GDP. In previous years this share had been estimated at between 3.1 per cent (1998) and 3.4 per cent (1999).

Also in 2000, an attempt was made to estimate the value of paid housekeeping services for the first time. The salaries of housekeepers were estimated on the basis of private sector salary data. The resulting estimates were included in the category of Private households with employed persons (Section P - ISIC Rev 3). The share of GDP was 0.1 per cent.

Several surveys collect information on employed persons. For 2000, some additional analyses of the data on the number of employees were carried out, using various statistical sources,

including annual financial statements, surveys conducted by the National Accounts Section, the Survey of Trade and the Labour Force Survey (LFS). Table 1 shows the comparison between the national accounts surveys and the LFS. The results suggest that the national accounts source has greater coverage of employees.

Table 1. Employed persons in 2000

	National accounts	Labour force	LFS/National accounts per cent
Agriculture	98 383	93 591	95.1
Fishing	1 505	1 280	85.0
Mining and quarrying	53 729	42 665	79.4
Manufacturing	724 458	667 909	92.2
Electricity, gas and water supply	57 166	54 076	94.6
Construction	119 579	110 702	92.6
Trade	320 968	235 230	73.3
Hotels and restaurants	69 037	44 451	64.4
Real estate, renting	51 623	50 456	97.7
Transport	169 831	143 190	84.3
Public administration and defence	117 435	70 011	59.6

The comparison of GDP figures calculated by the production and the expenditure approaches showed that the output-based estimate of GDP was higher than the expenditure-based estimates. The reason for the difference may well be that own-account production is at least partly accounted for in the production approach.

Future work is planned for estimating illegal production, including that associated with the distribution of drugs, prostitution, and illegal use of software.

SLOVAKIA

Definitions and concepts

The Statistical Office of the Slovak Republic (SOSR) began to systematically address the issue of the non-observed economy (NOE) in response to the Eurostat initiatives on this subject in the mid-1990s.

The main results of measuring the NOE are presented in a pilot study titled "Exhaustiveness of National Accounts, including, the informal sector, in the Slovak Republic".

The definition of the NOE is based on the Eurostat classification, in which the components of the NOE are classified into eight types of statistical measurement issues, as described in the introduction to this publication.

The formal sector is defined as comprising all legal producing units for which registration in an official register is required by law. The non-observed economy in the formal sector exists due to both the statistical and economic reasons.

The informal sector includes producing units that are not required to be officially registered. Such units are mainly classified to the Households sector of the national accounts. The NOE includes the following activities:

- All productive activities that are not captured in regular surveys, or not registered for tax purposes. The activities include those of tradesmen, self-employed farmers, and others operating on a free-lance basis;
- Production that is underreported, or producing units not officially registered, in order to evade tax;
- Other unregistered or unlicensed legal market activities of households or individuals.

The illegal economy encompasses all activities forbidden by law, or those that become illegal when carried out by unauthorised persons.

Sources and estimation methods

Estimates of the statistical underground

The main determinants of the size of the non-observed economy are the quality of statistical surveys, the response rate for the surveys, and the degree to which the statistical register contains up-to-date information about active units in the economy.

While the response rate or surveys of large enterprises and financial institutions is relatively high, at 93-96 per cent, the response rate for small enterprises and small non-profit institutions serving households is only 50-70 per cent. Grossing-up calculations for non-responding units are based on information about the number of live units in the Statistical Register.

The Statistical Office is responsible for the management of the Statistical Register (also known as the Register of Organizations). The register contains records of legal entities and individual business owners. The Register of Organizations is updated monthly for new and deceased units, using reports from the Business Register and Tradesmen Office.

The Statistical Office only has details of those sole entrepreneurs who have submitted relevant account statements to the Tax Office with their tax returns. Grossing-up estimates to account for other units is done by comparison of the tax Register and the Statistical Register. Balancing the supply and use of labour (i.e. the employment method) is also used to provide estimates of the unobserved output of sole entrepreneurs and small firms.

Employment method

Value added by non-registered labour is estimated by applying labour productivity rates to the estimates of unregistered labour which are derived from balancing the supply and use of labour.

The Labour Force Survey (LFS) is the main source for estimating the supply of labour. The total labour force from LFS data is adjusted to a "domestic labour" basis by excluding numbers working abroad, and including persons from abroad who are working in the Slovak Republic. Labour demand is calculated from statistical survey data supplied by companies and institutions. The employment data are adjusted to a full-time equivalent basis.

Tables 1 and 2 show estimated labour supply and use for 1998. The difference between the supply and use numbers indicate that about 187,900 workers, or 8.9 per cent of the total of "domestic" labour, were probably not included in direct surveys. According to LFS information, about 89,200 employees were working in irregular jobs.

The value of the output of this labour is estimated on the basis of information about average employment, wages, primary and secondary jobs, the number of known active units in the economy, and branch structures obtained from surveys of tradesmen, small enterprises, and the Statistical Register.

Until 1996, the employment method was applied only at aggregate levels, but as from 1997 the balancing process has been carried out at the branch level.

Table 1. Labour supply (Labour Force Survey, 1998)

Indicator	Physical persons, in thousand
Economically active population	2 554.8
of which: workers	2 198.6
unemployed	317.1
Workers living (offering labour) abroad	73.0
Workers coming from abroad	9.0
Women on maternity leave	19.3
"Domestic labour"	2 115.3

Table 2. Labour from the use side (statistical surveys, 1998)

Indicator	Number of workers in single job	Number of workers in second jobs
Employees in institutions, enterprises over 20 employees	1 474 552	18 263
Employees in small enterprises (up to 20 employees)	135 228	32 627
Entrepreneurs (self-employed) from tax returns	155 195	28 312*
Employees of entrepreneurs	162 477*	12 283*
Total	1 927 452	91 485

*Estimates

The total adjustments for *statistical* underground categories (NOE types T1, T2, T3) represent 12.8 per cent of GDP in 1998.

Estimates of the economic underground

Intentional underreporting of income and overstating of costs is a widespread phenomenon that occurs across all types of units. In addition, enterprises or individuals frequently engage employees who are not registered, and who receive wages that are not recorded in units' accounts.

The aim of such practices is to reduce taxation and/or social security payments. These activities are more common in small units which are subject to less accountkeeping regulation.

While the recommended source for estimating such underreporting is tax audit information, the Statistical Office does not as yet have access to the relevant information from the Tax Office. The following methods are therefore applied:

- Comparison of intermediate consumption ratios for different sub-groups of units operating in the same industry, e.g., size of unit, public or private enterprise, legal or unincorporated;
- Assumptions concerning the amount of overreporting of intermediate consumption and underreporting of gross output.

The employment method is used to estimate the production of intentionally non-registered units. Distinctions are made between primary, irregular and secondary jobs when the estimates are compiled.

Estimates for the *economic* underground (NOE type T4) represent 6 per cent of GDP in 1998.

Informal sector adjustments

The part of the NOE that is classified to the informal sector includes all market activities of individual entrepreneurs - tradesmen, self-employed farmers, and other self-employed persons who are not recorded in the Business Register, are not captured in normal surveys, or are not registered for tax purposes. Estimates for the non-observed activity of these units are compiled as part of the process, to account for the NOE categories T3 and T4.

The NOE also includes other unregistered market activities of households or individuals, such as self-employed persons undertaking activities without a licence (“moonlighting”). This type of activity normally takes place by households engaged in construction and other services activity. Estimates for this part of the NOE are based on special polls of households’ purchases from the informal sector, conducted by the Institute for Public Opinion Research of the Statistical Office for the period 1996-2001.

The survey also mapped citizens’ opinions on the extent of corruption, bribes and tips in three broad service areas:

- Hairdressers, barbers, restaurants, catering and hotels;
- Healthcare, education, police, courts and prosecution;
- Banks and other offices.

The results from the surveys are shown in Table 3.

The estimate for tips represented about 1 billion SKK in 1998. In the same year, bribery in healthcare, the educational system, courts, etc. was estimated to be 2.75 million SKK, while bribery in banks and other offices amounted to 2.5 billion SKK.

Table 3. Estimates based on the special opinion poll, 1996-1998

Expenditures of households (without receipts) on:	1996 (bill SKK)	1997 (bill SKK)	1998 (bill SKK)
Reconstruction of apartments, houses, and cottages	5.44	6.54	6.50
Services of craftsmen	4.00	5.51	6.79
Purchases of non-agricultural goods at free-markets and other marketplaces	4.03	4.96	5.51
Purchase of agricultural products	3.76	3.29	4.59
Rent paid to private persons	0.73	0.95	1.23
Rent for garages paid to private persons	0.29	0.29	0.37
Total	18.25	21.54	24.99

After analysis and comparison of various estimates, about 50 per cent of the estimated NOE based on the opinion poll was actually included in the national accounts. Estimates for bribery and tips were not included. Value added for this part of the NOE was estimated to be 1.3 per cent of GDP in 1998.

Estimates for illegal activities

Under the guidance of the Eurostat Pilot project, the SOSR also made estimates of illegal activities in the economy. Estimates were compiled for the following items, although only the estimates for drugs and prostitution were incorporated into GDP:

- Trafficking and distribution of illegal drugs;
- Prostitution;
- Smuggled goods;
- Selling of stolen goods (fencing).

Drugs

The main data sources and methods used were:

- Public opinion polls, organised by the Public Opinion Research Institute and conducted in 1996 and 1998. The polls focused on mapping the general drug addiction situation in the Slovak Republic, and collecting information on drug types used;
- Data from the Institute of Health Information and Statistics;
- Information released by the National Narcotics Squad of the Slovak Republic;
- Information on the average size of drug doses, prices, typical rates of consumption, etc. provided by the Centre for Treatment of Drug Addiction;
- A number of assumptions concerning drug usage where data were not available.

The estimate of drug consumption is based on the following formula: average daily drug dose x average price of one dose x number of doses taken annually x number of drug users = total expenditure.

In 1998 the estimated value of the total household consumption of drugs was about 4 billion SKK (it is assumed that all drugs were imported).

The estimation of imports related to the drug trade and the relevant trade margins was based on the formula: average retail price of a drug x quantity sold - average import price x quantity imported = the trade margin on drug sales.

The values of imports and associated margins were calculated only for heroin, cocaine and cannabis. The estimates took into account information and assumptions concerning the amount of drug captured, the chemical purity, prices of imports and the police seizure rate (assumed to be 10 per cent). Trade margins from trafficking of these drugs represented about 70-80 per cent of the value of consumption. As stated above, total household consumption of illegal drugs was estimated to be 4 billion SKK in 1998. Of this, the value of imports represented 1 billion SKK, and trade margins were valued at 3 billion SKK.

Prostitution

A very rough estimate of expenditure on prostitution was made using data and estimates provided by the Police Department about the number of prostitutes and their income. Intermediate consumption was assumed to be zero. The estimated value added of prostitution services is 1.4 billion SKK in 1998.

Prostitution services purchased by customers from abroad represent exports of services, and were estimated to be about 50 to 60 per cent of total prostitution services. It is highly likely that some private expenditure on prostitution is already included as business expenses. On the other hand, income earned abroad, by prostitutes working abroad is not estimated since it is not part of the GDP.

Smuggled imports

It is considered that the volume of illegal imports entering into the Slovak Republic is significant. Goods are usually smuggled with the intention of re-selling in the domestic market.

Because taxes on value added, excise taxes or other import taxes are not paid on smuggled goods, their prices are often lower than for similar domestic products.

Estimates of the volume of smuggled goods are based on data from the Customs Administration. They estimated that smuggled goods (excluding drugs) to the value of 2.6 billion SKK entered the economy in 1998. However, experts consider that the real volume of smuggled goods could be three to four times higher than the Customs estimate. The total value of smuggled goods for 1998 was therefore estimated to be 7.7 billion SKK.

On the assumption that trade margins on illegal imports are between 20 to 50 per cent of the value of the goods, the margins for 1998 were estimated to be 2.3 billion SKK. Based on these assumptions, household final consumption expenditure on smuggled imports was estimated to be 10 billion SKK in 1998 (part of which would also have been accounted for in the survey of households' purchases from the informal sector).

Selling stolen goods (fencing)

As it does not conform to the SNA definition of transactions, the value of theft itself should not be recorded in the accounts. However, any subsequent value added generated from selling stolen goods should be included.

Stolen goods are usually sold-on, either in the domestic market or as exports. To estimate value added (i.e. the trade margins) certain assumptions are made. It is assumed that thieves sell stolen goods to fences at 30 percent of the retail price. The fence then sells the goods for 60 percent of the retail price, and hence the fence's profit is 30 percent of the retail price of the stolen goods. If it is assumed that all stolen goods are sold, the value added represents about 30 percent of the retail price. Value added estimated in this way was 0.9 billion SKK in 1998. In making the estimates, it is also assumed that 40 per cent of stolen cars are exported.

The estimates of value added generated by illegal activities which were included in 1998 national accounts represented 0.6 per cent of GDP. These estimates relate to drugs and prostitution only. Other illegal activities, which consisted of smuggling and the selling of stolen goods, were not included in the national accounts estimates but were valued at 0.4 per cent of GDP.

All estimates are approximate, and are based on a number of assumptions. Before they are included regularly in the Slovak National Accounts it will be necessary to improve some of the estimation methodologies.

Table 4. Approximate estimates of illegal activities in 1998 in the Slovak Republic.
(Billion SKK)

	Value added	Imports	Household final consumption	Exports
1998				
Drugs	3.0	1.0	4.0	
Selling smuggled goods	2.3	7.7	10.0	
Selling stolen goods	0.9		0.3	0.6
Prostitution	1.4		0.5	0.9
Total	7.6	8.7	14.8	1.5

Other types of GDP under-coverage

Other problem areas that can lead to GDP under-coverage are included under type T8 of the Eurostat NOE classification. These include: production for own final use; tips; and wages and salaries in kind. Estimates for the following components of this type of the NOE are made:

- Agricultural production for households own final use;
- Own-account construction of houses, summer houses and garages;
- Services of owner-occupied dwelling (imputed rent);
- Tips.

Production for own final use is estimated on the basis of the following data sources and information:

- Household Budget Survey;
- Investment statistics, administrative data from the Ministry of Finance, and information from real estate offices;
- The average annual costs of 1 m² of dwelling space (consumption of fixed capital, operating costs, repairs and maintenance), number of private dwellings, and average size of dwellings (including garages and cottages).

Estimates of value added attributed to household production for own final use represented 7 per cent of GDP in 1998.

Other types of production for own use, generated by enterprises and other units in the *formal* sector, are monitored within the framework of surveys on production and no further estimates were made.

No adjustments to output for wages and salaries paid in kind are made. Explicit estimates are planned to be made from 2000 onwards.

As yet, explicit estimates of the value of tips have not been recorded in the national accounts, even though some estimates exist. In 1998, the estimated value of tips represented 0.13 per cent of GDP.

Implications and effects on national accounts and GDP estimates

Estimates of the NOE are made for each of the three GDP approaches to measuring GDP: production, expenditure and income. The main results are shown in Tables 5, 6 and 7.

Table 5. Summary of exhaustiveness adjustments, by type of adjustments, 1998
(production approach)

Type of adjustment	(Per cent of GDP)	
	Adjustment incorporated or not incorporated in published GDP	
	Yes	No
T1: statistical underground (non-response)	3.19	
T2: statistical underground (not updated registers)		
T3: statistical underground (not registered)	3.69	
T4: economic underground (underreporting)	5.96	
T5: economic underground (not registered)	1.31	
T6: informal sector (not registered, underreporting)		
T7: illegal activities	0.59	0.42
T8: other GDP under-coverage	6.88	0.13
Total	21.62	0.55

Not all estimates were included in official GDP. The estimates of value added generated by some illegal activities, such as trade in smuggled goods and fencing, and also estimates for tips will be included in future national accounts estimates following further analysis and data compilation.

Table 6. Summary of the exhaustiveness adjustments, by industry (included in GDP), 1998
(Per cent of GDP)

NACE	T1	T2	T3	T4	T5	T6	T7	T8	Total
A+B	0.04		0.11	0.10	0.21		0.00	2.32	2.78
C+D+E	0.26		0.70	2.36	0.00		0.00	0.00	3.32
F	0.35		0.53	0.68	0.43		0.00	1.23	3.22
G+H+I	1.77		1.40	2.19	0.51		0.40	0.00	6.27
J+K	0.70		0.56	0.44	0.08		0.00	3.33	5.12
L to P	0.05		0.38	0.20	0.08		0.19	0.00	0.90
Total	3.19		3.69	5.96	1.31		0.59	6.88	21.62

Table 7. Summary of the exhaustiveness adjustments, by institutional sector, 1998
(Per cent of GDP)

Sector	T1	T2	T3	T4	T5	T6	T7	T8	Total
S11	3.16			2.08					5.24
S12	0.03								0.03
S13									0.00
S14			3.44	3.88	1.31		0.59	6.88	16.10
S15			0.25						0.25
Total	3.19		3.69	5.96	1.31		0.59	6.88	21.62

Note:

S11: Non-financial corporation sector

S12: Financial corporation sector

S13: General government sector

S14: Households sector

S15: Non-profit institutions serving households sector

THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA

Introduction

The first GDP estimates for The former Yugoslav Republic of Macedonia, made in the early 1990s, did not include any adjustments for the non-observed economy. Later, the Statistical Office compiled very detailed and exhaustive estimates of GDP using the expenditure approach, resulting in estimates more than 20 per cent higher than the estimates obtained using the production approach.

The first attempts at adjusting output estimates for non-observed activities were based on detailed analyses of the financial data of non-financial enterprises, broken down by public and private enterprises. Analyses of the detailed cost structure of both kinds of enterprises were used for making adjustments for underreporting. However, even after this analysis, the discrepancy between the expenditure and output approach remained at around 10 per cent. At the same time, the dynamic privatisation process that was taking place in the economy meant that the structure of the economy on which the original adjustments were based no longer existed.

The participation in the Pilot Project on Exhaustiveness, launched by Eurostat, was used as a starting point for the process of overall improvement of the national accounts. The Pilot Project on the compilation of Supply and Use tables, carried out with the cooperation of experts from the Netherlands, also contributed to the work on GDP exhaustiveness.

Definitions and concepts

The definitions of activities that are not directly observed through the standard statistical surveys are based on the standard terminology used within the Eurostat Pilot Project on Exhaustiveness. The eight components of NOE (T1-T8) were considered.

The basic findings and the methods adopted to achieve exhaustiveness in the GDP estimates resulting from the two pilot projects are presented below.

Sources and estimation methods

Data sources

The registration of all enterprises in the Court Register is mandatory. On the basis of the registration documents the Statistical Office determines the identification code and main activity for each newly registered enterprise.

Each enterprise that wants to operate must also open a giro account with the Bureau of Payment Operations (ZPP)¹. The Statistical Office keeps an administrative register of enterprises that contains all registered enterprises regardless of whether or not they are still active. However, progress is being made in transferring the administrative register to another institution and establishing a statistical business register in the Statistical Office.

For the time being a combination of both registers - the register of giro accounts and the administrative one – is used by the National Accounts Department to create an up-to-date picture of active enterprises in the country. ZPP's register of giro accounts is considered to be exhaustive and current because, as stated above, each enterprise that wishes to carry out business transactions through the official payment system has to open a giro account with the ZPP. Due to its central position in the payment operations system, ZPP has the power to enforce the collection of financial data from all active registered enterprises that have performed transactions in their giro accounts during the year.

The income statements and the balance sheets collected by the ZPP are the basic data sources for the estimation of GDP by the output approach and for the compilation of institutional sector accounts. This information is available for all registered and active non-financial corporations, financial corporations, government units and NPISH. In addition, the Statistical Office collects data for unincorporated non-agricultural units, as well as data on quantities and prices for unincorporated agricultural and construction units.

Identification of types of under-coverage and adjustments needed

Based on analyses by the National Accounts Department and consultations with tax and accounting experts the following conclusions were reached:

- Income statements and balance sheets of financial corporations, government units and NPISH give a true picture of their activities over the year and major exhaustiveness adjustments are not necessary. Adjustments are only made for consumption of fixed capital by government units, and to change data from a cash basis to an accrual basis;
- Income statements of non-financial corporations understate sales, wages and salaries and the number of employees, and overestimate costs;

¹ The Bureau of Payment Operations is an institution that has remained from the pre-transition period. It is a type of clearing house that operates the payments system in the country, distributes cash to enterprises, executes all payment orders for enterprises and collects semi-annual and annual Income statements and Balance sheets for all registered enterprises. At present, reform of the payment operations system is underway, aimed at transferring the duties of the Bureau to different institutions such as commercial banks, the Central Bank, the Statistical Office, Central Register, and Public Revenue Office.

- The survey of unincorporated non-agricultural units has total coverage of registered units, but data are under reported and only data on the number of registered employees is collected;
- The incidence of non-registered unincorporated units is significant.

It can be concluded that the basic data sources do not provide total coverage of activities in the non-financial corporations sector or the households sector. This conclusion has been confirmed by the analysis of the different types of NOE.

T.1 Statistical underground (non-response). As previously mentioned, the role that ZPP plays in the payment operations system ensures the full response of registered active corporations, NPISH and government units. According to the analysis done by ZPP, non-financial enterprises make up 65 per cent of the total number of registered enterprises. Almost 75 per cent of this number consists of active enterprises that make transactions on their giro accounts and consequently submit an annual financial report. The remaining 25 per cent of active enterprises, which have annual turnover under a certain threshold are not obliged to submit financial reports.

T.2 Statistical underground (registers not updated). The ZPP is able to maintain an up-to-date register of giro accounts.

T.3 Statistical underground (not registered). The considerations that have been already noted for NOE, types of T1 and T2, apply to type T3 as well.

T.4 Economic underground (underreporting). Underreporting is one of the main types of non-observed economic activity in the country. It is characteristic of non-financial corporations and unincorporated enterprises. The main reason for underreporting is to avoid payment of turnover tax, import duties, personal taxes or employers' social contributions.

T.5 Economic underground (not registered). The existence of unregistered corporate enterprises is not characteristic. However, this type of under coverage is typical in the households sector, where it results in missing part of the production of some unincorporated units.

T.6 Informal sector (not registered). The largest part of informal activities is concentrated in own-account household construction and some service activities (such as repairs, personal services, transport, accounting, lawyers, and private classes) performed by non-registered self-employed persons.

T.8 Other GDP under-coverage. Production of agricultural or other products in the households sector for own final consumption forms the major part of this type of under-coverage. Gross output of agriculture in the households sector is estimated from a special annual survey. Price and trade data are also used. The value of total agricultural production in one calendar year, regardless of whether or not the whole quantity is sold, processed in agricultural holdings, used as

intra-branch consumption, used for own final use or partially added to stocks, is included in gross agricultural output. Valuation is made using the quantity-price method. Data for activities such as production of home made products, hunting, fishing, gathering of herbs, and the cultivation of flowers are also included. As a result, there is no need of specific adjustments for non-coverage.

Description of the adjustments for exhaustiveness

Adjustments for underreporting of type T4 (economic underground) are made for non-financial corporations and unincorporated enterprises. The adjustments are made on the basis of the Labour Force Survey (LFS) which ensures coverage of enterprises which, due to small turnover, are not obliged to submit annual reports.

Non-financial enterprises

Adjustments for underreporting are made only for active non-financial enterprises, and at a very detailed level. The following types of adjustments are made:

- Underreported wages. Data on net wages from annual financial reports and the Labour Department data are compared. The latter are usually higher. The difference between net wages obtained from the two sources multiplied by the number of registered employees represents the value of adjustment;
- Overreported intermediate consumption. The adjustment is made on the basis of data analysis and comparison of intermediate consumption for both the previous and current year in respect of similar economic activities;
- Non-registered employees. The assessment is based on comparative analysis of two data sources – the annual financial reports (registered number of employees) and the LFS (total number of employees). It is made at a very detailed activity level for each type of unit. The nature and characteristics of the particular economic activities are taken into account as well. The following assumptions are made: (i) for some specific activities performed by public enterprises or by some large privatised enterprises, the number of employees from the annual financial reports is usually considered the more reliable; (ii) for some other activities, where the number of employees obtained from annual financial reports (ZPP) is higher than the LFS figures, the ZPP number of employees is taken into consideration; and (iii) for activities performed by small private enterprises, the number of employees from the LFS is taken into account.

The adjusted total number of employees is close to the number of employees obtained from the LFS. Estimates of gross output are adjusted on the basis of estimates of the number of non-registered employees and the value of output per employee.

Non-registered sales in trade

Very often trade enterprises, in order to avoid turnover tax, do not register their sales in their bookkeeping records and sales in the financial reports are therefore underreported. Adjustments to the value of merchandise sales are based on the Household Budget Survey. The value of goods purchased by households is taken as the total value of sales and the appropriate trade margin is applied. The difference between the derived gross output and gross output calculated from the financial reports is the value of the adjustment.

Unincorporated enterprises

Estimation of the activity of household unincorporated enterprises is based on regular statistical surveys conducted by the National Accounts Department. They cover the following activities: construction, transport, trade, tourism and catering, personal services, craft and trades, financial, technical and business services, education, science, culture and information, and health care. The survey is based on data from the Regional Tax Department of the Ministry of Finance. In addition, the data are compared with information from other sources: Health fund (contributions for health care); Pension fund (pension contributions); Bureau of Payment Operations (the total sum of collected taxes and fees); and statistical information on net wages.

The survey provides data for the calculation of gross output at basic prices, value added and its cost structure. Data for the estimation of average monthly earnings are also collected.

Adjustments of the monthly net wages of employees are made after comparison of the survey data, Labour Department data and average net wages in each branch of the non-financial enterprises sector.

Adjustments to monthly wages of self-employed persons are based on estimates from experts with tax authority experience in relation to particular occupations.

Informal sector

The largest part of informal activities is accounted for by own-account household construction and certain service activities performed by non-registered self-employed persons (repairs, personal services, transport, accounting, lawyers, and private classes). Account is also taken of occasional and temporary activities, and of work on service contracts.

- Assessment of non-registered employees. The assessment is based on the LFS. As a large number of self-employed persons are not registered with the Tax Office, the LFS is considered a more relevant data source than the regular survey conducted by the National Accounts Department. In some specific cases, where the number of self-employed persons revealed by the LFS is very large,

- additional analyses are made taking into consideration the number of employees in non-financial enterprises.
- Own construction of residential buildings by households. Gross output of own-account construction is estimated on the basis of information obtained from the Department of Construction. Data available for the activity of corporate enterprises engaged in construction, together with additional information from the Department of Construction, are used to calculate intermediate consumption.
 - Occasional and temporary activities, work on service contracts. These activities and work on service contracts are considered to be intermediate costs for enterprises. Part of the required data is available from annual financial reports of enterprises that pay for such services and part of the remainder is obtained indirectly from tax data. The adjustment involves treating these costs as compensation of employees.

Illegal activities

The Statistical Office has made only one experimental estimate of drug consumption. It is based on data from the Ministry for Internal Affairs and from the special medical institution which is dealing with the problems of drug consumption. As the estimation procedure is considered experimental the results are not included in GDP. The results of the experimental calculation are shown in Table 1.

Table 1. Value of consumption of drugs, 1999

	Marijuana	Heroin	Cocaine	Total
Average consumption per day (gr)	3.0	0.25	0.5	
Total consumption (gr)	9 028 020.0	227 272.00	74 238.0	
Annual value of consumption (in '000,000 denars)	903.0	455.00	309.0	1 666

Implication and effects on national accounts and GDP estimates

The adjustments made as a result of the work within the framework of the Pilot Project on Exhaustiveness are included in officially published data. The results are presented in Tables 2 and 3.

Table 2. Adjustments of value added by selected economic activity – total economy

(percentage of GDP)

	1997			1998			1999		
	T4 ¹	T6 ²	Total	T4 ¹	T6 ²	Total	T4 ¹	T6 ²	Total
Value added at basic prices – total	12.4	2.0	14.4	13.0	3.2	16.2	10.6	3.1	13.7
of which:									
Manufacturing	3.7	0.1	3.8	4.2	0.3	4.5	2.7	0.3	3.0
Construction	0.4	1.2	1.6	0.5	1.2	1.7	0.4	1.1	1.5
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	5.8	0.0	5.8	5.8	0.2	6.0	5.0	0.2	5.2
Hotels and restaurants	0.5	0.1	0.6	0.6	0.3	0.9	0.6	0.3	1.0
Transport, storage and Communications	0.9	0.2	1.1	0.8	0.4	1.2	0.8	0.4	1.2
Real estate, renting and business activities	0.4	0.3	0.6	0.5	0.6	1.1	0.6	0.5	1.1

¹ Adjustments for economic underground² Adjustments for informal sector**Table 3. Adjustments of value added by sector and by selected economic activity**

(percentage of GDP)

	Non-financial sector - adjustments for economic underground			Households sector - adjustments for economic underground			Households sector - adjustments for informal sector		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
Value added at basic prices – total	11.4	11.8	9.2	1.0	1.2	1.4	2.0	3.2	3.1
of which:									
Manufacturing	3.5	4.0	2.6	0.2	0.1	0.1	0.1	0.3	0.3
Construction	0.4	0.5	0.4	0.0	0.0	0.0	1.2	1.2	1.1
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	5.6	5.2	4.4	0.2	0.6	0.6	0.0	0.2	0.2
Hotels and restaurants	0.4	0.5	0.5	0.1	0.1	0.1	0.1	0.3	0.3
Transport, storage and Communications	0.7	0.7	0.5	0.2	0.1	0.3	0.2	0.4	0.4
Real estate, renting and business Activities	0.4	0.4	0.4	0.0	0.1	0.1	0.3	0.6	0.5

TURKEY

Introduction

The national accounts estimates of Turkey were reconstructed in 1990. The existing data sources, methodology and techniques were analysed in order to improve the GDP estimates.

In a recent revision of national accounts, some adjustments were made and some indirect methods were developed to cover unregistered activities in the GDP estimates.

Illegal production is not included in the GDP estimates for Turkey.

Sources and estimation methods

Adjustments to data

Labour statistics are used as the basic data source to determine value added by sector. Employment details from the Household Labour Force Survey (HLFS) have been compared with corresponding information from the General Census of Industry and Business Establishments (CIBE). The reported number of persons employed in small-scale industry establishments (those with between 1 and 9 employees) in the CIBE was lower than that derived from the HLFS results.

On the assumption that some small-scale manufacturing establishments conceal their production activities, the difference between the two data sets was taken to represent this concealment. To account for the hidden production, the number of additional employees was multiplied by the average value added per capita for small-scale manufacturing, and added to the original estimate of value added for small-scale manufacturing industry.

The HLFS also indicated that quite a number of households were engaged in household manufacturing. Average hours worked per week were calculated from the HLFS and converted to a full-time equivalent. The average value added per capita in small-scale manufacturing was applied to the resulting number of employees to obtain estimates of the total value added (Table 1).

The value added of the trade and transportation sectors is estimated by using trade and transportation margins on produced goods and imports. Thus, the normal estimation method is likely to cover some parts of unreported production in these two sectors.

Informal Sector Survey

The State Institute of Statistics (SIS) began conducting an independent Informal Sector Survey in 2000 to estimate the basic characteristics of informal sector employment. With technical assistance from the ILO, investigations were carried out into the development of: a definition of the

Table 1. Share of non-registered activities and household production in total manufacturing industry and GDP

Year	1996		1997		1998		1999		2000	
	per cent of industry	per cent of GDP	per cent of industry	per cent of GDP	per cent of industry	per cent of GDP	per cent of industry	per cent of GDP	per cent of industry	per cent of GDP
Small-scale industry (non-registered)	5.95	1.26	5.97	1.29	6.04	1.17	5.83	1.04	5.87	1.12
Household manufacturing	2.57	0.54	2.33	0.50	2.43	0.47	2.55	0.46	2.43	0.46
TOTAL	8.52	1.80	8.30	1.79	8.47	1.64	8.39	1.50	8.30	1.58

informal sector that is in line with the particular conditions in Turkey; a survey methodology to measure employment in this sector; the survey sample and questionnaire forms, and a pilot test of the survey.

For the purpose of the survey, the informal sector is defined as all unincorporated non-agricultural economic units (establishments whose legal status is individual ownership or simple partnership), which pay either lump sum tax or no tax at all, and have fewer than 10 employees. Persons aged 16 years and over, working as self-employed or as an employer, are covered. The sample covers all settlements in urban areas with a population of 20,000 or more.

The survey includes both households and establishments. The questionnaire is composed of two main parts:

- Household questionnaire: collects information on the demographic characteristics of household members, their employment status in the last 12 months, source of household income and average net monthly household income.
- Establishment questionnaire: collects information on the demographic characteristics of the operators, working hours, total number of persons employed, taxation method, type of legal organization/ownership, numbers of hours worked last month, operating surplus in last month, input-output, etc.

Two reference periods were used: the “last 12 months” and the “last month that economic activity was carried out”. The survey was conducted in February, May, August and November of 2000.

In addition to the independent Informal Sector Survey that was conducted in 2000, the State Institute of Statistics has added some questions to a revised HLFS that started in 2000, aimed at estimating informal sector employment more precisely. It is hoped that analysis of the results of these two surveys will enable incorporation of informal sector data into the national accounts in the future.

UNITED KINGDOM

Definitions and concepts

General overview

The UK makes significant efforts to ensure its national accounts are of the highest quality. This starts by making decisions about whether to use administrative or survey sources for the components of each of the three measures of GDP and culminates in balancing these measures through the supply and use process.

One acknowledged weakness of the UK accounts is that at present no explicit estimate is made for illegal production. One of the strengths of the UK system is that it calculates three independent measures of GDP, which are balanced through Supply and Use Tables (SUTs). This ensures that certain illegal production can feed into the overall measure of GDP through the balancing process because it will generally be picked up in one of the measures of GDP. For example, income from selling stolen goods may be spent legally and therefore picked up in the expenditure measure of GDP.

Sources and estimation methods

Exhaustiveness is ensured within the UK accounts in three main ways: ensuring data quality, surveys and confronting data at a macro level.

Ensuring data quality

The three measures of GDP are all based on different administrative or survey sources. These sources can be affected by hidden activity to varying degrees. When administrative data are used, data may be 'hidden' from the collecting authority (e.g. tax evasion can affect Inland Revenue data). Surveys are more likely to suffer from non-response or poor quality data.

This makes the choice of data sources quite difficult and consequently decisions have to be made on a case-by-case basis. For example, in the production approach, published company accounts can be used for industries dominated by a few large enterprises (e.g. telecommunications) but industries populated by a large number of small firms are better covered by sample surveys because small firms are more likely to try to avoid taxation. The Office for National Statistics (ONS) strives wherever possible to use the best data source available.

Surveys

The ONS has invested in high quality business and household surveys, which have been specifically designed to produce results for the national accounts. The business surveys, such as the

Annual Business Inquiry (ABI) are supported by a comprehensive Inter Departmental Business Register (IDBR), which ensures these surveys remain representative of the whole economy. Sound survey methodology is used to make appropriate allowances for non-response through imputation, and use of the business register ensures accurate grossing.

The household surveys, such as the Family Expenditure Survey (FES) are run continuously throughout the year and based on a sample of the population derived from post office records. These surveys are often cross-referenced against relevant business sources (e.g. household final consumption is estimated from both household and business surveys) to ensure quality. Adjustments are made when it is known that these surveys under-record, for example, in the case of expenditure on tobacco.

Use of surveys must be balanced against effective use of administrative data wherever it can be used as an alternative source of information (e.g. tax records in the income approach). Administrative data may also be used as a check against survey data (e.g. using published accounts at industry level in the production approach or VAT data for the expenditure approach). Effective use of administrative sources can both increase quality and reduce the burden on survey respondents (businesses or individual householders).

Confronting data at a macro level

Balancing the accounts

In the UK much of the exhaustiveness work is focussed on the production approach, which is considered the best measure of GDP and consequently drives the SUTs balancing process. However, since this balancing process takes place at the relatively detailed 123 I-O group level this allows ONS to make use of the most accurate measure of GDP on a case by case basis, with the other measures constrained to the best total.

Use of employment data to cross-check output data

A global examination of the comparability between data derived from the production inquiries underlying the national accounts and the Labour Force Survey has been carried out. There is no evidence that there is significant hidden employment producing output that is not measured in the existing national accounts.

The supply approach to measuring fixed investment

Increasing use is being made of the supply approach to the measurement of fixed capital formation as a check on the results from the expenditure-based estimates. The two approaches give similar results, but adjustments have been made to the expenditure-based estimates for industries where there are most likely to be weaknesses in the coverage of the inquiries.

Production approach

The production approach to measuring GDP is based largely on the National Statistics Annual Business Inquiry (ABI), which draws a sample from the Inter Departmental Business Register (IDBR). Inquiry based estimates are further supplemented by estimates of earned income in kind and a number of other adjustments where necessary. Adjustments to the production measure are made on an industry-by-industry basis.

Data quality

Inter Departmental Business Register (IDBR)

The IDBR is the sample frame used for all of the main business surveys; it is a comprehensive register of UK businesses. It holds information on nearly 2 million enterprises, covering approximately 98 per cent of UK economic activity, but excluding private households.

It is regularly updated from both VAT and Pay-As-You-Earn (PAYE) sources. The IDBR provides a single, reliable set of employment estimates, improving the consistency of the national accounts and the quality of the productivity and unit wage cost estimates.

HM Customs and Excise (C&E), the government department which ensures compliance with the law governing payment of VAT, regularly feeds back information to the IDBR (for example any new VAT registrations are notified to ONS on a weekly basis). These quality checks mean that some firms who might otherwise have evaded the fiscal authorities (and therefore statistical records) will be included in the register and it is more likely that they will be included in the correct size band. These effects on the IDBR can be regarded as implicit adjustments for non-registration because of VAT evasion in the production approach to measuring GDP.

The Annual Business Inquiry (ABI)

The main source of data for the production approach is the ABI. The introduction of the ABI, which covers retail, wholesale, manufacturing and a host of other industries, has led to large improvements in the coverage of UK businesses and standardisation of inquiry procedures. The ABI covers Northern Ireland and includes small businesses in its sample selection and grossing procedures – these were sometimes weaknesses of the former separate inquiries used in the UK.

Adjustments made to ensure exhaustiveness

General adjustments

In most industries within the SUTs framework, the ABI provides sufficient information to calculate gross value added. This is supported by, for example, Prodcum in the manufacturing

industries and Department of Trade and Industry (DTI) data in the oil/gas extraction industry. The basic data sources (mainly ABI) are subjected to the following general adjustments in all industries:

- ONS compile an industry-by-industry measure of GDP in terms of production and income. These two methods are balanced in the SUTs process to provide the best possible measure of GDP by the production approach;
- An estimate of “income in kind” (based on Inland Revenue data supplied at I-O group level) is added for every I-O level industry;
- Generally good methodology and data validation techniques are employed in the ABI. However, as an additional check, odd movements in large companies (from ABI data) are often checked against companies’ annual reports and accounts. More use is made of this approach in industries dominated by large businesses, for example, telecommunications;
- Estimates of VAT based turnover and VAT paid (supplied by Inland Revenue at I-O group level) are used to validate the production-based estimates of turnover and gross value added (GVA);
- The income-based estimate of GVA is used in industries where source data for the production approach is considered to be poor or is absent altogether.

Specific adjustments

In addition to the general exhaustiveness adjustments mentioned above, the following industry specific adjustments are also used:

- Agriculture

The Ministry of Agriculture, Fisheries and Food (MAFF) provides estimates of the gross output, intermediate purchases, value added (and the product composition of purchases less sales) of the national farm, and of intra-farm transactions. This is used as an alternative, more comprehensive source of data in the production approach. These estimates do not cover all of the activity of non-farm based agricultural enterprises and therefore an adjustment is made to cover this type of activity.

- Construction industry

Construction output is based mainly on Department of the Environment Transport and the Regions (DETR) data, although this is crosschecked against ABI data. Additionally, ONS make a hidden economy adjustment for self-employed builders based on DETR data, which is also applied consistently in the expenditure approach.

- Wholesale and retail industry; Hotels and restaurants

Additional quality checks are applied to the base ABI data. Particularly, extra analysis of returns from large businesses including: year-on-year analysis; time series comparisons with quarterly data sources; and checks against annual reports and accounts. Additionally, there is an adjustment to ABI data for under-coverage of small outlets – based on special analyses undertaken in collaboration with the Department of Trade and Industry (calculation based on reported self-employment income in the industry and an estimate of under-coverage by the IDBR).

- Transport

Data are checked against annual reports and accounts (particularly in communications industry, which is dominated by large businesses). Under-coverage of taxis is dealt with by an adjustment based on number of registered cabs and expert opinion on taxi driver earnings (this adjustment is less important than it was, due to improvements to IDBR coverage). Additionally, Civil Aviation Authority data are used to check ABI data for the airlines.

Income approach

In the UK, the income approach is heavily reliant on information derived by the Inland Revenue (the UK government's tax collecting body) as a by-product of the tax system. Although this provides an independent approach for measuring GDP, it does have a number of weaknesses, which are overcome through a series of exhaustiveness adjustments in each of the income components. These adjustments aim to:

- Capture hidden activity (e.g. below the tax threshold);
- Adjust for coverage (e.g. include pension fund data);
- Utilise alternative data sources that are regarded as better quality or more timely (e.g. MAFF data).

Data quality

In the UK, income tax is charged under a series of “schedules” and “cases”, each representing a different type of income (e.g. Schedule D, Case 1 represents corporations/quasi-corporations tax on profits and Schedule E represents income from employment and pensions).

This system of recording income for tax purposes provides an ideal base for estimation of most of the components of the income approach. The main drawback is timeliness, since there is some delay in providing this information. However, this is not an issue when the accounts are finalised for GNP purposes.

The tax data utilised in the UK national accounts is provided by three main sources within the Inland Revenue: Pay-As-You-Earn data, Survey of Personal Income and Corporations Tax Returns.

Pay-As-You-Earn (PAYE) data

For the vast majority of employees who receive income under Schedule E (income from employment) the tax due on that income is calculated by the employer and the appropriate amount deducted before the employee is paid. This system, known as Pay-As-You-Earn (PAYE), ensures that these individuals do not usually need to complete an annual tax return or make any direct payment to the Inland Revenue.

About 90 per cent of all UK individuals liable to income tax are chargeable under schedule E and almost all of income tax chargeable under schedule E is collected under the PAYE system. This system therefore provides an excellent base for the calculation of compensation of employees.

After the end of each tax year (which runs from 6 April through to the following 5 April), employers send details of pay and tax contributions for each employee to the Inland Revenue. Estimates of wages and salaries for those within the PAYE system are derived from a 1 per cent sample of tax deduction documents. The Inland Revenue under statutory authority sends these documents to the Department of Social Security (DSS), which notes the details of social security. A separate computer file based on 1 per cent of these records is compiled for statistical analysis including details of pay and tax. The total number of tax deduction documents exceeds 30 million each year and 300,000 records are sufficient to estimate total wages and salaries with a standard error of about $\frac{1}{4}$ per cent.

The estimate of pay obtained for the whole PAYE population is obtained by multiplying the 1 per cent sample estimates by appropriate grossing factors. These are obtained by comparing the employees' National Insurance contributions (NICs) totals obtained from the 1 per cent sample with the total employees NICs recorded.

Employers are allowed to submit computerised returns to the Inland Revenue derived from their payroll systems and, in practice, include some employees falling below the tax/NIC threshold.

However an exhaustiveness adjustment is required (outlined below) to fully cover individuals who fall below the threshold.

The Survey of Personal Incomes

The Survey of Personal Incomes is an annual survey that covers individuals in receipt of income from self-employment (partnerships and sole traders) for whom income tax records are held by the Inland Revenue. The survey is based on a stratified sample of tax records.

The data from the survey is used in the calculation of mixed income (sole traders) and quasi-corporations (partnerships) gross operating surplus. This includes doctors and dentists practising under the National Health Service but excludes the salaries of members of the professions chargeable to tax under Schedule E (i.e. doctors who are full-time hospital employees, nearly all teachers and HM Forces pay), which are all included in PAYE data.

The Survey of Personal Incomes also includes details of rental income, which is used in the calculation of household operating surplus when earned by individuals classified to the household sector.

Corporation tax returns

The Inland Revenue data used by the ONS in the calculation of non-financial corporations gross operating surplus cover the taxable trading profits/losses of all industrial and commercial companies operating in the UK. The data are obtained from the Inland Revenue inquiry on trading profits of industrial and commercial companies assessed to UK corporation tax. The Inland Revenue data does not include quasi-corporations, which are supplied as part of the Survey of Personal Incomes (see above).

All companies must complete regular corporation tax returns regardless of their size or whether they are in profit or loss, so coverage of the sector is 100 per cent. Consistency is assured since the national accounts figures are taken from these standard tax returns.

Schedule D Case 1 profits is net of capital allowances but the national accounts definition of gross trading profits requires that these allowances not be deducted. Information for each company sampled includes the capital allowances given by the tax inspector, so that these can be added back to the Schedule D Case 1 profits. The resulting estimates (known as Schedule D Gross Case 1 profits, or losses) are used in the calculation of gross operating surplus of non-financial corporations.

The Schedule D Case 1 profits definition is different from the national accounts definition of gross trading profits in several other respects (e.g. the treatment of finance lease rental payments) so ONS make adjustments to align the overall estimate to a national accounts (ESA95) basis.

Adjustments made to ensure exhaustiveness

Compensation of employees

A number of specific adjustments are made to cover hidden activity:

- Estimates of incomes not covered because employees are below the threshold at which the PAYE system becomes operative are based on the numbers concerned and their average annual earnings (from the Family Expenditure Survey (FES));
- Estimates for informal activity e.g. (tips) are based on information from the Inland Revenue;
- A specific estimate based on the FES is made for the earnings of those outside the National Insurance scheme, principally the earnings of those under 16 years of age.
- Many of the workers in domestic service and agriculture are paid at rates below the PAYE system thresholds. A specific adjustment is therefore made for these workers, based on information from the FES and from MAFF.

A number of other adjustments are required in order to ensure complete coverage in compensation of employees. “Profit related pay” and “shares appropriated under profit-sharing schemes” are taken from Inland Revenue sources as “expenses, payments and benefits in kind assessed as taxable income”. Employees' contributions to superannuation funds are taken from government administrative sources (for public sector employees) and National Statistics inquiries (for private sector employees). A number of estimates of non-taxable income in kind are based on expenditure estimates (e.g. imputed rental value of housing provided free by employers and value of food provided in canteens etc. including meal vouchers) are also added.

Additionally, it is recognised that PAYE data do not adequately cover “compensation” of HM Forces, which includes a large proportion of income in kind (accommodation etc.). For this reason a substitute estimate is obtained from government administrative sources.

Mixed income

The main exhaustiveness adjustment within the UK measure of mixed income in hidden activity is an allowance for income tax evasion, which is significant in this sector.

The following additional adjustments are made to ensure exhaustiveness in the coverage of mixed income:

- Employers' contributions to the NHS pension fund (from the Government Expenditure Monitoring System);
- Lloyds Names income (from Bank of England data).

Gross operating surplus of non-financial corporations

The only exhaustiveness adjustment for hidden activity applied is a small (historically based) evasion adjustment based on 0.3 per cent of the gross trading profits of non-financial corporations.

Gross operating surplus of households

Although no specific exhaustiveness adjustments are required, the following coverage adjustments are required to fully cover gross operating surplus:

- Households' tax-free rental income (ONS estimate based on Inland Revenue information);
- Imputed rental income of owner - occupiers (ONS estimate).

Expenditure approach

Data quality

Household final consumption expenditure

Estimates of consumers' expenditure are built up commodity-by-commodity from a variety of independent sources. For each commodity or service the source used is the one which is judged to provide the most reliable estimate of the level and changes in expenditure for that commodity or service. In many cases a combination of sources is employed so as to make the best use of available information.

The primary sources of information fall into three main categories: sample surveys of consumers' expenditure; statistics of retail and other traders' turnover; and statistics of supply and sales.

- Sample surveys of consumers' expenditure

The principal surveys used in the UK estimates are the National Food Survey (NFS) and the Family Expenditure Survey (FES).

The Ministry of Agriculture, Fisheries and Food (MAFF) conducts the NFS, which covers households in Great Britain. It covers all household expenditure on food other than meals and snacks and other items bought and consumed outside the home. Each household participating in the survey records, for one week, the quantity and value of food bought. The survey includes an "eating out extension", to cover those meals and snacks eaten outside the home.

The FES, which like the NFS is taken continuously throughout the year, covers expenditure on all goods and services by all household members of aged 16 or over, whether the goods and services are consumed inside or outside the home. Members of each household participating in the survey record for two weeks the value of their expenditure and give particulars of their income. The household is also asked to provide details of those payments which may recur regularly but less frequently, such as electricity and gas bills, rent, and travel season ticket purchases.

- Statistics of retail and other traders' turnover

The second approach used in measuring consumers' expenditure is to collect statistics of turnover by retailers and other businesses selling goods and services direct to consumers. A sample of businesses can cover a far higher proportion of the population's spending than can be covered by a consumer survey of practicable size. This approach requires retailers and other businesses to provide a commodity analysis of their sales, which they are asked to do in the NS Annual Retail Inquiry.

- Statistics of supply and sales

A third approach is to make use of statistics of supplies or sales to consumers of particular goods and services. This approach is used for measuring expenditure on energy products, rail and bus travel, post and telecommunications, alcoholic drink and, to a certain extent, cars and motorcycles. For items such as gas and electricity, these direct estimates are highly reliable. But for other categories there are problems in assessing the proportion of the supplies used for business purposes (e.g. vehicles, rail travel and petrol).

Gross fixed capital formation

The overall calculation of GFCF is complex but estimates rest heavily on the capital expenditure and inventories inquiries conducted by ONS on a quarterly basis. These inquiries are the benchmarked against ABI data.

Fixed investment in new dwellings by the private sector is derived from statistics of construction output from DETR sources. In the public sector, estimates for the larger public corporations are based on their annual accounts supplemented by returns they make to ONS about the sources and uses of their funds. Figures for central government are based on the Appropriation Accounts presented to Parliament; local government data are based on their returns to DETR etc.

Estimates of GFCF by unincorporated businesses (other than dwellings) are compiled using the IDBR as the population frame, in the same way as estimates for incorporated businesses. Thus the estimates of GFCF will cover all unincorporated businesses which are registered for VAT either directly through statistical returns received or on the basis of their turnover declared to the tax authorities.

Trade in goods and services

Estimates for trade in goods are derived mainly from C&E, which is regarded as a high quality source. For services, estimates are derived from a wide variety of data sources but mainly the International Trade in Services (ITIS) and International Passenger Survey (IPS).

Adjustments made to ensure exhaustiveness

Household final consumption expenditure

Table 1 lists some of the main exhaustiveness adjustments for coverage made to household final consumption.

Gross fixed capital formation (GFCF)

- New dwellings

For GFCF in new dwellings, construction output estimates which are derived from the IDBR are supplemented by estimates for construction operatives with low turnover. This will allow for at least some part of activity in the hidden economy. The supplement uses as its basis the difference between the numbers of self-employed construction workers captured by the Labour Force Survey and the number on the IDBR.

- Improvements to dwellings

The hidden economy is thought to be particularly active in the house improvement market. Therefore, in addition to the reported construction output, the estimates of total GFCF on housing improvement work include an additional adjustment, worth approximately 25 per cent of the reported income of the self-employed in the construction industry. This is intended to allow for hidden economy home improvement work by this industry.

- Gross output of construction

The hidden economy allowance is based on the use of expenditure estimates, such as the periodic English House Conditions Survey, to estimate the under-recording of output in a 'benchmark' year. The DETR can provide employment in construction estimates consistent with their gross output figures. The Department for Employment and Education (DEE) also collects information on the labour force in employment (it is the higher of the two). The hidden economy allowance from a benchmark year is then taken forward in line with movements in the difference in the DETR and DEE estimates.

Trade in goods and services

- Goods

Estimates for trade in goods are derived mainly from C&E records. Regular quarterly samples drawn from the recorded transactions are checked and analysed to allow any necessary under-coverage adjustments to the statistics on trade in goods to be calculated.

Table 1. Adjustments for coverage made to household final consumption

CATEGORY	MAIN DATA SOURCE	ADJUSTMENT
Food and non-alcoholic beverages	NFS	Adjustments from trade sources: Casual purchases (chocolate, ice cream etc.) Food items consumed outside the home Expenditure on soft drinks
Alcoholic beverages, tobacco and narcotics	HM Customs and Excise (HMCE)	Deduction to remove business expenditure on alcoholic beverages Smuggling adjustment from 2001 Blue Book
Clothing and footwear	Retail Sales Inquiry	Adjustment for cleaning and repair (from FES)
Imputed Rental	ONS estimate	Movement in number of owner-occupiers (from DETR) and change in average rents (from FES and LA data)
Goods and services for routine domestic maintenance	FES	Upward adjustment to allow for income in kind
Purchase of vehicles	ABI (motor trades)	Deductions for sales to businesses Upward adjustment to allow for income in kind from company cars (income approach)
Motor vehicle repairs	FES	Upwards adjustment for payments by insurers (Association of British Insurers)
Rail travel	DETR	Deduction for business expenditure
Buses and coaches	DETR	Deduction for business expenditure and general government expenditure
Air travel	IPS/CAA	Deduction for business expenditure
Audio/visual equipment	ABI (retail)	Upwards adjustment film/tapes/repairs (FES)
Other recreational items	ABI (retail)	Upwards adjustment to expenditure on garden supplies/ veterinary services (FES)
Recreational and cultural services	FES	Upwards adjustment for juvenile expenditure in cinemas Upwards adjustment for television/video hire
Games of chance	HMCE /OFLOT	Upwards adjustment for on course bookmakers
Newspapers / magazines	FES	Upwards adjustment for under recording in FES
Restaurants and hotels	FES	Deduction for foreign tourists expenditure (IPS) Upwards adjustment for income (food) in kind Upwards adjustment HM forces income in kind (MOD) Upwards adjustment medical staff income in kind (NHS)
Personal care	FES	Upwards adjustment for expenditure on toiletries etc. (ABI retail)
Personal effects	ABI (retail)	Deduction for capital formation
Social protection	FES	Adjustment for residential nursing homes (ONS benchmark survey)
Insurance	FES	Deduction for service charges (association of British insurers)
Financial services	BOE/ Inland Revenue	Various adjustments for service charges

Separate exercises are carried out periodically on both imports and exports to check for actual errors in the recording of various data in the Customs system, including the value of goods. These results have led to an adjustment being incorporated for over-valuation of exports.

- Services

In recent years, efforts to improve exhaustiveness have been focused on improving the coverage and quality of the basic data sources (i.e. to ensure comprehensive coverage of and accurate reporting by registered and economically active units).

Illegal activities in the UK accounts

Work published in the July 1998 edition of UK Economic Trends suggests that the activities considered could generate value added to the UK economy within the range shown in Table 2. However, these are only broad estimates.

Table 2. Illegal activities generating value added

	Value Added (per cent 1996 GDP)	Consumers Expenditure (per cent 1996 Consumers Expenditure)
Drugs	0.5 – 1.1	0.9 –2.1
Prostitution	0.2	0.2
Selling stolen goods	0.1	0.1
Illegal gambling	0.1	0.2
Total	0.9 –1.5	1.4 –2.6

The potential effects on the accounts from the introduction of illegal activities are:

- Income from illegal activities (value added) would be included under income from self- employment;
- Consumers' expenditure on illegal activities would be included under household final consumption expenditure;
- Imports of illegal drugs would be included under imports of goods.

The vast majority of illegal activities are consumed by, and generate income for, the household sector and are recorded in neither the income, expenditure or output sides of the accounts. Illegal activities are thus unlikely to explain any discrepancies within the accounts.

Although the UK accounts are in other respects consistent with ESA95, in common with most other national statistical institutes, the ONS has not yet been able to make specific adjustments to include illegal activities (e.g. selling heroin) due to the difficulty in finding suitable and accurate data sources.

However, several types of transactions which are illegal but not hidden are already recorded in the national accounts. In the UK these will include sales of alcohol and tobacco to children under the age of 18, and selling tickets to 18 certificate films to children under 18. No attempt is made to remove these kinds of illegal transactions from the accounts.

One notable development is that the accounts published in September 2001 included, for the first time, estimates from 1995 of household expenditure on alcoholic drink and tobacco products (cigarettes etc.), which are smuggled into the UK. These estimates are based on HM Customs and Excise intelligence on the level of smuggling taking place, together with assumptions about the prices at which the smuggled goods are sold to consumers through different types of outlets.

The data sources examined in the 1998 report produce estimates that would need substantial refining before they could be included in the national accounts. There is also a major problem in obtaining a time series for these sources. Additionally, links between the illegal economy and the legal economy need to be better understood (whether the income from illegal production is channelled through legitimate businesses) in order to correctly classify activities, and check against existing data.

Based on the results of the 1998 study, the UK currently has no plans to include specific adjustments for illegal activity within the accounts. The exception to this is the inclusion of the smuggling estimates mentioned above.

Concealed income (evasion) adjustment

The Office for National Statistics re-evaluated its methodology for estimating concealed income, which was implemented in the 1998 Blue Book. Revisions to GDP (income measure) from implementing this methodology were incorporated from 1989 and described in the 1998 GNP Questionnaire. The work that was undertaken is presented in the box below.

Box 1. Concealed income (evasion) adjustment

Eurostat document CPNB/152 reported on the exhaustiveness of the UK's GNP estimates and recommended that adjustments made for tax evasion in the income measure of GDP should be improved. This resulted in a re-evaluation of the methodology for estimating concealed income, which was implemented in the 1998 Blue Book. Revisions to GDP (income measure) from implementing this methodology were incorporated from 1989 and described in the 1998 GNP Questionnaire. Subsequently, the exhaustiveness reservation on the UK accounts was lifted.

The original work undertaken comprised two main components: use of a much improved Inter Departmental Business Register (IDBR) to improve the production measure of GDP; and use of a new model to estimate hidden activities based on this improved production measure.

First, for the 1998 Blue Book, various revisions were processed (re-balancing the years 1989-96 through the input-output framework) including the transition onto the new register. This had been developed using VAT and PAYE information providing a much more exhaustive register and thereby improving estimates from ONS business inquiries. In particular, the coverage of small businesses was improved since the old register relied mainly on VAT data and excluded many businesses under the VAT threshold.

Most of the register changes had little direct effect on the components of income-based GDP since they rely mainly on administrative data from UK tax systems rather than inquiries based on the register.

Second, the ONS compiled an enhanced model based on detailed industry information on production and incomes (from the Inland Revenue) to estimate adjustments to allow for the hidden economy. This replaced the former method for estimating the evasion adjustment, which operated only at the whole economy level.

The production approach sources information from the IDBR in compiling an 'exhaustive' estimate of gross value added. In this process, adjustments are made for known under-coverage, such as construction, taxis, agriculture, retail and catering - with detailed comparisons of the production and income estimates. For industries other than construction or agriculture, the new model describes a path for concealed income from 1988 onwards. It covers income concealment by the self-employed (mixed income) and by employees (compensation of employees). Essentially the same model framework is used in both cases -there are differences but the basic outlines are the same.

The models assume that:

- a) (Annual estimates of concealed income are based upon the estimated level of concealed income in the UK in 1994 (according to the discrepancy between GDP production) and GDP (income));
- b) The level of income concealment in any following year depends on:

- The level of income concealment in the previous year;
- The growth in a factor which is the best indicator available of the change in demand (either mixed income or compensation of employees);
- From 1995, the methodology has a further improvement reflecting information on turnover by industry for sole proprietors and partnerships as an input to the model (from the IDBR); and
- The change in taxes affecting self-employed and employees.

Therefore:

$$\text{Level}_{n-1} = \text{Level}_1 * \text{Change in income (or turnover)} * \text{Change in tax}$$

In the UK, income is assumed to be mainly concealed by the self-employed and, to a much lesser extent, by employees. Therefore, the income concealment adjustment only affects the series for mixed income and compensation of employees. In 1994 (benchmark year) the concealed income adjustment for compensation of employees amounted to 0.25 per cent of total compensation of employees whereas the adjustment for mixed income amounted to 23.3 per cent of total mixed income.

Incorporated businesses will have some incentive to conceal operating surplus, but the practice is thought to be on a relatively minor scale and the comprehensiveness of the PAYE and VAT register makes evasion by companies difficult. It is more likely that incorporated businesses exploit legal means of minimising their tax payments by hiring tax consultants rather than evading taxes and breaking the law. However a small adjustment is made to corporation tax data to allow for evasion.

Benchmark

1994 was used as the benchmark year for this “evasion” methodology. Once all the information from all sources was available and had been scrutinised as part of the validation and balancing process it was evident that there was a shortfall in the early estimates of the income measure compared to the production and expenditure measures. Various judgements and adjustments are made to components of all measures of GDP as part of this process. The production measure was the highest of the three GDP measures. In order to achieve the optimum balance for GDP at current prices, the difference between the production and income measures was deemed to be due to missing hidden economy activity. This difference supplemented the provisional estimate of hidden economy activity (i.e. pay under tax threshold etc.) and formed the benchmark for the model. This was then allocated across industries and worked back to 1989. The model using this benchmark has been used to make estimates for the hidden economy for later years.

The last step analysed the whole time series to check that there was no discontinuity between the 1988 and 1989 estimates on account of the new methodology.

UNITED STATES

Introduction

The text that follows provides the latest available information on how hidden and informal economic activities are reflected in the U.S. national income and product accounts (NIPA's).

The Bureau of Economic Analysis (BEA) published a series of three articles in the May, June, and July 1984 issues of the *Survey of Current Business* (a list of references is shown in box 2) that describe the current framework for treatment of hidden and informal economic activity in the NIPA's.¹ BEA published a fourth article on the topic in the April 1985 *Survey* that discussed a technique for measuring the underground economy.² The scope of these articles is sufficient to inform readers of BEA's treatment of the underground economy within the NIPA's.

Some illegal economic activity is captured in the NIPA's, although the recording of the associated receipts and expenses may be misclassified or mistimed. To the extent that illegal income is "laundered" through legal business operations and the income generated therefrom is used to purchase goods and services in legal markets, this illegal economic activity would be captured in national economic statistics. Because the U.S. market is so large, it is likely that a substantial amount of illegal economic activity carried out in the U.S. is captured in the NIPA's in this way.

While the impact of the unmeasured and misallocated components of illegal activity are not insignificant—in contrast to other countries where their significance is much larger—improving estimates of illegal activities are not one of the United States' major statistical priorities. BEA, like other national accounting agencies, is ill-equipped to make analytical headway in using the few existing estimates of U.S. illegal economic activity or in developing new estimates. Thus, it is not cost-effective for BEA to devote resources to measure illegal economic activities. Instead, BEA's account-improvement initiatives are aimed at better measuring new types of legal economic activity such as nonreporting or misreporting of legal activities in income tax statistics, in employee compensation, in costs of production, and in market prices.

The text below presents a summary of the key articles mentioned above, addresses definitional issues and estimation methodologies, and provides information on the impact of such estimates on the NIPA's. It draws from and builds on the *Survey* articles, but does not attempt to replicate them.

¹ For full citations, see Carol S. Carson (A and B) and Robert P. Parker in the references.

² See De Leeuw in the reference.

BEA and the underground economy

Carol Carson authored the first of companion articles in the May 1984 issues of the *Survey* entitled “The Underground Economy: An Introduction.” The May article defines the underground economy from BEA’s perspective and discusses the incentives for agents to engage in such activity; provides a synopsis of numerous methods that have been used to measure underground economic activity in the U.S. and elsewhere around the world; and highlights the effects of underground economic activity on U.S. economic statistics.

The second companion article, which appeared in the June 1984 *Survey*, was authored by Robert P. Parker and is entitled “Improved Adjustments for Misreporting of Tax Return Information Used to Estimate the National Income and Product Accounts, 1977.” The Parker article presents and discusses newly developed estimates of unreported and misreported economic activity that were incorporated into the NIPA’s and it highlights the methodologies used to prepare the old and improved misreporting adjustments. The improved misreporting adjustments are primarily based on analyses of Federal income tax return data for business and individuals.

Carson’s second article in the July 1984 *Survey* elaborates further on coverage of the underground economy within the NIPA’s. It differentiates between the types of economic activities that are included in the NIPA’s and those that are excluded. It discusses appropriate interpretations of NIPA estimates with respect to their coverage of the underground economy. Finally, it explains the effects of the underground economy on NIPA estimates by presenting an analysis of how the underground economy affects major source data underlying the NIPA’s.

Frank de Leeuw prepared a related article in the April 1985 issue of the *Survey* entitled “An Indirect Technique for Measuring the Underground Economy.” This article reveals an econometric technique for analyzing 56 “suspect,” “well-measured,” and “intermediate” industries (based on the extent to which underground economic activity was present), to estimate the amount of underground economic activity during the period 1949 to 1982. De Leeuw finds, “subject to considerable uncertainty, that the underground economy causes the growth of national income in private domestic industries to be understated by an average of one-quarter of 1 percent” over the period.

These articles are the best available explanation of how BEA defines and treats the hidden and informal economy in the NIPA’s.

Definitions

In part, the *System of National Accounts, 1993 SNA* defines the production boundary to include:

“..a physical process, carried out under the responsibility, control and management of an institutional unit, in which labor and assets are used to transform inputs of goods and services into outputs of other goods and services. All goods and services produced as outputs must be such that they can be sold in markets or at least be capable of being provided by one unit to another, with or without charge.” (Paragraph 1.20)

The following additional restriction is applied; i.e., economic activity must be:

“..carried out under the instigation, control and responsibility of some institutional unit that exercises ownership rights over whatever is produced.” (Paragraph 1.23)

Further, paragraph 6.30 states:

“Despite the obvious practical difficulties in obtaining data on illegal production, it is included within the production boundary of the system.”

Although BEA estimates of gross domestic product generally follow the guidelines in 1993 SNA paragraphs 1.20 and 1.23, the NIPA’s do not reflect illegal economic activity. In fact, it has been a NIPA convention to exclude, to the extent possible, illegal activities.³ At least two reasons underpin this convention. First, by definition, illegal activities are “antisocial” or “‘bads’ rather than ‘goods’” sufficiently so that they are outlawed.⁴ Second, illegal activities are difficult to measure. “To a large extent, they must be deliberately concealed if they are to take place at all.”⁵

Carson (1984, B) notes that there are three important clarifying points to the statement that the NIPA’s do not reflect illegal economic activity: (1) The NIPA’s exclude those “illegal” activities that would otherwise be considered production; e.g., growing, manufacturing, and the distribution of goods and services; (2) the NIPA’s exclude only the value of goods and services produced despite prohibitions--i.e., there are no carry backs or forwards; (3) NIPA exclusions are not dependent on the status of producers.

The foregoing statements outline BEA’s intent; however, practice may differ somewhat from intent. This outcome results because some source data that are used to prepare the NIPA’s include some production and income associated with illegal goods and services that are reported as legal. Also, goods and services produced legally may not be reported in source data used to prepare

³ See U.S. Department of Commerce (1954).

⁴ See U.S. Department of Commerce (1936) and Denison (1982), respectively.

⁵ See Carson (1984, B), page 106.

the NIPA's because the goods and services are removed from legal markets through illegal activities.

Generally, BEA includes "legal source" underground economic activity in the NIPA's, where possible, by adjusting source data to include the value of "legal" economic activity that is **not** reported or that is misreported (underreported). BEA's adjustments do not distinguish between those adjustments that are required to correct for errors due to misinterpretation of reporting requirements and intentional misreporting or evasive reporting tactics. These adjustments are primarily to source data that are based on business or individual income tax returns. A brief description of the sources and methods used to develop the adjustments is presented in the next section.

Misreporting adjustments: estimation methodologies

Efforts to capture and reflect the underground economy in NIPA estimates is restricted by the extent to which adjustments can be made to data sources that are used to prepare the estimates. Federal tax return data constitute a major source of information for the NIPA's. Given that it is feasible to adjust Federal tax return data to account for misreporting, BEA uses this approach to capture "legal source" underground economic activity. The administrative and logistical costs of developing adjustments for all other source data that underlay NIPA estimates are virtually prohibitive.

Table 1 shows gross domestic product (GDP), income generated in the production of gross domestic income (GDI), and personal income (PI) and component series that are based on Federal tax return information and the sources of that tax return information. Table 2 shows 1992 aggregate and component estimates of GDP, GDI, and PI.⁶ For each series, the table shows the published value, along with the proportionate value of the series that is derived from Federal tax return information. The two tables make clear the facts that: (1) About 2.2 per cent of the value of GDP is derived from tax return information; (2) nearly 50 per cent of the total value of GDI is based on tax return information; and (3) almost 55 per cent of PI is based on tax return information.

The U.S. Department of the Treasury, Internal Revenue Service (IRS), developed misreporting adjustments for tax return data under the Taxpayer Compliance Measurement Program (TCMP) and the Information Return Program (IRP). To prepare misreporting adjustments, the IRS conducted intensive audits of tax returns under the TCMP and compared tax returns with information returns under the IRP. BEA combined this information with the results of an Exact Match Study (EMS) program that was conducted by the Census Bureau. For the EMS program, the Census Bureau compared tax returns with income information reported by taxpayers in an

⁶ Estimates are not shown for a more recent period because 1992 is the last year for which BEA has published Input-Output Table estimates where misreporting adjustments are separately identifiable.

independent government survey (the Current Population Survey (CPS)) under tight confidentiality conditions. Combined, the TCMP, IRP, and EMS programs produced tax compliance information that was used to adjust legal source income of individuals and businesses that file (filers) and do not file (nonfiler) income tax returns.^{7, 8} BEA uses this information to develop misreporting adjustments that are added to the tax data that underlie the NIPA estimates. Details on BEA's methodologies for preparing misreporting adjustments using TCMP, IRP, and EMS program information are provided in Parker, pp. 22-4.

Impact of misreporting adjustments

Table 3 shows aggregate and component estimates of GDP, GDI, and PI for 1992, associated misreporting adjustment values, and misreporting adjustments as a percent of the estimates. The table reveals that misreporting adjustments account for 1.2 per cent of GDP. Within GDP, the largest misreporting adjustments are to personal consumption expenditures. Misreporting adjustments account for 4.8 per cent of GDI; nonfarm proprietors' income, profits before tax, and wages and salaries received the largest adjustments. Misreporting adjustments account for 4.2 per cent of PI.

Summary

Carson (1984 A, p. 25) reports that, for the period 1974 to 1981, estimates of legal source underground economic activity -- the type intended to be captured in the NIPA's -- ranged from 4 to 8 percent of GDP. Although Table 3 indicates that BEA's misreporting adjustments accounted for only 1.2 per cent of GDP for 1992, such adjustments accounted for 4.8 per cent of adjustments to GDI. The statistical discrepancy for 1992, is very small (\$43.7 billion); hence GDP and GDI are virtually the same. Consequently, the combination of adjustments to GDP and GDI to capture "legal source" underground economic activity places BEA's adjustments just below the lower range of those cited by Carson.

Toward the end of 2002, BEA plans to publish an input-output table for 1997. Therefore, misreporting adjustments for 1997 will be available at that time. BEA will be able to prepare an updated version of this report that reflects the 1997 Input-Output Table estimates at the end of 2003, or early 2004.

⁷ The TCMP and IRP reflect adjustments for selected years beginning in 1963, while the EMS program reflects adjustments for selected years beginning in 1973. The last TCMP adjustments were prepared for 1988; BEA continues to prepare misreporting adjustments based on the TCMP by extrapolation.

⁸ For a more detailed discussion of the TCMP, IRP, and Exact Match Program, see Carson (1984 A, p. 26).

Box 2. List of References

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Table 1. Sources of Tax Return Information Used to Prepare Estimates of the National Income and Product Accounts, 1992

Component	Part of component estimated using tax return information	Source of tax / return information ¹
Gross domestic product		
Personal consumption expenditures:		
Durable goods	All durable goods	A
Nondurable good	All nondurable goods except gasoline and oil, fuel oil, and coal, prescription drugs, food furnished employees, food produced on farms, and net foreign remittances	A
Services	Services covered in economic census (primarily hotels and motels; automobile services; personal services; miscellaneous repair services; health services; professional services; recreational services; educational services; and welfare services)	A
	Financial services furnished without payment by investment companies	B
Gross private domestic investment:		
Nonresidential private equipment and software	All private equipment and software	A
Residential fixed investment	Residential equipment and manufactured home	A
Change in private inventory investment	Change in book value for construction, manufacturing, mining, and trade	A
	Change in book value for transportation and public utilities, finance, insurance, and real estate; and services	B,C
Gross domestic income		
Wages and salaries	All private industries, except farm production, railroad transportation, private households, nonprofit institutions, and all tips	D
Other labor income	Contributions to private welfare funds	B,C
Nonfarm proprietors' income	All industries	C
Rental income of persons	Royalties	E
	Nonfarm nonresidential properties	B,C
Corporate profits before tax	All domestic industries except Federal Reserve banks, other federally sponsored credit agencies, and mutual depository institutions; and State and local corporate profit tax accruals	B
Net interest	Domestic net monetary interest of corporations, sole proprietorships, and partnerships	B,C
	Imputed interest paid by investment companies	B
	Imputed interest paid by life insurance companies	B
Business transfer payment	Corporate donations	B
Capital consumption allowances with capital consumption adjustment	Corporate capital consumption allowances	B
	Nonfarm sole proprietorship and partnership capital consumption allowances	C
Personal income		
Personal dividend income	All domestic industries except Federal Reserve banks, other federally sponsored credit agencies, private noninsured pension funds, and credit unions	B

1. Sources:

A—Various reports from the 1992 economic census. In the census, tax return information is used to define the universe to be covered and to provide employment, payroll, and receipts data for small firms that are not sent a census report form.

B—*Statistics of Income—1992, Corporation Income Tax Returns*—tabulations of IRS form 1120 series.

C—*Statistics of Income—1992, Sole Proprietorship Returns*—tabulations of IRS form 1040 schedule C, and *Statistics of Income—1992, Partnership Returns*—tabulations of IRS form 1065.

D—*Employment and Wages—1992*—tabulations of employment tax returns submitted to State Employment Security Agencies.

E—*Statistics of Income—1992, Individual Income Tax Returns*—tabulations of IRS form 1040.

Table 2. National Income and Product Accounts: Estimates and Amounts Derived from Tax Return Information, 1992

[Billions of dollars]

	NIPA Estimates	Amount derived from tax return information ¹
Gross domestic product	6,318.9	137.8
Personal consumption expenditures	4,209.7	101.8
Durable goods	470.8	24.5
Nondurable goods	1,322.9	77.3
Services	2,415.9	0.1
Gross private domestic investment	866.6	36.0
Fixed investment	851.6	34.3
Nonresidential	626.1	33.9
Structures	172.2	0.0
Private equipment and software	453.9	33.9
Residential	225.5	0.4
Change in private inventories	15.0	1.7
Farm	5.0	0.0
Nonfarm	10.0	1.7
Net exports of goods and services	-27.9	0
Exports	636.8	0
Imports	664.6	0
Government consumption expenditures and gross investment	1,270.5	0
Federal	534.5	0
State and local	736.0	0
Gross domestic income	6,275.2	3,089.3
Compensation of employees	3,644.8	2,355.2
Wages and salaries	2,966.8	2,285.0
Government and government enterprises	567.7	0
Other	2,399.1	2,285.0
Supplements to wages and salaries	677.9	70.2
Employer contributions for social insurance	228.4	0
Other labor income	449.5	70.2
Proprietors' income with inventory valuation and capital consumption adjustments	434.3	402.2
Farm	32.7	0
Proprietors' income with inventory valuation adjustment	40.9	0
Capital consumption adjustment	-8.2	0
Nonfarm	401.7	402.2
Proprietors' income	373.4	373.4
Inventory valuation adjustment	-.5	0
Capital consumption adjustment	28.8	28.8
Rental income of persons with capital consumption adjustment	63.3	8.6
Rental income of persons	111.4	8.6
Capital consumption adjustment	-48.1	0

Table 2. National Income and Product Accounts: Estimates and Amounts Derived from Tax Return Information, 1992

(continued)

Corporate profits with inventory valuation and capital consumption adjustments	453.1	311.2
Profits before tax	451.6	306.9
Inventory valuation adjustment	-2.8	0
Capital consumption adjustment	4.3	4.3
Net interest	399.5	12.1
Less: Subsidies less current surplus of government enterprises	22.4	0
Business transfer payment	28.1	5.5
Indirect business tax and nontax liability	510.6	0
Consumption of fixed capital	787.5	² 0
Private	642.2	529.2
Capital consumption allowances	612.8	495.5
Less: Capital consumption adjustment	-29.4	-33.7
Government	145.3	0
Less: Income receipts from the rest of the world	151.1	127.6
Plus: Income payments to the rest of the world		0
Personal income	5,390.4	2,948.6
Wage and salary disbursements	2,982.6	2,285.0
Other labor income	449.5	70.2
Proprietors' income with inventory valuation and capital consumption adjustments	434.3	402.2
Rental income of persons with capital consumption adjustment	63.3	8.6
Personal dividend income	185.3	165.0
Personal interest income	750.1	12.1
Transfer payments to persons	751.7	5.5
From business	28.1	5.5
From government	723.6	0
Less: Personal contributions for social insurance	226.6	0

1. Government receipts that are derived from tax return information are not included as such in this table. They are not included because the focus is on NIPA estimates for which adjustments for taxpayer misreporting needed to bring NIPA estimates up to actual levels. Adjustments for government receipts (or their counterentries) in the NIPA's are not needed because such receipts as obtained from their data sources are already at their actual levels.

2. As indicated by the \$0, tax return information is not used to prepare the estimate for this component even though tax return information is used for parts of the components that comprise it. For private capital consumption allowances, \$495.5 billion is derived from tax return information. The private capital consumption adjustment is derived as the difference between private capital consumption allowances with private capital consumption adjustment and private capital consumption allowances. The \$33.7 billion in capital consumption adjustment that was derived from tax return information is the part of that difference associated with part of private capital consumption allowances derived from tax return information. Government consumption of fixed capital is not derived from tax return information.

**Table 3.—BEA Adjustments for Misreporting of Tax Return Information
in the National Income and Product Accounts, 1992**

[Billions of dollars and percent]

	NIPA Estimates	Misreporting Adjustment	Misreporting Adjustment as percent of estimate
Gross domestic product	6,318.9	75.7	1.2
Personal consumption expenditures	4,209.7	74.0	1.8
Durable goods	470.8	7.4	1.6
Nondurable goods	1,322.9	24.0	1.8
Services	2,415.9	42.5	1.8
Gross private domestic investment	866.6	1.7	.2
Fixed investment	851.6	1.7	.2
Change in private inventories	15.0	0	0
Net exports	-27.9	n.a.	n.a.
Government consumption expenditures and gross investment	1,270.5	n.a.	n.a.
Gross domestic income	6,275.2	299.7	4.8
Compensation of employees	3,644.8	56.2	1.5
Wages and salaries	2,966.8	56.2	1.9
Supplements to wages and salaries	677.9	0	0
Employer contributions for social insurance	228.4	n.a.	n.a.
Other labor in come	449.5	0	0
Proprietors' income with inventory valuation and capital consumption adjustments	434.3	179.7	41.4
Farm	32.7	n.a.	n.a.
Nonfarm	401.7	179.7	44.7
Proprietors' income	373.4	171.9	46.0
Inventory valuation adjustment	-5	0	0
Capital consumption adjustment	28.8	8.8	30.6
Rental income of persons with capital consumption adjustment	63.3	1.0	1.6
Rental income of persons	111.4	1.0	.9
Capital consumption adjustment	-48.1	n.a.	n.a.
Corporate profits with inventory valuation and capital consumption adjustments	453.1	70.7	15.6
Profits before tax	451.6	70.7	15.7
Inventory valuation adjustment	-2.8	0	0
Capital consumption adjustment	4.3	0	0
Net interest	399.5	-7.9	-2.0
Less: Subsidies less current surplus of government enterprises	22.4	n.a.	n.a.
Business transfer payments	28.1	0	0
Indirect business tax and nontax liability	510.6	n.a.	n.a.
Consumption of fixed capital	787.5	n.a.	n.a.
Private	642.2	n.a.	n.a.
Capital consumption allowances	612.8	8.8	1.4
Less: Capital consumption adjustment	-29.4	-8.8	29.9
Government	145.3	0	0
Less: Income receipts from the rest of the world	151.1	n.a.	n.a.
Plus: Income payments to the rest of the world	127.6	n.a.	n.a.
Personal income	5,390.4	229.0	4.2
Wage and salary disbursements	2,982.6	56.2	1.9
Other labor income	449.5	0	0
Proprietors' income with inventory valuation and capital consumption adjustments	434.4	179.7	41.4
Rental income of persons with capital consumption adjustment	63.3	1.0	1.6
Personal dividend income	185.3	0	0
Personal interest income	750.1	-7.9	-1.1
Transfer payments to persons	751.7	0	0
Less: Personal contributions for social insurance	226.6	n.a.	n.a.

n.a. – Not applicable

