

**FRAMEWORK FOR THE MEASUREMENT OF UNRECORDED ECONOMIC
ACTIVITIES IN TRANSITION ECONOMIES**

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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INTRODUCTION

Measurement of unrecorded economic activity, i.e. that part of economic activity which is largely not recorded in “official” basic statistics, has been one of the major problem areas in the development of reliable statistics for transition economies ever since the commencement of the transition process. A lot has been written on various methodologies for measuring unrecorded economic activity and other problem areas of measurement referred to as the “informal economy”, “hidden economy”, etc. Also, over the last six years many seminars, workshops, and expert meetings have been held to discuss measurement issues for hitherto unrecorded activities.

Despite the efforts of transition countries and international organisations, the measurement of unrecorded economic activity is still very much a live issue in the development of reliable statistics for transition countries, in particular for the compilation of national accounts. It is also an issue for OECD Member countries. The reliability of many of the statistical series produced by national statistical agencies continues to be diminished in the eyes of users because of perceived insufficient measurement of such activities.

The aims of this document are to:

- provide a practical framework for the measurement of unrecorded economic activity; and flowing from this framework to
- outline a number of recommendations on the working practices of organisations in transition economies charged with the measurement of unrecorded economic activity which are essential to the successful implementation of the framework.

These objectives are outlined in general terms and can be applied to any transition country. The application of the framework to the measurement of unrecorded activity in individual transition countries will be presented in future publications.

In most national statistical offices, basic statistics are collected by groups of staff concerned with one particular industry group or branch. These are then passed to the group responsible for assembling these within a national accounts framework. Another aim of this document is to show how data collected and compiled by branch areas are used by the national accounts areas in the compilation of key components of the national accounts. These involve the compilation of the three measures of GDP and derivation of items such as intermediate consumption, value added, gross operating surplus, etc. The document is therefore intended for staff in both branch statistics and national account compilation areas of national statistical offices of transition countries.

The document is also designed for the senior management of statistical and other agencies responsible for policy decision-making on broader issues associated with the introduction of new statistical and compilation methodologies. The implications of the framework presented in this document on the working practices of statistical agencies (outlined in Section 9) are of particular relevance to the role of senior management. As will be discussed in more detail in Section 9, the adoption of the working practices described is essential for the measurement of unrecorded economic activity. Such measurement is required if both the compilation of national accounts and improvements in coverage of economic indicators are to be undertaken in a satisfactory and consistent manner.

Why is the measurement of unrecorded economic activity still an issue?

The literature is full of specific initiatives undertaken by many transition countries to measure unrecorded economic activity. Numerous different approaches and methodologies have been pilot tested and implemented in an on-going way with varying degrees of success. Often, these studies have yielded only global estimates of the extent of total unrecorded economic activity, but have not contributed the required level of detail for these estimates to be of use in the compilation of the various component tables of the national accounts.

The experience of transition countries over the last five years has amply demonstrated that there is no one methodology for measuring economic activity that falls outside official statistics. This experience has also shown that the derivation of detailed measures of unrecorded economic activity within the framework of the System of National Accounts (SNA) cannot be achieved without changes to the working practices statistical agencies of the type described in Section 9 of this document. These practices relate to the methodologies used across the entire organisation and, in particular, necessitate close on-going co-operation between areas responsible for the collection and compilation of basic statistics and the compilation of national accounts.

The question that should be asked is: why is unrecorded economic activity (or, similarly, the informal economy) still regarded as the major statistical issue in transition economies? Perhaps one reason is that the measurement of unrecorded economic activity has been approached in terms of a number of individual, unrelated initiatives, each aimed at measuring key areas of the economy that were previously unrecorded or under-recorded. Also, some of the estimates produced are available at too aggregated a level that precludes their use in the compilation of component national account tables.

What is missing is a framework that brings together various initiatives within a country to measure those activities that need to be measured at the required level of detail, either for the compilation of national accounts (annual or quarterly), or for the preparation of reliable short-term (e.g. monthly) economic indicators. Such a framework is essential in order to highlight the relationship between individual initiatives to components of the economy currently included in the “official” statistics, and to permit identification of priorities for the allocation of statistical resources to the measurement process in both the short and long terms.

A number of pilot studies to measure unrecorded economic activity have been sponsored by international organisations and by a number of OECD Member country national statistical organisations. Although these pilot studies have made significant contributions to the measurement of unrecorded economic activity the fact is that given the problems of inadequate funding of

statistical agencies in many transition countries, much of the effort within a transition country stops when external funding is discontinued.

One of the essential conditions for the success of future projects is that most of the resources and initiative for the implementation of changes in the working practices of staff in the national statistical organisation must be provided by the transition country itself. This will ensure that the methodology tested in future studies continues after completion of the initial phase. The major role of the international agencies in the short-term should only be to provide any required technical expertise for the initial project.

The need for the measurement process to be conducted with resources available from within transition countries further highlights the importance of the management issues outlined in Section 9 of this document. To some extent external funding for individual projects in the past has often made those exercises “semi-autonomous” with the consequence that senior management of statistical agencies have not fully focused on the implications for previous collection and compilation practices and resource implications. While it could be argued that initially some parallel running of alternative procedures could be instructive, the time has now come when new practices must be fully adopted. This will necessitate changes to, or even abandonment of, past practices that were more in tune with centrally planned economies.

Emphasis of this document

The methodology described in this document places heavy emphasis on the use of existing data sources and evaluation of methodologies used in the collection and compilation of data for those sources. A more detailed discussion of the main issues involved in the compilation of enterprise based data is provided in the OECD publication, *Issues in the Compilation of Short-term Economic Statistics in Transition Countries*. In addition to outlining a number of problems currently faced by transition countries in the compilation of enterprise statistics, this publication provides a number of recommendations for data collection, etc., based on existing international standards that have already been promulgated by various international agencies. By outlining a number of the major compilation issues in transition countries, the publication is also useful for determining the degree to which individual statistical series compiled in those countries conform to international standards and guidelines.

The implementation of the framework described in this document is designed to enable transition countries to produce their own estimates of unrecorded economic activities using available data. The quality of the resulting estimates is seen as a continuum. Initial estimates based on available “core” data of known quality are derived from direct methods of measurement. These may be supplemented by imputation based on data from other sources to produce estimates of economic activity (including a component of hitherto unrecorded economic activity) that though not perfect are more accurate than those excluding any estimate of unrecorded economic activity. As either the quality of the core data are improved or the quality of the supplementary estimates are improved, the quality and reliability of the total estimate of economic activity is improved.

Obviously, it is impossible for any one document to cover all aspects of unrecorded economic activity for all components of the national accounts. What the document aims to achieve is the presentation of a framework containing recommendations in a number of key areas, and to describe a number of processes that individual transition countries can expand upon to meet their own particular situation.

For example, most of the discussion in this document addresses how unrecorded economic activity impacts on the production accounts and consumption. Important as these areas are, this may convey the incorrect impression that the hidden economy is only a problem of determining GDP through balancing supply and demand. In reality, the measurement problem is much more pervasive through the whole national accounts system. The document does not specifically talk about its effect on other aspects such as payment of taxes, calculations of savings and net lending, etc.. It is important to realise that major omissions such as these in data used to compile national accounts will also carry through to the entire set of national accounts. There is therefore a need to ensure that such transfers are adequately captured.

SECTION 1. SNA PRODUCTION BOUNDARY

This Section describes the types of activities that should be included in the compilation of national accounts estimates, i.e. those falling within the production boundary of the 1993 SNA. Such an understanding is essential for making objective decisions on priorities as to which activities should be measured directly by statistical collection, indirectly by imputation, or in cases where the impact on national accounts estimates are demonstrably insignificant, omitted entirely. Data derived by imputation could be calculated by either staff in the national accounts areas of national statistical offices or branch statisticians (refer Section 9.2 below). However, it is important for there to be agreement and on-going co-ordination between the two areas to ensure that imputation is done once, and only once.

Issues relating to the definition of the production boundary are described in Sections 6.14-36 of the 1993 SNA. The SNA describes production in general terms as an activity in which an enterprise uses inputs to produce outputs. Economic production mainly concerns activities that produce outputs of a kind that can be delivered or provided to other institutional units. The SNA refers to two main types of output, i.e. goods and services.

Goods are defined in the SNA as physical objects for which a demand exists, over which ownership rights can be established and whose ownership can be transferred from one institutional unit to another by engaging in transactions on the markets.

Services are defined as heterogeneous outputs produced to order, and typically consist of changes in the conditions of the consuming units or goods (i.e. health services versus car repair services) realised by the activities of producers at the demand of consumers. The production of services must be confined to activities that are capable of being carried out by one unit for the benefit of another.

The SNA provides both a general definition of the production boundary and a more restricted definition that is used in the System.

1.1 General production boundary

Economic production may be defined as an activity carried out under the control and responsibility of an institutional unit that uses inputs of labour, capital and goods and services to produce outputs of goods and services. The SNA stipulates that there must be an institutional unit that assumes responsibility for the process and owns any goods produced as outputs or is entitled to be paid or otherwise compensated for the services provided.

Whilst the production processes that produce goods are easily identified, there is more difficulty to distinguish the production of services from other activities that may be both important and beneficial. The SNA cites examples of eating, drinking, sleeping, etc., as being important but not

productive in an economic sense and are therefore outside the general production boundary. On the other hand activities such as washing, preparing meals, caring for children, etc., that are capable of being provided by other units fall within the general production boundary.

1.2 Production boundary within the SNA

The production boundary within the SNA is the same as the general production boundary defined above except for the exclusion of all household activities that produce domestic or personal services for own final consumption within the same household except for services produced by employing paid domestic staff and the imputed rent on owner-occupied dwellings.

More specifically, the activities that fall within the production boundary of the SNA are:

- the production of all individual or collective goods or services that are supplied to units other than their producers or which are intended to be supplied. This includes the production of goods or services used up in the process of producing such goods or services;
- own-account production of all goods that are retained by their producers for their own final consumption or gross capital formation;
- own-account production of housing services by owner-occupiers and of services produced by employing paid domestic staff.

The SNA (in Sections 6.18-29) devotes considerable attention to the discussion of the types of domestic and personal services, own-account production of goods, etc., that are excluded or included in the production boundary of the System.

As mentioned above, own-account production of domestic and personal services by members of the household for their own final consumption is excluded. However, at the time of own-account production of some goods it may not be known whether, or in what proportions, the goods produced are destined for the market or for own use. The following types of production are therefore included irrespective of whether or not they are intended for own final consumption:

- production of agricultural products and their subsequent storage. This includes gathering of berries or uncultivated crops; forestry; wood-cutting and the collection of firewood; hunting and fishing;
- production of other primary products such as mining salt, cutting peat, the supply of water, etc.;
- Processing of agricultural products; the production of grain by threshing; production of flour by milling; etc.;
- other kinds of processing such as weaving cloth; dress making or tailoring; production of footwear, pottery, furnishings, etc.

Small scale do-it-yourself repairs and maintenance to dwellings and consumer durables carried out by members of the household constitute the own-account production of services and are

excluded from the production boundary of the System. The materials purchased are treated as final consumption expenditure. However, when repairs to dwellings are major, typically of the kind that it would be expected a landlord would perform, then the repair activity is included within the production boundary.

1.3 Illegal production

Illegal activities are activities which are forbidden by the law, or which may be legal in themselves but not when conducted by someone not authorised to do so, e.g. unregistered medical practitioners, illegal gambling. Examples of illegal activities are prostitution, trade in heroin or other drugs, theft, blackmail.

Since laws differ from country to country the SNA recommends the inclusion of illegal activities when there are willing buyers and sellers. This recommendation could be regarded as “counsel of perfection” and is primarily aimed at ensuring that the accounts compiled are internally consistent. In reality, most countries (including most OECD Member countries) do not calculate volumes of illegal output such as the production of drugs, weapons, contraband goods or prostitution. However, it is possible that the income from these types of activities are included in estimates of clandestine income. In some transition countries such income is estimated as the difference between the total expenditure of households and their officially registered income. Insofar as households spend part of their illegally gained income on the legal market these figures will be included in the calculation of clandestine income.

The SNA distinguishes two kinds of illegal production:

- the production of goods or services whose sale, distribution or possession is forbidden by law (e.g. narcotics, prostitution, etc.); and
- production activities which are legal but which become illegal when carried out by unauthorised producers.

Both types of production are included within the production boundary of the System provided they are genuine production processes whose outputs consist of goods or services for which there is an effective market demand. When recommending the inclusion of illegal activities within the production boundary the SNA makes the clear distinction between transactions that involve mutual consent between the buyer and the seller (e.g. sale of drugs, stolen goods, prostitution) which are included and other activities where such mutual agreement is missing (e.g. extortion, theft) which are excluded.

A distinction could also be made between illegal activities such as drugs and prostitution where both parties in the transaction are aware of the illegality of the activity and other activities such as the selling of stolen goods where one party is unaware of any illegality. Because of selling and reselling that takes place the situation could easily arise where in subsequent transactions neither parties may be aware of any illegality in the transaction.

The reason for the inclusion of such activities is not only to obtain complete coverage of production but also to prevent errors appearing elsewhere in the accounts if the funds exchanged in illegal transactions are presumed to be used for other purposes. The incomes generated by illegal

production may be disposed of legally, and expenditures on illegal goods and services may be made out of funds obtained legally.

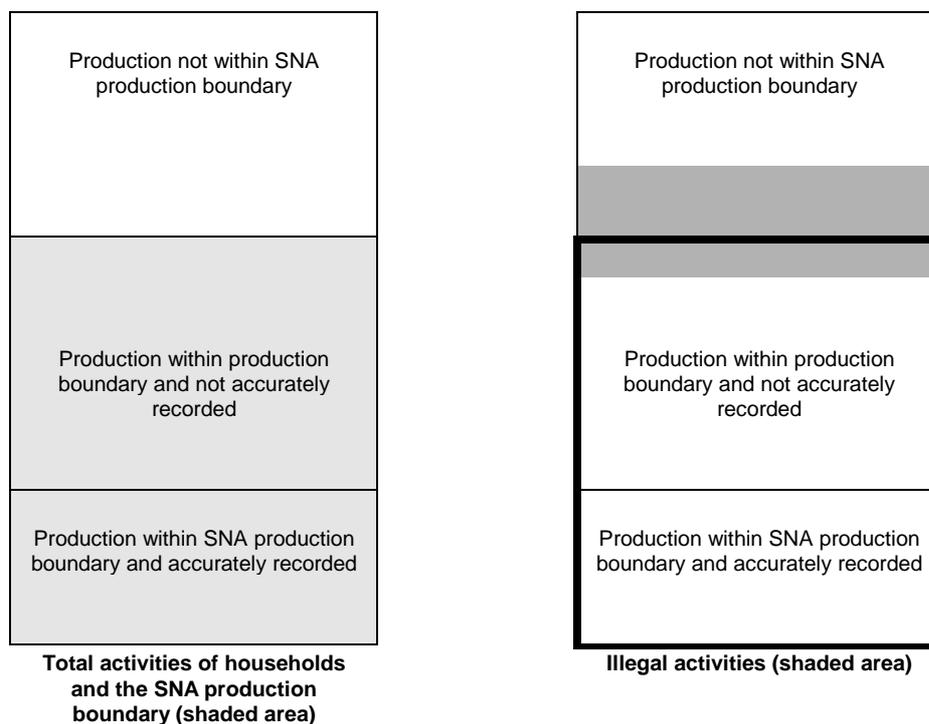
The question of whether or not illegal activities that conceptually fall within the production boundary of the SNA should actually be included obviously depends on the significance of such activities to total GDP and the degree of distortion in the accounts that would arise from their exclusion. This consideration would obviously determine the priority that should be given to the allocation of resources by the statistical agency towards the estimation/imputation of illegal activities that are required to be measured.

Preliminary studies undertaken in the Netherlands, the United Kingdom and the United States have shown the imputed level of illegal drugs, prostitution and gambling to be around 1 per cent of total GDP. Most of these countries have decided that such low levels of relative magnitude and the fact that they are thought not to vary significantly in volume from one year to the next do not justify their inclusion compared to other deficient areas, e.g. hidden activities.

Illegal activities to some extent occur in all five institutional sectors defined in the SNA (i.e. non-financial corporations, financial corporations, government, non-profit institutions serving households and households). However, the statistical significance of such activities varies from sector to sector. For example, in most countries one would expect illegal activities to be almost non-existent in the government sector (as distinct from the illegal activities of individuals within government on their own behalf) whose activities are generally within the letter of the law, including those which may be considered undesirable.

The relationship and relative magnitude between the different elements of the SNA production boundary (which is represented by the area within the bold lines in the box on the right hand side) described above for the SNA household sector are represented in the following diagram. No attempt has been made to draw any of the elements in the diagram to scale.

Diagram 1: Household Sector: Relationship between SNA production boundary and illegal activities



The purpose of the diagram is to illustrate the overlap between illegal activities and the production boundary. The sum-total of illegal activities represented in the diagram comprise those for which there are willing buyers and sellers (and therefore within the production boundary) and those where willingness is absent for at least one of the participants to the illegal transaction (and which are excluded from the production boundary). Similar diagrams could also be drawn for each of the remaining four SNA institutional sectors.

SECTION 2. CONCEPT OF UNRECORDED ECONOMIC ACTIVITY

The purpose of this Section is to define what is meant by the term “unrecorded economic activity” in the context of this document. One of the problems with discussions on the measurement of such activities over the years, has been the profusion of terms or labels attached to them by various commentators, often interchangeably. The terms used include “informal economy”, “hidden economy”, “black economy”, “non-observed economy”, “underground economy”, and “illegal activities” discussed in Section 1 above. There is also considerable overlap in what these terms refer.

The reason for defining the term “unrecorded economic activity” in this Section is not to provide a definitive set of terms, but to ensure consistent understanding of the issues and concepts discussed in subsequent parts of this document.

2.1 Informal economy

The informal economy includes activities which occur outside the normal administrative and regulatory framework. This framework varies in scope from country to country and in particular, between transition economies, where all units engaged in economic activity are obliged to register, and market economies where many activities, especially those conducted within households, fall largely outside the need to formally register.

Informal activities of interest to statisticians in transition economies are those which are not normally included in official measures of economic activity but which should be, according to the SNA production boundary discussed in Section 1 above

However, it is not sufficient to define informal activity merely as “that which is not measured in official measures of economic activity” because a proportion of such activity which is inside the SNA production boundary may already be included in some measures as GDP. For example, the sales of unregistered market traders may be included in expenditure-based estimates of GDP even though the income of the trader may be missing from income-based estimates of GDP based on statistical surveys of registered units or tax records.

As a result, an estimate of the total value of an informal activity such as sales by unregistered market traders has two components:

- the component that is included in measures of economic activity; and
- the component that has not been included.

The relative sizes of these components varies from country to country due to differences in both the legal requirement to register economic activity and adherence by economic units to this requirement. In fact, a further distinction could also be made between formal and informal economic

activities based on the registration of the units undertaking them by legal, fiscal or social authorities. The registration requirements may vary for each authority even within a country. The registration criterion may not however be appropriate in transition countries which often lack business laws and regulations and in particular the means to enforce them.

From the practical viewpoint of measurement, the informal sector may be better defined in relation to the way in which economic units are organised and carry out their activities than their legal status or relations with public authorities. Production units of the informal sector often have the characteristic features of household enterprises. Household enterprises are characterised by:

- absence of “formal” premises, e.g. small-scale businesses operating from private homes, in streets or markets, or without a fixed base;
- minimal sophisticated investment;
- being wholly or mainly run by family members.

The existence of informal activities of households is linked to the fact that households and small businessmen do not go through the registration procedure due to the temporary nature of their activities and the refusal by some to pay taxes and adhere to administrative standards.

Within the household sector, the informal sector comprises “informal” own-account enterprises and enterprises of “informal” employers. These two categories may then, for operational reasons, be further narrowed to production units not registered with tax authorities or social security institutions.

In the light of the above discussion, the term “informal economy” could be defined as the output of production units not registered with fiscal or social security authorities.

2.2 Hidden economy

In addition to the activities of unregistered economic units, activities which fall within the production boundary may also be deliberately hidden from official measurement or be excluded for other reasons such as incomplete registers or non-response, etc. The term “hidden economy” is generally used to underline the deliberate nature of output concealment. Thus the concept of informal activities should be distinguished from the concept of activities of the hidden economy. The latter includes:

- concealed or hidden production of economic units belonging to both the formal and informal sectors of the economy;
- concealment of side activities, or the extent of side activities;
- domestic services produced by undeclared paid employees and hidden productive activities.

Activities performed by economic units of the informal sector are not necessarily performed with the intention of evading payment of taxes or social security contributions, or infringing labour or other legislation or administrative provisions. Other motivating factors include:

- fear of responses to surveys finding their way into the hands of organised crime;
- belief that the information could be used by government in a return to centralised control;
- belief that the request for information is excessive and imposes undue burden; and
- the realisation that statistical authorities are powerless to enforce compliance.

The difference between hidden activities and illegal activities discussed above in Section 1.3 is that for the latter, the activity itself is forbidden, whereas with hidden activities one or more legal obligations or restrictions are avoided. Although misreporting data to avoid taxes, etc., is not legal, the activity it concerns is usually not illegal.

Most transition countries compile simple estimates of activities in the hidden economy. These estimates also include informal activities which are not fully covered as a result of imperfections in methods of statistical observation. The latter include the activities of officially registered private subsidiary small holdings, other small producers and people working in private construction.

Some countries make the distinction between legal activity of producers concealed for the purpose of tax evasion or other obligations, and informal unofficial legal activity of households and small businesses operating out of households which could be used to supplement income derived from employment in areas of the economy that are included within official statistics. Such activities are characteristic of trade and agriculture, services, building, transport, teaching, medical, shuttle trade, etc.

2.3 Unrecorded Economic Activity

As can be seen from the above discussion, there is considerable overlap between the concepts of “informal”, “hidden” and “illegal” activities. However, in the calculation of the three measures of GDP (production, income and expenditure) the overriding aim is to include measures of all economic activity that fall within the production boundary as defined by the 1993 SNA (refer Section 1 above). Rather than dwelling on the semantics of the various terms, the focus of this document is to provide a practical framework to measure or include estimates of all economic activities that fall within the SNA production boundary. Such activities that are not currently included in “official statistics” either through direct measurement or by imputation are regarded as unrecorded economic activity.

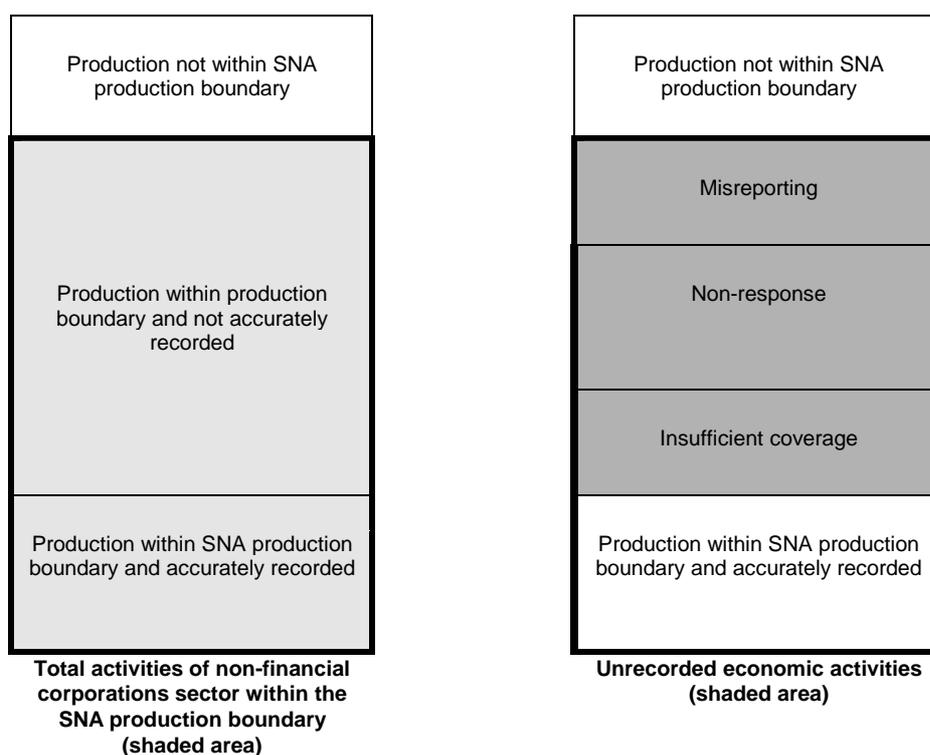
This document will also focus on three primary reasons for these activities not being recorded. These are:

- coverage of official statistics not adequately including the operations on non-registered units;
- high non-response rates for units included in surveys and the lack of imputation methodology for non-responding units; and
- misreporting by responding units.

The document will describe the process of reconciling different sources of data to compile the three equally important production, income and expenditure estimates of GDP. As mentioned in the above discussion on informal activity, there is considerable asymmetry in the coverage of “informal” activities in the different data sources used to compile the various estimates of GDP. This asymmetry provides a means of measuring unrecorded economic activity. An example is the imputation of alcohol consumption using information derived both from household budget surveys, which generally understate the real level of consumption, and data derived from retail sales data, which generally provide higher (though also not necessarily complete) estimates of consumption.

The second diagram illustrates the relationship between the three main causes of unrecorded economic activities, i.e. inadequate coverage, non-response and misreporting, and the SNA production boundary. The proportion of unrecorded economic activity arising from these three causes is represented by the shaded area in the right hand box. Though the diagram only represents the non-financial corporations sector, unrecorded economic activities occur in all sectors. Again, no attempt has been made to represent any of the elements to scale.

Diagram 2: Non-financial Corporations Sector: Relationship of SNA production boundary and unrecorded economic activities



Similar diagrams could be prepared for each of the five institutional SNA sectors, though the relative importance of each of the three factors would vary from sector to sector. For example, in the area of coverage many units operating in most of the institutional sectors deliberately exclude themselves from official registration procedures which would, had they registered, result in their inclusion in the statistical business register. The main exceptions to this are units in the government sector where coverage is assumed to be complete and (possibly) units in the household sector. The primary reason why units in the household sector could be excluded in terms of coverage would be

through use of a biased or inadequate sample frame by the statistical agency rather than through any deliberate action on the part of the household.

Most transition countries also continue to obtain high response rates for the government sector, though non-response is significantly higher for new financial and non-financial corporations.

Finally, there is some amount of deliberate misreporting for all institutional units, though some misreporting could also be attributed to inadequate question wording in the collection forms used.

As will be further explained in Section 4 below it is important to determine the relative magnitudes of each of these three factors for each institutional sector and to apportion scarce resources for making the greatest reduction possible.

Finally, it should be emphasised that not all unrecorded economic activity can be attributed to deliberate action on behalf of units whose activity is not included in official statistics. In many instances such activities are unrecorded due, for example, to the fact that such units may be unaware of their obligation to register, or because they did not receive a questionnaire, or because they simply do not understand or have the information requested. By recognising the non-deliberate nature of these and factors contributing to activities not being included in official statistics statistical agencies should place considerable emphasis on obtaining respondent co-operation and not on compulsion. A number of processes for gaining this co-operation are outlined in Section 4 below.

SECTION 3. OVERVIEW OF THE MEASUREMENT PROCESS

The primary aim of the measurement process described in this document is to compile a consistent set of estimates for the three measures of GDP (production, income, and expenditure). To achieve this aim there is a need to start from a very clear understanding of what should be measured (in terms of the SNA), and then analyse what is currently being measured. Many countries commence with an analysis/description of what is omitted and definitional issues of the informal economy, illegal and hidden activities, etc. In a lot of cases these issues are only peripheral to what actually has to be measured as defined by the SNA.

Essentially, the measurement process for unrecorded economic activities described in this document entails the use of on-going production based data obtained directly from enterprises, income and expenditure data based largely on household survey information, and administrative data (taxation authority data, information from customs authorities, building permit data from local authorities, financial enterprise data from central banks, information on state budget from finance ministries, etc.). Where possible, these sources would be supplemented by special small-scale ad hoc surveys and indirect imputation.

One of the major issues that will be addressed in this document is the problem of avoiding gaps and duplication of data when using different sources of information.

More specifically, the measurement process described in more detail in subsequent Sections entails the:

- On-going evaluation of existing statistical collections (both enterprise and household based) and administrative data with respect to coverage, non-response and misreporting vis a vis that part of the SNA production boundary not covered by current official statistics.

The process of evaluation is designed to objectively identify the :

magnitude of excluded unrecorded economic activity within the SNA production boundary due to problems with coverage, non-response and misreporting;

boundary between information obtained from enterprise-based statistical collections and that which needs to be obtained from alternative sources of information; and

long and short-term priorities for overcoming problems of measuring unrecorded economic activities.

The evaluation process is described in Section 4.2 below.

- Compilation of a series of key aggregate national account working tables from available data for the three main measures of GDP, i.e. production, income and expenditure, and the reconciliation of these tables. The data included in the working tables comprise the information received from on-going statistical collections and administrative data sources, and the adjustments required for unrecorded economic activity. The confrontation of production, expenditure and income based data is also designed to identify gaps in existing on-going data sources.

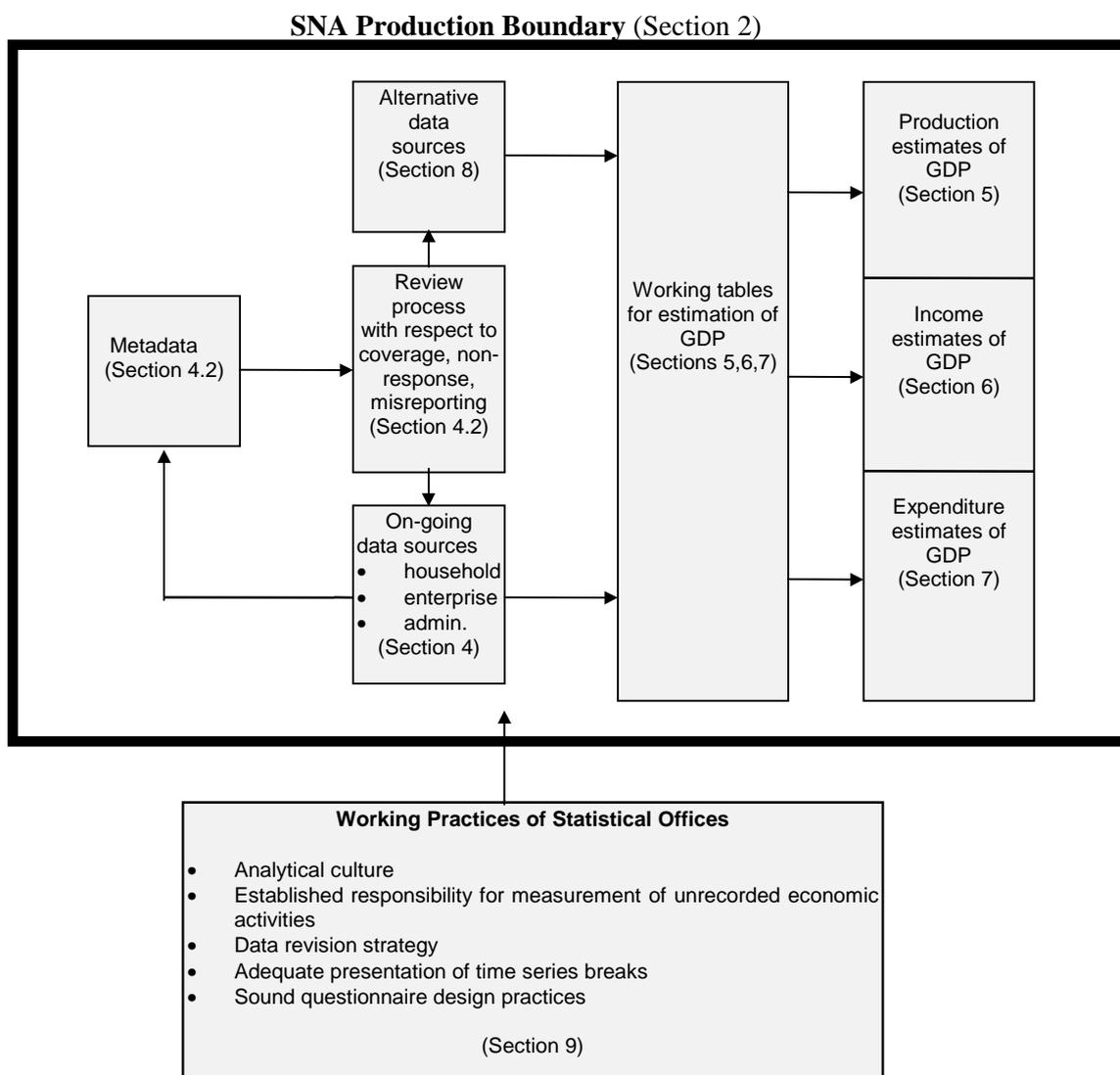
This process is described in Sections 5, 6 and 7 below.

- Use of alternative data sources of information to supplement and fill in the gaps from existing statistical collections identified above. As mentioned above these sources include one or combinations of special ad hoc collections and indirect methods of imputation. The documentation of the methodology used to adjust directly recorded official statistics is also an essential part of this process. The collection of data from special ad hoc enquiries obviously depends on the availability of resources. However, this process also enables the statistical organisation to determine the priority that should be given to a number of different areas in the accounts that require development.

A list of some alternative data sources (including those currently used in transition countries) is provided in Section 8 below.

The relationship between the different elements of the framework is shown in the following diagram. This framework shows that the estimation of unrecorded economic activities is not a set of disparate activities but is an on-going process of review of statistical collections within the context of the SNA production boundary. This requires the implementation of appropriate working practices across the statistical organisation such as the co-ordinated work of the basic statistics and national accounts areas. Senior management have a key role in ensuring that such processes are implemented across the statistical organisation. The diagram also lists where the different elements of the framework are discussed in this document.

Diagram 3: Relationship between the elements of the framework for measuring unrecorded economic activity



In summary, the methodology for the measurement of unrecorded economic activity outlined in this document relies heavily on the use of data sources that are currently available in most transition countries. The purpose of the objective evaluation process is twofold:

- to provide an indication of the areas where changes in methodology are required in either the short or long term; and to
- identify gaps in the data intended for use to compile estimates of GDP.

The evaluation process is undertaken through both an examination of key individual on-going statistical collections by branch statisticians and through the process of data confrontation driven largely by the compilation, by national accounts staff, of key aggregate national account working tables for the three main measures of GDP.

SECTION 4. PROCESS OF EVALUATING EXISTING ON-GOING STATISTICAL COLLECTIONS AND AVAILABLE ADMINISTRATIVE DATA SOURCES

The first part of this Section focuses on why some activities within scope of the SNA production boundary are not included (recorded) in the basic statistics used in the compilation in transition countries of each of the three measures of GDP (i.e. production, expenditure and income). These statistics include both information obtained from the direct collection of information from enterprises, from households and data available from administrative (particularly government) sources. The last source includes taxation authorities, state customs authorities, central banks and regional government. The Section then outlines the process of evaluating these collections/sources and the types of methodological information (or metadata) used. Recommendations for the measurement of production, income and expenditure measures of GDP are provided in Sections 5, 6 and 7 respectively.

4.1 Areas of unrecorded economic activity in existing statistical collections and available administrative data sources

The areas where unrecorded economic activity occurs in each of the existing statistical sources listed above that are used in the compilation of the three estimates of GDP essentially relate to problems of:

- inadequate coverage
- high levels of non-response
- misreporting

These issues obviously impact on the direct collection of information from enterprises and households, but they are also relevant for administrative data obtained from other government agencies. One of the major problems faced by statistical agencies when using administrative data is that they have less control over the implementation of procedures to improve the quality of the information received with respect to the three issues listed above. More often than not, changes can only be brought about through protracted negotiations with the agencies responsible for the initial collection and processing of administrative data.

Identifying the significance of each of coverage, non-response and misreporting for each statistical series enables a picture to be obtained of the adequacy of existing statistics and the formulation of priorities for either the improvement of on-going statistical collections and/or administrative data or the use of imputation techniques and/or small scale ad hoc collections.

Although this Section covers each of the three elements primarily in the context of enterprise based statistical collections many of the issues raised also relate to household based statistical collections and administrative data. Issues specific to household based statistical collections are outlined in Section 4.1.2 below. Issues relating to the documentation of these elements in metadata required for each statistical series used in the compilation of each of the three estimates of GDP are discussed below in more detail in Section 4.2.

4.1.1 Enterprise based statistical collections

Coverage

The “universe” or total population of units actually engaged in some form of economic activity that falls within the production boundary of the SNA comprises:

- Units are currently covered by official statistics because they are in the sample and there is thus direct collection. Even when a sample survey is used and not a complete census, this component obviously includes those units that are not actually selected in sample surveys but which are included in the list of enterprises, etc., from which the sample of units in surveys are drawn with a known probability of selection.

In most transition economies units currently covered by official statistics generally comprise registered units included in the coverage of statistical business registers maintained by national statistical offices. However, this segment also contains a considerable amount of unrecorded economic activity. These take the form of non-response and misreporting and are discussed below in more detail.

- Units whose activities are totally excluded from official statistics but which are within the SNA production boundary. These units are not included in the coverage of statistical business registers maintained by national statistical offices. This part comprises units whose activities are often completely outside existing statistical collections. The activities of such units may be illegal or legal. They include units that should be on the statistical business register but are not, as well as units exempt from registration.

In summary, the problem of unrecorded activities in this category is one of lack of coverage of units whose activities fall within the production boundary of the SNA.

The significance of insufficient coverage as a factor contributing to unrecorded economic activity in relation to the two other causes, i.e. non-response and misreporting, varies by branch of activity. For some branches, for example domestic trade and services, the combined activities of small units totally excluded from the coverage of official statistics small units could comprise a significant portion of total actual branch activity. In other branches (e.g. large industry enterprises) misreporting (particularly underreporting) by units included in the coverage of existing statistical collections could be a more significant component of unrecorded activity.

Before the commencement of the transition processes statistical business registers maintained by national statistical agencies were by and large comprehensive. Such comprehensiveness was possible because the number of business units operating in even the largest of the transition economies was fairly small. The process of transition towards a market economy saw an explosion in the number of units that needed to be maintained on the register in order to achieve

the objective of universality. Registers that previously only had a few thousand units in some cases now have over 600 000. In the former Soviet Union the total number of retail outlets was around 50 000. At the beginning of 1997 the number of registered units in domestic trade and catering for the Russian Federation alone exceeded 730 000 units. Even this number is probably below the number of units actually in operation.

All countries to some degree encounter problems of under-coverage with respect to their statistical business registers. What distinguishes many transition countries from OECD Member countries is the extent of under-coverage and the (largely unknown) impact it has on the reliability of individual statistical series. The ultimate goal should not be universality, but the introduction of procedures and best practice that will bring the extent of undercoverage more into line with that of OECD Member countries. The first step in this process is obviously the preparation of some objective measures, no matter how crude, of the extent of undercoverage for each key statistical collection. Such measures are essential in determining priorities in the allocation of resources to improving coverage and in sample survey design.

As will be further explained in Section 5 below, the key to improving the coverage of existing enterprise-based statistical collections is to set realistic coverage rules for the inclusion of units on the statistical business register which form the basis of coverage of individual statistical collections. These rules must obviously be consistent with resources available in the register areas of statistical offices for register maintenance.

One of the problems faced by many transition countries (and in some OECD Member countries) is that of maintaining business registers where universality of units has been attempted. These problems particularly apply to countries that attempt to maintain complete coverage of all registered enterprises irrespective of size. Some transition countries also endeavour to include all individual persons involved in economic activity. In many instances the largest number of registered enterprises comprises such individual entrepreneurs. For example, in 1995 the statistical business register (the REGON) maintained by the Central Statistical Office of Poland included over 2.1 million units or which about 80 per cent were physical persons. The explosion in the number of such units in transition countries in recent years has caused problems in maintaining up-to-date coverage of such units. This task consumes an inordinate amount of the register maintenance resources in the statistical offices of those countries, resources that could be used elsewhere, for example, to improve imputation techniques of indirect measurement of unrecorded economic activity, or to reducing the level of misreporting.

An alternative approach used in most OECD Member countries is to restrict coverage in enterprise-based statistical collections (and in some cases even their business registers) to units above a specified size cut-off defined in terms of employment or value of output/sales, etc. The size cut-off used often varies from branch to branch, for example for industry the cut-off would be significantly higher than one used for domestic trade and personal services where smaller sized units predominate. In the case of the last two branches statistical collections could exclude all non-employed units from their the scope of their collections and use information from household survey sources to supplement information from registered employing enterprises.

An example of the concentration of employment and turnover by size of enterprise for all branches is shown in the following table for Finland for 1994.

Table 1: Number of enterprises, employment and turnover (all branches) by employment size group: Finland, 1994

Employment Size Group (no. of employees)	No. of Enterprises	Percentage Total No. of Enterprises	Percentage of Total Employment	Percentage of Total Turnover
4 or less	159 465	86.2	15.8	10.6
5 - 9	14 127	7.6	8.3	7.1
10 - 19	5 970	3.2	7.5	6.5
20 - 49	3 196	1.7	9.0	8.7
50 - 99	1 026	0.6	6.8	7.5
100 - 249	663	0.4	9.7	10.2
250 - 499	265	0.1	8.7	10.1
500 - 999	120	0.1	7.8	9.2
100 or more	99	0.1	26.4	30.1
Total	184 931	100.0	100.0	100.0

Non-response

Non-response is a major issue in the compilation of basic statistics in transition economies. In some branch collections non-response can be as high as 40-60 per cent of total enterprises in the collection. The major impact of non-response in the quality of the basic statistics produced is the bias it introduces into the resulting aggregate data. One form of such bias could arise from the fact that, anecdotally, non-responding enterprises tend to be in the private sector, and in particular, in smaller businesses involved in the private sector, especially in the domestic trade and service branches. Another type of bias could result from the fact that entrepreneurs might decide not to respond to a survey for a particular reason. They may be earning higher than usual profits through being involved in new activities such as computer services.

The non-responding component of official statistical collections can be further broken down into two elements:

- non-response due the fact that enterprises are no longer active or in fact, may no longer exist;
- non-response for those enterprises that, for a number of reasons, choose not to respond but which are still in operation during either a part or the entire reference period.

One of the first tasks that should be undertaken by national statistical offices in the area of non-response is to identify the component of non-active or dead units. In some transition countries the number of non-active or dead units (particularly registered unincorporated enterprises) can be as high as 40 per cent of total registered units on the statistical business register.

Such measures of the proportion of non-active units could be derived by undertaking periodic quality assessments of the register by taking a randomly selected sub-sample of units on the register to identify the proportion the units that are dead or non-active. This component of non-response could then be deducted from the adjustments that are made for non-responding enterprises.

Failure to make such adjustments tends to inflate estimates because they would be included in the estimates for non-responding enterprises.

Alternatively, the number of “dead” units (i.e. those that no longer exist, or in fact never existed) on the register could be minimised through the implementation of procedures that involve periodic (say annual) matching of units on the statistical business register against administrative data collected by other government agencies, for example, the state taxation authority. Some transition countries have implemented procedures where registered individual entrepreneurs are deleted from the register if they have not submitted information to the taxation authorities for two consecutive years.

Efforts for dealing with non-responding enterprises that are still active but for which a response has not been received can be broken down into long-term and short-term solutions.

Short-term solutions

The short-term solutions essentially involve the use of one of a number of techniques for estimating non-responding enterprises. These techniques generally involves the creation of data for those enterprises, etc.. Imputed data will not always be the true values but they need only be good enough for the purpose of providing outputs of acceptable quality.

A dataset that has a large amount of imputation performed can be used as though it were a complete dataset. The results however can be misleading if the imputation used distorts the distribution of the data. As a check on the quality of the final estimates analyses should be undertaken to identify the extent of the contribution to key total aggregates of the final estimates made by imputed data.

If too high a proportion of the final estimate is derived from imputed values then the quality of that estimate is questionable and there is a clear need to revise collection procedures or methodology in some way.

Imputation will usually involve the creation of data that are consistent with ideas about how the data should behave. This requires extensive knowledge about the behaviour of enterprises, etc., under study.

When imputing data for units in a sample survey it is particularly desirable to have an idea of the effect of the imputation on the final estimate. A change in value from 15 to 100 will have a much greater effect than another change from 0 to 500 if the estimation weight of the individual non-responding enterprise in the former case is 63 but only 2 in the latter.

Imputation can be carried out either clerically (using the knowledge of staff concerned) or through some automated process. An automated process is preferable unless imputation is rare or the need for human judgement is clear. Clerical imputation can be expensive in terms of resources required and can lead to inconsistent treatment.

There are a number of different imputation methodologies, some of which are listed below. A more detailed discussion of the alternative methodologies is however beyond the scope of this document. Broadly speaking imputation methods fall into three broad categories:

- the derivation of data based on information provided by the unit, either for the current period, or in previous periods (with allowance for inflation if appropriate);
- the use of information provided by other similar units that is modified to achieve a closer approximation of the data for the missing enterprise;
- the use of information provided by other similar units that is not modified to achieve a closer approximation of the data for the missing enterprise.

Long-term solutions

Longer-term solutions towards reducing the level of non-response involves the adoption of procedures to improve the response rate for statistical collections. Such solutions include:

- The improvement of questionnaire design using some of the specific techniques described in Section 9.5 below.
- The training of staff involved in the collection in statistical agencies to obtain the co-operation of non-responding enterprises. The whole emphasis should be aimed at obtaining the willing co-operation of enterprises and not on compliance based on prosecution or the threat of prosecution of enterprises that do not comply with the statistical office's request for information. This entails, for example, ensuring that staff in statistical offices are fully conversant with the purposes of the statistical collection and the uses to which the data will be put.
- Encouraging the co-operation of respondents by providing data from statistical collections that is of use to enterprises in the planning of their own activities. Such a program of obtaining the active co-operation of enterprises may be directed at enterprises (particularly the larger enterprises) themselves directly or via the entrepreneur associations that are beginning to be established in some transition countries. At the moment such activities may have little impact in transition countries as the information culture has yet to evolve or because associations of entrepreneurs have yet to emerge. However as a long-term investment for minimising non-response, senior management in statistical agencies have an important role in establishing contacts with such organisations as soon as they are formed and in the education of members in the use of statistics by individual enterprises for planning their own operations.
- Setting more realistic deadlines for entrepreneurs to provide information to the regional offices of statistical agencies. At the moment it is not uncommon for all enterprises in transition countries to be required to forward monthly data within two days of the end of the reference period. Such tight deadlines evolved during pre-transition times and are more suited to situations where compliance from state enterprises and co-operatives was more or less assured. However, the experience of western countries with respect to response from the private sector is that private entrepreneurs are less likely to be persuaded to respond voluntarily if they believe that statistical agencies are being unrealistic both in the amount of information required and in the time allowed for them to respond. The appropriate way of setting response times is by discussion with private sector enterprises as to when the required information is likely to be available for their own purposes. The setting of realistic deadlines for compliance is also related to the

issue of data revision which is covered below in more detail in the discussion on misreporting.

- The priority allocation of non-response resources in statistical agencies to those enterprises that are sufficiently large and where non-response would have an influence on the quality of the results of a statistical collection. These enterprises should be given priority follow-up. A sub-sample of the smaller units should be followed-up on some sort of rotation basis. For a monthly collection, this would mean that a certain number of the smaller enterprises are followed-up each month so that they are all followed-up over a twelve month period.

In conclusion, the emphasis of the long-term solutions outlined above is to obtain the cooperation of the respondent, rather than rely primarily on compulsion. Such emphasis is based on the fact that a substantial portion of non-response is neither deliberate or ill-intentioned. The most important task is therefore to ensure that data requests are reasonable in terms of content and the time allocated to the respondent to comply to the request for information.

Misreporting

The information provided by units that respond to statistical collections also contain an element of the unrecorded economy, i.e. that part of response which is under-enumerated or misreported. This could take the form of the understatement of income, the overstatement of costs, hidden activities undertaken by enterprises (including state enterprises) in order to survive. The causes of misreporting are varied. Some were described above in the discussion on illegal activities in Section 1.3, including: fear of information finding its way into the hands of tax authorities or organised crime; belief that the information could be used by government in a return to centralised control; and the belief that the request for information is excessive and imposes undue burden.

Misreporting could also be due to the inability of respondents to understand the questions or the non-availability of the information sought. An example of the latter is the request for excessive detail, particularly from small enterprises.

Short-term solutions

Short-term solutions to misreporting involves adjusting reported data to derive “correct” aggregated information. Such adjustments could be made to unit record information or to preliminary aggregates. The first step is to try to obtain some measure of the extent of incorrect reporting. Procedures for doing this include the calculation of averages for large and small enterprises for key variables that are being measured. These could include output per employee, value added per employee, return on assets, etc.

The process of determining the adjustments required using data disaggregated by type of ownership and branch is illustrated in Section 6 below. Such analysis generally focuses on income (revenue), compensation of employees and costs.

By identifying a branch average it is possible to focus available resources for editing in the direction of large enterprises reporting data well below or above these averages. This information should be used by staff to query enterprises whose information is simply not believable or is inconsistent with the bulk of the enterprise information received. The same process can be used to

identify obvious outliers that should be removed from the calculated averages used in the adjustment of misreported data.

The underlying assumption in the use of such of averages is of course the absence of systematic under or incorrect reporting across all or most of the enterprises in the collections. Such an assumption may be incorrect for transition economies where large scale misreporting is quite common. Overcoming this problem necessitates use of case study data obtained from alternative sources. These include taxation authority data; private accounting firms that are commencing operations in some transition countries; informal contacts within the industry; etc. This information would be used to arrive at “correct” averages and ratios.

Where adjustments are made to reported data it is essential for branch statisticians to include in their metadata information about the extent of such adjustments (as a proportion of series totals), where they are made and the methodologies used.

Further discussion on the use of ratios is provided in Section 8.2 below.

Long-term solutions

Long-term methods for overcoming the problem of misreporting centre on overcoming the problem at source, i.e. to obtain accurate information from responding enterprises. Techniques for achieving this are similar to those discussed above for reducing non-response in the long term. They also involve the use of more systematic editing techniques.

As with the implementation of long-term strategies to reduce the level of non-response discussed above, similar strategies to overcome misreporting should seek to obtain the co-operation of the respondent and not rely primarily on compulsion. A substantial portion of misreporting is also neither deliberate or ill-intentioned.

Another cause of misreporting arises from respondents being given insufficient time to respond to statistical collections. This issue was discussed above in the context of non-response, but it is also relevant in respect of the accuracy and completeness of information actually reported. In addition to allowing sufficient time for respondents to provide their information it is necessary for the statistical agencies to develop a consistent set of procedures to be applied across the entire organisation for revising aggregate data after it has been published.

There are several other factors contributing to the need to revise data, but all centre on the fact that with more time, new, more accurate, more final and more comprehensive data becomes available. It is standard practice for statistical agencies in OECD Member countries to revise published data from time to time. The issue of the need to implement organisation-wide data revision procedures is discussed in greater detail in Section 9.3 below.

In order to identify priorities for overcoming these problems it is essential to undertake an evaluation of each statistical collection with respect to each of the three factors discussed above. The aim of the evaluation process which is discussed in Section 4.2 below is to attempt to derive objective measures of activities that are not recorded, some idea of magnitude, or as a minimum to at least identify areas where there are significant problems.

4.1.2 Household based statistical collections

The major sources of information that focus on expenditure and income estimates of GDP are household based statistical collections. These comprise:

- household budget surveys (HBS); and
- labour force surveys based on households (LFS).

Both of these sources are already currently available in most transition countries. However, for the reasons outlined below there is also the need for a review process of these collections as well to ensure that the information they provide can be used to compile accurate measures of GDP.

Household Budget Surveys

Although almost all transition countries conduct regular HBSs there is considerable variation in the sample designs and methodologies used for the collection and compilation of detailed expenditure and income data. Many countries continue to use procedures developed in pre-transition periods, which for reasons discussed below, provide data that should be used with caution. In recent years the World Bank has provided technical and financial assistance that has enabled some transition countries to develop HBSs in conformity with international standards both with respect to sample design and collection methodology.

The main features of the traditional HBS developed (largely) in pre-transition times are:

- the selection of a sample of households based on a three-way categorisation: employed persons; farmers and collective farm workers; and pensioners. The sample of employed persons was selected from lists of enterprises maintained on statistical business registers, the list being stratified by branch and geographic region. A sample of pensioners was initially obtained through the random selection of social security offices. A sample of individual pensioners receiving “average” pensions was then selected from lists maintained by the selected social security offices;
- income and expenditure details for all household members were then obtained following the selection of the “initial” household member using the procedures outlined above. Self-employed persons, etc., were only included in the sample as members of the families whose members are employed in registered enterprises selected in the initial selection phase;
- once selected, households remaining in the sample indefinitely. Households were only replaced in the case of a refusal or as a result of efforts to include wage earners from new industrial sectors. Annual rotation for these reasons comprised around 10 per cent of the sample. These households were replaced by other households with the same characteristics as those dropping out of the sample. As a result, the number of low income households in the sample is disproportionately high;
- exclusion of the highest income earners due to difficulties with response in many transition countries. Although this is also a common practice in western countries, some transition countries restricted the scope of their household budget surveys to exclude a broader range of high and low income earners.

The development of HBSs in conformity with international standards entails the selection of households using area frame sample selection techniques and the introduction of procedures for systematically rotating selected households out of the sample after predetermined and much shorter periods of time. One of the factors limiting the creation of accurate area frames is that most transition countries have not conducted comprehensive population censuses since the late 1980's.

Even if the sample of households included in HBSs is fully representative account needs to be taken of the fact that reported purchases of some goods and services will be considerably underreported, for example, expenditures on alcohol. This is of course true in all countries, not just countries in transition. An indication of the extent of such underreporting is only possible by comparing aggregates obtained from HBSs with information from other sources, e.g. production and retail sales data.

Labour Force Surveys

During the transition period the most common source of information on employment in Central and Eastern European countries and the Commonwealth of Independent States were surveys of enterprises, organisations and institutions. These collections were generally based on statistical business registers which have the same coverage, non-response and data misreporting problems experienced by other enterprise based collections described in Section 4.1.1 above. As with other enterprise collections the problems with the labour force collections were particularly evident for small private enterprises, and especially for private domestic trade and services.

Over the last five years many transition countries (particularly in Central and Eastern Europe) have implemented regular (generally quarterly) household based employment surveys. Although the labour force definitions applied are generally consistent with those recommended by the International Labour Organisation (ILO) and collection practices used are similar to those used in many OECD Member countries households in the initial sample selection phase are often drawn from lists of households based on the last population census. In some transition countries the last population census was conducted in 1989. With the next round of population censuses scheduled for 1999 the situation should improve, though data that could be used for establishing a reliable area frame would not be available until well beyond that time.

In the meantime, where either area frame or household lists are currently being used there is a need to ensure that procedures are implemented to ensure that newly formed households have a chance to be included with a known probability of selection.

In addition to the use of a properly designed area frame sample for the selection of households living in dwellings with their own cooking and bathing facilities, consideration also needs to be given to the possible impact that the exclusion of persons living in institutional dwellings such as hostels will have on employment by industry tabulations. For example, large enterprises in some transition countries have built large hostels to accommodate their staff near their factories. If employees in these hostels are concentrated in particular branches (and occupations), and they represent a significant proportion of people employed in those branches, their exclusion could contribute to biased results.

Notwithstanding these problems, a properly constituted household labour force survey provides a valuable source of information on employment on activities that are largely unrecorded in enterprise based collections. The extensive use of household labour force survey data for the

estimation of the underground economy was pioneered in Italy. Some aspects of the methodology used are described in more detail below in Section 6.1.

4.2 The evaluation process

The process of evaluating elements of non-recorded economic activity in each key statistical data source (including administrative data) used in the compilation of national accounts is designed to assist transition countries to systematically:

- break the measurement problem down into smaller more manageable components to enable systematic identification of options for measurement, etc.;
- identify priority areas for measurement;
- focus on the accuracy and efficiency of what is currently measured in “official statistics” produced by national statistical offices and administrative data produced by other statistical agencies; and to
- identify what has to be done in future, both in the short-term and the long-term.

The processes underlying the framework presented in this document essentially entail an evaluation of existing data source (e.g. industry, domestic trade, construction, household budget surveys, foreign trade data, information from tax authorities, etc.) in respect of:

- coverage of units involved in the unrecorded economy;
- the level of non-response and methodologies for estimating data for non-responding units; and
- estimates of misreporting by responding units.

For both LFSs and HBSs this process for example could entail checking to ensure that household coverage does not introduce bias through the systematic exclusion of certain types of households that may be involved in unrecorded economic activities. This might involve checking the sample for key characteristics (e.g. income, age, sex, branch, occupation) against alternative sources of data.

Because of the rapid process of structural change experienced in most transition countries these processes need to be on-going.

Short and long-term perspective

Another key consideration is the timeline for the development of measures for recording unrecorded economic activity. Many of the refinements to existing collections designed to improve their ability to pick up activities that are currently unrecorded require considerable time, expertise and resources to develop and implement. National statistical offices in transition countries often do not have sufficient resources to introduce these processes and in many instances their implementation can only be seen as a long-term strategy. Nevertheless, consideration of such long-term strategies is important.

On the other hand, the problem of providing measures of the unrecorded economy that can be used now also needs to be addressed. This often requires the use of available data with all its deficiencies. This is why a clear, realistic quantitative (as far as possible) and documented understanding of the deficiencies of existing information is so urgent and important. As mentioned in the introduction to this document, the primary aim of the framework outlined is to enable transition countries to produce their own estimates of unrecorded economic activities using available data.

Initial estimates of such activities would be based on available “core” data of known quality which are derived from direct methods of measurement. These are supplemented by imputation based on data from other sources to produce estimates of economic activity (including a component of hitherto unrecorded economic activity) that though not perfect are more accurate than those excluding any estimate of unrecorded economic activity.

As either the quality of the core data are improved or the quality of the supplementary estimates are improved the quality and reliability of the total estimate of economic activity is improved.

Importance of suitable metadata

The term “metadata” refers to text, etc., that describes the methodologies used in the collection, processing, compilation and dissemination of statistical data. The provision of adequate metadata is essential in enabling users to make appropriate use of information provided by statistical agencies. User studies conducted by the national statistical offices of OECD Member countries consistently point to the absolute necessity for statistical tables to be accompanied by comprehensive methodological descriptions. These studies also show that in the eyes of users the absence of accompanying metadata seriously limits the usefulness of statistics provided.

Users of metadata compiled in transition countries include other areas of the national statistical agency (such as national accounts staff), government policy departments, analysts outside government (e.g. in universities) and international organisations. In future, more and more organisations in the emerging private sector will also require more comprehensive metadata.

The key to the evaluation of existing statistical collections is the availability of suitable metadata that adequately describes not only the types of units, activities, etc., that are currently included but also what is excluded, especially where these relate to unrecorded economic activities that fall within the production boundary of the SNA. The focus of metadata currently provided for existing statistical collections in most transition countries is on what is included. Information about excluded activities is more often than not only implied.

The provision of such metadata by branch statisticians requires the adoption of a more systematic approach/culture by branch statisticians in the information they provide about their statistical collections to users both within their own organisation and to external users. The paucity of information currently provided stems largely from a number of factors, these include:

- the fact that in the past it was assumed that written standards and procedures laid down centrally were fully complied with;
- policies of deliberate compartmentalisation of the activities of different areas of the organisation;

- fears of criticism about the statistics currently produced.

In respect of the last point, the opposite is true. By being more open about both the strengths and weaknesses of existing data not only will users be in a better position to correctly analyse the statistical tabulations provided but there is greater likelihood that a wider understanding of the problems/issues of data collection throughout the user community (especially in key government ministries) will help bring about the required change/improvements. Greater transparency in the methodologies currently in use will also reduce “blanket” criticism based on prejudice that nothing is being done in the area of the hidden economy.

Elements of metadata

An outline of the elements of metadata required for key statistical data sources is provided in the following table. As can be seen from this table the issues of coverage, non-response and misreporting discussed in detail in Section 4.1.1 above are important elements of the descriptions of collection and compilation practices required for each statistical series produced by a statistical agency. This task is clearly the responsibility of the branch areas producing the data.

Increased access to personal computers in all transition countries in recent years has reduced the effort required to ensure that the metadata for each statistical series is kept up to date. Detailed metadata could be provided to users (both within and outside the statistical agency) in the form of specific sources and definitions type publications or in one issue per year in monthly and quarterly statistical publications.

Table 2: Elements of metadata used in the review of key statistical data sources used for the compilation of the three measures of GDP

<p>1. Broad definition of collection</p> <p>2. Coverage</p>	<p>Master list</p> <p>Geographical coverage of collection and publication</p> <p>Statistical population</p> <p>Coverage exclusions</p>	<p>The register, etc., from which units in the collection are drawn</p> <p>Country, region, cities, urban/rural</p> <p>Enterprises, establishments, households</p> <p>This describes: - types of unit ownership excluded - whether or not small units, etc., are excluded; - types of activities excluded.</p> <p>An indicator is required of the magnitude of these exclusions based on objective analyses.</p>
<p>3. Non-response</p>	<p>Non-response rate</p> <p>Methodology for imputing data for non-responding units</p>	<p>As percentage of total enterprises in collection. Also required are indications of non-response bias (e.g. response rates by size of enterprise, type of ownership, predominant activity, etc.)</p>
<p>4. Collection</p>	<p>Frequency of data collection</p> <p>Reporting units</p> <p>Reporting method</p> <p>Survey items</p> <p>Data item collection</p> <p>Sample survey frame</p>	<p>Monthly, quarterly, annually</p> <p>For example, households/enterprises in x regions of the whole country</p> <p>Complete enumeration, sample survey, use of employment/turnover cut-offs, etc.</p> <p>Description of questionnaire (how long questionnaire has remained unchanged, brief description of what is collected)</p> <p>Whether monthly/quarterly items are collected on a cumulative or discrete basis</p> <p>Sample frame used (e.g. whether centralised statistical business register, or branch specific register) Sample stratification Method for selecting sample units Method for updating sample frame Method for rotating sampled units out of survey Sample size</p>

Table 2: Elements of metadata used in the review of key statistical data sources used for the compilation of the three measures of GDP (continued)

5. Data Manipulation	Aggregations/grossing up Seasonal adjustment Other adjustments	Methodology used Aggregated items/targets Calculation of weights Who does this (regional office, head office) Methodology/program used (X11, X12, etc.) Trading days, etc.
6. Data quality	Sampling errors and their corrections Indications of reporting bias Other errors and their corrections Missing data in time series Breaks in time series Timeliness and release dates Preliminary data Revision strategy once data is published Data verification strategy	Systematic under-reporting
7. Classification standards	Standard classifications/nomenclatures International comparability Departures from international standards	

SECTION 5. MEASUREMENT OF PRODUCTION

The output of goods and services represents the value of goods and services which are the result of the production activity of resident producer units in a given period. It covers all goods and services that are either sold or provided to households free, or at prices that are economically insignificant.

The unduplicated value of production is measured by:

- taking the market value of goods and services produced by a branch classified on the basis of the predominant activity of the enterprise/establishment using either ISIC or NACE (referred to as its output); and
- deducting the cost of non-durable goods and services used up by the branch in the production process (intermediate consumption);
- which leaves the gross value added by the branch. This is the contribution of the branch to GDP which is then obtained by summing the gross value added of all branches and making an adjustment for taxes on products.

The gross output of enterprises/establishments is usually not the same as the value of sales. For goods producing enterprises some of the goods sold are derived from stocks produced or purchased for resale in earlier periods. Similarly, some of the goods produced or purchased in the current period will enter inventories for sale in later periods.

Furthermore, for both goods producing and services producing enterprises some of the sales will comprise second-hand goods such as machinery, buildings or other equipment, or scrapped fixed assets. Since these are not produced by the enterprise that sells them they are not considered part of the gross output of that enterprise. Instead, the receipts from their sale are deducted from the enterprise's purchases of similar items in the current period.

The following elements are included in output:

- receipts from the sales of goods and services;
- goods and services which are exchanged in barter terms;
- goods and services used for consumption in kind;
- inter-establishment deliveries (i.e. the value of goods and services delivered between units within the same enterprise to be used as intermediate inputs);

- changes in inventories of finished goods;
- changes in work-in-progress;
- goods and services that are supplied to other institutional units free or at prices that are not economically significant.

In addition, goods may be produced for own final consumption (only by unincorporated enterprises) or for use as own fixed capital formation (by both incorporated and unincorporated enterprises).

The SNA recommends that goods and services produced for the market be valued at either basic prices or producers' prices. Basic prices are the prices received by a producer excluding any tax payable or subsidy receivable. It also excludes any delivery charges invoiced separately by the producer. Producers' prices are the prices received by a producer including any tax payable or subsidy receivable except invoiced value added tax (VAT). Producers' prices also exclude any delivery charges invoiced separately to the consumer by the producer.

5.1 Role of the statistical business register

In common with business registers maintained by national statistical offices in OECD Member countries a large part of register resources in transition countries is consumed maintaining coverage of small units. Due to the ease of entry of these units into business activity and the ease with which they drop out, the experience of western national statistical offices is that it is not possible to maintain an accurate register of all small units without using a disproportionately large amount of resources. For example, in the case of Finland illustrated in Table 1 above, 159 500 enterprises with employment of four persons or less account for around 86 per cent of the total number of enterprises but only just under 11 per cent of total turnover.

Because the processes of identifying "dead" or inactive units are often not as systematic as those for adding new units onto the register, a common feature of many business registers in both transition economies and in western economies is the large number of dead units that are on the registers. Unfortunately, many transition countries devote considerable resources in an attempt to maintain exhaustive coverage of all small units. By and large, this is a process they will never be able to get on top of and in future resource constraints will compel most statistical agencies in these countries to limit coverage of smaller units on their registers.

For the measurement of unrecorded economic activity it is essential to clearly delineate the boundary between information obtained from the direct collection of information from enterprises by means of statistical collections with known coverage, from information obtained from other sources. These mainly comprise household based collections, and if resources permit special ad hoc collections. The issue of known coverage is very important. It means that all the units defined as in-scope of enterprise-based statistical collections are actually included, or in the case of sample surveys have a known probability of selection.

A strategy adopted by some OECD Member countries is to focus register resources on accurate recording of the larger enterprises operating in the economy and the actual deletion of the smaller units from the register. Direct collection of information for these units is substituted by the

use of indirect measurement techniques outlined below. There are many aspects to this approach, these include:

- the complete removal of all units that do not have any employees. The resulting registers are restricted to those units that employ staff above a predetermined cut-off. Some countries have modified this approach and have included smaller (or non-employing units) for branches of the economy where their contribution to total economic activity is important, e.g. agriculture, domestic trade. The identification of appropriate register cut-offs requires analyses of register information similar to that presented in Table 1 above. The analysis would also need to include the dimensions of geographic regions and activities.
- the allocation of specific resources to maintaining accurate coverage for the larger enterprises that dominate the economic activity of individual branches within the country. In some OECD Member countries this approach is coupled with the focusing of branch resources involved in the actual collection of enterprise data to the collection of accurate information from the larger units so identified.

The units that are maintained on the register are then part of the known universe. Structural and activity data for those units not maintained on the register are obtained using key alternative measures described below. The role of the business register would be focused on obtaining reliable data for the enterprises, etc., it contains. The coverage of the register would determine the boundary between the directly recorded economy and that part estimated by other means. The delineation of such a boundary is essential in order to remove/minimise the possibility of duplication in the estimates of unrecorded economic activity used in the compilation of the production estimate of GDP.

In summary, the major element in the identification of the boundary centres around analyses of the coverage of the statistical business register that is used for statistical collections conducted by national statistical offices. The resultant coverage should of course be commensurate with the resources available to maintain that register in respect of inserting new units and not allowing an accumulation of dead units.

The formulation of appropriate register coverage for the statistical business register maintained by national statistical offices needs to be undertaken in the context of an organisation-wide branch collection strategy and strategies for the measurement of unrecorded economic activity for the three measures of GDP. Such a corporate approach is essential if staff resources, etc., are to be made available for reallocation to other higher priority activities within the organisation.

5.2 Types of enterprises

In preparing estimates of production it is necessary to examine the characteristics of four broad types of enterprises in the light of the discussion in Section 4.1 above. These enterprises comprise:

- **State enterprises:** The coverage and response rates for state enterprises are generally satisfactory due to the fact that these units have maintained reporting discipline established during the pre-transition period. Because of the relatively small numbers of

such units, registration is generally not a problem and it is often possible to collect the required information, even on a monthly basis.

A problem with regard to unrecorded activities is the possibility of deliberate underreporting to avoid taxes, though the incidence of this would be generally lower than for the other types of units discussed below. A more likely problem would be the non-reporting of “non-conventional” activities carried out that might either be illegal or not sanctioned officially by the government.

Another problem with regard to state enterprises is that many pay part of their wages and salaries in kind and report them as material costs. As a result compensation of employees is underestimated and intermediate consumption is overestimated.

- **Former state enterprises:** Former state enterprises that have been privatised generally exhibit the same coverage and response characteristics as state enterprises, though the level of non-response is likely to rise in future as the old reporting discipline begins to erode.

As with state enterprises, the main problem with respect to unrecorded activities is deliberate misreporting. Unlike state enterprises this is likely to relate to the enterprise’s main activity as there is less need for these enterprises to hide non-conventional activities.

New registered private enterprises: Newly-created private enterprises have generally undertaken the formal registration process with the appropriate authorities, including the legal requirement to register with the national statistical office. These enterprises generally operate out of fixed premises and have employees, fixed capital, etc. The activities of newly created enterprises are generally focused in the areas of retail, hotels, catering, travel, banks and other financial activities, e.g. foreign exchange. Over the next few years this category could be expected to include more businesses providing services to business (e.g. accountants, lawyers, real estate, technical and computing services) and personal services (e.g. hairdressing, laundries, etc.).

The total activities of registered new private enterprise units to actual total branch activity could be low as many of the units involved in providing services, etc. (including those with employees) would be expected to fall within the final category of units discussed below (informal activities). Because of the relatively low incidence of coverage, results from sample surveys would be questionable with regard to obtaining an accurate measure of total actual activity for each branch.

The level of non-response for these enterprises is also high, and even when they do report there is a high incentive to understate the level of incomes. It is common for these enterprises to exclude a significant portion of their transactions, especially sales in cash and wages in cash. Some of the smaller newly created enterprises also show in their business accounts expenses related to household consumption (e.g. use of vehicle, travel, other expenses such as meals in restaurants, etc.). As a result sales are underestimated, together with compensation of employees. Intermediate consumption is overestimated.

- **Informal activities:** The main characteristics of these units is that they do not operate out of fixed premises, they have few or no employees and have very little or no fixed capital. These units existed in pre-transition times (e.g. plots, food processing) though their activities have considerably increased in significance. The activities of these units are focused in the areas of retail and services and primarily cater to final consumption.

Despite the fact that many transition countries attempt to include these units on their statistical business registers their coverage in statistical collections remains a large problem. Even though these units are legally obliged to register many do not due to reasons cited in the discussion of non-response in Section 4.1.1 above.

Given the fact that only a relatively small proportion of such enterprises register, the results from statistical collections including these units will only represent partial coverage of their activities.

5.3 Data sources

A range of data sources are used to compile production accounts, these include:

- annual reports by enterprises on their revenues and expenditures. An outline of the annual requirements from these reports is provided in Section 5.4 below;
- household budget surveys to provide data on the activities of individual entrepreneurs;
- household labour force surveys to provide data on the activities of the self employed;
- information from the Central Bank for information on the activities of commercial banks;
- state budget statistics from the Ministry of Finance and the reports of other Ministries for details of revenues and expenditures;
- customs and tax statistics;
- annual reports on labour statistics.

5.4 Data requirements from annual enterprise reports

The items of revenue and expenditure required for the calculation of gross output, compensation of employees, intermediate consumption, value added, gross fixed capital formation, etc., are provided in the following table.

Table 3: Production estimates: Data requirements from annual enterprise reports

<p>Income items</p> <p>Receipts from sales¹</p> <p>Value of increase/decrease in inventories of finished goods and work in progress</p> <p>Rental, leasing and hiring income</p> <p>Value of own-account gross fixed capital formation</p> <p>Contract, sub-contract and commission income</p> <p>Interest receivable</p> <p>Dividend income receivable</p> <p>Government subsidies receivable</p> <p>Insurance claims</p> <p>Total</p>	<ul style="list-style-type: none"> - receipts from sales of goods (net of discounts given) - receipts from sales of services (net of discounts given) - valued at prices of goods sold, not cost - should be amounts due, not those actually received - should be amounts due, not those actually received - should be amounts due, not those actually received
<p>Expense items</p> <p>Wages and salaries</p> <p>Employer's contributions to social insurance</p> <p>Provision of expenses for employee entitlements</p> <p>Contract, sub-contract and commission expenses</p> <p>Motor vehicle running expenses</p> <p>Rental, leasing and hiring expenses other than for motor vehicles</p> <p>Rental, leasing and hiring expenses for motor vehicles</p> <p>Repair and maintenance expenses</p> <p>Purchases</p> <p>Other operating expenses</p> <p>Insurance premiums</p> <p>Interest payable</p> <p>Taxes on products</p> <p>Total</p>	<p>Enterprise reports will provide contributions when they are made to a funded scheme but not when the scheme is unfunded. For national accounts purposes it is therefore also necessary to make adjustments to include estimates of imputed contributions when they are made to an unfunded scheme.</p> <p>Includes annual leave, sick leave, termination and redundancy payments</p> <ul style="list-style-type: none"> - goods for resale - materials, components, containers and packaging materials - electricity, fuels and water - office supplies - telephone, postage charges -travelling and entertainment expenses - advertising costs -freight and cartage expenses <p>Include VAT, taxes on imports, excise payable on goods and services produced. If a deductible form of VAT is in operation show both invoiced and deductible</p>

Table 3: Production estimates: Data requirements from annual enterprise reports (continued)

Inventories (opening and closing) Raw materials, fuels, containers, etc. Work-in-progress Finished goods Goods for resale	
Capital expenditure and disposal of assets² Capital expenditure on selected assets Disposal of plant, machinery, equipment, land, dwellings, other buildings and structures and intangible assets	- plant, machinery and equipment - major enhancements to value of land - dwellings, other buildings and structures - intangible assets

1. including estimates of the value of goods and services bartered or exchanged for other goods and services, and goods and services provided to employees as payments in kind.

2. Including capital work done by own employees for own use or for rental or lease

The above list of data items should be regarded purely as a reference list for the calculation of key variables in the SNA production account. Its purpose is to further develop an understanding of the type of information required from enterprises for the calculation of value added, etc. As further outlined in the discussion on questionnaire design practices in Section 9.5 below it would be unrealistic to expect all enterprises to provide such detail irrespective of size, etc. In fact, many of the items listed above (e.g. interest payable, dividend income) would normally be maintained at the level of the enterprise and not for each establishment in a multi-establishment enterprise.

The SNA uses the term “enterprise” to describe an institutional unit in its capacity as a producer of goods and services. “Establishments” on the other hand are defined as an enterprise or part of an enterprise that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added.

The collection of the necessary data items should therefore be undertaken in the context of a collection strategy across the entire statistical collection agency. Such a strategy takes account of the:

- size of the enterprise and frequency of collection;
- whether or not its purpose is to obtain periodic (a year or more) benchmark data or subannual information on changes in level; and
- whether or not it is more appropriate to collect the required information from establishments or enterprises taking into account the availability of the data sought from accounting records maintained by respondents.

The ultimate aim of such a strategy is the collection of information from enterprises with minimal respondent burden. Further details on data collection is provided below in Section 5.5.

Under the SNA, production accounts are compiled for establishments and industries as well as for institutional units and sectors. In order to ensure numerical consistency concepts such as output,

sales and intermediate consumption are defined and measured in the same way in production accounts for industries or sectors. To achieve such consistency it is essential for the output of an enterprise to equal the sum of the outputs of individual establishments of included in the enterprise. This necessitates the inclusion in output of deliveries of goods and services to other establishments belonging to the same enterprise. Such inter-establishment deliveries are counted as part of the output of the enterprise even though they do not leave the enterprise.

5.5 Information gathering strategy

Given the above analysis of the four types of units whose activities contribute to total production and which fall within the SNA production boundary, the recommended information gathering strategy is provided in the following table.

The experience of OECD Member countries is that the collection of cost/expenditure data at the required level of detail for the derivation of intermediate consumption imposes a particular burden on enterprises and is a significant factor influencing the level of non-response, especially for smaller private enterprises. This problem is exacerbated for the industry branch when detailed commodity data is also required for the compilation of input-output tables (refer Section 7.1 below).

Table 4: Production estimates: Data gathering strategy

Type of Enterprise	Type of Collection	Collection Strategy
State	Complete enumeration	Focus resources on obtaining high quality responses
Former state enterprises	Complete enumeration	Focus resources on obtaining high quality responses - refer discussion on information processing below
New registered private enterprises:	Complete enumeration of enterprises only above a specified size cut-off measured in terms of employment. Depending on the relative contribution of the enterprises/units below the cut-off consideration could also be given to sampling units below the cut-off.	The size cut-off should be set at the level where coverage on the existing statistical business register is believed to be relatively high. This would differ from branch to branch. Sample survey techniques would be used where the number of such units is high, provided that overall coverage is satisfactory.
Informal activities	No direct on-going collection of data for enterprises below the size cut-off	Information would gathered by means of: small scale ad hoc surveys and indirect imputation using information from other sources such as household surveys

5.6 Information processing

The following table illustrates the process for identifying areas where adjustment/imputation is required for the derivation of total value of gross output for each branch and for each of the enterprise types discussed in Section 5.2. The assumptions as to which of the fields in the table have to be adjusted, etc., are derived from the analysis of on-going statistical collections using elements of metadata described in Section 4.2 above. Those fields for which estimates are required are hatched (XXXXXX). Obviously, the fields requiring imputation, etc., will vary from branch to branch and from country to country.

Table 5: Production estimates: adjustments for unrecorded production activity

Branch/Type of enterprise	Current value of gross output (1)	Adjustment for under coverage	Adjustment for non-response	Adjustment for misreporting (5)	Revised value of gross output estimate
Agriculture, hunting and related service activities (Div 01)					
State enterprises	XXXXXX			XXXXXX	
Former state enterprises	XXXXXX			XXXXXX	
Registered non-state ents.	XXXXXX		XXXXXX (4)	XXXXXX	
Informal		XXXXXX (2)			
Manufacturing (Tab. Cat D)					
State enterprises	XXXXXX			XXXXXX	
Former state enterprises	XXXXXX			XXXXXX	
Registered non-state ents.	XXXXXX		XXXXXX (4)	XXXXXX	
Informal		XXXXXX (2)			
Retail Trade⁶ (Div 52)					
State enterprises.	XXXXXX			XXXXXX	
Former state enterprises	XXXXXX			XXXXXX	
Registered non-state ents.	XXXXXX	XXXXXX (3)	XXXXXX (4)	XXXXXX	
Informal		XXXXXX (2)			
[other branches]					

(1) Derived from on-going enterprise collections of state, former-state and registered non-state enterprises.

(2) Adjustment for undercoverage of informal output is derived from household budget survey data. Estimates of production on agricultural plots may also be prepared based on information about the area under cultivation, average yields and average prices.

(3) Adjustments of the number of excluded non-state enterprises are derived from imputations based on household Labour Force Survey data .

(4) Should be covered by data imputed by statistical branches. If not separate imputation is required depending on the magnitude of non-response identified in metadata.

(5) Estimates for misreporting and under-reporting are made using a range of imputation techniques outlined in Sections 4.1.1 and 8.2.

(6) Including repair of personal and household goods. Excluding sales of motor vehicles and motor cycles.

The next step entails making adjustments for the underreporting of registered enterprises. This entails making a detailed analysis of output, wages and salaries, and costs from information obtained from annual financial reports. Data is disaggregated at the most detailed level possible by branch and type of enterprise (i.e. state, former state and registered non-state enterprises). Adjustments are made on the basis of the following analyses and assumptions:

- Whilst it is possible for individual private enterprises to continue operating at a loss for short periods without going bankrupt it is not realistic for entire branch aggregates to show losses. In periods of high interest rates and where there is only limited finance available from banks it is not possible for private enterprises to take out loans to cover losses. The aim of private enterprise is to realise a profit. Therefore, the rationale for making adjustments is that private enterprises have to realise at least minimum net operating surplus. A factor that needs to be considered in this regard is the extent to which banks have continued to provide “soft” loans to allow enterprises to survive.
- Questioning the possibility of costs per employee in private enterprises being significantly higher than those for state and former state enterprises. To some extent differences may be explained by overemployment in state enterprises, etc., especially as gross output per employee may also be higher in private enterprises. However, it is generally unrealistic for the rate of intermediate consumption per employee to be higher for private enterprises. For this reason it is possible to conclude that private enterprises show overestimated intermediate consumption, and underestimated value added and net operating surplus.
- Undertaking comparisons of costs per employee for specific costs such as energy, materials, transport, allowances for business trips, restaurants, and comparing these costs with compensation of employees, etc. Unusually high expenses may be used for paying unregistered employees or part of the wages of registered employees to avoid payment of social contributions.
- Ascertaining whether or not it is realistic for revenues from sales in private trading enterprises to be below the cost of acquiring goods for resale. One reason for such discrepancies could be non-reported cash sales.

An example of the application of such adjustments could be in the situation where certain types of costs in private enterprises are very high in comparison with other types of ownership. The adjustment process may entail decreasing costs and increasing value added by the same amount. One part of the additional value added could be allocated to wages and salaries and the other to net operating surplus.

Another example could be the situation where revenues from sales in private trading enterprises are lower than the value of the goods purchased for resale. In this instance it would be appropriate to increase sales to the level that provides for some minimum positive margin.

Similar adjustments could be made to state enterprises using as a basis carefully audited information from “model” enterprises. This may involve increasing wages and salaries as provision for payments in kind.

The following three tables (Tables 6-8) are examples of the data required for such analyses. The first step involves comparison of the share of intermediate consumption, etc., for each type of ownership. The second step involves comparisons of similar variables expressed in per employee value terms. The third step involves a detailed breakdown of costs per employee in value terms.

Table 6: Production estimates: structure of output - per cent

Branch/Type of Enterprise	Output	Intermed. consumpt.	Value added	Compensat. of employees	Operating surplus	No. of employees
<p>Agriculture, hunting and related service activities (Div 01)</p> <p>State enterprises Former state enterprises Registered non-state ents.</p> <p>Manufacturing (Tab. Cat D)</p> <p>State enterprises Former state enterprises Registered non-state ents.</p> <p>Retail Trade¹ (Div 52)</p> <p>State enterprises. Former state enterprises Registered non-state ents</p> <p>[other branches]</p>						

(1) Including repair of personal and household goods. Excluding sales of motor vehicles and motor cycles.

Table 7: Production estimates: structure of output - value per employee

Branch/Type of enterprise	Output	Intermed. consumpt.	Value added	Compensat. of employees	Operating surplus	No. of employees
<p>Agriculture, hunting and related service activities (Div 01)</p> <p>State enterprises Former state enterprises Registered non-state ents.</p> <p>Manufacturing (Tab. Cat D)</p> <p>State enterprises Former state enterprises Registered non-state ents.</p> <p>Retail Trade¹ (Div 52)</p> <p>State enterprises. Former state enterprises Registered non-state ents</p> <p>[other branches]</p>						

(1) Including repair of personal and household goods. Excluding sales of motor vehicles and motor cycles.

Table 8: Production estimates: structure of output - cost per employee in value terms

Branch/Type of enterprise	materials	transport	allowances for business trips	business lunches, meals	office equipment	etc.
<p>Agriculture, hunting and related service activities (Div 01)</p> <p>State enterprises Former state enterprises Registered non-state ents.</p> <p>Manufacturing (Tab. Cat D)</p> <p>State enterprises Former state enterprises Registered non-state ents.</p> <p>Retail Trade¹ (Div 52)</p> <p>State enterprises. Former state enterprises Registered non-state ents</p> <p>[other branches]</p>						

(1) Including repair of personal and household goods. Excluding sales of motor vehicles and motor cycles.

In addition to the collection of information on unrecorded economic activity, care is also required to ensure that the correct values/prices are applied to the data. Many transition countries do not measure receipts from trading enterprise sales with an appropriate adjustment for inventories. Very often, production is measured directly. Such volumes are generally measured correctly, however inventories are often valued incorrectly as the sum of costs instead of at their selling price.

Another issue relates to how the selling price is actually derived. It should be emphasised that sales should be measured using actual prices paid. These may differ significantly from the list prices applied to sales volumes in some transition countries. For this reason the preferred methodology is actual sales plus adjustments to inventories, rather than the production methodology described in the previous paragraph.

SECTION 6. MEASUREMENT OF INCOME

Conceptually, the measurement of GDP from the income side is identical with the production side in that it summarises the change on value added (gross output minus intermediate consumption). Usually, however, the production side estimates are made from enterprise surveys while income estimates are derived from administrative data, in particular, tax returns. To be an independent estimate of GDP independent sources must be used.

In broad terms the income estimate of GDP entails summing the incomes accruing from domestic production. Such income components can be viewed as the market costs of production (consisting of compensation of employees, provision for the consumption of fixed capital (depreciation), subsidies on production, taxes on production and imports) and gross operating surplus.

The primary means of estimating compensation of employees is to derive accurate estimates of income through the confrontation of different sources of information on employment in an attempt to estimate the number of workers whose activities are largely unrecorded. Hours worked data derived from these sources are converted to a monetary figure either by asking questions about earnings, or perhaps more reliably, by applying average compensation rates to employment estimates. This approach has been pioneered in Italy.

Briefly, the method used in Italy entails calculation of the extent of unrecorded economic activity on the basis of estimates of the total labour input into activities falling within the SNA production boundary. The methodology does not distinguish between the different types of unrecorded economic activity but deals with the problem in its entirety. The various estimates of unrecorded economic activity are used as an expansion factor to adjust per capita values of aggregates such as value added and production.

6.1 Compensation of employees

Compensation of employees comprises wages and salaries and social insurance contributions. SNA requirements are for this information to be compiled on an accrual basis, i.e. measured by the value of the remuneration in cash or in kind which an employee becomes entitled to receive from an employer in respect of work done during the relevant period and not on the basis of when payment is actually made. As discussed in greater detail below, in transition countries the level of unpaid wages and salaries and the incidence of payment in kind are very much higher than those in OECD Member countries.

Data Sources - wages and salaries

Employment data

By far the largest component of compensation to employees is wages and salaries (including payments to non-payroll staff such as casual labourers, etc.). The primary requirement for the compilation of reliable estimates for wages and salaries is detailed and accurate information on employment.

The most common source of information on employment in transition countries has traditionally been surveys of enterprises, organisations and institutions. These collections are generally based on business registers and have the same coverage, non-response, data collection methodology problems experienced by other enterprise collections similar to those described above. As with other enterprise collections these problems are particularly evident for small private enterprises, and especially for domestic trade and services. Apart from these factors there are a number of other issues associated with the use of enterprise-based employment data, these include:

- the high incidence of long-term unpaid administrative leave. There are a number of incentives on both the enterprise side and the employee's side encouraging the use of such leave (and short-time work) in lieu of layoffs. Enterprises avoid paying severance pay to redundant workers and the requirement to give one or two months notice before dismissal. From the employee's perspective continued ties to the enterprise allow access to non-cash benefits such as housing, child care, health services and subsidised goods. Many employees support themselves in the informal economy while maintaining these ties;
- the high incidence of employment in second and third jobs which are largely not reported in enterprise based collections because many of these activities take place in the informal economy.

As a result of the problems with enterprise-based collections on the labour force many transition countries (in particular those in Central and Eastern Europe) have implemented a program of regular (mostly quarterly) household based LFSs using collection methodologies in conformity with international standards. These surveys also obtain data based on International Labour Organisation (ILO) - OECD definitions in respect of the main variables such as total labour force, total employment, unemployed persons, etc. The principal ILO-OECD definitions are provided below:

Total labour force (or currently active population): comprises all persons who fulfil the requirements for inclusion among the employed or the unemployed as defined below.

Total employment: includes persons in civilian employment plus the armed forces and all those employed, i.e. all persons above a specified minimum age who during a specified brief period, either one week or one day were in paid employment or were self-employed.

Those in paid employment include those, who during the reference period, performed some work for wage or salary in cash or in kind, and those with a job but who were temporarily not at work during the reference period and have a formal attachment to their job. This formal job attachment is defined in the light of national circumstances according to one or more of the following criteria:

- the continued receipt of wage or salary;
- an assurance of return to work following the end of the contingency, or an agreement as to the date of return;
- the elapsed duration of absence from the job, which wherever relevant, may be that duration for which workers can receive compensation benefits without obligations to accept other jobs.

Persons temporarily not at work and who should be regarded as in paid employment provided they have a formal attachment to the job include those absent because of illness or injury, holiday or vacation, strike or lockout, educational or training leave, maternity or parental leave, adverse business climate for the enterprise, temporary disorganisation or suspension of work due to such reasons as bad weather, mechanical or electrical breakdown, or shortage of raw materials or fuels, or other temporary absence with or without leave.

Those in self-employment include those at work and again those with an enterprise but not at work during the reference period for any specific reason.

A decision as to whether or not a person on extended leave from an enterprise in a transition country should be regarded as employed obviously depends on the strength of the employee's ties to the enterprise and whether or not there is any likelihood of the person resuming work in the enterprise.

The unemployed: includes all persons above a specified age who during the reference period were without work (i.e. not in paid employment or self employment) and who were currently available for work and who were seeking work.

Those requiring a more detailed explanation of these definitions should refer to the relevant publication listed in the bibliography of this document.

The main types of information required from LFSs to measure unrecorded economic activity include:

- employment status of the population, i.e. employed, unemployed, not in work force;
- number of employed persons by branch. Care must be taken to include casual employment of non-payroll staff (e.g. casual labourers) whose payments must also be included in wages and salaries;
- location of unit (home, no fixed premises, fixed premises);
- nature of persons in workforce, i.e. for wage/payment in kind, self employed in own enterprise or own business (with or without employees), unpaid employment in family business;
- name and address of enterprise (for matching against statistical business register);
- number of employees in own business;

- number of persons with multiple sources of income by type of activity and hours worked;
- number of persons involved in main areas of informal activity for sale or exchange. These will vary from country to country but should include:
 - agricultural production, fishing, hunting, food gathering;
 - construction;
 - buying and selling.
- category of persons not in labour force, i.e. student, pensioner, domestic duties, etc.;
- whether or not the place of employment is registered - derived by matching name and address information of place of employment with statistical business register.

As previously discussed in Section 4.1.2 above the reliability of household labour force data is largely dependent on the:

- representativeness of the sample, especially in respect to coverage of persons involved in unrecorded economic activities;
- validity of responses provided; and
- ability of the survey to identify multiple job holders.

Another source of detailed employment data that needs to be considered is the use of benchmark information from population censuses. This source is particularly useful for providing detailed employment breakdowns by branch and could be used to supplement more frequent household based labour force data which may only be available for more aggregated activities. The fact that many transition countries have not conducted a full-scale population census since the late 1980's would diminish the usefulness of this source given the significant structural changes in employment that have occurred with the onset of the transition process. However, many transition countries plan to conduct their next population census in 1999.

Compensation of employees

In order to impute accurate estimates of wages and salaries in it is also essential to obtain information on average compensation of employee by branch. In the 1993 SNA compensation of employees includes:

- direct wages and salaries;
- remuneration for paid leave;
- regular bonuses and gratuities;
- irregular bonuses;

- payments in kind;
- housing and rent allowance;
- severance and termination pay; and
- employer contributions to pension schemes, life insurance and workers compensation insurance schemes.

A key aspect of the labour market in many transition countries is the low level of average wages in the formal sector of the economy. In some countries, in order to survive, up to 75 per cent of those employed in the formal sector have an additional source of earnings. A high proportion of these people earn more from their informal sector work than from formal sector employment. Very little accurate information about the wage levels of those working in the informal economy finds its way into official statistics on average wages.

In addition to these problems the wages people earn in formal sector jobs also appear to be underreported in many transition countries for taxation purposes.

Another issue is that many enterprises pay part of their wages and salaries in kind and report them as material costs. As a result compensation of employees is underestimated. Also, some employers pay their employees exclusively in cash and do not show such payments in their accounts. In some transition countries interest income is not subject to tax and it is not unknown for banks to open special accounts for their employees and then pay abnormally high interest on them.

For national accounts compilation purposes workers receiving payment in kind are treated as making expenditures equal to the market value of the goods or services received, the costs of the expenditures being met out of the income they receive as remuneration in kind.

For these reasons it is essential to adjust information available from the direct collection of average wage data with information from other sources such as taxation authorities, etc. Use of information even from this source should be used with caution due to the probable understatement of incomes reported to the authorities. As a result it is necessary to further adjust taxation authority data with qualitative information obtained from emerging private accounting firms, informal discussions with a small representative panel of private entrepreneurs, etc., to obtain an indication of the extent of understatement of incomes.

When use is made of such informal sources care must be used to avoid imputation based on inflated incomes data. Whilst the incomes of a small number of private entrepreneurs might be considerably higher than the average, most private entrepreneurs will only be earning the basic survival income, which could be used to supplement incomes from formal sources.

Information gathering

Estimates of clandestine incomes are based on data on the income and expenditure of the population, unpaid wages and pensions and changes in the availability of national and foreign currency.

One problem with matching income and expenditure data arises from the extent of remittances from people living overseas. As a result there is a need to look at population drift abroad.

Also, large parts of the population cover their needs from one-off sources of income such as sales of property and other possessions.

The strategy recommended in this document is to focus resources on the collection of regular (at least annual) employment data from household based labour force surveys (LFS) using methodologies and definitions based on international standards.

With regard to information on compensation of employees OECD Member country practice is to collect the required information directly from payrolls by mail enumeration of enterprises and from taxation authorities. These data are generally adjusted upwards to account for wage and salary earners not included on statistical business registers and understatement of incomes in information supplied to the taxation authorities. The primary source is information based on an independent estimate derived from household-based labour force surveys. In estimating the quarterly earnings of these unrecorded wage and salary earners it is generally assumed they belong to the small business sector.

Small-scale surveys of employment and wage levels in selected enterprises conducted in a number of transition countries inevitably show real incomes to be significantly higher than the official estimates.

Information processing

The recommended process for the imputation of compensation of employees entails reconciliation of employment data from household surveys with data from enterprise based collections and the reconciliation of incomes data from several different sources as shown in the following tables.

The process of reconciling incomes data from several sources could for example entail the use of income information from household budget surveys (collected in a number of transition countries) against the expenditure recorded by households. The purpose of such reconciliation is to identify areas of unrealistic “dissaving” both at the micro and aggregate levels (where expenditure greatly exceeds income) which require adjustment.

Table 9: Income estimates: Imputation of employment

Industry/Type of unit	No. employed LFS data ²	No. employed Enterprise data	No. employed (reconciliation)
<p>Agriculture, hunting and related service activities (Div 01)</p> <p>State enterprises Former state enterprises Registered non-state ents. Informal</p> <p>Manufacturing (Tab. Cat D)</p> <p>State enterprises Former state enterprises Registered non-state ents. Informal</p> <p>Retail Trade¹ (Div 52)</p> <p>State enterprises. Former state enterprises Registered non-state ents Informal</p> <p>[other branches]</p>			

(1) Including repair of personal and household goods. Excluding sales of motor vehicles and motor cycles.

(2) Adjusted by population census data where appropriate - refer discussion on use of population census data in Section 6.1 above.

Table 10: Income estimates: Imputation of wages and salaries

Industry/Type of unit	No. employed (from Table 6)	Average incomes	Average incomes	Average incomes	Average incomes	Estimated wages and salaries
		Enterprise data	Tax authority data	Other sources	Reconciliation	
Agriculture, hunting and related service activities (Div 01) State enterprises Former state enterprises Registered non-state ents. Informal Manufacturing (Tab. Cat D) State enterprises Former state enterprises Registered non-state ents. Informal Retail Trade¹ (Div 52) State enterprises. Former state enterprises Registered non-state ents Informal [other branches]						

(1) Including repair of personal and household goods. Excluding sales of motor vehicles and motor cycles.

6.2 Taxes on production and imports

Taxes on production are those levied by government that enterprises/establishments regard as part of their costs of production. They include taxes assessed on the production, sales, purchase or use of goods and services. These include import duties. However, taxes on production do not include direct taxes levied on the income or wealth of enterprises.

Taxes on production and imports are taxes on products payable on goods and services when they are delivered, sold, transferred or otherwise disposed of by producers. Taxes on production also include taxes on the ownership or use of land, buildings or other assets used in production or on the labour employed, or compensation of employees paid.

Examples of taxes of production which are normally paid by producers include: employers' payroll tax; taxes on financial and capital transactions; excises; value added taxes; taxes on specific services; export duties; motor vehicle taxes (when paid by producers); stamp taxes; recurrent taxes on land, buildings or other structures; taxes on pollution; taxes on international transactions; etc..

Taxes on production are also referred to as unrequited payments as the government provides nothing in return to the individual unit making the payment. Therefore, business and professional licences, registration fees, etc., are only regarded as taxes on production if the government does not provide a service to the unit paying the licence, fee, etc.. If the government issues the licence to exercise some regulatory function (such as checking/monitoring qualifications) then the payment should be regarded as a payment to the government for the purchase of a service and not as a tax on production.

A subset of the examples of taxes on production listed above are taxes on products. A tax on a product is a tax that is payable per unit of some good or service. A tax on a product usually becomes payable when it is produced, sold or imported. A tax on a product may also become payable when it is exported, leased, transferred, delivered, or used for own consumption or own capital formation.

An enterprise may or may not itemise the amount of a tax on a product separately on the invoice or bill which they charge their customers.

Examples of taxes on products are:

- value added type taxes (VAT) - comprise taxes on goods or services collected in stages by enterprises but which are ultimately borne by the final purchasers. VAT is described as a “deductible” tax as producers are not normally required to pay to the government the full amount of the tax they invoice to their customers, being permitted to deduct the amount of tax they have been invoiced on their own purchases of goods and services intended for intermediate consumption or fixed capital formation. VAT is also usually payable on imports of goods and services in addition to any import duties;
- taxes and duties on imports excluding VAT - these include excise, import duties, customs duties, import charges which are intended as a means of raising revenue or discouraging imports in order to protect resident producers;
- export taxes;
- general sales or turnover taxes;
- excise duties on specific types of goods such as alcoholic beverages, tobacco, fuels, etc.;
- taxes on specific services such as transportation, communications, insurance, gambling and lotteries, etc.;
- profits of fiscal monopolies that are transferred to government.

Data Sources

Information on taxes of production are obtained from the various government agencies responsible for their collection. The main issues with respect to the collection of tax data from these agencies responsible include:

- ensuring that the data collected relates to a tax and not a fee for a service provided by the government, e.g. checking the professional competence of an individual, safety of machinery, etc.;
- the existence of large arrears in many transition countries, particularly in the CIS. The SNA requires the recording of tax data on a full accrual basis, that is, when the activities, transactions or other events occur which create the liabilities to pay taxes. However, in many transition countries the amounts of taxes actually paid often diverges significantly from the amounts due to be paid to the extent that not all tax liabilities can be regarded as constituting financial liabilities as intended in the SNA. Therefore a decision is required on the extent of such unpaid taxes that should be ignored for the purposes of national account compilation.

It is generally assumed that this issue is more of a problem for taxes on income than on taxes on products, though in some transition countries this may not be the case. If it is thought that amounts corresponding to taxes are paid by customers then the values of sales or output or GDP at market prices are correct. If some of this “tax” is subsequently withheld by companies and not passed to government this should not be shown as a tax but as a part of operating surplus.

In addition to these issues is the fact that tax data obtained from government agencies is generally not classified by kind of activity required for national account compilation purposes. The allocation of the various taxes to the required categories (i.e. to the various tax payers) is generally undertaken through imputation and the application of a number of assumptions based on each type of tax data obtained. Some of these include the allocation of:

- general sales taxes (excluding VAT) to the activities from which they are collected in proportion to their sales. Often such taxes are only levied on retailers;
- property taxes (not falling into the category of income taxes) to owners of dwellings, owners of non-residential buildings classed in other branches and to owners of land by means of data on average tax rates and the taxable value of the various types of real estate;
- entertainment taxes in proportion to the gross output of the various types of entertainment services and the average tax rates;
- taxes of wages and salaries among kinds of activity on the basis of the wage and salary bill of each type of activity and the average tax rates;
- fees for driving licences and other similar fees for unincorporated enterprises. The allocation of the proportion of these fees between households and producers is often arbitrary as the nature of the fee does not provide any indication of the required split.

The means used for making such allocations include subjective information from tax authorities or discussions with a small judgmental sample of unincorporated enterprises.

There is also the need to ensure that the fee is in fact a tax on production and not a payment for a service provided by the government (refer above).

6.3 Subsidies on production

Subsidies on production are grants which state and private enterprises receive from government and which represent additions to the receipts of producers of goods and services over and above what they receive from the sales of their output. Such receipts are not part of the market value of output, however they can be used to offset part of the costs of producing that output. Subsidies are often deducted from taxes on production paid to yield “net” indirect taxes paid.

Subsidies also include payments by government to underwrite the losses of an enterprise. Such payments may not be directly linked to the prices charged by the enterprises receiving the subsidy but are given to keep the enterprises functional for reasons of social and other policies.

In the SNA subsidies are not payable to final consumers. Subsidies also do not include grants made by governments to enterprises to finance their capital formation. These should be treated as capital transfers.

Data sources

Subsidies should be recorded at the time they are due to be paid. Data on subsidies may be obtained from either government accounts or from information provided by enterprises. Because subsidies are generally paid for a specific purpose data from government sources are generally sufficiently detailed to permit allocation among the required activity groups.

The main issues with respect to the allocation of subsidies to the various activity groups arises from the fact that they may:

- only be paid on specific uses of a particular good, for example, only exports and not domestic use;
- not be readily identified in government accounts as subsidies. Examples include: payments to enterprises for employing the long-term unemployed or physically handicapped persons, subsidies to reduce pollution through payments to compensate for additional processing or the elimination of pollutant discharges.

6.4 Gross operating surplus

The gross operating surplus of individual enterprises is defined as output less intermediate consumption on production, less subsidies on production and compensation of employees. By definition, only market enterprises can have operating surplus. By convention, the gross operating surplus of non-market producers is zero since the value of output is estimated as the sum of costs incurred.

Data sources

Gross operating surplus is normally derived for each activity group and for the economy as a whole by the process of compiling national accounts. An example of the types of data analyses and manipulation of aggregates of gross operating surplus is provided in Section 5.6 above in the discussion of information processing for GDP estimates of production.

Some countries also prepare independent estimates of gross operating surplus based on profits data reported to taxation authorities. Due to the massive extent of tax avoidance that exists in many transition countries such sources should be used with extreme caution and only as a starting point for analysis and reconciliation with other estimates of gross operating surplus.

SECTION 7. MEASUREMENT OF EXPENDITURE

This measure of GDP entails summing all final expenditures (i.e. ignoring all expenditure on intermediate consumption) on goods and services and adding the contribution of exports less imports. Final expenditures includes household final consumption expenditure, NPISH final consumption expenditure, government final consumption expenditure, gross fixed capital formation and net changes in inventories.

7.1 Supply and demand tables

An essential process for the compilation of reliable estimates of expenditure that are consistent between the various components of expenditure (described below in Sections 7.2 to 7.6) is the preparation of a set of supply and demand tables. The basic premise underlying the compilation of such tables is very simple. It involves taking commodity output as measured from the production accounts, adding imports and deducting exports to obtain domestic supply and allocating domestic supply between intermediate consumption, various categories of final consumption and capital formation.

Whereas the production approach for estimating GDP described in Section 5 above provides estimates of the gross output, intermediate consumption and value added classified by various ISIC branches on the basis of predominant activity, the compilation of supply and demand tables requires the output of establishments and enterprises to be broken down by particular kinds of goods and services irrespective of the predominant activity of the enterprise.

While it is fairly straightforward to convert production (output) from an industrial to a product classification, it is not so simple to convert intermediate consumption. In production accounts, intermediate consumption shows the amount of all types of goods and services used by each branch (based on the United Nations Central Product Classification (CPC)). For a supply and demand table what is needed is the total of the products of branch "X" used by all branches as intermediate consumption. This conversion can be done using an input-output table, with adjustments as necessary to make it reflect as far as possible the most recent conditions.

If the components for each branch balance then the total for the whole economy must balance. By adding all balanced branches it is possible to derive totals for each of the components that can be compared with aggregates previously calculated.

The preparation of supply and demand tables can be undertaken at various levels of disaggregation. They may range in level of detail from only a dozen or more key commodity items to tables comprising 200 to 300 of the over 1 800 individual commodity items listed in the CPC. Even though there may be gaps in the data currently available, the compilation of even the most

elementary tables is something all transition countries can undertake immediately. Such tables are an indispensable means of identifying data deficiencies and priorities for improving data sources. These could, for example, involve overcoming a number of operational problems including the development of a series of inter-related economic classifications that would enable tracing the entire movement of goods and services from their production and imports to consumption, investment and exports.

Information provided in supply and demand tables can also be used to provide a more systematic and objective means of identifying areas where adjustments are required to overcome discrepancies between production, expenditure and income estimates of GDP.

It should again be emphasised that use of supply and demand tables is not dependent on the availability of commodity information for a large number of items. What is required is a commodity breakdown that is comprehensive but only small in number. An initial strategy could, for example, focus on the reconciliation of a small number of key detailed individual commodities particularly important to the transition country compiling the table. Such key commodities could include electricity, basic iron and steel, meat and meat products, etc.. The remaining items would be reconciled at a more aggregated level of detail.

The level of detail required for the column headings may also vary for individual countries, depending on the significance of the activity of some of the institutional sectors and information available. For example, on the demand side (Table 12), the relatively small amount of activity of non-profit institutions serving households (NPISH) in some countries may not result in serious imbalances in supply and demand reconciliation sides if excluded. Also, on the demand side, there are some commodities (e.g. food products, services) where one would not expect large figures for investment. Finally, few countries would readily have separate commodity information on changes in inventories as a component of output.

The important point from the above discussion is that countries compiling supply and demand tables need to be flexible with regard to the amount of detail inserted in both the commodity and column headings of the tables they prepare. An initial imbalance in the supply and demand for a particular commodity might require further information (for example, on changes in inventories, or on activities of NPISHs) to reconcile both sides of the supply and demand equation.

Steps for compilation of supply and demand tables

- The first step entails obtaining output data for industry sub-divisions. It is not sufficient to work with manufacturing industry as a single branch, as industry overall accounts for so much of total output.
- The next step requires the use of detailed figures for imports and exports as recorded primarily from customs data supplemented as required for some commodities from importing and exporting enterprises. The main commodities are allocated to the corresponding branch headings. In many transition countries this may not be difficult as a large proportion of total imports/exports (in value terms) are restricted to a relatively small number of commodities. The columns for imports and exports must also include services and the adjustment items that change from trade figures, however recorded, to a balance of payments basis.

- After the main imports and exports relating to services have been allocated to the appropriate branch, for example, transport and communication, a number of additional lines are added to show further adjustments. These include supplies to ships and non-monetary gold. An important addition discussed in Section 7.6 below are adjustments for the inclusion of informal trade (e.g. by shuttle traders or small private companies) normally excluded from official foreign trade statistics. In this area it is important that the same (correct) estimates are included in both balance of payments and national accounts.
- Commodity data is also required for taxes on products minus subsidies on products, and on trade and transport margins.
- Once compiled, data for domestic supply need to be allocated between intermediate consumption, final consumption or investment. For some items it is clear where the allocation needs to be made. For example, oil extraction is clearly all intermediate consumption. Health and education are clearly all final consumption. Most of the output of the construction industry can be assumed to be capital formation, though consideration needs to be given to the extent of current repair work undertaken by the construction industry.
- For those branches where output could be used both for intermediate and final consumption crude proportions need to be used to allocate total output. Instead of using a proportionate split of domestic supply, it is preferable to obtain intermediate consumption using the last available input-output matrix (which as been adjusted to match current conditions as far as possible) applied to domestic supply to generate intermediate consumption..
- The next step entails the balancing and reconciliation of the different sources of information. This process is described in the following sections under each of the major components of expenditure.

Examples of supply and demand tables are provided below in Tables 11 and 12. The left hand column of each table lists the Section headings for the CPC (including the draft CPC for services (Sections 5-9)). The finest level in the classification (the five digit subclass level) comprises over 1 800 individual commodity items. For example, subclass 22110 lists processed liquid milk whilst subclass 23911 lists coffee, decaffeinated or roasted.

Table 11: Expenditure estimates: Supply side

Commodity Item (CPC Section Headings)	Production / Output	Exports	Imports	Taxes minus subsidies	Trade and transport margins	Total supply
	(1)	(2)	(3)	(4)	(5)	(6)
Agriculture, forestry and fishery products						
Ores and minerals; Electricity, gas and water						
Food products, beverages and tobacco; Textiles, apparel and leather products						
Other transportable goods, except metal products, machinery and equipment						
Metal products, machinery and equipment						
Intangible assets; land; constructions; construction services						
Distributive trade services; lodging; food and beverage serving services; transport services; and utilities distribution services						
Financial and related services; real estate services; and rental and leasing services						
Business and production services						
Community, social and personal services						

(1) Including household production

(4) Taxes on products minus subsidies on products

(5) Trade margins are defined as the difference between the actual or imputed price realised on a good purchased for resale and the price that would have been paid by the distributor to replace the good at the time it is sold or otherwise disposed of.

(6) Total supply: Items 1+3-2+4+5

Table 12: Expenditure estimates: Demand side

Commodity Item (CPC Section Headings)	Household final consumption expenditure	General government final consumption expenditure	NPISH final consumption expenditure	Intermediat e consumption	Gross fixed capital formation	Total demand
	(7)	(8)	(9)	(10)	(11)	(12)
Agriculture, forestry and fishery products						
Ores and minerals; Electricity, gas and water						
Food products, beverages and tobacco; Textiles, apparel and leather products						
Other transportable goods, except metal products, machinery and equipment						
Metal products, machinery and equipment						
Intangible assets; land; constructions; construction services						
Distributive trade services; lodging; food and beverage serving services; transport services; and utilities distribution services						
Financial and related services; real estate services; and rental and leasing services						
Business and production services						
Community, social and personal services						

(12) Total demand: Items 7+8+9+10+11

Data sources

As mentioned in Section 5.5 above, the collection of detailed commodity data can pose a considerable reporting burden for respondents, and the collection of such data from enterprises should be undertaken in the context of an overall data collection strategy. Initial consideration should be given to the immediate collection of information for a small number of key commodity items. The number of items could then be expanded as further priority data items are identified.

The collection practices of OECD Member countries in this area vary considerably, though some countries collect the required level of information from a small subsample of enterprises in annual surveys. This involves the despatch of a supplementary questionnaire to only a few hundred enterprises to collect detailed output and expense breakdowns. The information derived from these

subsamples may be used to derive ratios that may be applied to data collected from enterprises in the main part of the annual, etc., survey.

Consideration could also be given to the use of a number of different form types covering narrow ranges of activities within each branch to collect the required commodity output. Such a strategy would considerably reduce the size of the questionnaire that would result if all (say industry) output commodity items were collected using the one form type.

Data processing

The balancing of information from the two main sources of information listed above is undertaken at the most detailed commodity level for which information is available. Much of the detailed commodity data required (in particular for agricultural products and the output of industry) is readily available in transition countries. Several different estimates are usually made for each group of commodities based on different sources of data available on output and consumption. The process of estimation, balancing and reconciliation is undertaken within a series of tables.

Through the process of comparison of the different sources of information, an expert estimate is made about the consumption of certain goods in quantity terms which is then valued at average selling prices. For example, corrections are often required for items such as beverages and tobacco which are frequently under-reported in household surveys as well as those items where other data sources such as retail survey, input-output data, administrative data, etc., prove to be more reliable than the HBS. Such analyses will result in the correction of an unrealistic estimate of output, especially for the output of those goods where the private sector predominates.

Prior to undertaking such analysis care must be taken that data from the demand and supply side of the equation are valued in comparable terms. For example, as mentioned above commodity data derived from household budget surveys (demand side) are recorded at market prices, that is, the purchaser's prices paid by households which includes taxes on the products and services payable at the time of purchase. It also includes delivery charges incurred by the purchaser not already included in the seller's invoice price. On the other hand, commodity data derived from producers, etc. (supply side) may be valued at basic or producers' prices.

Basic prices are the prices received by a producer excluding any tax payable or subsidy receivable. It also excludes any delivery charges invoiced separately by the producer. Producers' prices are the prices received by a producer including any tax payable or subsidy receivable except invoiced value added tax (VAT). Producers' prices also exclude any delivery charges invoiced separately to the consumer by the producer.

Cross checking of aggregated adjusted proportions of purchases recorded in column 8 in the above table against the most recent corresponding aggregates of weights used in the compilation of the consumer price index should also be undertaken as a means of verifying the relative consistency of the result of the supply and demand analysis.

The value of purchases of transport and communication services, dry cleaning services, laundry, etc., may be estimated using data from reports on revenue and expenditures of enterprises providing the services. Significant amounts of such services, especially where supplied by small private businesses, would be excluded from existing enterprise collections. It is therefore essential for this data to be verified and where necessary supplemented with information on household expenditure data derived from household budget surveys.

The value of the following purchases are deducted from the total value of purchased goods and services:

- purchases of goods used by households for major repairs or other production (building materials, instruments, small tools, fodder and seeds, etc.). Special attention is paid to the analysis of the purchases of goods intended for long-term use by households, such as cars, typing machines or computers which may be either final consumption expenditure or fixed capital expenditure for a private unincorporated enterprise operated by the households. Proprietors of unincorporated enterprises often deliberately confuse their business and household expenditures as a means of tax evasion. The expert opinion of tax authorities may be used as a basis for making the appropriate adjustments.

In allocating these expenditures between final consumption, intermediate consumption and fixed capital formation (in the case of durables) of households, consideration needs to be given to the social status and kind of employment of households recorded in the household budget survey sample. Information from the official register of vehicles may be used as an indicator of the purpose for which cars have been purchased, though this source will inevitably understate the number of vehicles used for business purposes;

- purchases of goods by schools, hospitals, etc. Estimates of the value of foodstuffs, medicines, equipment, small instruments, textbooks and stationary, etc., are made using information from the reports of the budget institutions on their expenditures.

7.2 Household final consumption expenditure

Household final consumption expenditure consists of expenditure incurred by households on the consumption of goods and services. Household consumption expenditure includes the following:

- purchases of goods and associated services from trade outlets including purchases at markets and in restaurants, cafes and worker's canteens;
- purchases of electricity and water for domestic purposes;
- purchases of services, e.g. transport and communication services, personal services (dry cleaning, laundry services), etc.;
- goods produced by households for own consumption including unincorporated activities of households;
- purchases or barter from other households;
- compensation of employees representing income in kind;
- imputed rent of owner-occupied dwellings.

Prior to the commencement of the transition process it was assumed that retail outlets (particularly state retail outlets) accounted for the overwhelmingly predominant proportion of goods and services available to households, and that households only purchased their requirements from retail outlets. However, with the commencement of transition both assumptions are wrong. It is no

longer possible to estimate household purchases directly from estimates of sales by retailers. In lieu of this it has become (even more) necessary to adopt indirect methods of imputation using data from a number of sources. The primary process is the preparation of supply and demand tables described above.

Data sources

Estimates from the production account can show a breakdown of supply at either basic or producers' prices. For inclusion in a supply and demand table these must be converted to market prices. Items valued at basic prices need to have taxes on products added to bring them to producer prices. Then trade and transport margins need to be added to bring them to market prices. Estimates of output of wholesale and retail trade gives an estimate of total margins. This has to be allocated to the different types of goods. For this, estimates need to be made based on average mark-ups for different types of goods from retail and wholesale survey data. This process of adjustment is described in further detail below under the heading "data processing".

In addition to this, other sources of information for the compilation of household final consumption expenditure comprises:

- commodity production statistics;
- reports prepared by electricity and water supply authorities showing estimates of purchases by households. Some adjustments may be necessary to deduct purchases related to the production activities of households depending on expert assessment as to its extent and significance;
- information on the purchases of households from household budget surveys. The information required from HBSs for the measurement of expenditure includes:
 - information on individual land plots (including number of plots, location, size, whether used for agricultural produce for sale) to estimate total agricultural production;
 - quantities of own produce sold (in lieu of income) - to deduct from total production to estimate own consumption;
 - detailed breakdown of expenditure on goods and services;
 - location of expenditure (e.g. state store, commercial store, private individuals, market) - for use in matching margins;
 - food and other items obtained free of charge;

In addition to the above information which is used to estimate expenditure the HBS is also used to collect other information used for estimating unrecorded economic activity for the other measures of GDP. This information additional includes:

- car ownership;

nature of persons in workforce, i.e. for wages/payment in kind, self employed in own enterprise or own business (with or without employees), unpaid employment in family business.

- information on output, imports and exports of certain goods and their intermediate consumption in both quantity and value terms;
- information from the reports of budget institutions on their expenditures.

The experience of most transition countries is that, in particular, data on expenditure on market services derived from the above sources (e.g. transport and personal services) tends to be significantly understated due to problems of coverage and underreporting. The value of purchases of such services derived from enterprise data needs to be cross-checked and very probably augmented with data derived from household budget surveys.

Data processing

Household final consumption expenditure is the largest category of demand and the procedure of estimating it as a residual item (i.e. from government final consumption expenditure, gross capital formation and exports) must be avoided, primarily because the residual reflects all the errors in all the estimates from which it is derived. For this reason the use of supply and demand tables is essential. Such tables can take advantage of information available from any of the sources listed above.

Own Consumption

Household final consumption expenditure includes the imputed values of goods and services produced as outputs of unincorporated enterprises owned by households that are retained for consumption by members of the household. Note that goods and services produced by households and used by them as intermediate consumption are excluded.

As mentioned in Section 2.2 above in the discussion of the SNA production boundary, with the exception of housing services produced by owner-occupiers and services produced by employing paid domestic staff, the production of services for own consumption by members of the household is excluded from the SNA. As the costs of producing goods or services for own consumption are borne by the households themselves, expenditures are also incurred by households even though their values must be imputed.

The main types of goods and services produced and consumed within the same household are:

- food or other agricultural goods produced for own final consumption by farmers or other persons for whom agricultural production is only a secondary activity. The main data sources for the imputation of this expenditure are household budget surveys, agricultural production surveys and details of payments in kind compiled from reports completed by agricultural enterprises. All of these sources are supplemented by expert estimates where appropriate to adjust for underreporting, etc..

An assessment should also be made of the possible significance of the production of non-agricultural products for own consumption such as clothing, items of furniture, etc.;

- other kinds of goods produced by unincorporated enterprises owned by households that are consumed by members of the same household;
- housing services produced for own final consumption by owner-occupiers;
- domestic or other services produced for own final consumption by households that employ paid staff for this purpose.

Finally, as mentioned in Section 6.1 above, for national accounts compilation purposes workers receiving payment in kind are treated as making expenditures equal to the imputed market value of the goods or services received, the costs of the expenditures being met out of the income they receive as remuneration in kind. When goods and services are obtained this way the imputed values must be recorded as household final consumption expenditure.

7.3 Government final consumption expenditure

Government final consumption expenditure consists of expenditure incurred by general government on the consumption of goods and services. Services provided by the government are divided into two broad types, individual and collective.

- Individual services are those that benefit individual households and comprise health care, social welfare, education, sport, culture and art.
- Collective goods and services benefit the community as a whole and include security and defence, maintenance of law and order, legislation and the general administration undertaken by government departments. Collective services also include part of scientific services, representing research and development funded by the government.

Data sources

As in the case of OECD Member countries, information on general government final consumption expenditure in transition countries are generally obtained from reports of Ministries of Finance on the state budget and other government accounts. In most transition countries information on detailed expenditure by purpose category (education, health, defence, etc.) and type of current expenditure (intermediate consumption, wages and salaries, consumption of fixed capital) are available.

Such sources are generally deemed to be sufficiently comprehensive for the needs of transition countries in the sense that they cover all levels of government, i.e. central, regional and local (municipal). There are however a number issues that need to be evaluated before information obtained from ministries of finance, etc., can be used for national account compilation purposes in transition countries. These comprise:

- the need to ensure that concepts and classifications meet 1993 SNA requirements;
- the fact that data are usually available on a cash rather than the accruals basis required for national accounts compilation purposes;
- the problem of extra-budgetary funds;

- problems caused by insufficient breakdown of budget information, particularly at the regional and local government levels. For example, totals for individual projects or departments may be a mix of compensation of employees and outlays on goods and services;
- ambiguity about boundaries of the sector (state enterprises, special funds), and of local, regional and central government. Boundary issues associated with the various levels of government can result in double counting of expenditures;
- problems associated with the treatment of defence expenditure. In the SNA some defence expenditures (in particular, the acquisition of weapons and equipment that can only be used to deliver and support such weapons) are classified to government final consumption expenditure. However, many of the structures and other assets used by the military (e.g. airfields, docks, hospitals) are regarded as fixed assets. The major problem in transition (and often in OECD Member countries as well) is obtaining sufficient information to separate the different types of expenditures.

Data processing

To compile data on intermediate consumption by type of good or service it may be necessary to examine the payment vouchers of each administrative unit authorised to make outlays. Such examination may also be used to provide a basis for splitting composite items. To minimise the effort associated with such work consideration should be given to:

- examination of only a sample of such vouchers;
- obtaining expert opinion of the appropriate government authority;
- restricting examination to only large items.

The selection of the appropriate methodology is of course dependent on the form in which information is available. These range from detailed computer listings comprising items classified on the basis of codes suitable for national account compilation purposes, to fully manual systems where examination of individual payment vouchers is the only practical methodology available.

If firm data are not available reasonable “guestimates” may be made using common sense (e.g. on the purchase of medicines by hospitals) and information from other areas of government activity whose expenditure patterns may be similar.

7.4 Gross fixed capital formation

Gross fixed capital formation (GFCF) is measured by the value of expenditure on tangible and intangible fixed assets. It shows the acquisition by resident units of goods and services produced in the current period that will be used in production and thus generate new income in subsequent periods.

Gross fixed capital formation is equivalent to the acquisition less disposals of new and existing fixed assets plus the improvement and cost of ownership transfer associated with fixed assets and all non-produced assets.

Gross capital formation (GFC) is the sum of GFCF plus changes in inventories and acquisitions less disposals of valuables. GFC shows the net acquisition by resident units of goods and services produced in the current period but not consumed in it. Inventories and valuables are excluded from GFCF because they are not themselves used in production.

Tangible fixed assets include:

- dwellings and other structures such as factories;
- civil engineering works;
- machinery and vehicles intended to be used repeatedly or continuously in a production process for more than a year;
- expenditure on fruit-bearing plants, vines, that are cultivated year after year;
- expenditure on and production of breeding and dairy livestock that continue to be used in production year after year.

Intangible fixed assets include:

- computer software and databases;
- mineral exploration;
- entertainment, literary or artistic originals.

For an individual enterprise, savings may be used to acquire either new or second-hand assets. On the other hand, for the resident enterprise disposing of the second hand assets to another resident enterprise the funds realised off-set new capital formation and are thus recorded by the seller as negative GFCF. For the economy as a whole therefore acquisitions and disposals of second-hand assets offset one another (except for the costs of ownership transfer) and total GFCF is a measure of new capital formation.

This situation is more complicated when an existing movable fixed asset such as a ship, aircraft or machinery is sold (exported) by a resident producer to a non-resident. There is therefore no positive GFCF recorded elsewhere in the economy to offset the seller's negative GFCF. The opposite problem occurs when resident producers purchase (import) movable fixed assets from a non-resident. In this situation the imported fixed asset is recorded as a new fixed asset as it is new to the economy importing the asset.

GFCF includes expenditure made on own-account construction of dwellings and major repairs by households. GFCF excludes the acquisition of military hardware which is included in the intermediate consumption of general government.

In summary, the compilation of GFCF requires data on the:

- acquisition of new fixed assets and improvements to new and existing fixed assets (plus cost of ownership transfer);

- acquisition of existing fixed assets including the costs of ownership transfer on these existing fixed assets;
- disposals of existing fixed assets excluding costs of ownership transfer on these existing fixed assets;
- major improvements to non-produced assets (e.g. land, certain uncultivated forests, mineral deposits, patented entities) including cost of ownership transfer on these improvements;
- cost of transfer of ownership of non-produced assets not associated with any improvement.

Data sources

The main sources of information used for the compilation of GFCF are:

- annual reports on the expenses of enterprises, ministries and local governments which provide information on the acquisition of both tangible and intangible assets;
- information on construction permits issued to households, or information on dwellings completed.

The issues with regard to unrecorded GFCF are similar to those described above in respect to production. The general undercoverage of the private sector enterprises also results in the non-availability of the required information for GFCF, i.e. data for construction, and investment in machinery and equipment (especially modern office equipment) of emerging private enterprises, and fixed capital accumulation by farmers in private agriculture. At the moment in most transition countries this is likely to be relatively small for the smaller enterprises, but it is likely to grow.

There is also considerable understatement of private construction work undertaken in many transition countries. An example of this is the understatement of summer house (or dacha) construction in CIS countries. As a result, significant adjustments to information obtained from enterprise reports may be necessary. The basis of such adjustments could be data obtained from local authorities or information from electricity supply authorities on records of new electricity connections in regions adjacent to large urban areas.

Another issue with respect to government GFCF is whether or not GFCF funded by government for state enterprises that are funded by extrabudgetary sources are adequately reported in information provided by government. Apart from obtaining adequate information about these sources the main issue is that capital formation is often not clearly distinguished in government accounts.

Data processing

For the compilation of commodity composition estimates of GFCF used in supply and demand tables, priority should be given to identifying those areas where GFCF is significant. Using the very broad commodity item classification applied in Tables 11 and 12 above these areas are estimates are normally required are hatched (XXXXXX) in the following table. The purpose of this table is purely illustrative of the type of analysis required and could vary from country to country

depending on the economic climate. Furthermore, undertaking such an analysis is considerably easier when commodity data are available for small numbers of significant individual commodities.

Table 13: Commodity composition of gross fixed capital formation

Commodity Item (CPC Section Headings)	Possible areas of significant GFCF
Agriculture, forestry and fishery products	XXXXXX
Ores and minerals; Electricity, gas and water	
Food products, beverages and tobacco; Textiles, apparel and leather products	
Other transportable goods, except metal products, machinery and equipment	
Metal products, machinery and equipment	XXXXXX
Intangible assets; land; constructions; construction services	XXXXXX
Distributive trade services; lodging; food and beverage serving services; transport services; and utilities distribution services	
Financial and related services; real estate services; and rental and leasing services	
Business and production services	
Community, social and personal services	

7.5 Changes in inventories

Inventories need to be recorded because not all production processes are completed at the end of an accounting period and because the outputs from production do not reach their final destination immediately after the production process is complete.

Changes in inventories include:

- raw materials and other materials;
- work-in-progress;
- goods for resale;
- finished goods (i.e. goods held by the original producer).

Finished goods and work-in-progress are held only by producers of the goods in question, whereas raw materials and goods for resale can be held by any enterprise engaging in trade as a primary or secondary activity.

Data sources

It should be emphasised that the data required for estimating changes in inventories relates to the inventories of those products and not the inventories handled by specific branches.

The main sources of information used are annual book-keeping reports of large enterprises. For some transition countries only large firms maintaining double entry book-keeping records report inventories. As a result there is very little information on changes in inventories for small enterprises and firms, however these are thought to be small in most transition countries and are generally ignored. Data are generally available for the three groups of inventories in value terms though generally not by type of good.

An important issue with regards to estimating changes in inventories is the estimation and elimination of holding gains arising from the high rates of inflation experienced in many transition countries.

Data processing

As mentioned above, changes in inventories are not entirely covered by statistical reports. The inventories of small enterprises, especially unincorporated enterprises, are often not recorded. In some countries tax declarations of corporations include information on closing stocks of inventories.

As with the compilation of commodity composition estimates for GFCF (shown above in Table 13) a similar analysis may be applied to identifying commodities where inventories would be expected to be significant. The results of such an analysis are shown in the following table. Again, the purpose of this table is purely illustrative and could vary from country to country depending on the particular branch and economic climate.

Table 14: Commodity composition of changes in inventories

Commodity Item (CPC Section Headings)	Possible areas of significant changes in inventories
Agriculture, forestry and fishery products	XXXXXX
Ores and minerals; Electricity, gas and water	XXXXXX
Food products, beverages and tobacco; Textiles, apparel and leather products	XXXXXX
Other transportable goods, except metal products, machinery and equipment	
Metal products, machinery and equipment	XXXXXX
Intangible assets; land; constructions; construction services	
Distributive trade services; lodging; food and beverage serving services; transport services; and utilities distribution services	
Financial and related services; real estate services; and rental and leasing services	
Business and production services	
Community, social and personal services	

7.6 Exports and Imports

Data sources

Prior to the commencement of the transition process the major data sources of data on exports and imports of goods were the reports of enterprises specialising in foreign trade. Both exporters and importers were surveyed. With foreign trade being extended to all enterprises and persons this source became increasingly less viable in terms of the coverage of total foreign trade. As a result, most transition countries now rely on information derived from customs declarations which cover most trade in goods irrespective of the type of ownership of the enterprise.

The development of customs unions between transition countries (e.g. between the Russian Federation and Belarus, and between the Russian Federation, Kazakstan and the Kyrgyz Republic) has also created problems of measuring the volume of trade between member countries, as the usefulness of customs declaration data is diminished considerably. As a result there is again a need to obtain information directly from key enterprises engaged in trade with partner countries.

Customs data generally covers:

- imports of goods for domestic consumption;
- exports to the rest of the world;
- imports and exports for goods for processing. The value of exports and imports after processing includes also the value of the work done;
- re-exports.

Because of difficulties a number of transition countries have experienced in establishing reliable customs data information for these items it is generally not possible to use this source uncritically for national accounts compilation purposes. In particular, customs data in most transition countries (and in many non-transition countries) commonly exclude:

- shuttle trade;
- parcel post;
- gifts to and from individuals abroad except by parcel post;
- special trade (including exports and imports of military equipment);
- foreign aid;
- supply of fuel, food, water and other products to national ships and aircraft abroad, and to foreign vessels in the country;
- value of fishery products sold by resident units operating in international waters to non-residents;

- direct purchases of goods by embassies and international organisations;
- non-monetary gold;
- barter goods;
- goods on consignment when change of ownership occurs.
- exports/imports of oil and natural gas, especially by pipeline;
- very large items such as ships and aircraft;
- very small but high value items such as gems.

It should also be emphasised that an important element of imports and exports is trade in services, for which balance of payments data is the main source.

Data processing

A number of transition countries, in particular the Russian Federation, adjust their import data to include estimates of shuttle trade at the national level. The methodology generally applied involves use of information from border security services/agencies of the number of foreigners visiting the country (for both business and tourism purposes) and the number of nationals travelling abroad for the same purposes. This information enables estimates to be compiled for key countries which are favoured destinations for shopping tours (e.g. Gulf States, China, India, Pakistan, Turkey) and from where goods are brought back by national and foreign shuttle traders.

Conservative global estimates of the extent of such trade (but not by commodity type, etc.) are then derived by multiplying the number of persons crossing the border by the maximum value of the duty free allowance permitted for each person. Such an estimate only provides a benchmark of the value of goods imported by private persons and may need to be modified on expert advice if the level of actual imports are thought to significantly exceed the maximum duty free allowance. However, such benchmark data is a useful starting point for estimates of the commodity composition of such trade for inclusion in supply and demand tables. Such estimates would be based on anecdotal information and information on the types of goods imported from different countries.

A framework for undertaking such estimates for shuttle trade imports is provided in the following table. In the left hand column are the same commodity items listed in previous tables. The columns to the right would list the countries where most shuttle trade imports originate. All column headings would vary depending on the situation in each particular country. The benchmark estimate of total shuttle trade imports for a particular year would appear in the bottom right hand table cell. Using anecdotal information many of the commodity headings would have little or no shuttle trade imports from the specific countries listed. Such a process of elimination would continue until the only commodity items remaining would be those which make up the bulk of shuttle imports.

Table 15: Commodity composition of unrecorded imports

Commodity Item (CPC Section Headings)	Imports from Turkey	Imports from China	Imports from Gulf States	Imports from other countries	Total commodity imports
Agriculture, forestry and fishery products					
Ores and minerals; Electricity, gas and water					
Food products, beverages and tobacco; Textiles, apparel and leather products					
Other transportable goods, except metal products, machinery and equipment					
Metal products, machinery and equipment					
Intangible assets; land; constructions; construction services					
Distributive trade services; lodging; food and beverage serving services; transport services; and utilities distribution services					
Financial and related services; real estate services; and rental and leasing services					
Business and production services					
Community, social and personal services					
Total commodity imports					(1)

1. Total benchmark estimates of shuttle trade

SECTION 8. USE OF ALTERNATIVE DATA SOURCES

After the completion of the evaluation processes outlined in Section 4 above it may be necessary to fill-in gaps in the data required for the compilation of production, income and expenditure GDP estimates. These gaps will vary from country to country and may require special small-scale ad-hoc collections to obtain information in relation to specific areas of need which cannot be met from on-going statistical collections. Alternatively, imputation techniques could be used.

This Section outlines a number of ad hoc surveys and imputation techniques currently used by transition and OECD Member countries for the measurement of unrecorded economic activity.

8.1 Small-scale ad hoc collections

The primary purpose of ad-hoc collections is to obtain key benchmark information on the extent of unrecorded activity in key areas. In many instances ad-hoc collections would need to be conducted only at irregular intervals and could be rotated on a yearly basis.

The strategy recommended in this document is for statistical agencies to focus on a limited number of such alternative sources to enable sufficient resources to be allocated to ensure that the information produced by such sources are sufficient in respect of quality, coverage, etc., to provide information on unrecorded economic activity.

Examples of small scale ad hoc surveys include:

- A Hungarian quarterly survey introduced in 1994 to obtain information on inventories. Some countries restrict the coverage of such surveys to enterprises with more than 50 employees. Such surveys identify different types of stocks and also provide information on the valuation method for inventories used by enterprises which facilitates the establishment of a methodology for the adjustment of holding gains or losses.
- Collection of detailed information on the structure of intermediate consumption from a small number large and small enterprises by personal interview.
- Collection of information on payments in kind through ad hoc labour costs surveys.
- Due to the fact that current HBSs in most transition countries under-represent high income households and over-represent low income households some countries adjust HBS income distribution data. In Hungary the data required to make the adjustment is collected by means of a special household income survey conducted every fifth year. The last survey referred to 1987 and covered 95 per cent of household income in the national accounts. These data were updated year by year until 1992 using microsimulation techniques. Since then, the 1992 distribution is simply extrapolated by

income decile using the same total annual nominal household income growth. The original HBS data were reweighted using the decile income distribution of the simulated dataset.

As a result of this procedure the overall level of consumption expenditure increased by almost 50 per cent. A great dispersion was observed among the different commodity groups of consumption. Items with low income-elasticity such as food increased only by 12 per cent whilst items with high income elasticity such as consumer durables and services increased by more than 70 per cent.

- An Hungarian survey designed to obtain information to supplement information from tax declarations. This survey covers around 4 000 of the largest enterprises and collects information on secondary activities, costs, research and development, various kinds of social benefits paid to employees in cash and in kind and stocks of fixed assets.
- Studies of small and medium sized registered units conducted in a small number of regions in Poland to verify assumptions and ratios relating to incomes. The aim is to obtain more realistic estimates of the earnings of the persons employed in small and medium sized economic units.

8.2 Imputation techniques

Use of ratios

The first step in trying to impute for under-reporting by enterprises (in particular, the private sector) involves checking information supplied by all private enterprises irrespective of whether or not they are in the formal or informal sector. This entails making various comparisons between:

- data provided by different organisations within the same branch and data provided by organisations in different branches;
- organisations with different types of ownership;
- the same organisation over time;
- data supplied on enterprise returns from external sources such as taxation data, anecdotal information from accountants and different organisations of private entrepreneurs.

The types of ratios used include:

- comparisons of output per employee;
- the ratio of intermediate consumption to output by branches and sub-branches. A private enterprise is not likely to be competitive with state enterprises if the ratio of its costs to output are higher. An assumption that could be made where this occurs is that the value of intermediate consumption is overstated by the private sector enterprise to minimise tax on profits. It is also possible that output could be understated. When using such ratios consideration could also be given to the fact that, for example, in the case of the

first few years of operation of retail trade and catering establishments the renovation of premises could require considerable one-time overhead expenditures for current repairs and furnishing which may not be typical of state outlets;

- the average compensation of an employee in the private sector is compared with the average compensation of an employee in the state sector. A number of transition countries commence with the assumption that wages and salaries paid to employees and individual entrepreneurs in private enterprises are very much higher than those received by employees in the state sector. Whilst income differentials of such magnitude do obviously exist, many more employees/private entrepreneurs may only be earning a “survival level” income. This would be especially true of small scale operations, e.g. street traders, taxis, etc.. Therefore, the application of high differentials for all private sectors employees, etc., could lead to significant overestimation of total income. Such ratios should only be used if they are supported by empirical data (no matter how crude) that shed some light on the distribution of income differentials between the state and private sectors;
- the average mixed income of the owner of a private firm is compared with the average compensation of employees in the same industry.

Further discussion on the use of ratios for verifying and adjusting reported data is provided in Section 5.6 above.

Imputation of number of unregistered enterprises by branch

A useful source of information on the number of unregistered enterprises excluded from ongoing statistical collections involves the use of the methodology for validating the coverage of the statistical business register. This entails matching name and address information of place of employment obtained from respondents in household based labour force surveys against coverage on the statistical business register. The only purpose of such an exercise would be to arrive at estimates of the number of unregistered enterprises. Using such information to coerce unregistered enterprises identified using this methodology to register could be counterproductive, particularly for future response to the household survey.

Imputation for non-responding enterprises

A brief outline of the various techniques for imputing data for non-responding enterprises is provided in Section 4.1.1 above.

Imputation techniques involving the use of indirect indicators

A number of transition countries have adopted imputation/adjustment methodologies involving the use of indirect indicators. Examples of some of these are provided below.

- estimation of private construction by individuals on the basis of information on new housing and facilities registered by local authorities. In the Russian Federation physical (floor space) indicators are converted to value terms using average construction cost per square metre of residential space in each given region. These computations are checked against HBS data and sales of building materials to households through retail trade, for example, cement sales as in the case of Armenia;

- the adjustment for market services provided by the private sector. In the Russian Federation the adjustment is based on both indirect indicators and information from taxation records. The former includes:

- number of private cars used as taxis;

- number of private dentists, lawyers, etc. and their average remuneration as shown by special labour force surveys;

- adjustments for services provided by private pre-school institutions based on the total number of enrolments and fees charged per child.

9. IMPLICATIONS FOR WORKING PRACTICES OF STATISTICAL OFFICES

Listed below are a number of implications for the working practices of statistical offices that have a major bearing on the ability of those offices to successfully compile estimates of unrecorded economic activity in an on-going, co-ordinated manner. Consideration of these issues, and where required the implementation of some of the working practices advocated, are essential for compiling estimates of unrecorded economic activity using the framework outlined in this document.

The on-going application of the framework described requires the co-operation and active involvement on many individuals and branches within statistical organisations, and at all staff levels, from the highest levels of management down. The need for senior management to play a leadership role is crucial. Specific areas where such leadership is required are provided below.

9.1 Analytical culture

The main prerequisite for the application of the methodology for estimating unrecorded economic activity described in previous sections is the development by the statistical agency of an analytical culture, ideally at all staff levels. Staff involved in the compilation of basic statistics must be made responsible for analysing the output they produce, particularly with a view to validating the ability of the data to accurately reflect the phenomena they purport to measure. The role of the branch statisticians therefore needs to go beyond their traditional information gathering and compilation functions.

Whilst the main need is for such practices to be implemented at the operative/working level, the absolute necessity of senior management insisting that such activities take place cannot be overemphasised. Ensuring this happens is a major responsibility of senior management and one that can be exercised when “finalising” data sets for publication or release to users. Such functions should occupy a large proportion of the time of senior management.

The main specific elements in the development of an analytical culture include:

- the capacity of staff within statistical branches to assess the reliability, quality, etc., of existing statistical collections. Due to workload pressures and the need to meet tight deadlines there is a natural tendency for staff directly involved in the collection and compilation of data to rigorously defend existing methodologies. This is also natural if critical comment about the reliability of the statistics produced by the statistical agency is always seen as coming from outside the organisation.

For such an assessment approach to work, senior management must develop an environment where critical assessment of existing methodologies is encouraged together with a willingness to accept/adopt changes required to resolve identified short-comings of existing statistical series;

- the ability to compare the output of different statistical series and to recognise areas where consistency should be expected. This is required to identify deficiencies and areas of possible improvement either by imputation, or in the longer term through modification of collection methodologies; essential for this is
- the improvement in communication across the organisation of activities undertaken by individual areas of the statistical organisation. The breakdown of compartmentalism and the development of an awareness of activities (such as the development of new collections, etc.) of other statistical branches that could be used to provide the means of validating the data collected in organisationally unrelated areas of the agency is essential. An awareness of the development of new statistical collections by other areas would also enable branches to influence the content of these collections and help ensure they provide data that could be used to measure unrecorded economic activity;
- the confrontation of different data collections and placing greater emphasis on horizontal collaboration between the different collection and processing areas in contrast to existing emphasis on purely vertical collaboration within individual statistical branches.

9.2 Establish responsibility for estimating not observed activities

Is the measurement of unrecorded economic activity a problem of the branch statisticians or is it a problem of national accountants? In recent years, the national accounts areas of the national statistical offices in transition countries have played a major role in the measurement of the unrecorded economy. This is because the compilation of a reliable set of national accounts requires the systematic confrontation of data obtained from many different statistical sources within the framework of the SNA. The process of data confrontation often brings to light deficiencies and inconsistencies in existing official statistics compiled by branch areas of the national statistical office.

In order to produce national accounts that are internally consistent it is often necessary for national account staff to make adjustments to the basic data due to:

- the fact that a number of SNA definitions and conventions differ from those used in individual enterprise accounts;
- errors in the data; and
- inadequate estimates of unrecorded economic activity.

In the long-term, adjustments by national account staff to the basic data could lead to problems if they are unaware of changes implemented by branch statisticians to improve coverage of previously unrecorded economic activities. Problems would arise if national account staff continue to “correct” the basic data as before to account for such undercoverage.

For a number of reasons it is far preferable for branch statisticians to be more active in issues related to measuring unrecorded economic activity. In the context of the methodology described in this document this involvement would entail:

- evaluating existing collection/compilation methodologies for each collection to identify the significance of unrecorded economic activity. This includes the introduction of validation procedures by comparing output from their collection with information from other sources;
- documentation of existing practices in the form of adequate metadata (refer discussion on metadata in Section 4.2 above). The process of documentation itself often reveals deficiencies in methodologies hitherto not noticed. Documentation also helps users to understand the extent to which unrecorded activities are included in the basic data;
- participation in the development of imputation methodologies to overcome deficiencies of existing collections.

The reasons why branch statisticians should be actively involved in issues related to the measurement of unrecorded economic activity is because they have:

- a better understanding of the components of the unrecorded economy to be measured;
- a better understanding of the strengths and weaknesses of the data they produce; and
- more detailed knowledge of the collection issues involved in the measurement of the unrecorded economy.

Another argument for branch statisticians playing a more prominent role in the measurement of the unrecorded economy is that the monthly and quarterly statistics they produce are important economic indicators in their own right. The rate of change in monthly or quarterly levels of unrecorded economic activity may differ from that of recorded economic activity due to the extent of the involvement of small units in the former. The experience of OECD Member countries is that small units are more likely to commence and cease their activities in response to cyclical economic changes, due to their smaller capital requirements, use of family labour, etc.

Another aspect of greater branch involvement in the compilation of estimates of unrecorded economic activity is where such estimates should be compiled. Much of the statistical collection and processing work in transition countries is undertaken in regional offices. In a number of instances only aggregate data is then transferred to the head office of the national statistical office for compilation into national totals. A decision is therefore required according to the circumstances of each country as to whether such estimates should be undertaken in regional offices or at the national head office in the capital city. Advantages for doing such work in the head office include the ease for ensuring the uniform application of estimation methodology across the country and the physical proximity of head office staff in branch areas to national accounts staff. The main advantage of undertaking such work in regional offices is the fact that regional staff have greater knowledge of the local environment and regional circumstances influencing the extent of, and composition of units engaged in unrecorded economic activities.

The inclusion of estimates of unrecorded economic activity compiled by branch areas in published economic indicators would therefore improve the ability of those indicators to reflect short-term changes in the level of economic activity. Furthermore, the failure of branch statisticians to include such estimates in short-term indicators which may at the same time be included in statistics

compiled by national accounts staff, might result in the accounts providing a different message about developments in the economy from short-term indicators.

Having said all this, national accounts staff also have a responsibility to ensure that branch staff responsible for collecting and compiling basic statistics are made fully aware of the requirements of the SNA with respect to concepts, classifications, variable definitions, etc. Such knowledge is particularly important when new statistical collections are being developed or the methodologies of existing collections modified.

9.3 Data revision strategy

It is standard practice for the statistical agencies in OECD Member countries to revise published data from time to time. There are several causes of such revisions but the most important one is that as new, more accurate, more final and more comprehensive data becomes available there is a need to revise previously compiled and published data.

In transition countries it is common practice to not revise previously published data once they have been published, but instead to carry revisions through to subsequent periods in the same year. This practice results in the substantial diminution of the ability of monthly and quarterly series to accurately reflect actual changes that occurred in each monthly and quarterly time period.

Therefore, as a matter of priority, it is the function of the statistical agencies in these countries to educate users of the international practice of periodically revising economic statistics that have been previously released or published.

To achieve credibility for its revision policy it is necessary for statistical agencies to:

- adopt and publicise beforehand a timetable for the publication and revision of monthly, quarterly and annual series, reconciliation of estimates, etc.;
- in the metadata and/or any analytical text accompanying published data draw users attention to the fact that index numbers for the current and previous month (period) should be regarded as preliminary and subject to revision;
- advise users when revisions have been made to data for a particular month, etc., by clearly indicating which items have been altered. A practice adopted by some countries is to place the letter “r” beside the revised series.

In order to reduce the need for data revision resulting from enterprises being given insufficient time to respond consideration could be given to modifying the timing of statistical collections. This may entail giving respondents more time to provide completed questionnaires. Whilst this would lengthen the lead-time before information is provided to users, the quality of the aggregates could be enhanced.

Finally, sufficient recognition needs to be given to the impact of variations in coverage between annual, quarterly and monthly collections on the grossing up of sample survey data. Annual data should be used for this purpose if it is the most comprehensive in terms of coverage.

9.4 Presentation of breaks in time series

The primary reason for the compilation of a time series such as a volume index is to analyse seasonal and cyclical fluctuations in key branches of the economy. The purpose is to develop an understanding of changes taking place in an economy over time in terms of both magnitude and direction. Such changes may be short-term or long-term (i.e. extending over one or many years).

The essential element of the above description are the words “over time”. Obviously, in order for appropriate conclusions to be drawn from changes in levels of the series over time it is essential for the underlying data to be comparable in terms of collection and compilation methodologies over the whole period of the analysis. In fact, a series where these conditions of underlying comparability do not exist cannot be called a valid time series and should not be presented as such in publications, etc.

Because of significant changes in their statistical systems, most transition countries have had difficulties maintaining a consistent time series for many key short-term economic indicator series over the whole transition period. Changes that have occurred in these series include changes in coverage (especially with the introduction of private sector organisations), the introduction of and frequent alteration of size cut-offs, introduction of new classifications, and changes in compilation compilation/calculation methodologies. It is not unusual for some series to be significantly altered on an annual basis.

Allied to the issue of inadequate metadata discussed in Section 4.2 above, the main problem with the introduction of series breaks in transition countries is that often users are provided with scant information in the metadata about the significance of these changes on the consistency of the underlying series over time. There are frequent instances of unreported changes in the compilation practices which lead to data for successive time periods not being strictly comparable. Furthermore it is not unknown for a continuous series to be graphed regardless of series breaks.

What constitutes a break in a series is largely a matter of judgement, however, in accordance with international practice, series breaks should be identified and clearly presented in data provided to both internal and external users.

The statistical agencies of OECD Member countries go to great lengths to maintain comparability of data in a series over time. This is done by ensuring comparability in terms of data item definitions, classifications, coverage and definition of collection units, compilation methodologies, etc. However, situations occur where it is not possible to maintain such comparability. Where this occurs the following practices are implemented:

- sufficiently detailed information is provided in the metadata about changes in underlying methodologies to give users a clear and unambiguous understanding of the magnitude of the break in the time series;
- the statistical data is presented in such a way that the break in series is again drawn to the attention of users. Common practice is to show the break by drawing a line between the old and new series and inserting appropriate footnotes at the foot of the table;

- where possible, historical data is revised on the basis of the new methodology. Where this is done by imputation clear indication (for example in footnotes) of the fact that data prior to implementation of the new methodology is estimated should be provided;
- where it is not possible to revise all (or significant parts) of earlier data, effort should be made to overlap the old and new series for as long as necessary to give users an indication of the magnitude of the changes in level resulting from the new methodology. Because of resource constraints such overlap is often restricted to only one or two time periods (i.e. months or quarters).

There is a need for many national statistical organisations in transition countries to implement such policies for the proper documentation and presentation of time series breaks in statistical collections across the entire organisation.

9.5 Questionnaire design practices

Many transition countries continue to use questionnaires designed when information was collected primarily for central planning and control purposes, and only covered the activities of state enterprises and co-operatives. Many of these forms collect very detailed information, and their continued use is a significant cause of poor response from private sector enterprises, particularly for small units.

There is a need for statistical agencies to substantially reduce the number of questionnaires received by any one enterprise or organisation (including state agencies), and to modify existing forms design practices. The latter entails:

- improvement of lay-out and the provision of adequate information/instructions for completion of the form;
- significant reductions in the number of questions asked, especially by small enterprises. Many OECD Member countries restrict the data collected from small enterprises to description of predominant activity, turnover, employment, wages and salaries;
- ensuring that information required by national statistical offices is readily available from the records maintained by enterprises. This entails use of branch specific terminology and the collection of information known to be maintained by enterprises for taxation and other government administrative requirements, for the monitoring of their own performance. Questionnaires also need to be tailored to the amount of information available for the different types of units within an enterprise (e.g. establishment, location, etc.);
- ensuring that questionnaires used for different statistical collections use common definitions of variables, classifications, etc.;
- the tailoring of questionnaires to enterprises based on previous returns, e.g. the inclusion of last year's data on this year's forms, prefilling of name/address, reference number, etc.;

- the use of different questionnaires tailored to the terminology, expressions, etc., used by specific branches. This could enable the development of shorter questionnaires than would otherwise be possible with the use of more “general” questionnaires designed to collect information from a wider portion of the economy;
- the adoption by all areas of a rigorous process of form testing before the implementation of new, or even substantially modified existing forms.

There is a need to change the collection culture of the statistical organisation from one of compulsion reliant on the punitive elements of statistical law to one of persuasion where respondents are encouraged to supply information.

Such encouragement will only be effective where respondents are given appropriate information and feedback on the uses of the data they provide. Also, respondents must be made aware of efforts by the statistical organisation to ensure that the data being collected is really useful in conditions that are emerging in the transition process. In many transition countries the collection of excessively detailed data is a remnant of the era of central planning. In market economies the role and function of government has changed and information is required primarily for economic analysis of short-term and structural changes that take place.

Allied to the revision of forms design practices is the need to ensure that procedures are implemented for the co-ordination of collections across the statistical organisation. The aim is to minimise the reporting burden of enterprises, particularly large state and private enterprises. Such co-ordination entails:

- reduction in the number of individual questionnaires sent to the same enterprise;
- ensuring that different questionnaires do not collect the same data items, or worse, collect the same data items based on different definitions;
- the despatch of questionnaires sent out by different areas of the statistical office at around the same point of time. In this regard, consideration should be given to the despatch of different forms in the one package with an explanation of the reason/purpose of the different forms. The experience of OECD Member countries in this area is that such an approach is more likely to yield data that is more consistent across the different questionnaires. Such consistency in reporting, particularly for large state and private enterprises, can have a marked impact on the consistency of aggregates derived from the questionnaires;
- ensuring that all individual collections conducted across the national statistical organisation, from which data is used in the compilation of national accounts, are developed using variable definitions, classifications, etc., that are consistent with the requirements of the SNA.

In order to achieve the above objectives a number of OECD Member country national statistical agencies carefully document forms design practices and an approval process that are mandatory for the various branches within the agency to use when designing new questionnaires. Although such a mechanism can be resource consuming to establish in the short-term, such costs are offset in the longer-term by improved response, higher quality data, etc.

9.6 Estimation of missing data

There is a need for national statistical offices in many transition countries to adopt organisation-wide strategies and methodologies for estimating missing data. Missing data may arise from a number of causes ranging from complete non-response to omission (deliberate or otherwise) of only some data items from an otherwise complete questionnaire. Techniques for the estimation of missing data were covered in detail in the discussion of non-response in Section 4.1.1 above. Although these techniques were mainly provided in the context of complete non-response, most of them are relevant for the imputation of missing/omitted data items. Such omissions are of course detected through the use of adequate data error detection techniques.

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