

Measuring the non-observed economy

By Derek Blades and David Roberts

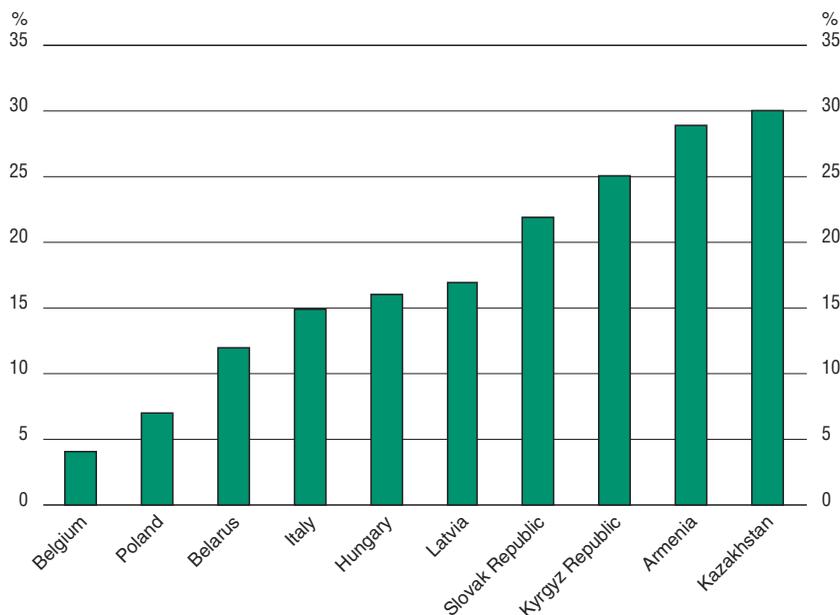
Strictly speaking, the Gross Domestic Product (GDP) is only a measure of economic activity, but in practice it is often used to compare the relative wellbeing of countries as well as their overall economic performance. To measure the latter, users normally look at the rates of growth of GDP, while for comparing relative wellbeing the levels of GDP per capita are used. The absolute level of GDP is also used for calculating policy-relevant indicators such as the ratio of government deficit to GDP, the ratio of R&D expenditure to GDP and the ratio of carbon dioxide emissions to GDP.

Because of this, it is essential that statisticians correctly measure the absolute levels of GDP as well as the growth rates by valuing all economic activities that are to be included in the GDP according to the international standards of the System of National Accounts 1993 (SNA).¹ The challenge that this presents to statisticians has increased in recent years because of the difficulties in valuing new activities, particularly in the services sector, and in valuing activities in the so-called “informal” and “underground” sectors. Chart 1 shows the shares of GDP accounted for by the non-observed economy in a number of countries.

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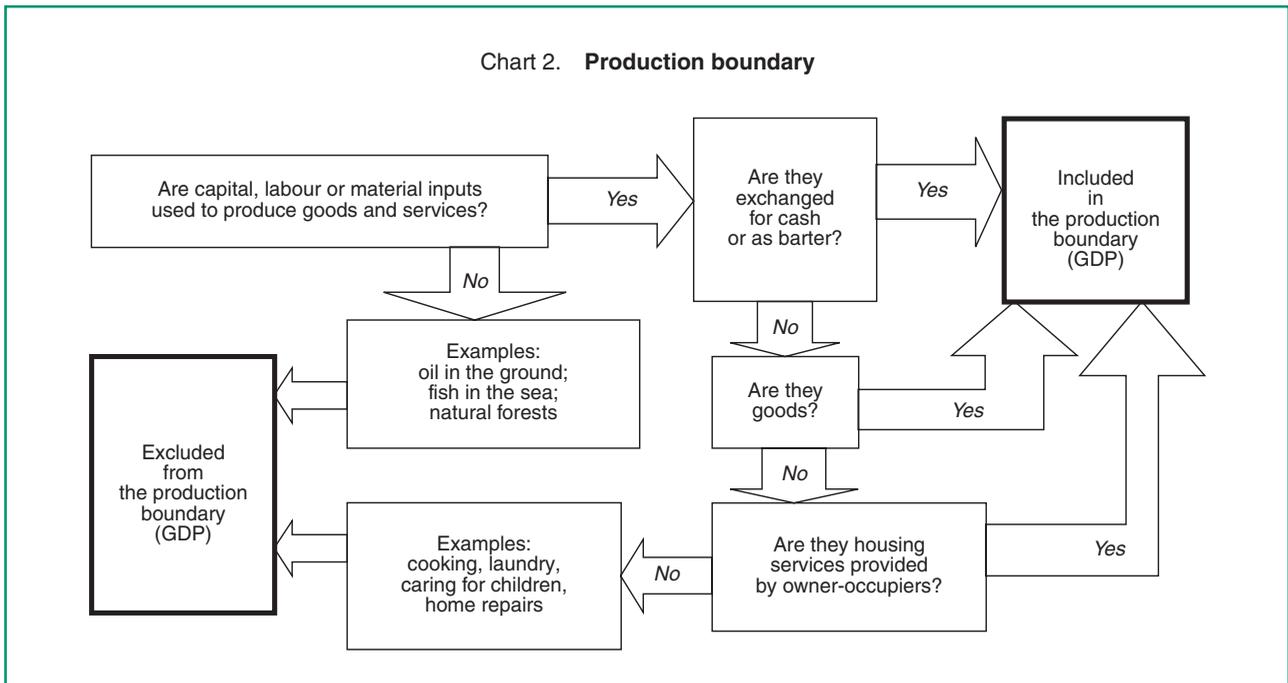
Chart 1. **Non-observed activities included in GDP of selected countries**
Percentage share of current GDP; years around 1998



Source : *Inventory of National Practices in Estimating Hidden and Informal Activities for National Accounts*, United Nations, Geneva, 2002.

1. Commission of the European Communities – Eurostat, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, and World Bank (1993), *System of National Accounts 1993*, ISBN 92-1-161352-3, Brussels/Luxembourg, New York, Paris, Washington.

Chart 2. Production boundary



To address these issues, the OECD has recently published *Measuring the Non-Observed Economy: A Handbook*.² It draws on the experience of official statisticians from member and non-member countries and from international organisations to identify best practices in ensuring that macro-economic statistics (in particular, national accounts) provide a comprehensive picture of economic activity.

Why is there a problem?

The 1993 System of National Accounts is based on a broad view of economic activity. For example, the SNA production boundary (see Chart 2), which is used to define the GDP, makes no distinction between legal and illegal activities as long as they are willingly engaged in by buyers and sellers. The SNA also requires the national accountant to pretend that certain transactions have occurred – for example that home-owners rent their homes, in their capacity as owners, to themselves in their capacity as occupants, or that farmers who eat some of the food they have grown sell it, in their capacity as producers, to themselves, in their capacity as consumers. Most significantly, the SNA production boundary includes

economic activities that are not reported to the tax authorities and government statisticians either through ignorance or deliberate intent on the part of producers or through incompetence or deliberate choice on the part of the authorities.

Clearly, the comprehensive nature of the SNA production boundary represents a considerable challenge for official statisticians charged with compiling the national accounts. In the last decade three developments have spotlighted the efforts of national accountants to meet the requirements of the SNA.

- First, the increasing use of national accounts statistics as the basis for levying contributions and distributing subsidies in the European Union (EU) has required that all Member States adopt common and demanding standards to ensure the “exhaustiveness” of their GDP estimates. Adoption of these standards has resulted in increases in the level of GDP in almost all EU Member States.
- Second, the collapse of central planning in the former Soviet block and its replacement by unrestricted, sometimes chaotic, free markets largely undermined the system of orderly and comprehensive statistical reporting that was an essential feature of the planning system. Statisticians in these countries have had to make drastic changes in their work methods in

2. The *Handbook* is a joint publication of the OECD, IMF, ILO and the CIS Statistical Committee. The international team of experts was led by Michael Colledge of the OECD Statistics Directorate.

Measuring illegal activities

The 1993 SNA recommends the inclusion of productive illegal activities in the GDP because the incomes generated from them may be spent on legal goods and services. In order to preserve the accounting identity between GDP as the sum of value added and GDP as the sum of final expenditures, both illegal and legal activities must be covered. Accounting for illegal activities is also necessary to preserve comparability between countries and within countries over time. This is because legislation differs between countries and the borderlines between legal and illegal activities shift over time. Note that not all illegal activities are productive – only those which involve an exchange of goods and services between willing buyers and sellers. Protection rackets and most kinds of fraud are not productive activities in this sense; they involve forcible transfers but do not add to the GDP. Theft is not productive in itself, but trade in stolen goods – “fencing” – is normally treated as a productive activity. Gross output is measured by the margin earned by the fence, i.e. the difference between what is paid for the stolen goods and what they are sold for.

At the present time, only a few OECD countries include explicit estimates of illegal activities in their GDP figures although most of them have made experimental estimates for one or two years. Several transition countries, on the other hand, now make regular estimates of illegal activities. In general, the inclusion of illegal activities in GDP raises levels by less than 1%. The Statistical Office of the European Communities insists on a strict application of the EU version of the 1993 SNA,

and this will eventually mean the inclusion by all Member States of illegal activities in their GDP.

Narcotics and prostitution are generally the most important illegal activities in OECD countries. In transition and developing countries production and trade in counterfeit goods – audio and video products, fashion goods and watches – is also significant and fencing of stolen vehicles is included by some countries of East and Central Europe.

For production and trade in narcotics, the usual method is to start by estimating the annual consumption of each type of drug using either information on the quantities seized by the authorities (multiplied by an estimated seizure rate) or estimates of the numbers of drug users and average consumption per head. Information on prices at different stages of the production and distribution chain is taken from police records or from voluntary organisations working with drug users.

For prostitution, the standard approach is to estimate the total number of sex workers classified by gender and type of service provided. An estimate of the number of clients to each worker then provides the volume of output and multiplication by the average prices of each service gives an estimate of gross output. Intermediate consumption – rent, exotic clothing, electricity, etc. – is usually assumed to be some low, fixed percentage of gross output. The table below shows some recent estimates of illegal value added as a share of GDP.

Illegal value-added in selected countries

Percentage share of GDP

| Country | Year | Activities covered | % |
|-----------------|------|---|---------|
| Estonia | 1998 | Drugs, prostitution, and audio-video counterfeits | 0.8 |
| Latvia | 1998 | Drugs and prostitution | 0.97 |
| Lithuania | 1998 | Drugs, prostitution, fencing (cars) | 0.5 |
| Poland | 1998 | Drugs | 0.13 |
| | | Prostitution | 0.20 |
| | | Smuggling and fencing | 0.21 |
| Slovak Republic | 1998 | Drugs, prostitution, smuggling and fencing | 0.59 |
| United Kingdom | 1996 | Drugs | 0.5-1.1 |
| | | Prostitution | 0.2 |
| | | Gambling and fencing | 0.2 |

Source: *Inventory of National Practices in Estimating Hidden and Informal Activities for National Accounts*, United Nations, Geneva, 2002

order to establish the credibility of their national accounts as reliable measures of overall economic activity.

- Third, the increasing role of new “global players” – China, India and Brazil among others – has highlighted the need for better statistics to measure their economic weight in the World. These countries face particular difficulties in accurately measuring the levels of GDP both because of the drastic changes in their industrial structures that are now occurring and because of the growth of informal and underground activities in rapidly expanding urban areas.

What is the non-observed economy?

The term “Non-Observed Economy” (NOE) refers to those economic activities which should be included in the GDP but which, for one reason or another, are not covered in the statistical surveys or administrative records from which the national accounts are constructed. What are these reasons?

First, of course, because they are carried out in a clandestine fashion to avoid paying taxes or social charges or to avoid the costs associated with legislation on safe working conditions or protection of consumers’ rights. This is usually what most people have in mind when they speak of the “underground” or “hidden” economy. Sometimes the transactions are only partly concealed and may be reported to the tax authorities or to the statistical office at lower than true values so as to reduce rather than entirely eliminate taxes. In other cases, there will be no record of the transaction at all and in such cases the payment will usually be made in cash.

Most clandestine transactions involve the production or exchange of goods and services that are perfectly legal in themselves but, obviously, those which involve illegal goods and services – narcotics and prostitution for example – will also be carried out in secrecy. In addition to the “legal” underground, certain kinds of illegal activities are therefore the second component of the NOE (see box “Measuring illegal activities”).

A third component is the production of goods³ for own use. This is usually perfectly legal and there is no reason for producers to conceal their activities. It may be omit-

3. The 1993 SNA specifies that all goods production falls within the production boundary whether or not the goods are exchanged. As regards services, however, with one exception (housing services of owner-occupiers), they must be exchanged to count as productive.

ted from the national accounts only because there are no observable transactions between sellers and purchasers since they are one and the same. In OECD countries, construction and maintenance of dwellings is probably the most important example of production for own use. In transition and developing countries growing ones own food is another important activity. Following the collapse of Communism in the early 1990s, small scale crop production became an essential survival strategy in most transition countries and may have accounted for up to half of total agricultural output in some countries.

The fourth component of the NOE is sometimes termed the “statistical underground”. The statistical surveys and the administrative records that provide the basic data for the national accounts are incomplete. Sometimes this is by design; it may simply be impractical to cover every producer in a survey so a cut-off point is used to exclude the smallest enterprises. In other cases, the problem arises from poor statistical practices. The business register used for the survey is out of date or incomplete; the questionnaires are not returned or come back with missing answers; informal activities such as street trading may not be covered by any survey; inappropriate methods are used to correct for non-response.

Developing a strategy to measure the non-observed economy

Various techniques to adjust GDP for the non-observed economy are explained in the *Handbook*. However, while these techniques may be required in the short term, the main emphasis of the *Handbook* is on longer term solutions. The *Handbook* develops a five-part strategy for measuring the non-observed economy the ultimate aim of which is to improve the basic data sources so that surveys and administrative records cover the full range of economic activities included in the SNA production boundary. These are summarised as:

- Identify an appropriate conceptual and analytical framework on the basis of which the NOE can be assessed.
- Assess the basic data being supplied to the national accounts and the compilation methods in use. Identify the extent of non-observed and non-measured activities and establish priorities for dealing with them, both in the immediate future and the longer term.
- Identify potential improvements in the national accounts compilation process that will reduce the

“Non-observed” does not mean “non-measured”

It is important to stress that while many activities are non-observed in the sense of being under-reported or missed out of the regular data sources, this certainly does not mean that they are missed out of the GDP. Government statisticians live in the same world as everybody else and as private citizens they may participate in the NOE like anyone else. Over the years they have developed a wide range of techniques to measure the informal, underground and illegal activities that make up the NOE. These include:

Commodity flow methods in which gross output and value added are estimated by applying mark-ups to “flows of commodities” into production. For example, instead of relying on reports of earnings from building work by small construction firms, their gross output is calculated from data on sales of construction materials together with estimated labour inputs and profit margins.

Household expenditure surveys in which respondents are asked to identify the places – farm-shops, roadside stall, street-markets, etc. – where each reported expenditure occurred. Some household surveys also invite respondents to act as informers by asking them to assess the extent to which people in their neighbourhood – themselves excluded – may be participating in hidden or underground activities.

Tax audits in which samples of tax returns are subjected to detailed examination can provide correction-factors to adjust for under-reporting of incomes.

Labour input methods first establish the total size of the labour force broken down by gender, age, industry of employment using information from social security and tax sources, household labour force surveys, population censuses and industry surveys. The labour force in excess of that reported in regular surveys is assumed to earn wages similar to those of employees in similar industries in the observed economy.

Chart 1 shows how much of GDP is *non-observed* in a number of OECD and transition countries. In Hungary, for example, informal, underground and other non-observed activities account for about 16% of official GDP. This is the share of total value added that was not covered by the basic statistical sources and that had to be estimated using the kinds of techniques described above.

Clearly the fact that such large parts of total GDP have to be estimated using second-best methods – the best method being to observe them – raises questions about the overall accuracy of the GDP figures, but the statisticians concerned cannot be accused of ignoring the non-observed economy. It may not be observed but they are making efforts to measure it.

incidence of non-measured activities. This will often involve “guesstimates” to capture the broad order of magnitude of the missing activities or it may be possible to use results from ad hoc supplementary surveys.

- Identify potential improvements in the infrastructure and content of the basic data collection programme that will reduce the incidence of non-observed activities by bringing the programme into line with international standards and best practices.
- Develop an implementation plan that includes consulting with users, prioritising the potential improvements, ensuring good communication between survey statisticians and national accountants, and dealing with

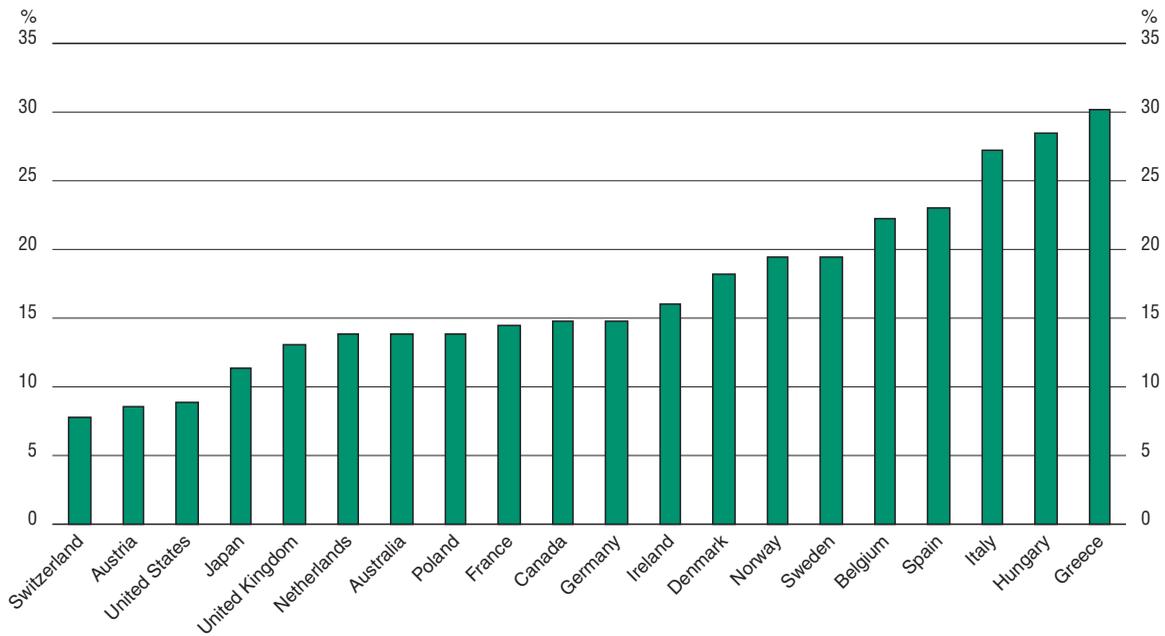
revisions to national accounts estimates that may occur as a consequence of the changes.

The *Handbook* gives practical guidance on each of these steps and emphasises that the programme to improve measurement of the NOE will often need to be an integral part of an overall programme of reform.

What about macro-model methods?

Macro-model methods is the term used in the *Handbook* for methods that produce an estimate of the entire NOE by means of a single model. Such methods are discussed in the *Handbook* but they are not considered useful in obtaining exhaustive estimates of GDP or in estimating underground production. They do, however, tend to produce spectacularly high measures which have no sound

Chart 3. Alleged size of the “Shadow Economy” in 20 OECD countries
 “Omitted” activities as a percent of official GDP



Source: IMF Working Paper, WP/00/26, *Shadow Economies Around the World: Size, Causes and Consequences*, Washington D.C., 2000.

scientific base but which, despite this, attract much attention from politicians and newspapers.

Chart 3 is based on a recent IMF *Working Paper*⁴ that reviewed macro-model based estimates of the “shadow economy” around the world. Except for Poland and Hungary, these particular estimates are based on a currency demand model. There are several versions of this model but the basic idea is that transactions in the “shadow economy” are entirely in cash so that any growth in the cash to deposit ratio in excess of changes that can be explained by factors such as interest rates, changes in payments habits or growth of income levels, is due to the growth of the “shadow economy”. Since the model only measures the *change* in the “shadow economy”, assumptions must next be made about the size of the shadow economy at some point in the period under investigation. The usual assumption is that it was zero in an early base year.

4. Friedrich Schneider and Dominik Enste, *Shadow Economies Around the World*, IMF Working Paper, WP/00/26, IMF Washington D.C. 2000.

Another commonly used model assumes that “true” GDP – i.e. the “official” plus the “shadow” parts – grows in line with electricity consumption. This is how the figures for Poland and Hungary in Chart 3 were obtained. This approach again requires an assumption about the size of the “shadow” economy in a base year. Estimates based on electricity consumption tend to produce even larger estimates of the “shadow economy” than those based on currency demand models.

Note that the estimates of the “shadow economy” in Chart 3 are additional to the non-observed activities that are already included in the official GDP estimates. To see what this means, if we set Hungary’s official GDP at 100 of which 16 is already non-observed (see Chart 1), Schneider and Enste are claiming that there is another amount equal to 28 which the official statisticians have failed to measure. Hungary’s “true” GDP would therefore be 128 of which 16 plus 28 (= 44 or 35% of 128) are “non-observed/hidden/shadow/underground”, etc. But what on earth could these shadow activities consist of? And how could the statistical and tax authorities be so remiss as not to notice what is going on? After a

careful scrutiny of their statistical sources, Statistics Canada has estimated that in 1992 the upper limit to the shadow economy was 2.7% whereas Schneider and Enste quote macro-model estimates of between 10% and 13.5% for the same period.

A point that is not always understood is that the non-observed economy is heavily concentrated in a small number of sectors. In power generation, heavy industry, rail and air transport, government services, banking and telecommunications, for example, there is little scope for a “shadow” economy. Shadow activities are confined to a relatively small number of “susceptible” sectors, such as home repairs, retail trade, taxis, trucking, cafés and restaurants. To understand the implications of this consider Chart 1, which shows that the non-observed economy is about 16% of official GDP in Hungary. This means that in the susceptible sectors, between 30% and 40% of value added is currently non-observed. That is already a very high figure, but if we accept the Schneider and Enste estimate of a shadow economy equivalent to an *additional* 28% of official GDP, the share of the non-observed economy in the susceptible sectors rises to an incredible 70% or more.

The way forward

Measurement of the non-observed economy is a difficult and delicate matter. It is not just a question of making quick-fix adjustments to the national accounts but will often involve a major overhaul of procedures for collecting, processing and editing the basic economic statistics on which they are based. Publication of the *Handbook* is a first step and some countries have already asked the OECD for help with the next step – implementation.

The NOE *Handbook* is primarily designed to help national statistical offices improve their coverage of the non-observed economy but we hope it will also give a sense of perspective to alarmist media stories about the amazing size and growth of a sinister, but undefined, shadow economy that allegedly escapes the notice of blinkered government statisticians. It is not only the media and general public that are misled. Policy makers have sometimes taken inappropriate measures to deal with the “shadow economy” in the mistaken belief that it represents a lucrative source of extra tax revenues. The truth is that national accounts are not obtained by just adding up transactions that are easily observed and openly reported. Serious efforts are made in all countries to cover the non-observed economy as well. ■

Further information

- “**Measuring the Non-Observed Economy – A Handbook**”, Organisation for Economic Co-operation and Development, International Labour Organisation, International Monetary Fund, Statistical Committee of the Commonwealth of Independent States, Paris, 2002. The *Handbook* is available as an *E-Book* or as a *Printed Publication* from the OECD Online bookshop via the Website – www.oecd.org.
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Glossary

Informal sector: The informal sector is broadly characterised as consisting of units engaged in the production of goods or services with the primary objective of generating employment and incomes for the persons concerned. These units typically operate at a low level of organisation, with little or no division between labour and capital as factors of production and on a small scale. Labour relations – where they exist – are based mostly on casual employment, kinship or personal and social relations rather than contractual arrangements with formal guarantees.

Non-Observed Economy: The groups of activities most likely to be non-observed are those that are underground, illegal, informal sector, or undertaken by households for their own final use. Activities may also be missed because of deficiencies in the basic statistical data collection programme.

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The **Statistics Brief** is published by the Statistics Directorate of the OECD

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