Expert Group on Household Income Statistics

The Canberra Group

Final Report and Recommendations

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Ackowledgements

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Preface

The initiative to organise an International Expert Group on Household Income Statistics was taken by the Australian Bureau of Statistics in order to work on the development of statistics on household economic well-being and particularly on household income. The initiative was a reaction to a growing awareness that, in advancing the quality of their own household income statistics, national statistical offices shared many problems. In particular the comparative OECD study on income distribution (Atkinson et al. 1995) triggered off a renewed discussion on the underlying quality and comparability of household income data. Expectations were that combining forces would help solve conceptual and methodological problems, and would thus result in more relevant and reliable national statistics which could also be used for international comparisons on income distribution.

The International Expert Group met for the first time in Canberra, Australia and, taking its name from the venue of the First Meeting, is known as the 'Canberra Group'. It follows a now well-established phenomenon of City-named Expert Groups set up under the auspices of the United Nations Statistical Commission. The tradition started with the Voorburg Group on service statistics, which was first set up in 1986 and first met in Voorburg, the Netherlands, in January 1987. According to the United Nations Statistical Commission the role of City Group is:

- To contribute actively to the development of international standards in their respective areas of work, within the framework set by the international work programme;
- To exchange best practices in their area of work;
- To produce specific outputs (advice, classifications, manuals) requested by the Statistical Commission.

Objectives of the Canberra Group

The primary objective of the Canberra Group was to enhance national household income statistics by developing standards on conceptual and practical issues related to the production of income distribution statistics. Its work was in support of a revision of international guidelines on income distribution statistics. The Group would address collectively the common conceptual, definitional and practical problems faced by national and international statistical agencies in this subject area and would act as a forum for expert opinions on conceptual and methodological issues and for

obtaining endorsement for guidelines. It was hoped that a combined approach to solving these conceptual and methodological problems would result not only in improved national statistics, but also in improved data for international comparisons on household income distribution.

Meetings and participants

The Canberra Group was designed to be a flexible working group of experts in household income statistics from both national and international organisations. Members of the Group included representatives from national statistical agencies, government departments and research agencies from Europe, North and South America, Asia, Australia and New Zealand as well as from a number of international organisations and research agencies. All members attended as experts rather than official representatives of their organisations. A central tenet of all City Groups is that their members take part in a personal capacity without necessarily committing their employers. At the outset, the Group decided that English should be its sole working language.

From December 1996 to May 2000 the Canberra Group met four times. Over 70 participants from 26 national organisations and 7 international organisations were involved in the work of the Canberra Group (See Acknowledgements page at the front of this volume). Reports of the First, Second and Third Meeting of the Canberra Group were published in February 1997, May 1998 and November 1999 respectively (See International Expert Group on Household Income Statistics 1997, 1998 and 1999). This document represents the final Report of the Group.

The Group's work has benefited from contributions from other individuals and organisations. Professor A B Atkinson (Nuffield College, Oxford) and Mr Andrea Brandolini (Bank of Italy, Research Department) have both made major contributions to papers discussed by the Group. The discussions of the Expert Group meeting on Income Distribution Statistics convened by Eurostat in December 1999 provided an additional forum. The International Association for Research into Income and Wealth has played a major role both in the birth of the Group as a result of a session on International Standards on Income and Wealth Distribution at its 24th General Conference at Lillehammer, Norway in August 1996, and in enabling peer review of the Group's outputs at a session at the 26th General Conference in Cracow, Poland in August 2000 when some of the draft chapters of this Report were presented and discussed.

Summary

Chapter 1 Introduction

… sets out the aims of these Guidelines and their intended audience, and describes their historical background. They are a guide to compilers, and also data analysts and other users, on how to prepare harmonised and comparable statistics on household income distribution. The manual represents a synthesis of prevailing ideas and tries to be faithful to the concept of income and its theoretical definition, while taking account of the practical difficulties of data collection and presentation.

The main motivation for the production of household income statistics is the measurement of economic well-being. However, income is not the only way in which the concept of economic well-being can be characterised, and this introductory chapter also considers the broader conceptual issues underlying its nature.

Although the Guidelines are primarily aimed at the users and producers of micro-level income statistics, the concept of household income is equally familiar to national accounts practitioners. As in practice the two sets of statistics are rarely produced in a harmonised manner, however, the manual attempts to interpret the differences of approach and terminology to what is in fact a single concept.

Chapter 2 The income concept

… seeks to establish conceptual groundrules for defining and measuring household income, ignoring for the time being considerations of data quality and availability. A hierarchy of components of income is built up which provides definitions of total, disposable and adjusted disposable income, described in more detail in **Appendix 1. Appendix 2** reconciles these micro concepts with the macro concepts familiar to national accountants, demonstrating how the different categories of income can be assembled to meet the needs of different types of analyses coming from the two traditions.

> THE CANBERRA GROUP RECOMMENDS THAT THE CONCEPTUAL FRAMEWORK SET OUT IN TABLE 2.1 BE ADOPTED AS THE FRAMEWORK FOR INCOME DISTRIBUTION ANALYSIS, RECOGNISING THAT NOT ALL OF IT CAN BE IMPLEMENTED FOR PRACTICAL PURPOSES.

This chapter also explains how the concept of income is related to those of household consumption and capital accumulation.

Chapter 3 Other conceptual issues

… discusses the other important conceptual issues which have to be resolved before income distribution statistics can be compiled. It is necessary to decide which statistical units are to be used and the length of the accounting period to which the statistics refer. If households are the chosen unit, then the effect of variation in their size and composition on their relative needs has to be taken into account. The use of equivalence scales to adjust for such differences is discussed.

> THE CANBERRA GROUP RECOMMENDS THAT THE ACCOUNTING PERIOD TO BE USED FOR INCOME DISTRIBUTION ANALYSIS SHOULD BE ONE YEAR, AND THAT THE HOUSEHOLD, AS DEFINED IN TABLE 3.1, BE ADOPTED AS THE BASIC STATISTICAL UNIT, WITH THE OTHER UNITS SET OUT IN TABLE 3.1 AS ALTERNATIVES FOR PARTICULAR PURPOSES.
>
> THE GROUP FURTHER RECOMMENDS THAT INCOME SHOULD BE ADJUSTED TO TAKE ACCOUNT OF HOUSEHOLD SIZE, USING EQUIVALENCE SCALES.

Most comparisons of income distribution statistics across time or between countries are made in relative terms using measures which are invariant to absolute levels of income. However, if income distribution statistics expressed in money terms are to be compared either spatially or temporally, an added consideration is how to take account of price differences in order to compare real incomes. For valid comparisons of real incomes between countries or other geographic areas, the use of Purchasing Power Parities is discussed, and for comparisons within a country the use of relevant price indices is addressed. **Appendix 3** provides background on Purchasing Power Parities.

> THE CANBERRA GROUP RECOMMENDS THAT WHEN CROSS-COUNTRY COMPARISONS OF REAL INCOMES ARE TO BE MADE, PURCHASING POWER PARITIES SHOULD BE USED IN PREFERENCE TO EXCHANGE RATES.

Chapter 4 From concept to practice

… provides an overview of the practical considerations which will determine the parameters for the production of a set of income distribution statistics. These are:

- Availability of data
- Quality of available data
- Purposes for which the statistics are required

The Canberra Group carried out a metasurvey of data availability in 25 countries from all continents, the results of which are summarised here (details may be found in **Appendix 4**). This illuminates differences in current practice and the extent to

which they might allow the development and implementation of a consistent definition.

It is not enough that data are available from which income distribution statistics can be compiled: they must be fit for purpose. This chapter goes on to identify the main sources of error or uncertainty which may underlie income distribution results, and draws on a survey of data quality amongst Canberra Group members to indicate which difficulties appear to be widespread. National Accounts aggregates are one yardstick against which the quality of income distribution statistics may be assessed, though these themselves have some uncertainties as discussed in **Appendix 5.**

Both data availability and data quality will affect the choice of income definition. The options for choice of a practical income definition are discussed in the context of making cross country comparisons and are developed based on the experience of the Luxembourg Income Study.

> THE CANBERRA GROUP RECOMMENDS THAT THE PRACTICAL DEFINITION OF INCOME SET OUT IN TABLE 4.1 BE ADOPTED FOR USE IN MAKING INTERNATIONAL COMPARISONS OF INCOME

Priorities are also suggested for the development of a more complete income definition.

Chapter 5 Comparing income distributions over time

… discusses the consistency requirements for making valid cross-time comparisons within a country, as well as the additional difficulty of comparing time trends across countries. In this context guidance is provided for primary data producers; for the compilers of secondary datasets which bring together time series estimates for multiple nations; and for the researchers and analysts who use both primary and secondary sources.

> THE CANBERRA GROUP RECOMMENDS THAT PRIMARY AND SECONDARY PRODUCERS OF INCOME DISTRIBUTION STATISTICS BE MORE AWARE OF THE NEEDS OF USERS FOR TIME SERIES DATA AND THAT IMPROVEMENTS IN THE AVAILABILITY OF BOTH DATA AND METADATA BE GIVEN PRIORITY

Chapter 6 Income Dynamics

… draws attention to the fact that cross-sectional data have a number of limitations for the study of change over time in income distributions. Longitudinal (panel) data have an important role in providing insight into the way in which households of different types move within the distribution over time. However, they have drawbacks also, in terms of attrition bias and cost of collection. Examples of panel surveys and their use are presented.

Chapter 7 Data Presentation

… provides a practical guide to presenting complex income distribution statistics in a clear, unambiguous and user-friendly manner, through the provision of a wide variety of examples. The user is warned of some of the pitfalls in presenting and interpreting income distribution statistics, based on Canberra Group members' experiences.

Chapter 8 Robustness Assessment Reporting

… complements the previous chapter, in that when the results of income distribution studies are presented, they should always be accompanied by full information on the sources and methods employed, and an assessment of their quality. It provides recommendations on the forms of reporting which may be appropriate in individual analyses and at various stages of producing and using income distribution statistics. A template for a robustness assessment report is set out in **Appendix 6**, and **Appendix 7** presents Eurostat recommendations for presenting robustness data for estimates at varying levels of detail.

> THE CANBERRA GROUP RECOMMENDS THAT INCOME DISTRIBUTION STATISTICS BE ALWAYS ACCOMPANIED BY ROBUSTNESS ASSESSMENT REPORTS AS SET OUT IN APPENDIX 6, SO THAT USERS MAY JUDGE THEIR FITNESS FOR PURPOSE.

Chapter 9 Issues for the future

… draws together a number of issues which the Canberra Group recognise have still to be resolved and which require further work. Some have already been touched on in earlier chapters – for example, the importance of expenditure and wealth as complementary measures of economic well-being. There is also a range of developments in the world economy which provide conceptual and methodological challenges to the ways in which household income is measured today.

This chapter sets out this future agenda, hoping that others will rise to the challenges it presents.

> THE CANBERRA GROUP RECOMMENDS THAT THESE GUIDELINES BE PERIODICALLY REVIEWED TO ENSURE THAT THE ADVICE IS KEPT UP-TO-DATE WITH DEVELOPMENTS IN THE PRACTICE OF INCOME DISTRIBUTION COMPILATION AND IN THE ECONOMIC AND SOCIAL CONTEXTS IN WHICH THE STATISTICS ARE USED.

Chapter 1

Introduction

1.1 Aim of these guidelines

This document is a guide to compilers, and hence data analysts and other users, on how to prepare harmonised and comparable statistics on income distribution. It is a synthesis of prevailing ideas which tries to reconcile the dual concerns to be faithful to the conceptual nature of income and its theoretical definition, whilst taking into account the practical difficulties of data collection and compilation including the costs involved both to the agencies producing the statistics and the households providing the raw material.

The aim is to lay down useful guidelines for understanding the complex nature of income data, set in the context of prevailing ideas and best practices. These reflect how economic societies are organised and people conduct their lives. Over the passage of time, with social and political transformation, changes in the role of government, globalisation and so on, economic issues and priorities will change. It is thus essential to retain a certain degree of flexibility in developing general standards for statistics on this topic. Thus, acknowledging that there is no single concept or set of concepts that fit all circumstances, the guidelines do not attempt to propose a definitive set of standards for the compilation of income distribution statistics. Rather the aim is to give a systematic presentation of all the issues, both conceptual and practical, which should be considered by producers and users of income distribution statistics. Where sufficient consensus exists about best practice, recommendations are made, in the hope that this will contribute in due course to the availability of more accurate, complete, and internationally comparable income statistics compiled to common standards. This should in turn lead to greater transparency in their presentation, and better informed use of what are inevitably some of the most complex statistics produced by national and international organisations.

The guide is designed to be pragmatic. It is aimed mainly at those who are responsible for compiling income distribution statistics, whether primary producers (originators) who collect and analyse data from primary sources or secondary producers who take processed data (micro, meso, or summary level) and derive their own estimates and datasets from them. However, it will be of equal use to researchers and analysts who make use of the outputs from primary and secondary producers, in leading them to a better understanding of the underlying principles of income distribution statistics and the pitfalls in their practical implementation.

1.2 Why is income distribution important?

Economic analysts and policy makers identify three main purposes for compiling information on income distribution. The first is driven by a desire to understand how the pattern of income distribution can be related to patterns of economic activity and the returns to labour, capital and land, and to the way in which societies are organised – ie to theoretical and institutional considerations. The second reflects the concern of policy makers to determine the need for both universal and socially targeted actions on different socio-economic groups and to assess their impact. The third is an interest in how different patterns of income distribution influence household well-being and people's ability to acquire the goods and services they need to satisfy their needs. These guidelines are driven by the need to produce statistics which fulfil all these purposes.

Producers of income distribution statistics therefore have to address such questions as:

- How unequal is the distribution of income in a given country? How does this compare with earlier years, or with other countries?
- How many 'poor' people are there in a given country? How does this compare with earlier years, or with other countries?
- Who are the 'poor'? Has this changed over time?
- Have the rich become richer? The poor become poorer?

The audience for income distribution statistics is usually less conscious of the ambiguities surrounding concepts such as 'income,' 'poor' and 'rich' than are the producers of the statistics. 'Income' may often be thought of by the user in terms of cash income; the 'poor' are those whose lack of income means they are restricted to a low standard of living – i.e. there is an implicit assumption that 'income' constraints are binding on poor people's consumption - and the 'rich' are those who can afford a luxurious lifestyle. Typically, the main focus of interest is on changes over time, with differences between countries coming a close second. Statisticians' statements about incomes are interpreted as statements about the living standards experienced by different sections of the population; those with the lowest incomes are assumed to have the lowest living standards.

Thus interest in income distribution may be justified either *per se* as a way to see how the benefits of national product are distributed across people, or indirectly as the best proxy for the distribution of economic well-being. In a strictly utilitarian framework, the ideal measure of well-being would be the lifetime utility of a person. A utility measure should reflect differences in leisure as well as all forms of potential consumption, including home production and publicly provided goods; it should take account of differences in constraints faced both by people living in the same country, and differences in constraints faced by people in different countries; it should account for differences in the ability to smooth income across periods. It is therefore clear that household income measured over a period of perhaps a year is, at best, a proxy for this ideal concept. On the other hand, income remains a fundamental determinant of people's well-being in non-utilitarian frameworks, such as Sen's capability approach (Sen, 1992).

However, income is not the only way in which the concept of economic well-being can be characterised, and it is therefore useful first to consider the broader conceptual issues underlying its nature, such as consumption, savings and wealth.

1.3 Economic well-being

A household's economic well-being can be expressed in terms of its access to goods and services. The more that can be consumed, the higher the level of economic well-being, though the relationship between the two is not a linear one. Measuring consumption might therefore be a way of measuring economic well-being. However, a household may be able to choose not to consume the maximum amount it could in any given period but to save at least some of the resources it has available. By saving, households can accumulate wealth through the purchase of assets which will both generate income at a later date and serve as a 'nest-egg' for spending at a later time when income levels may be lower, or needs higher, than now. In addition to potentially earning a return for the household, ownership of wealth also affects their broader economic power. For example, wealthy households may find it easier to gain credit to finance their consumption. Thus to capture the full extent of a household's economic well-being it is desirable to look at a number of different aspects of their economic situation including not only income but also levels of wealth (hereafter referred to as level of net worth - assets minus liabilities) and changes in the value of that wealth.

Analysis of economic well-being is usually primarily concerned with the comparison of the actual or potential living standards of different groups in society, and sometimes between groups in different societies, at a point in time and also over a period of time. Policies to address problems of living standards usually focus on income in some form or other. In other words, income is normally the most objective proxy for economic well-being for policy purposes. Therefore the focus of this report is on measuring household income. But to be able to define income, and as a reminder that income is not the only element of economic well-being, the remainder of this section provides an overview of the relationship between economic well-being and income, change in the value of net worth, and value of stock of net worth.

The economist's concept of economic well-being also often encompasses the value of leisure time (or the disutility of labour). However, these guidelines assume that income distribution statistics do not attempt to capture this element.

1.3.1 Income

In broad terms, income refers to regular receipts such as wages and salaries, income from self employment, interest and dividends from invested funds, pensions or other benefits from social insurance and other current transfers receivable. Large and irregular receipts from inheritances and the like are considered to be capital transfers because it is unlikely that they will be spent immediately on receipt and are 'one-off' in nature.

Income presents a partial view of economic well-being and represents the regular or recurring receipts side of household economic accounts. It provides a measure of resources available to the household for consumption and saving. On the disbursements side of household accounts, consumption expenditure represents the day-to-day purchases that may be financed not only by regular or recurring income but also by savings from previous years or by incurring debt. For some households, such as retired households, the running down of capital for consumption may represent a deliberate attempt on their part to even out consumption over a life time. Other groups in the population, such as farmers, may also average out their

consumption over a number of years while their incomes may show quite wide fluctuations over the same period. In such cases, consumption expenditure may represent a better estimate of the household's sustainable standard of living.

There are difficulties in collecting data on both income and consumption expenditure in household surveys. Income is a sensitive issue for many respondents and non-response or misreporting of some income components may be significant. On the other hand, data on consumption expenditure are often onerous and costly to collect. In fact, the choice between the income or the consumption expenditure approach to measuring economic well-being is often made for the analyst by the fact that income data may be more frequently available than data on consumption expenditure.

Nevertheless, it should be acknowledged explicitly at the outset that the approach to defining income taken in these guidelines is essentially consumption-based. A positive resource flow (in money, goods or services) is considered as contributing towards economic well-being if it increases the recipient's potential to consume or save, and a negative flow reduces well-being if it reduces the capacity to consume or save.

1.3.2 Change in value of net worth

Whether data on income or on expenditure are used for measuring economic well-being, the data should ideally be accompanied by some assessment of the change in the value of the household's net worth during the accounting period. If the level of net worth has increased, the increase will have resulted from saving (the difference between income and consumption), from the receipt of capital transfers, or from other changes in the value of assets, including capital or holding gains. Such a household is likely to be better off in the long term than a household with a similar level of consumption that has financed this consumption by dissaving, that is, running down assets or incurring a liability. The question of whether the dissaving has been involuntary or has been planned by saving in earlier periods is important in this context.

1.3.3 Value of stock of net worth

The value of the stock of net worth owned by a household is the value of accumulated assets less liabilities. As already noted, as well as possibly earning a return for the household in the form of income, those households with high levels of net worth may find it easier to gain credit for consumption or investment or to maximise the choice of timing for different types of consumption. High levels of net worth can also affect living standards by the potential for dissaving for consumption either now or at a later date. For these reasons, it is important to ascertain, if possible, the value of the household's net worth to give a complete picture of the household's command over economic resources or economic well-being.

At a practical level, the collection of microdata on the assets and liabilities of households can often be problematic. Such information may be even more sensitive to the respondent than that on income and, because transactions are relatively infrequent, misreporting may be more prevalent. There are also considerable difficulties in using data on stocks of wealth and data on transactions or flows in a combined measure of economic well-being. One option is to annuitise the net worth held by the household and add this (notional) annuity to the flow of income and

other receipts (Australian Bureau of Statistics, 1995). However, annuitisation of net worth requires that a large number of value judgements and assumptions be made in relation to, for example, the period over which the net worth should be annuitised (life of the householder or spouse) and the interest rates to be used. This is not a simple matter, and the complexity suggests that the issue of incorporation of the value of stocks of household net worth into a broader measure of economic well-being might be best treated in a separate study. The measurement of these stocks is therefore not considered any further in these guidelines. However, the last section of Chapter 2 sets out a conceptual framework in which income, consumption and accumulation can be related to each other.

Ideally, analysis of economic well-being would benefit greatly from the availability of fully articulated survey or administrative data covering all aspects: income, expenditure, saving, and the value of wealth held. This would enable observation of the size and nature of the economic resource generated by households, and how they then disposed of it. Many of the uncertainties which exist, for example about how to treat lump sum income receipts which some households might regard as additions to saving but others would spend immediately, would be resolved at the micro level by reference to observed behaviour. No catch-all assumptions would have to be made either across all households or across groups of households.

However, collection of such fully articulated data is highly problematic from a practical point of view. Integrated income and expenditure surveys are conducted in some countries, more often in the developing than in the developed world. Some also collect data on savings and other capital transactions and on net worth. However, the respondent burden is very high and even when data are collected on all of these variables they are rarely fully articulated and can raise as many questions as they answer. For example, the accounting period which is optimal, say, for collecting income information may not be optimal for expenditure or capital transactions, leading to potential inconsistency and error in estimates of saving that are derived from those aggregates. The same may be true of the reporting unit. Compromise choices have to be made which may increase the ease and accuracy with which data can be collected but reduce consistency between them. Integrated surveys also impose a heavy burden on respondents particularly in complex economies where even a questionnaire concentrating only on cash income can take an interview of two hours or more to administer. They are therefore very costly not just to the commissioning organisation but also in the opportunity cost to the respondent. They are not therefore considered further in these guidelines as feasible sources of internationally comparable data.

1.4 Household income as a microeconomic and a macroeconomic concept

One of the major issues to emerge during the discussions of the Canberra Group was the existence of two traditions of household income measurement:

- the *macro* approach, having its roots in national accounts and in particular the standards laid out in the System of National Accounts (SNA) (Commission of the European Communities et al, 1993);
- the *micro* approach, having its roots in microeconomics and particularly the study of poverty and its effect on different socio-economic groups within society.

The two traditions have tended to develop different terminologies and conventions, and often use different data sources. The difference of approach might be characterised in the contrast between the rigorous accounting framework of the SNA and the inherent flexibility of income micro-data.

Notwithstanding the differences of approach, it is important to stress that both macro and micro analysts are trying to measure the same concept: household income. Many of the conceptual difficulties encountered in drawing together the guidelines on household income distribution statistics are the same or similar to those faced in developing related guidelines such as the SNA. While the decisions made about how or how not to treat specific situations might sometimes be relatively arbitrary, it is sensible to adopt a consistent treatment across frameworks whenever possible.

Indeed, the social accounting matrix (SAM) approach to national accounts as set out in the SNA, Chapter XX, typically focuses on the role of people within the economy. A SAM will invariably disaggregate the household sector in order to analyse the interrelationship between structural features of an economy and the distribution of income and expenditure among different socio-economic groups. In most SAMs therefore it is necessary to reconcile the macro aggregate of household income with the micro income statistics on which the disaggregation is based. However, although the intention of the SNA was in fact to include a disaggregation of household income by socio-economic group as a standard part of national accounts output, in practice there are few if any countries who do so on a regular basis.

It can also be argued that most users of household income statistics would expect the producers to have carried out a reconciliation between the macro aggregate of household income and the micro income statistics suitably grossed up to population totals. Even if this is not possible, at least one should expect to see clear explanations when discrepancies are known to exist. It is undoubtedly a considerable dis-service to users when two sets of statistics both labeled 'household income' appear to produce quite different results and, possibly, different implications for social policy. Nevertheless such a reconciliation is rarely carried out by national statistics offices.

There are other practical reasons to try to maximise comparability between income distribution statistics and household income as defined for the national accounts. First, there is a greater likelihood that any datasets collected can be used for multiple purposes. Second, statistics compiled under the different frameworks can be compared as part of a mutual checking process, and users can be confident that different sets of statistics can be brought together if so required for analytic purposes.

Although these guidelines have been produced with the needs of the micro-analyst uppermost, they also draw attention to areas of difference between the recommendations and those of the SNA and how the two may be reconciled. The intention is to aid understanding amongst micro-analysts of the concerns and conventions of the macroanalysts and thus to build bridges between the two.

1.5 Historical background

Income distribution statistics were first on the agenda of the United Nations Statistical Commission at its Fourteenth Session in 1966. Subsequently, a system of distribution statistics was gradually developed by the United Nations Statistical Office, which

covered income, consumption and accumulation of households and was tied in with both earlier versions of the United Nations System of National Accounts and the now obsolete System of Balances of the National Economy (MPS).

The United Nations Statistical Commission adopted a final version of the full system at its Seventeenth Session in 1972. However, the Commission requested that amendments and simplifications be made in the light of its discussions. A draft of the simplified system was presented to the Commission at its Eighteenth Session in 1974 and was adopted with a number of reservations. In particular, the Commission felt that further simplification was desirable.

After careful consideration, the United Nations Statistical Office concluded that it would be desirable to combine the full and the simplified versions of the Guidelines and present them in a single publication. So, the *Provisional Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households* were published by the Statistical Office of the United Nations in 1977 (M71, United Nations, 1977). Their aim was to assist developed and developing countries to collect and disseminate income distribution statistics and to provide for international reporting and publication of comparable data. The guidelines emphasised the need to link micro-level income distribution statistics with macro-level national accounting standards. Surveys of national practices of income distribution statistics were published by the United Nations Statistical Office in 1981 and 1985 (United Nations, 1981 and 1985).

The 1977 Provisional Guidelines were to be revised concurrently with the revision of the 1968 SNA (eg Norrlof ,1985). The United Nations Economic Commission for Europe (UNECE) in particular began work on revising the 1977 Provisional Guidelines and organised a number of Work Sessions and Seminars on statistics of household income with this in mind. Special attention was paid to the relevance of the revision of the SNA (eg United Nations, 1989), given that the revision process of the 1968 SNA had led to advances in conceptual thinking about the household sector and about the concept of income in particular. However, due to limited resources progress in the revision of the 1977 Provisional Guidelines was slow.

In 1994, with the agreement of the UNECE and the Organisation for Economic Co-operation and Development (OECD), EUROSTAT, the Statistical Office of the European Communities, undertook to play a major role in the revision of the 1977 Provisional Guidelines. The key objective was to update the Guidelines in the light of the revised SNA and European System of Accounts (ESA) and new developments since 1977 relating to household income statistics (eg hidden and informal activities) and to extend and adapt them where appropriate to serve the analytic needs of economic and social policies. However, the geographical scope of the revised guidelines would initially be the countries of the European Economic Area.

In addition, as a result of the 15th International Conference of Labour Statisticians in October 1993 the Bureau of Statistics of the International Labour Organization (ILO) took the initiative to improve the measurement of income from employment (eg Dupré, 1997). In October 1998, the 16th International Conference of Labour Statisticians (ICLS) adopted a Resolution concerning the measurement of employment-related income (ILO, 1998*b*).

A general feature of most of these approaches to create international guidelines on income distribution statistics is that they principally started from a macro view, proceeding from the SNA. However, the top-down macro-to-micro approach to conceptual issues provides a very different, and not immediately obvious, perspective for most micro-data users. Emphasis on a framework tends to lead to a rigorous and theoretical approach where flexibility may look like inconsistency. Emphasis on the practical issues arising from micro-datasets sets great store on the virtues of flexibility at the possible cost of losing sight of an underlying framework. Consequently, framework-based guidelines tend to lack practical advice to the producers and users of micro-data. This is perhaps the main reason why the 1977 Provisional Guidelines were seldom adopted by producers of income distribution statistics and remained provisional.

In what was thus a virtual vacuum of international consensus on how income distribution could and should be measured, concern grew in many countries to develop better measures of the economic well-being of their populations for national policy purposes. The range of survey and other information expanded, and technological advances considerably improved the possibilities for sophisticated treatment of complex micro-data. At the same time, there was an increasing desire to make international comparisons of such statistics which exposed the lack of consistency of the available data. At the inter-country level, the Luxembourg Income Study (LIS) was set up in 1983 to address the lack of comparability of household income data from different countries. Located in the Centre for Population, Poverty and Socio-Economic Policy Studies in Luxembourg, LIS draws together unit record data from a wide range of countries and attempts to reorganise them to a common set of concepts and definitions. However, organisations such as World Bank, United Nations and OECD all published inter-country comparisons during the 1990s in which the same country might have very different relative rankings depending on the concepts and data sources used. Partly in response, the OECD commissioned a cross-national study of income distribution based on LIS data (Atkinson et al, 1995).

The 24th General Conference of the International Association for Research in Income and Wealth (IARIW) in August 1996 included a session on International Standards on Income and Wealth Distribution (Smeeding, 1996). This session mainly focussed on efforts to revise the 1977 *Provisional Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households* (United Nations, 1977). The session had two keynote papers:

- 'Towards a Revision of the UN Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households', actually consisting of three separate contributions by Lidia Barreiros and Deo Ramprakash (Barreiros and Ramprakash 1996), Alfred Franz (Franz, 1996*a*) and John Walton (Walton, 1996) respectively;
- 'A Provisional Framework for Household Income, Consumption, Saving and Wealth', published in June 1995 by the Australian Bureau of Statistics and presented by Harry Kroon and Maureen McDonald (Australian Bureau of Statistics, 1995).

The first paper contained the early results of the work of the EUROSTAT consultants (the conclusion of their work may be found in Franz et al, 1998). The second paper was the result of the work of the Australian Bureau of Statistics aimed at defining a conceptual 'map' as a basis for further development of statistics relating to the economic well-being of households and at facilitating better dialogue between users and producers of such statistics, both nationally and internationally.

Once again, one of the main conclusions from the discussions during this session was that the top down macro-to-micro approach was not sufficient from the perspective of micro-data users. Both macro-to-micro and micro-to-macro viewpoints are valuable and the new international guidelines needed to address these issues. So, a clear challenge emerged from the 1996 IARIW Session. Integration of theory and application would be difficult but not impossible: any revision of the UN Provisional Guidelines on income distribution statistics should serve both purposes. However, a wider constituency of interest needed to be engaged in the discussions, particularly from national statistical offices, but also from a range of other national and international organisations. Hence the birth of the Canberra Group.

Chapter 2

The Income Concept

2.1 Introduction

This chapter seeks to establish conceptual ground-rules for the production of household income statistics. At this stage the practical difficulties of data availability are generally not addressed. The aim rather is to determine what in an ideal world it would be desirable to define and measure as 'income'.

However, it is important to recognise at the outset that different measures of income may be the most appropriate or the best available for different analytical purposes. Different uses may include analysis of the extent of income inequalities between groups within a population, the extent of poverty in absolute or relative terms, and the impact which government intervention has through social assistance and taxation on income distribution and poverty. Changes in distribution over time may be of interest, as may differences between countries. Alternatively, the impact of alternative government policy actions may be the focus of attention. The practical issues of choosing appropriate definitions in the light of the use to which the statistics are to be put, the particular national economic circumstances, and the availability of data will be discussed in Chapter 4.

2.2 Towards a definition of income

2.2.1 Historical background

There has been a long history of debate on the boundaries to be set for the definition of income. Much of the debate has centred on whether:

- income should include only receipts that are recurrent (that is, exclude large and unexpected, typically one-time, receipts);
- income should only include those components which contribute to current economic well-being, or extend also to those which contribute to future well-being; and
- whether the measure of income should allow for the maintenance of the value of net worth.

The debate has benefited from theoretical insights from a number of prominent economists. J R Hicks proposed that '...it would seem that we ought to define a man's

income as the maximum value which he can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning.' (Hicks 1946, p. 172.) The Haig-Simons definition of personal income is that it comprises the sum of consumption and change in net worth in a period, therefore making no distinction between regular and irregular receipts. (For a discussion on the differences in the Hicks and Haig-Simons approaches, see Goode, 1977.)

However, whilst these definitions can give general guidance they are open to more than one interpretation. Typically, the choices to be made in constructing household income have been approached by macro and micro analysts from rather different perspectives, which has resulted in different definitions for measuring what is essentially the same concept.

The macro-analyst is interested in the aggregate of household income as it fits into the macroeconomy as a whole, and approaches its construction in a top-down manner. Previous attempts to update the existing international guidelines on income distribution (UN, 1977) to bring them into line with the 1993 SNA have categorised income according to the type of transaction which gives rise to the flow without regard to the medium in which payment is made. The sequence is basically to measure first income generated in the course of production, then to allow for distribution of property income thus arriving at a concept called "primary income". The next stage is to account for current transfers, widely interpreted, and thus arrive at "disposable income". This is either spent on consumption or saved. Saving is used either to finance investment or leads to net borrowing or lending.

Exhaustiveness of the definition is also very important to the macro-analyst, as is its consistency with the definitions of income of the other institutional sectors: no theoretical gaps can be left unfilled, even if in practical terms imputations and estimations have to be widely employed when actually compiling the statistics.

The micro-analyst on the other hand is primarily interested in the measurement of income distribution. Conceptually, this means that the definitions are driven mainly by what the individual perceives to be an income receipt of direct benefit to him or herself, which results in a bottom-up approach to the construction of a definition. The means of payment is a major discriminatory factor and the rationale behind the payment is subsidiary. Practically, definitions have also to be constrained by what it is feasible to collect in household surveys or what is available at the household level in relevant administrative sources. In fact these two considerations – the conceptual and the practical – will usually result in the same choices, since if individuals perceive a receipt to be of direct benefit to them they are much more likely to be able to provide reliable data on it.

2.2.2 The micro approach

The approach of the micro analyst begins by addressing the question: "Is the income receiving unit better off today as a result of this receipt (able to consume more goods and services)?". Such an approach implies that it is *current* economic well-being which is of interest. Components which contribute to *future* economic well-being include employer contributions to pension funds and other forms of social insurance, interest earned on retirement-based assets and capital gains. The recipient may be scarcely aware of these, certainly at the time they are 'received', even though the individual usually benefits from them in some way, if not at the time of payment then in the future. This means that in addition to the conceptual difficulties the micro-

analyst may have in accepting their inclusion, there are undoubtedly severe problems in collecting micro level data of the value of these benefits.

Having chosen current economic well-being as the organising principle, there are three other dimensions along which further choices of income components have to be made. These are: cash (ie monetary) versus non-cash income; regular versus irregular income; and maintenance of the value of net worth. Decisions on what to include and exclude along these dimensions are governed by the extent to which the component may be 'spent today'. The microanalyst will also want to be sure that the resulting income distribution statistics will represent a true and fair picture of the actual distribution of income, and therefore be as free from statistical artifice as possible.

2.2.2.1 Cash income

The most basic component of income is cash earnings. This is the income component most familiar to income analysts and perhaps the most easily and accurately measured in household surveys. They include payments for overtime, bonuses and similar additions to basic wages and salaries. Cash earnings may arise from paid employment or self-employment. In the case of self-employment, earnings are measured as receipts from the business less operating expenses.

Although cash earnings are often the largest component of income, the micro analyst would normally consider the following categories as essential to the construction of reasonably complete income distribution statistics:

- property income
- cash transfers

These are considered in turn below.

Property income

People receive income in return for providing land and capital for someone else to use in production, just as they do for providing their labour. Examples which the micro-analyst would include in their income definition include:

- interest
- dividends
- royalties, and income from estates and trusts
- rent from land.

Cash transfers

People may receive cash transfers from a variety of sources, for example government, private social insurance funds, non-profit making bodies and from other households, and some of these may be the Rest of the World – eg from households in other countries or from overseas governments. In general, the largest category is likely to be from government.

There are two main types of transfer known collectively as social benefits. The first are those to which entitlement has been secured by previous contributions made by individuals, or by employers on their behalf. Schemes of this sort controlled and financed by government are known as social security schemes, and together with private schemes run by employers are collectively known as social insurance schemes.

The second type of transfer is that for which no previous contributions are required to acquire eligibility. These are referred to as social assistance benefits. Social assistance benefits may be means and/or assets tested – that is, eligibility may depend on the recipient having less than a certain level of income or assets - or they may be universally available to all or to a particular type of citizen (for example, child benefits). Social assistance benefits and social insurance benefits are collectively referred to as social benefits.

Some non-profit making organisations may make transfers to households which are akin to social benefits; for example, strike pay and sickness benefits paid by trade unions to their members; relief payments from the Red Cross in times of natural disaster.

People may in addition receive transfers from other households. This is one of the most difficult areas in which to decide what should and should not be included in the definition of income. Examples include cash gifts, payments of alimony or child maintenance, and cash inheritances. In trying to remain true to the starting question – can the receipt be spent today? – the microanalyst may wish to exclude receipts which are irregular, infrequent and/or 'large', regarding these as 'windfall' income more likely to be saved than spent. One distinction that some find useful is whether these transfers are mandatory (eg as a result of a legally binding agreement) or voluntary, though determining such a distinction accurately is difficult and will also be affected by institutional differences between countries.

Whatever decisions are taken about which, if any, inter-household transfers are to be included, any which are included must not only be added to the income of recipients but also be deducted from the income of donors, otherwise double-counting will take place at the aggregate level. Double-counting should be avoided if at all possible. However, if it is not possible, the micro-analyst must judge what treatment comes closest to giving a true and fair picture of the income distribution within the constraints of the data available.

Deductions

The sum of the elements described above may be referred to variously as gross cash income or total cash income. However, there is an issue as to whether to express income before or after the deduction of direct taxes such as income tax and social insurance payments to government and employer based social insurance funds. The individual may not regard such involuntary deductions as part of their income because they reduce their capacity to consume, and if tax is deducted at source they may have little idea of the amount paid. It is therefore common to present income distributions both gross and net of direct taxes, even though in some countries data are only collected on a net basis and grossed up to pretax levels using simulation models.

An individual might also regard some of the costs associated with working as compulsory and therefore not part of their disposable income – for example expenditure on travel to work and childcare. The problem here is that it is difficult to distinguish 'compulsory' expenses connected with working from the less essential which are close to mainstream consumption. However, in some analyses it is usual to deduct such costs so that the economic well-being of those in work may be compared more accurately with those not working.

2.2.2.2 Beyond cash income

As one moves beyond the elements of cash income briefly described above, the inclusion of further income components becomes more controversial.

Income in kind

There can be in-kind counterparts to most of the elements of cash income listed above. For example, an employer-provided car may form part of a total remuneration package; in many countries households produce goods for their own consumption as well as for sale or for barter; some social assistance payments may be non-cash such as food stamps or payment of rent; gifts between households may be in the form of goods rather than cash.

In addition, there is a class of components known collectively as social transfers in kind. These are government-provided goods and services which benefit the individual but are free, or mainly free, at the point of use. Examples include health care and education.

The main conceptual difficulty in including in-kind income is that the beneficiary may have no idea of the value of the benefit and if offered a comparable cash sum might spend it very differently. Further, beneficiaries may have difficulty in appreciating that they experience increased well-being as the result of some benefits: they do not 'feel better off today'.

There are also considerable difficulties in valuation: imputations have to be made and the greater extent of the imputation the more risk there is of the resulting statistics being vulnerable to statistical artifice. It may only be possible to make imputations less frequently than cash-based estimates are available. They may also be produced with less timeliness, if the modeling can only be done after cash-based estimates have been compiled.

On the other hand, some items such as food stamps have a clear cash value and there is some discretion in how they are spent. Some analysts may decide to include such items in a broader measure of income. In developing countries, incomes of many households would be seriously understated if a valuation were not to be made of the goods which they produce for their own consumption: in this case the issue is not whether to value this income, but how.

Changes in net worth

Many households receive capital transfers and benefit from capital gains which they may or may not realise. Decisions have to be made as to whether any or all of these should be included in a definition of household income. Selling assets or realising capital gains can sometimes enable a household to meet its everyday needs for food, clothing and shelter which would argue for their inclusion. Section 2.5 addresses these issues.

2.2.3 Reconciling the micro and macro approaches

The main framework developed for analysis of income at the macro level is the System of National Accounts (SNA). The SNA has been evolving over decades and is a comprehensive system for expressing in statistical terms most elements of a country's economy in a way which articulates the roles of, and interrelationships between, the various sectors of the economy. The household sector is one such sector.

Clear definitions based on economic theory have been set out most recently in the 1993 System of National Accounts (SNA93) and the 1995 European System of Accounts. Some components of the conceptual definition are more straightforward to define and measure than others, and there continues to be discussion about the treatment of some components. Nevertheless the SNA represents an international standard which is widely accepted and applied.

The concept of income set out in SNA93 is closely aligned with that described in Hicks. In SNA93, the theoretical view of disposable income is defined as:

> **".. the maximum amount that a household or other unit can afford to spend on consumption goods or services during the accounting period without having to finance its expenditure by reducing its cash, by disposing of other financial or non-financial assets or by increasing its liabilities." (SNA93 para 8.15).**

Within the SNA, the difference between current and capital transactions is basically that current transactions are complete within the period in question. By the end of the period, they disappear like ripples on water and they have no effect on balance sheets. Capital transactions are precisely those that do have an effect in another period and thus impact balance sheets, the measures of wealth.

It can be seen that the definition of income developed in the previous section is very similar to this. Thus the Canberra group felt that the SNA93 definition could form a basis for household income distribution analysis also.

Nevertheless, there are good reasons in some areas for departing from the recommendations embodied in SNA93, reflecting the different purposes of the statistics to be compiled. The definitions developed below therefore differ from SNA93 in several respects. Income distribution statistics are primarily concerned with a particular set of micro-economic issues and require the construction of statistics which reflect the circumstances of individual households. The SNA is concerned with macro-economic issues and the household sector is but one sector of interest. It follows, for example, that some recommendations in SNA93 that are targeted at non-household sectors but impact on the household sector in aggregate may have to be treated differently in compiling household income distribution statistics.

2.3 Income versus capital accumulation

2.3.1 Current and capital transfers

Capital transfers usually refer to the acquisition of, or disposal of, assets or net worth. Current transfers, on the other hand, are available for consumption during the accounting period. If a transfer is treated as current rather than capital, it will of course increase the receipts available for consumption and saving.

SNA93 notes that 'a prudent household will not treat a capital transfer that happens to be received during a particular period as being wholly available for final consumption within the same accounting period'. (SNA93 8.31)

In practice, it is not always simple to differentiate between current and capital transfers received by households. Micro-analysts usually make the assumption that capital transfers tend to be large, unexpected and one-time, whereas current transfers tend to be comparatively small, are often made regularly and can be relied on, which is in fact much the same as the SNA advice. However, this of course begs the question of what constitutes 'large', 'unexpected' and 'one-time'. A receipt which one household may regard as large enough that to consume it all within the accounting period would be profligate may be regarded by another as small enough in relation to their other income that it would be quite natural to make it all available for consumption. In an ideal world, information on how households actually disposed of transfer payments received would resolve this problem. However, in the absence of such information rules of thumb have to be devised which can be applied to all households alike.

An example adopted in these guidelines is in relation to termination and redundancy payments made by employers to employees. These payments have been included in the measure of employee income, as they are in the SNA. However, they will vary in size for different households and also vary in the manner in which households regard them. For some households, they may represent a means of financing consumption expenditure for a period while the recipient looks for another job. For other recipients, they may be large enough to be viewed as a worthwhile addition to the household's assets.

A second example in which the opposite treatment has been adopted is inheritances. These are classified as capital transfers, regardless of size. They can be regarded as transfers of assets from the deceased to the beneficiary, most likely representing a movement from one person's balance sheet to that of another.

2.3.2 Capital/holding gains

The theoretical argument for including capital gains in an extended measure of income is that this would be in line with the definition of income leaving a household as well off at the end of the accounting period as at the beginning. Capital gains or losses do have an effect on the economic behaviour of households and may affect their decisions on consumption.

There are several possible different measures of capital gains/losses and arguments can be made for the inclusion or exclusion of most of them. The details of the measures and the rationale for the suggested solution is discussed in section 5. In brief, though, the recommendation is that capital gains/losses should be treated as a memorandum item which may, optionally, be added to income measures for certain analyses.

2.4 The components of income and its aggregates

2.4.1 Introduction

This section provides an overview of the components to be included in various measures of income. Table 2.1 is a tabular summary and Appendix 1 provides more detailed information. Appendix 2 discusses in more depth the areas in which this framework departs from the SNA recommendations and shows how the macro and micro approaches may be reconciled. Appendix 1 may be regarded as a glossary of

the concepts and terms used below whilst Appendix 2 is aimed primarily at the microanalyst who wishes to gain a more detailed understanding of how these guidelines relate to national accounts conventions and practices. Since each is intended to be free-standing there is inevitably some overlap and duplication.

Note that the lower level of detail shown in Table 2.1 is not exhaustive and that a more detailed disaggregation is used in Appendix 4: Availability of income data.

Table 2.1 Definitions of income

		Section ref
1	**Employee income**	**2.4.2.1**
	Cash or near cash	
1.1	Cash wages and salaries	
1.2	Tips and bonuses	
1.3	Profit sharing including stock options	
1.4	Severance and termination pay	
1.5	Allowances payable for working in remote locations etc, where part of conditions of employment	
	Cash value of 'fringe benefits'	
1.6	Employers' social insurance contributions	
1.7	Goods and services provided to employee as part of employment package	
2	**Income from self-employment**	**2.4.2.2**
	Cash or near cash	
2.1	Profit/loss from unincorporated enterprise	
2.2	Royalties	
	In-kind, imputed	
2.3	Goods and services produced for barter, less cost of inputs	
2.4	Goods produced for home consumption, less cost of inputs	
2.5	Income less expenses from owner-occupied dwellings	
3	**Rentals**	**2.4.2.3**
3.1	Income less expenses from rentals, except rent of land	
4	**Property income**	**2.4.2.4**
4.1	Interest received less interest paid	
4.2	Dividends	
4.3	Rent from land	
5	**Current transfers received**	**2.4.2.5**
5.1	Social insurance benefits from employers' schemes	
5.2	Social insurance benefits in cash from government schemes	
5.3	Universal social assistance benefits in cash from government	
5.4	Means-tested social assistance benefits in cash from government	
5.5	Regular inter-household cash transfers received	
5.6	Regular support received from non-profit making institutions such as charities	
6	***Total income*** *(sum of 1 to 5)*	
7	**Current transfers paid**	**2.4.3.1**
7.1	Employers' social insurance contributions	
7.2	Employees' social insurance contributions	
7.3	Taxes on income	
7.4	Regular taxes on wealth	
7.5	Regular inter-household cash transfers	
7.6	Regular cash transfers to charities	
8	***Disposable income*** *(6 less 7)*	
9	Social transfers in kind (STIK) received	2.4.4.1
10	***Adjusted disposable income*** *(8 plus 9)*	

WE RECOMMEND THAT TABLE 2.1 BE ADOPTED AS THE CONCEPTUAL FRAMEWORK FOR INCOME DISTRIBUTION ANALYSIS, RECOGNISING THAT NOT ALL OF IT CAN BE IMPLEMENTED FOR PRACTICAL PURPOSES.

2.4.2 Total income and its components

The first measure of aggregate income to be built up is 'total income'. It is called 'total' because it is the gross measure assembled before deducting the components required to derive 'disposable income'. Total income includes a number of sub-aggregates.

2.4.2.1 Employee income

Employee income is the sum of remuneration received from an employer in both cash and non-cash form. It includes payments made by the employer on the employee's behalf, for example into a private or government pension fund.

2.4.2.2 Income from self-employment

The profit that a self-employed person makes out of his or her unincorporated enterprise includes an element which rewards the labour expended and also an element covering the return to the capital employed. (For this reason, the SNA refers to the receipts as mixed income.) The business of a self-employed person may make a loss, which is regarded as negative income.

Households not only consume goods and services which they purchase or receive from others, but also goods which they produce themselves. It is important that household production for own consumption is included in measures of income when it is a significant element of economic well-being. If it is omitted, comparisons between countries, over time or between income groups are likely to be deficient.

Imputed income thus includes goods produced for home consumption, less the cost of inputs other than the imputed value of own labour. When the goods are actually sold, placing a value on them is relatively straightforward. Sometimes, though, the goods will be intended solely for use by the household, or for exchange with another household through bartering. This is especially the case for subsistence agriculture in many developing countries but is conceptually true even for kitchen gardens or allotments in developed countries.

The services which are produced and consumed by the members of the household itself, such as cooking, housekeeping and child-rearing, also have a bearing on household well-being. There are great difficulties in putting a value on them, as discussed further in Chapter 9. At present there are no widely accepted methods for making such valuations and so they are not included in Table 2.1.

As explained in more detail in Appendix 1, imputed income less expenses from owner-occupied dwellings is also included here.

2.4.2.3 Income from rentals

Households may receive income from renting out dwellings, other buildings, vehicles, and so on. In the macro accounts, such receipts are regarded as part of self-

employment income, since the household is regarded as operating as an unincorporated enterprise by renting out their possessions. However, in many countries such income is classified in the micro income distribution statistics as property income because it is viewed as the result of 'lending' an in-kind asset to someone else. Thus in Table 2.1, this type of income is shown as a separate category to enable either treatment to be applied.

2.4.2.4 Property income

Property income is the receipts less expenses which arise from lending some types of assets to another user for which there is a usually a monetary return.

In the macro-data on household income, interest and dividends should be recorded on an accruals basis, that is when they are due to be received (ie receivable) rather than when they are actually received. This difference can sometimes be significant. However, it is very unlikely that such information will be available at the micro level, and so property income here is shown on the basis of actual receipts.

There are three main forms of interest payment:

- Interest paid on business loans by the owners of unincorporated enterprises, including those loans on assets rented out (such as dwellings, machinery, vehicles)
- Interest paid on loans associated with home ownership (ie mortgage interest)
- Interest paid on borrowing to finance consumption (eg loans to purchase consumer durables or interest paid on credit card balances).

The first two are always deducted from income. This can be done by offsetting them against interest received in property income. The recommendation here is that the interest paid on consumer debt should also be offset against income receipts. This procedure has the advantage that it is not necessary to try to separate total interest payments into the three components if it is not easily available in that form. A second advantage is that this treatment is consistent with the SNA. However, for some analyses it may be useful to identify interest on consumer debt explicitly and to deduct it not from disposable income but at the same stage as consumption expenditure is deducted from disposable income to reach saving. In this case consistency with the SNA would be restored only with the calculation of saving rather than being preserved more generally.

2.4.2.5 Current transfers received

Transfers are payments and receipts made without a 'quid pro quo'. They are a major way in which income is redistributed and therefore a good classification of transfers is particularly important for income distribution studies. Transfers may be made between one household and another, between households and government, or between households and charities. They may also cross national boundaries: in Table 2.1 no distinction is made according to whether a transfer is received from within a country or outside, so that for example pensions received from governments in other countries are not distinguished from those received from the national government.

Having established that a transfer should be classified as current in nature as described above, there are additional concerns. Does the receipt of a transfer really represent income? Does the payment of a transfer represent a reduction in income or is it rather a decision on how to spend disposable income? Chapter 1 established that 'income' is the concept of choice to act as a proxy for economic well-being

because it provides a guide to the level of material living standards that people can sustain, given their current economic and social circumstances, without increasing/ decreasing their net worth. Thus deciding which current transfers should be taken into account in defining income has to refer back to this basic rationale. (Note that this represents a significant difference between the perspective of the micro-statistician and the macro-counterpart. From the macro point of view, all current transfers are recorded before the derivation of disposable income and the only issue of principle to decide is whether a transfer should be classified as current or capital in nature. Of course, for the macro accounts which do not disaggregate the household sector the issue does not arise anyway.)

It is desirable therefore to separate transfers into two groups. The first group relates to transactions that clearly affect disposable income. Many of the transfers paid which fall into this group are compulsory in nature, such as payment of income tax, making contributions to compulsory pension schemes and paying alimony and child support. Their counterparts amongst transfers received include social insurance and social assistance benefits, and receipts of alimony and child support where these are compulsory. All of these tend to be regular and predictable in certain circumstances. The Canberra Group concluded that all such receipts should be included in a definition of income and corresponding payments should be deducted.

The second group of transfers includes gifts between households, donations to charities and other transactions of a more voluntary and possibly more sporadic nature – for example child support not made under legal obligation. A further distinction may be made between such transfers made in cash and those made in kind. The latter might include presents exchanged between households, and clothing etc donated to charities and then distributed to beneficiaries. The Canberra Group agreed that transfers in kind should not be included in an income definition. One way of viewing them is as transfers of expenditure rather than of income and this issue is discussed further in section 2.5.2.1.

Thus we are left with voluntary transfer transactions made in cash. Although the recipient may be another household, it may not be sensible for this household to regard such transfer receipts as a reliable source of income, even if they may be used for consumption as and when received. Similarly, the donor household may not regard such payments as a reduction in their income but as an expense like any other which contributes, at the margin, to the donor's welfare (by fulfilling a moral obligation for example).

The decision on how to divide these transactions into those to be included in income and those to be excluded is a fine one, and one which may differ between countries of different cultures. Here the recommendation is to include those payments which are regular, and/or expected and relied on by the recipient. All other current transfers, usually relatively insignificant, are treated in these guidelines not as transfers of income but as transfers of expenditure and are discussed further below in section 5.

A further question is whether to show receipts and payments separately or consolidated. While ultimately it is essential to exclude double counting, the approach taken here is to record transfers in two stages, first the receipts and then the payments.

2.4.2.6 Total income

Is the sum of all the above

2.4.3 Disposable income

2.4.3.1 Current transfers paid

Many of the items included here are the counterparts of current transfers received above such as social insurance contributions and regular inter-household cash transfers. Also included are taxes paid on income and regular taxes paid on wealth.

There are two types of taxes on wealth, those levied relatively infrequently such as taxes on capital gains and those levied on the ownership of assets such as housing and consumer durables. The latter are levied regularly and predictably every tax period, can be assumed to be paid from income and so are deducted alongside income tax. The former are assumed to be paid from capital and are therefore deducted from wealth.

2.4.3.2 Disposable income

'Disposable income' is derived from total income by deducting current transfers paid. Note that work expenses such as travel and childcare payments are considered part of consumption expenditure in this framework. However, such unavoidable and unreimbursed expenditures related to undertaking paid unemployment might be deducted at this point if the aim is to compare economic well-being of those working with those not working.

2.4.4 Adjusted disposable income and social transfers in kind

Disposable income can be augmented to include social transfers in kind (STIK) received, thereby creating the measure 'adjusted disposable income'.

2.4.4.1 Social transfers in kind

In most countries, government provides some services to individual households, usually targeted towards meeting specific needs such as education, health and social welfare. These services are referred to as individual services since they are identifiable as being consumed by individual households. In general the extent to which one household benefits affects the extent of the benefit which can be offered to other households. In addition, government provides services such as public administration, and defence services. These are available to all households collectively and no allocation process is involved. Such services are referred to in the national accounts as collective services and often by economists as pure public goods. The level of well-being of households is affected by the level of collective services provided by government. Since the range and level of services provided differs between countries, it could be argued that in cross-country comparisons some allowance should be made for the extent of collective services provided. However, it is difficult to find a metric by which it would be possible to say by how much greater expenditure on defence or on road-building increased the well-being of the inhabitants. Because of this difficulty, it is not usual to include the level of government collective services in income comparisons.

By contrast, the level and distribution of individual services does affect comparisons across different groups of households, where levels of entitlement may vary from one to another and across countries where the extent of state provision differs markedly. STIK therefore may be included to allow for a fuller allocation of individual consumption expenditure to households.

The Canberra Group concluded that in principle, social transfers should be included in a complete definition of income, and they are thus included in Table 2.1. However, the Group recognised that the statistical community is some way from being able to agree on a definitive method of valuation and allocation to individual households. More research and experimentation are needed.

STIK are defined as benefits provided by government and non-profit institutions serving households (NPISHs) to individual households. There are a variety of ways in which such benefits are provided. Goods and services such as education, housing, cultural and recreational services may be provided either free or at greatly reduced cost at the point of use. These are known as transfers of individual non-market goods and services. In addition, in some countries households receive reimbursement from government social insurance schemes for specified types of expenditure, typically for medical or dental goods and services. Other social security benefits in kind are typically also medical or dental in nature, but involve the provision of goods and services direct to the recipient and thus do not require reimbursement. Social assistance benefits in kind are also similar but are not provided through a social insurance scheme, for example food vouchers for low income families.

There are a number of ways in which the value of social transfers in kind can be estimated for individual households. One basis is that of entitlement to the benefit; depending on household characteristics, the value of the entitlement is calculated such that the total of all entitlements across all households is equal to the value of the services provided. This method begs two rather important questions. The first is that it is commonly observed that actual take-up of social benefits falls below the level which would be observed if everyone took up their full entitlement. However, since the amount of services distributed reflects the extent of non-take-up, we simply assume that the global level of entitlement is scaled back to the total value of take-up. The second and very vexed question refers to the value to be placed on the services provided without direct cost to the beneficiaries. Here we follow the national accounts convention that the value of the service is equal to the cost of providing it. Under this assumption, all households with equal entitlement are assumed to be equally better off by the provision of the state of the services in question, regardless of whether they actually avail themselves of the entitlement or not. One could regard the entitlement as equivalent to an insurance premium guaranteeing that the service would be provided if needed.

Conceptually it would also be possible to allocate the services on the basis of actual take-up. For some purposes, as discussed further below, this may give very useful information but it is not necessarily appropriate when thinking of the income equivalent of services provided. It may seem acceptable when considering a parent opting out of the government provided education system and choosing instead to send children to fee-paying schools, but it is less acceptable in the case of health services. It is difficult to see when it would be desirable to reclassify a poor household to a rich category simply because they had the misfortune to require extensive medical services.

There is a third alternative for allocating social transfers in kind, frequently referred to as the insurance basis of allocation. Under this, there is no specific allocation to individual households but instead an allocation is made to a group of households depending on the average take-up for the group as a whole. Normally, this means of allocation will give a distribution fairly close to an allocation by entitlement but may show some drift if the level of take-up is strongly correlated with the groups of households being considered – for example, in the case of health services the distribution may be skewed towards the elderly. Note also that if the grouping of households is changed, the allocation by insurance principle would have to be redone. As a result, the implicit allocation for an individual household will change if the previous and new groups of households with which it is associated have different patterns of take-up of the service in question.

However, the difficulty still remains under any of these methodologies that the recipient may place a lower value on the benefit than the cost of providing it – for example, they may be willing to accept a lower cash payment in lieu of the in-kind benefit. A fourth alternative would thus be to record the cash payment which a household would be willing to accept in lieu of the service as the value of the in-kind benefit to them – ie what they would have been prepared to spend to receive the service. The difference between this and the cost to government of providing the service would be treated as a pure public good.

Measuring the value of social transfers in kind received by individual households, or even groups of households, will generally only be possible indirectly via simulation models. This whole issue is returned to in Chapter 4.

2.4.5 Choosing between income measures

2.4.5.1 Total, disposable and adjusted disposable income

Of the aggregates set out in the conceptual framework shown in Table 2.1, total income is the broadest measure of income. Because it is measured after the receipt of property and transfer receipts but before any payments are made, at the aggregate household level there is a degree of double counting. The extent of this will vary from country to country depending on institutional arrangements. The more extensive are the social insurance schemes, for example, the higher total income will be relative to, say, income from employment. On the other hand, total income may be easier to measure than some of the other aggregates and thus be felt to be more reliable.

Disposable income is usually the preferred measure for income distribution analysis. It is freer of the impact of institutional arrangements than total income and provides a closer approximation to the receipts that are available for consumption during the accounting period. Given that most income tax regimes are intended to be progressive, measurement of income after tax is likely to be more equally distributed than income before tax.

Adjusted disposable income takes this "income levelling" one stage further since a major objective of government in making essential services available via social transfers in kind is normally to effect a more equal access to those services. Adjusted disposable income is therefore the preferred measure for analysing the total redistributive effect of government intervention in the form of benefits and taxes on income distribution. In such studies it may also be desirable to impute the value of indirect taxes embodied in consumption expenditure to complete the picture (see section 2.5.2 below).

2.4.5.2 Cash only or cash and non-cash income

When an individual receives income in cash they have a choice between spending and saving it. They can also decide how that money will be spent and the type of consumption items to be purchased or investments to be made.

However, despite the attraction of the convenience of using cash income data only, this measure falls short of valuing the economic resources enjoyed by the household. Of particular concern is the fact that the relative mix of cash and non-cash income may differ significantly across population groups.

The relationship between cash and non-cash income may also differ between countries and within a country over time. While the majority of income receipts in developed countries may be in cash, for people in developing countries, a very large proportion of income may be received in a non-cash form. The most important form of non-cash income in developing countries is subsistence agriculture.

Similarly, within a country, there may be changes over time in the cash and non-cash mix of remuneration of employees. This may occur, for example, when "salary sacrifice" is used to gain fringe benefits or employer contributions to pension funds. Changes to tax regimes within a country may make either cash or non-cash receipts more attractive and result in distortions in time trends if the measure of cash income only is used.

2.5 Extension to consumption and accumulation

2.5.1 Introduction

In previous sections, there has been discussion about the boundaries between income flows and capital flows, and about household consumption and saving. Table 2.1 presents the flows which are regarded as part of the income concept recommended in these Guidelines. Although the extension to concepts of consumption, saving and wealth was outside the scope of the Canberra Group, for completeness Table 2.2 shows how the various concepts can be brought together in an integrated way, building up to a measure of the change in net worth due to saving and net capital transfers which is called 'Net accumulation of capital'. These issues require further discussion and work, and the Group recommends that they be taken up by others. Further discussion of this research agenda may be found in Chapter 9.

Most of the items included in Table 2.2 have been discussed in earlier sections of this chapter, especially Section 3, Income versus capital accumulation, and so only household consumption expenditure and holding gains and losses are discussed further here.

2.5.2 Household consumption expenditure

Household consumption includes the value of all goods and services provided in kind from employers or as a result of home production (including the value of imputed rent for owner-occupied dwellings) which have already been included in total income, otherwise household savings will be over-stated. However, it should not include costs incurred in generating income from self-employment. Nor should it include costs incurred in generating imputed rent from owner-occupied dwellings or other home production if those items have been included in the measure of income as advocated

above. However, if in practice it is not possible to include them, then the input costs should be included in household consumption expenditure so that the appropriate value of household saving can still be derived.

Aggregate expenditure may be disaggregated in different ways to support different types of analysis.

First, it may be desirable to identify the indirect taxes included in the value of consumption expenditure if the full redistributive effect of government intervention in the form of benefits and taxes on income distribution is to be analysed. It is then possible to contrast the value of social transfers in cash and in kind with the total value of taxes paid, both direct taxes which are included in transfers paid and indirect taxes which form part of consumption expenditure.

Second, consumption expenditure is sometimes broken down by type of expenditure. For some analyses it is of interest to know the size of unavoidable expenditure related to undertaking paid employment, and it may sometimes be desirable to show disposable income after the deduction of such expenditure as explained in section 2.4.3.2. For other analyses it is useful to have housing costs separately available so that a measure of income minus housing costs can be derived. This measure can be especially important if the implemented version of total income does not include income less expenses from owner-occupied dwellings. More comparable proxies for income can then be produced by taking total income less housing costs, where housing costs include the input costs of owner-occupied dwellings.

One of the useful distinctions that can be made concerning consumption is between the unit which pays for it and the unit which uses it. The total financed by a unit is termed consumption expenditure; the total used is called actual consumption. Most household goods and services are bought and consumed by the same household so fall into both categories. However, the social transfers in kind discussed above are financed by government but consumed by households. Thus they form part of government consumption expenditure and household actual consumption. To demonstrate this we may set up the following table:

Consumption expenditure
less social transfers in kind paid to another unit
plus social transfers in kind received from another unit
equals actual consumption.

For the purposes of income distribution statistics this conceptual distinction between expenditure and actual consumption can be applied to deal with some inter-household transfers in a similar way. Compulsory transfers and regular inter-household cash transfers were dealt with under the discussion of income above. This leaves some other transfers which affect the distribution of consumption if not income. First among these are inter-household transfers.

2.5.2.1 Inter-household transfers

Once compulsory transfers and regular inter-household cash transfers are removed, two classes of inter-household current transfers remain. The first of these covers irregular transfers in cash. These are most likely to be between family members in different households – though not exclusively so. This reinforces the need for clarity and precision about what constitutes a regular cash transfer. In any case, though, it is necessary to allow for irregular cash transfers received and paid.

Other transfers are irregular gifts such as presents exchanged between family members and non-family. Often they will take place by someone in household A buying a good and giving it to someone in household B. A uses part of its disposable income to undertake expenditure on behalf of B by buying the gift. B has neither income nor recorded expenditure but benefits by the acquisition and consumption of the gift from A. The gift is included in the consumption expenditure of A and the actual consumption of B, and recorded as a transfer in kind between households. Another way of viewing this is to say that voluntary inter-household transfers are treated as transfers of expenditure rather than of income. That is, the actual consumption of the recipient is increased and that of the donor is decreased but disposable income, consumption expenditure and saving for both are unaffected.

Resolving a satisfactory analytical treatment is somewhat easier than solving the practical problems of data collection. Inevitably these transfers are going to be extremely hard to capture well in the basic data. Such errors, though, may not matter too much in the aggregate since on the average gifts in and gifts out will tend to be about the same order of magnitude though on balance maybe rich households give more and poorer ones receive more. Note also that some of these transfers may be between domestic and foreign households, though the sum will usually be small relative to domestic transactions.

2.5.2.2 Voluntary transfers between households and other units

There are a number of transfers which take place between households and other sectors of the economy which need to be considered. These are payments to and from charities, lotteries, and insurance, both life and non-life (accident) insurance. They are discussed in turn below.

Transfers to charities

Donations to charities may be tiny or very considerable; they may be regular or quite irregular. For income distribution statistics, there are two options for dealing with transfers to charities. The first is to regard them as “impersonal” family support and include them with compulsory transfers. This recognises that many households do in fact make regular contributions to organisations who rely on these as part of their normal income, for example dues paid to trade unions and professional bodies. It would also be consistent with the SNA treatment. The second option is to treat them as transfers of expenditure as described above. This would preserve symmetry for the payments by households to charities and for transfers by charities to households. The first option has already been recommended above for regular cash payments but the second option is adopted here for irregular cash payments and all payments made in kind. However individual countries may wish to take different approaches.

Lotteries and gambling

It is reasonable to assume that there is no net redistribution between income groups overall because of lottery or gambling winnings. However, in household budget surveys gambling expenditure is systematically under-recorded, and big winners are likely to be under-represented. The proposal is therefore to show the total stakes as part of household consumption and to show the winnings (where known) as negative expenditure off-setting these.

The main objection that can be raised is that for big winners, the win may seem like a capital rather than current flow. Against this there are two counter-arguments. By number, most wins are small. Even if for an individual household the win is large, for the income group as a whole it may not be so significant. By excluding the winnings from disposable income, the size of the winning cannot influence the income class of the winning household. On balance, it may be analytically defensible, even preferable, to include even large winnings as "negative expenditure" so that saving includes the balance of the winnings less any immediate corresponding spending from them rather than have possibly negative saving offset by this unusual capital transfer receipt. This is how lottery flows are shown in the accompanying tables but again countries may choose to adopt another presentation.

Non-life insurance

Non-life insurance is taken to be synonymous with accident insurance and to include term life insurance. (Whole life insurance is treated as a form of saving in these guidelines.)

The treatment advocated here is to include actual premiums paid in household consumption and again show claims as negative consumption for the sorts of reasons advanced above concerning lotteries. This differs from the SNA treatment, which records the premiums and claims as transfers payable and receivable - see Appendix 2. Even with the simplified presentation proposed in these guidelines, the question arises whether some of the claims should be regarded as capital transfers rather than current. For an individual household, the payment to compensate a burglary or the write-off of a car may seem like a capital transaction. However, it is likely that even for large claims, the money would be spent immediately to replace whatever had been lost rather than saved. For the insurance company, payouts are predictable statistically and this calculation is used in determining rates. Across a large enough group of households the number of occurrences will be such that the smaller and more common the risk, the more the insurance payments will seem like a regular and recurrent event. For the insurance company, these are sufficiently common to be treated as current rather than capital payments. In order not to distort national saving, the SNA treatment is to treat all non-life insurance claims as current. However there is discussion by national accountants about whether some non-life insurance should be treated as capital and not current transfers, such as those relating to natural disasters.

There are some types of non-life insurance taken out by individuals which pay out a series of regular amounts rather like social insurance payments - for example private unemployment or disability insurance. If these are a common means of covering such risks in a particular country it may be useful to identify the payments into such schemes and the receipts from them separately, since the receipts may be a significant part of the beneficiary's income.

2.5.3 Holdings gains and losses

As described briefly in Section 2.4.2, Capital/holding gains, holdings gains and losses are not regarded as income, and the following paragraphs elaborate on that explanation.

For a start, there is a language problem with the terms “holding gains” or “capital gains”, stemming from the number of complicated ways of reckoning capital gains. (These are described as holding gains in the SNA to make clear that they refer not only to gains on fixed capital but also, and more importantly, to gains on financial and other assets also.) It is easiest to explain with a simple example.

Suppose an asset is bought for 100 and five years later it is worth 500. Over five years there has been a nominal holding gain of 400. If the asset is sold, the realised holding gain is 400. If it is not sold, the asset there is an unrealised gain of 400. This gain, however, relates to the five year period and for income calculations, one would only want the gain within the relevant accounting period, say a year. Suppose at the end of the previous year the asset was worth 450. During this year, the nominal holding gain is 50. Suppose the rate of inflation in the year is 10 per cent. Then 45 of this 50 is needed simply to maintain the real value of the asset. This 45 is called the neutral holding gain. The real holding gain is the remaining 5.

What should be included in income? The SNA says none of them because income must be measured on the same basis as production where holding gains are rigorously excluded. It can be argued that for some analyses one might want to include the real holding gain of 5. This accords with the income definition of being as well off at the end of the period as at the beginning. For some purposes one might conceivably want to include the whole of the 50 (though never the 400), but this may also represent a form of double counting. For example, if the value of a share increases because of the increased performance of the company concerned, the increase in the share will be related to the increase in dividends expected in the coming years. To count both as income would be to count the same income flow in two periods.

The treatment adopted in these guidelines is to exclude all holding gains and losses from income and the measure described here as ‘net accumulation of capital’. They should be recorded them as a separate memo item because they need to be taken into account in the compilation of balance sheets. The Canberra Group recommends (Chapter 4) that ideally data should be collected on holding gains and losses, but recognises the practical difficulties of doing so.

Table 2.2 Extension of definition of income to consumption and accumulation

11	**Household consumption expenditure** (incl. consumption in kind except STIK)
11.1	Unreimbursed unavoidable work related expenses (travel, childcare, etc), excluding indirect taxes
11.2	Indirect taxes on work related expenses (travel, childcare, etc)
11.3	Housing consumption expenditure (actual rent, housing subsidies, imputed rent of owner-occupiers (equals 2.5)), excluding indirect taxes
11.4	Indirect taxes on housing consumption expenditure
11.5	Other household consumption expenditure, excluding indirect taxes
11.6	Indirect taxes on other household consumption expenditure
11.7	Goods and services provided to employee as part of employment package (equals 1.7)
11.8	Goods received through bartering (equals 2.3)
11.9	Goods produced for home consumption, less cost of inputs (equals 2.4)
12	Irregular transfers of expenditure in cash and in kind
12.1	Irregular cash transfers and in-kind gifts received from other households and charities less those given
12.2	Lottery and gambling stakes less winnings
12.3	Non-life insurance premiums less claims
13	***Total consumption expenditure*** *(11 plus 12)*
14	**Social transfers in kind received** (equals 9)
15	***Household actual consumption*** *(13 plus 14)*
16	***Household saving*** *(10 less 15)*
17	**Capital transfers received**
17.1	Inheritances
17.2	Lump sum retirement payouts
17.3	Life insurance claims less premiums
17.4	Other windfall gains
18	**Capital transfers paid**
18.1	Tax on inheritances
18.2	Periodic taxes on wealth (including taxes on holding gains and losses)
19	***Net accumulation of capital*** *(16 plus 17 less 18)*
20	**Memo item: Holding gains and losses**

Chapter 3

Other Conceptual Issues

3.1 Introduction

In addition to defining the income concept, a number of other conceptual issues have to resolved before income statistics can be compiled. It is necessary to decide which statistical units are to be used and the length of the accounting period to which the statistics refer. And if comparisons are to be made between countries or over time it is necessary to take account of price differences in some way. Sections 3.2 and 3.3 of this chapter discuss length of accounting period and choice of statistical units respectively. Section 3.4 addresses the use of price indices to remove the effect of inflation from time series comparisons, and Section 3.5 discusses the use of purchasing power parities to adjust comparisons between countries for price differences between them.

3.2 Accounting period

A twelve-month reference period is also the common period for which owners of small enterprises derive a measure of profit or loss for their business if they are operating within the formal sector. If income statistics are compiled from administrative records such as income tax data, the data for wage and salary earners are also likely to be only available with a twelve-month reference period.

There are some types of receipt such as interest, dividends, and income from seasonal activities such as agriculture and tourism, which tend to be received on an annual cycle. As they are essentially 'regular' receipts and should contribute to the measure of income, a year is the minimum accounting period that should be used for them.

While a one-year reference period is both the desirable and practical accounting period in many situations, there are other circumstances where this may not be so. If income data are collected by means of household surveys, wage and salary income and any regular transfers received will normally be reported more easily and more accurately if information is only sought with respect to the previous week or month. For practical purposes it may therefore be best to collect different types of data with different accounting periods and standardise them for analytical purposes, even though an element of non-comparability is thereby introduced. Also, the shorter period used for some components will not always be typical of the full period and so

complementary information on whether there were any special factors during that period which made the receipts atypical should be sought if possible.

It should also be noted that different accounting periods may suit different types of analysis. For example, studies of income distribution within the population produce larger measures of inequality when income is measured for a twelve month period than if income were measured as an average across a person's lifetime. Students, for example, may be poor this year, but be building up skills to provide for an above average income across their working life. (Further discussion of longitudinal data issues is provided in Chapter 8, Income dynamics.) On the other hand, life-time average income will not be a very useful measure for governments and other organisations concerned with assisting those in poverty today.

WE RECOMMEND THAT THE ACCOUNTING PERIOD TO BE USED FOR INCOME DISTRIBUTION ANALYSIS SHOULD BE ONE YEAR

3.3 Statistical units

3.3.1 Introduction

A choice of statistical unit has to be made both for collecting income data and for analysing them. For data collection, the choice will depend on the design of the survey (or the nature of the system through which administrative data are available) and on the element of income for which data are sought. For example, wages and salaries are best collected at the individual level whereas data to enable imputed rent to be calculated will have to be collected at the household level. In general it is advisable to collect information at the lowest level of disaggregation possible to give maximum flexibility in choice of analysis unit. The remainder of this section concentrates on choice of analysis unit.

One of the key requisites in making progress in the area of meaningful international data comparisons is the establishment of the capacity to harmonise and standardise the units of analysis used in the development of income estimates from household surveys.

In principle, economic well-being is an individual rather than a collective experience. However, the use of the individual as the primary unit for income distribution analysis, even if it were practically possible, would be to ignore the fact that individuals often share income with others with whom they live. To use the individual as the statistical unit would mean that economically dependent spouses, for example, would be seen as living in poverty when they may in fact share substantial income received by their partner and children. Thus to attempt to make an accurate estimate of individual income would require data on transfers made within the living unit, a virtual impossibility.

The statistical unit for analysis of economic well-being therefore has to be one where assumptions of sharing of economic resources are most plausible. Ideally, the unit should be one where an assumption can be made that the well-being of any individual in the unit can be assessed on the basis of the combined economic resources of all members.

Statistical units become increasingly important in the assessment of the social and demographic implications of economic well being – especially when the yard stick is income distribution. Thus the choice of the statistical unit of analysis will depend to a high degree on the analysis framework intended for the information. This idea is well articulated in ***A Provisional Framework for Household Income, Consumption, Saving and Wealth*** (Australian Bureau of Statistics, 1995). In short that Australian work suggests that an individual may be the preferred statistical unit when analysing, for example, the relationship between earnings and educational attainment. However, for the analysis of the distribution of income it is usually more appropriate and meaningful to group people according to the way income is potentially shared within, say families, to form a single spending unit.

Income, expenditure and wealth statistics are of necessity collected and disseminated using a limited range of statistical units such as households, various types of families and individuals. Practices in the choice of statistical units, and the definitions of those units varies from country to country, and may even vary within a given country's income and related statistics programs (see Chapter 8: Robustness Assessment). The picture of the economic well being of individuals may vary considerably depending which statistical units are chosen and indeed on the legitimate statistical comparability of the unit of analysis. As already noted however, the choice of reporting unit may not be the same as the choice of analysis unit. It will often be appropriate to collect data from units at a lower level of aggregation and then aggregate to the level at which the income sharing assumption is thought to hold.

The following sections discuss various statistical units for use in the analysis of income. The approach is to explore the statistical units at a conceptual level and then recommend some specific, operationally feasible definitions. In this way compromises which need to be made for practical reasons in choosing definitions for statistical units can be assessed against a theoretical ideal.

3.3.2 Definitions of statistical units

Traditionally, groupings used for the measurement of income are households, broadly defined families (called "economic families") and nuclear families (smaller units - mother, father, sister, brother).

3.3.2.1 Unattached individuals - Persons not in families:

One of the implications of the choice of families as statistical units is that each family definition creates a somewhat different group of individuals who we can refer to as "persons not in families." These can be divided into those who live by themselves, and those who reside with other persons. For those who are living by themselves, in many countries (though not all) these individuals will all be classified as persons not in families regardless of the definition of the family used. The impact of the choice of family definitions is, therefore, found among those who share a dwelling with others. In the case of nuclear families, these people may be related to other people in the dwelling but they are considered to be persons not in families since the kinship ties are other than parent-child. In the case of broadly defined or economic families, the persons not in families are those who share only the same roof and have no kinship ties.

If the household is the chosen statistical unit, there are no analogues to "persons not in families" since households are defined to include persons living alone in a dwelling i.e., households of size one. Standard practice is to include all households in calculations regardless of household size. This raises one of the peculiarities of calculations performed using the households as statistical unit. For families, only groups of two or more individuals are included in calculations. The result is that while households are the more inclusive unit, average household income will be smaller, often substantially smaller, than average family income simply because the inclusion of households of size one in the calculations.

The impact of the choice of family definitions on persons not in families is most evident with calculations based on thresholds such as low-income cut-offs or poverty lines. In the case of nuclear families, for example, the economic well-being of persons living with relatives (but not in a parent-child relationship) will be calculated as though they were living alone. Their individual incomes may be quite low (which is frequently the case with the elderly) with the result that they will be erroneously counted among the "poor" even when they benefit considerably from income sharing with the nuclear family with which they reside. This can also occur in the case of economic families. However, in the case of economic families, persons not in families but living with others have no kinship ties with those with whom they live and so the likelihood of income sharing is presumed to be lower as is, therefore, the likelihood that their individual incomes misrepresent their economic well-being.

3.3.2.2 Households

Definition

The definition of a household is usually deceptively simple. There are two main types of definition in use: people who share a dwelling, and the rather more restrictive definition of those who share a dwelling and who usually eat together. The latter is commonly used for household budget surveys.

Impact on the income sharing assumption

Households may include persons who are not related by blood, marriage or adoption to all of the other household members. What does this do to the sharing assumption? In the extreme, some household members such as roomers and boarders may pay other household members for the services that they receive. The other household members may share in this income (the payments of the roomers and boarders) but they do not share in all of the income of the roomers and boarders. It is evident that at the household level, the income sharing assumption is not always valid.

On the other hand, there are instances of income sharing which cross household boundaries. There are many developing countries where the extended family is of great importance, even to the extent that family members living abroad make substantial transfers to those in the home country. In developed countries, high income elderly families often transfer income to adult children (or grand children) living in separate dwellings. (In some cases, this serves to reduce their long-term income tax liability.) Between-household sharing of income also occurs when families break up and one spouse (usually the one without custody of the children) makes payments to the former spouse either for the support of the spouse or for the support of the children or for both.

In other words, if we were to define statistical units as those groupings of individuals who shared income, then the "same dwelling" limitation in the definition might be both erroneous and unacceptable.

In order to capture all of the income sharing so that it includes between household transfers, it is necessary either:

- to adopt statistical unit definitions which are not subject to the "same dwelling" constraint.

or

- to include as income all such inter-household transfers.

However, the first option gets very complicated from a practical point of view since surveys would have to ask questions about inter-household income transfers just to identify statistical units, and all households within the 'sharing unit' would have to be included in the survey sample, which is impractical when using area samples. The second option is the one implied by the conceptual framework recommended in Chapter 2, with the proviso that the payment of such inter-household transfers must also be deducted from the donor household's income.

Practical measurement implications

Since a household is generally defined as all persons sharing a dwelling, the two principal issues are: how do you associate people with dwellings, and even more importantly, what is a dwelling?

Associating persons with dwellings:

The standard practice is to say that persons are associated with the dwelling that is their *usual* place of residence. That is easy to say but much more difficult to put into practice. Failure to associate everyone with a dwelling is believed to be a major source of undercoverage in censuses of population and in household surveys using area samples. (Age-specific undercoverage rates of 10 per cent or more are not unheard of in household sample surveys.) It might be dismissed as a problem for demographers but it also has serious implications in the assessment and analysis of income distributions. When a household member is away from the dwelling where his or her immediate family resides in order to get work, failure to associate that person with the family residence has obvious and serious implications for income distributions. The household or family income may be reduced, possibly erroneously putting the family or household income near the very bottom of the income distribution. In a one person household (that of the person away working) the income may be shown as being far higher than it really is in the scale of economic well-being.

Students away from the parental dwelling can create similar problems. A student not associated with their parental dwelling will show up as a very low income, one-person, household and the parental household's economic well-being may be over estimated. Of a somewhat different nature, but still problematic, are joint custody arrangements for children following separation or divorce. These also pose problems for household definitions based on usual place of residence.

In general then, the use of the household as a unit to describe income distributions is perhaps necessary as a building block to other more useful analytical units. The reasons for this would include the fact that the household is a rather loosely defined set of individuals who share a common dwelling. The assumption of pooling

or sharing of income and expenditure decisions is far less clear in the case of households than is the case for families.

Definition of a dwelling:

The conventional definition is that a dwelling is a structurally separate set of living quarters with an entrance from outside of the structure which does not pass through some other dwelling. Generally the application of this definition poses few problems, at least in the well-housed populations of developed countries. Nevertheless, there are situations where on site suites or cottages occupied by other family members or domestic staff may be problematic as may low-cost housing for individuals (e.g., rooming houses) with shared cooking and washing facilities.

3.3.2.3 Broadly defined families

Definition

A broadly defined family usually includes all persons sharing a dwelling who are related by blood, marriage or adoption, often referred to as an economic family. Such a definition relies on the relationships (blood, marriage, and adoption) to substantiate the income sharing assumption. In the most generic of terms a family should exhibit the following characteristics. It should be comprised of two or more persons, one of whom should be of a minimum age (some countries use 15 years, others use 16) who are related by blood, marriage or adoption. The persons identified in the family should be usual members of the same dwelling. Both registered and de facto/common law marriages are usually given equal status. All other persons living in a dwelling who do not meet the generic characteristics described above would be characterised as unattached individuals.

Impact on the income sharing assumption

While seldom explicitly articulated, members of an economic family are assumed to share income because they are related to each other and choose to share a common dwelling. Being related alone is not sufficient to ensure income sharing since parents and adult children living in different dwellings, brothers and sisters living in different dwellings, and so forth, are not assumed to share income. As pointed out earlier, in the context of households merely sharing a dwelling may not be sufficient grounds for assuming income sharing.

However, when both kinship and shared dwellings are operative, as is the case with economic families, the assumption seems to stands on firmer ground.

3.3.2.4 Nuclear families

Definition

Nuclear families are defined as parent(s) and unmarried children sharing a dwelling. Sometimes an age limit for children (e.g. 18 years) is added to the definition.

Impact on the income sharing assumption

Again, kinship and the sharing of a dwelling substantiate the income sharing assumption. In the case of the nuclear family, the influence of kinship is buttressed

by the nature of the kinship ties. Specifically, the children in these families, especially those under a certain age, have little or no income of their own and so all of their consumption is derived from parental income.

3.3.3 Choice of unit and the measurement of income

The choice of statistical unit over which the income sharing assumption holds may be more straightforward for some types of income than for others. In particular, there are difficulties for certain types of imputed income. The following provides a few situations to illustrate the point that within the income framework the complexity of some income or benefits and the subsequent allocation to a dwelling, household, family or individual may be too complicated to cover with a household survey methodology. Whatever the merits and challenges of extending the income to include imputed income the issue here is what are the implications vis-à-vis the statistical units? These may be quite considerable.

3.3.3.1 Owner-occupied housing

A "family" occupying a mortgage-free house clearly has a higher level of living than an otherwise demographically and financially identical family renting their accommodation. (Also note that those who live in state-owned housing, and who pay less than market rents, should also have the difference between the rent paid and market value imputed to them as income in the form of social transfers in kind. Most of the following arguments regarding owner-occupied housing apply here as well.)

One might argue that all of housing related imputed income should be attributed to those holding legal title to the dwelling. However, this is a classic case of income sharing. Everyone in the dwelling consumes the housing services provided by the dwelling and so everyone in the dwelling should be included among those receiving the imputed income.

In terms of statistical units the implication is that the household is probably the most suitable unit for measuring the income from owner occupied housing.

3.3.3.2 Goods and services provided to employee as part of employment package

Often referred to as 'fringe benefits', these may extend to more than the employee whose employment package generates them. For example, medical insurance benefits and dental plans generally provide benefits to both the employee and his/her family. However, almost all of these plans cover only the so-called nuclear family, i.e., parent(s) and "dependent children".

In terms of the choice of statistical units, it is clear that no one definition of family or spending unit will be appropriate when adding to income the imputed value of these fringe benefits. In fact no single analytical unit will provide a comprehensive solution and compromises will have to be made.

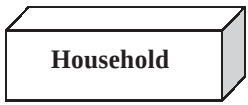
That having been said, the following section provides a proposal for a set of hierarchical units of analysis for the purposes of collecting and presenting income data.

3.3.4 Recommendations for harmonised statistical units

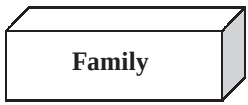
The diagram below sets out a hierarchy of units of analysis which the Canberra Group recommends be adopted as the standard for collecting and presenting household income data. This reflects the position which has already been adopted by most countries.

Table 3.1 Canberra Group recommendations for harmonised statistical units

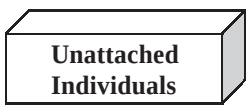
A structurally separate set of living premises with a private entrance from outside the building or from a common hallway or stairway inside[1]



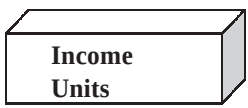
A person or group of people who reside together in the same dwelling[2]



Two or more people sharing a common dwelling unit and related by blood, marriage (including same sex couples and de facto or Common Law relationships) or adoption. The proposal here is that all relatives living together at time of the data collection should be considered to comprise a single family regardless of the nature of kinship.



An unattached individual is a person living alone or in a household where he/she is not related to other household members.



One person or group of related persons, within a household, whose command over income is shared. [3]

1. Eurostat definition is: a structurally separate set of living premises and the principle usual residence of at least one person
2. This is virtually identical to the Eurostat definition of a private household - household dwelling concept
3. This is virtually identical to the Eurostat definition of a private household – housekeeping concept

Taking into account the relationship between these "building" blocks for units of analysis and the actual production of income estimates, the Canberra Group considered the household to be the preferred basic unit of analysis. The preference was driven by to a high degree by the relationship of households to both micro (survey) and macro (SNA) data uses.

The 1993 System of National Accounts (SNA) definition of the institutional sectors of the economy (page 3 Section C) indicates the main sectors of the economy for which it is possible to compile the full sequence of accounts. Two main kinds of institutional units or transactions are distinguished in the system: households and legal entities. In the SNA, institutional units that are resident in the economy are grouped together into five broad mutually exclusive sectors composed of the following types of units:

i) Non-Financial Corporations

ii) Financial Corporations

iii) Government Units

iv) Non-Profit Institutions (NPI's)

v) Households

Clearly the use of the household as a unit in the macro sense relies on the notion of the income associated with that unit. However the definition of household in the SNA is very loose and is one of several subsets of the institutional units and sectors. Households are defined as (Commission of the European Communities et al, 1993, page 19-20):

> *Households: all physical persons in the economy, with the institutional unit in the household sector consisting of one individual or a group of individuals. According to the criteria given for defining the institutional unit, the household of the owner of an unincorporated enterprise in general includes this enterprise, which is not considered an institutional unit (except under certain conditions). The principal functions of households are the supply of labour, final consumption and, as entrepreneurs, the production of market goods and non-financial (possibly financial) services.*
>
> *Non-profit institutions serving households (NPISHs): legal entities which are principally engaged in the production of non-market services for households and whose main resources are voluntary contributions by households.*

Generally speaking, the SNA is not especially particular about the methodology of how the "household' is defined and constructed, but rather how it functions as a production or consumption unit. It is worth noting that "Australian" household units are treated in the SNA frameworks the same as "Canadian" or "USA (American)" household units despite the fact each is defined quite differently for microdata.

The basic definition of "household" as proposed in this paper is recommended for comparison and data analysis activities since the only major difference in most countries microdata collection definition of households relates to "the eating together". This slight variant would not seem to create large differences in either the number or size of households for most microdata survey based estimates for most countries.

WE RECOMMEND THAT THE HOUSEHOLD, AS DEFINED IN TABLE 3.1, BE ADOPTED AS THE BASIC STATISTICAL UNIT FOR INCOME DISTRIBUTION ANALYSIS, WITH THE OTHER UNITS IN TABLE 3.1 AS ALTERNATIVES FOR PARTICULAR PURPOSES

3.3.5 Equivalence scales

One complication posed by use of the household as the statistical unit is that households vary in size and composition and such differences between households mean that their relative needs will be different. For example, a large household will have a lower standard of living from the same income as that received by a small household, all other things being equal. Costs of household members also differ according to their age, student status, labour force status and so on.

When the focus is on international comparisons of income distribution, even when countries have adopted the definition of household as the unit of analysis their different demographic structures may have an impact on the validity of comparisons between them.

Equivalence scales are designed to adjust income to account for differences in need due to differences in household size and composition. The most basic of such adjustments is to calculate household income per member to adjust total incomes according to the number of people in the household. But such an adjustment ignores economies of scale in household consumption relating to size and other differences in needs among household members, in particular differing needs according to the age of both adults and children.

There is a wide range of equivalence scales in use in different countries and by different organisations. All take account of household or family size: in many scales this is the only factor, whilst in those taking into account other considerations it is the factor with greatest weight.

Equivalence scales are usually presented as income amounts, or ratios of amounts, needed by households of different size and structure. Thus if a one person household needs one unit of income to maintain a given level of living, a two-person household may need 1.7 units, and a three-person household 2.2 units. There are two basic approaches to construction of scales: those which use the expert knowledge of social scientists and others, and those which are developed empirically based on analysis of survey data.

Equivalence scales are generally assumed to be invariant with income – i.e. the relative needs of different household types are assumed to be the same for those on low incomes as for those on high incomes. This is not necessarily correct. But a more sophisticated assumption would be more difficult to implement. The simple approach appears reasonable as long as results are tested against a wide range of equivalence scales: Chapter 4 provides guidance.

A simple adjustment for differences in need according to household size is recommended for most international comparisons. Hence, measuring adjusted household income as income divided by the square root of household size is a good starting place. Moreover, choice of equivalence scale may vary according to the income concept being measured. If it includes social benefits in-kind, e.g., education

expenditures per pupil or health care benefits, the equivalence scale used to adjust this income measure may be different than one which is applied to cash income alone (Smeeding et al. 1993). Finally, note that choice of "no equivalence" adjustment is in effect choosing a particular equivalence scale. It means that the producer implicitly assumes complete economies of scale, such that a given cash income level produces the same level of utility if it is shared by 1, 2, or 6 different persons in the household.

WE RECOMMEND THAT FOR DISTRIBUTIONAL ANALYSIS, INCOME SHOULD BE ADJUSTED TO TAKE ACCOUNT OF HOUSEHOLD SIZE USING EQUIVALENCE SCALES

3.3.6 Population weighting

A final issue in relation to the choice of statistical units is the choice of population weights. The households interviewed in income surveys are drawn to be representative of a defined population. Each household is weighted inversely to their probability of selection. Household incomes are then multiplied by this household weight to produce representative estimates for all households in the target population. Thus sample household incomes are 'weighted' to estimate total household income.

However, it has already been established at the beginning of this section that the users of income statistics are most often concerned with the economic well-being of individuals and not with the well-being of households *per se.* Once equivalence scale adjustments have been applied to household income so that household income no longer directly reflects the size of the household, household income weights can be multiplied by the number of people in each unit to derive 'person weights'. By the application of these derived 'person weights' to equivalised household income, estimates of the distribution of income amongst all persons can be made. Thus a six person unit 'counts' six times as much as a one person unit. Person weighting produces an estimate of the overall distribution of income among individuals in the population, assuming that all household incomes are pooled. This distribution reflects the assumption that household income is shared equally between all members of the household, and does not reflect the direct receipt of income by individuals. Because many household members receive no money income, eg younger children, such an assumption is hard to avoid in practice.

In some countries, complete income data are available for each individual within a household, except for children. In these cases, individual person weights are determined by the sample design used to produce income distribution estimates of the income earning population. Such design-based weights are distinct from the 'person weights' used in income distribution analysis as described above. In this method different household members have different income values, and incomes are assumed not to be pooled. However, in order to estimate the distribution of incomes amongst all persons within a household unit, including children, the person weighting method first described above is recommended .

3.4 Use of price indices

When the data compilers produce household income statistics that form time series, it may be desirable to adjust them to remove the effects of inflation so that 'real' comparisons may be made of income levels.

Such adjustments can be seen as the extension of the concept of equivalence scales already discussed. Equivalence scales provide estimations, or assumptions, about the level of disposable income that a household with one set of characteristics needs, so that its members can attain the same standard of living as a reference household that has different characteristics. They can be thought of as price indices for different household types.

However, even for households of a given type, prices are unlikely to remain unchanged over time. To provide valid comparisons over time – or between different geographic areas or different groups within a population - income distribution statistics need to be adjusted by an appropriate price index, consistent with the income definition. The requirement is for a transformation such that, when people are ranked by their incomes deflated by the chosen price index, they are correctly ranked by the living standards which those incomes allow.

When the income definition chosen is disposable income, the index should capture those consumption items which can be purchased out of 'disposable income,' however this is defined. For example, if income is measured net of local government/ property taxes, then local government/property taxes should not appear in the price index. Normally it will be possible to use the consumer price index or one of its sub-indices, which will be widely available.

If a broad definition of income, beyond cash income, is employed, the price index needs to be widened. If, for example, imputed rent on owner-occupied property is included in income, such 'rents' would need to be captured and appropriately weighted in the price index. If 'income' is broadened to include social transfers in kind, then these need to be included in the price index.

Another possibility is that price changes vary across the income distribution. This could arise because of different availability of expenditure items combined with different inflation rates for different items. Or differential changes in the cost of living could arise from differential changes in access to discount stores. There would be attractions in making complex adjustments to price indices to capture such differences. However, in practice they would bring major problems. If three types of price indices are available, one reflecting family circumstance, one average income and one geographical location, which of the three should be applied to a given household? If different adjustments are made for different sorts of analyses, the situation is reached where even the average income for all households can differ between analyses, just as it can be different if different equivalence scales are used. Thus in most situations data producers have to be content with the application of a single-dimensional (eg location only; family composition only) price index to adjust a given income definition for differences in across time in the same country.

3.5 Use of Purchasing Power Parities

Most cross-country studies of income distribution present income data in relative terms, that is, poverty studies will describe the fraction of the population with income less than some fraction of the median (see Chapter 7: Data Presentation). Such presentations are not made in money terms and thus the question of converting different currencies to a common standard does not arise. However, analysts and policy makers are also interested in the relative standards of living in different countries in real terms. They are interested, for example, in the 'real' living standards of the poor in one country compared to the 'real' living standards of the poor in another country. In order to make such comparisons, researchers need to transform relative incomes into real incomes in a way that takes into account differences in the purchasing power of income.

Macroeconomists have for some time used purchasing power parities (PPPs) to transform relative incomes expressed in different countries' currencies onto a common base. PPPs have been developed from National Accounts data coupled with cross-country surveys of 'average' prices of baskets of goods and services relevant to the whole economy. PPPs are regularly produced by OECD for their member countries, by Eurostat for EU member countries, and are produced less frequently by the World Bank for a wider range of countries.

A PPP calculates the ratio of the cost of one country's basket of goods to that of the same basket at the prices of another country. The baskets of goods in different countries may differ because of national characteristics; it may be technically possible to price comparable goods in two countries but if the goods are not equally representative for both countries, the resulting price ratio may not give an unbiased estimate of purchasing power. One factor affecting such comparisons may be geographical. A temperate climate may mean that neither air-conditioning nor central heating is in common use and so comparing the cost of running these units is somewhat artificial. Basic foodstuffs are another case where comparisons are difficult since what is a staple in one country may be a somewhat exotic article elsewhere.

PPPs have primarily been developed to generate 'real GDP per capita', and therefore cover a wide range of goods and services over and above household consumption. Sub-indices are also produced of 'Individual Consumption by Households' which exclude capital goods and collective expenditures by government and are therefore more suitable for use in adjusting household income data. Sub-indices are also available which exclude those goods and services such as health care, education and housing which may or not be purchased by households rather than provided by government in different countries. Thus PPPs exist which are appropriate for use in income distribution analysis. However, for many countries PPPs are not calculated annually but less frequently: thus one has to be careful to use those which are as close as possible to the years for which the household income microdata are to be compared.

Nevertheless, whatever their technical difficulties, PPPs are much preferred to exchange rates for making cross-national comparisons. If the cost of a given basket of goods can be put in common currency, the conversion of one to another gives a real purchasing power measure of the local currency, a measure which can deviate considerably from the exchange rate since the latter is affected not only by the domestic cost of living but also by the relative demand for a country's products, capital market and currency trading, and international trade. Further information about the concepts and methodology of PPPs may be found in Appendix 3.

WE RECOMMEND THAT WHEN CROSS-COUNTRY COMPARISONS OF REAL INCOMES ARE TO BE MADE, PURCHASING POWER PARITIES SHOULD BE USED IN PREFERENCE TO EXCHANGE RATES.

Chapter 4

From Concepts to Practice

4.1 Introduction

Chapters 2 and 3 sought to establish the concepts which should underlie production of household income statistics. However, there have already been hints that when it comes to putting these concepts into practice compromises have to be made because of various constraints encountered, which may move the implemented definition some way from the ideal. This chapter explores these constraints and their impact, and tries to draw from them some criteria for choice of practical definition.

The two main constraints faced in turning a conceptual definition of income into a working definition which can be implemented in practice are:

- availability of data
- quality of data

In addition, the purposes for which the data are required will also influence the choice of definition.

Most income distribution statistics rely on data collected in household surveys, although there are administrative sources in some countries which can be used: for example, tax and/or social benefit records, or personal income registers. However, it is highly unlikely that either type of source can provide the level of detail of data which the concepts developed in Chapters 2 and 3 demand.

Household surveys are constrained by the information it is feasible to expect people to be able to provide with reasonable accuracy during the course of an interview. This means that:

- people have to have knowledge of the income they are being asked to report – for example they may have little idea of the social insurance contributions made on their behalf by their employer;
- they have to be able to recall the information with a reasonable degree of accuracy, which may influence the accounting period used as well as the questions it is feasible to ask;
- the questions must appear relevant to the respondent – it may be difficult to get information which might seem to them to have little connection with their circumstances, such as the value of goods produced at home for barter transactions in many OECD countries.

Some of these difficulties may be overcome by collecting proxy information from which estimates of some income components can be made. This is particularly the case for social transfers in kind, but is also the preferred method in some countries for the estimation of other items such as income tax.

At first sight it might appear that recourse to administrative records could circumvent most of these problems. Income tax records are the most important of such sources and have historically provided long-run time series of continuous data. However, they also have their drawbacks:

- incomplete coverage of those with incomes below the tax threshold, a problem which varies over time with the tax base and which will be particularly acute in countries where the tax base is very small in relation to the total population;
- the definition of taxable income may not correspond to that chosen in studying income distribution;
- the definition of the tax unit may not be appropriate; and
- there may be difficulties in treating part-year units.

For these reasons, tax records are typically used in conjunction with other sources: for example, social security information for non-taxpayers, and information on total incomes from national accounts. Appropriate use of these files almost always involves direct matching of individual files by a personal identifier and, hence, runs up against privacy and confidentiality concerns. In most nations, the individual respondent is required to give his/her "informed consent" before the match takes place.

The issue of data availability is linked to those of quality and fitness for purpose. Often, when data are not collected on a particular income component this is because it is supposed – or indeed has been established in previous studies – that it is not possible to do so with sufficient accuracy for the purpose for which they are required. Quality may be sufficient to provide accurate estimates for some purposes but not for others.

These issues are explored further in the rest of this chapter. Section 4.2 discusses data availability through reference to a metasurvey carried out by the Canberra Group of the income data collected in a range of countries from different regions of the world and at different stages of development. However, availability of data items is not sufficient to ensure that reliable and internationally comparable income distribution statistics can be constructed from them. Quality of data is also of paramount importance. Section 4.3 draws attention to the factors which can affect data quality and identifies the pitfalls of which data producers and users alike must be aware, drawing on the experiences of countries participating in the Canberra Group. Section 4.4 brings all this material together to suggest options for choice of a practical income definition in the context of making cross country comparisons, drawing on the experience of the Luxembourg Income Study. Priorities are suggested for the development of a more complete income definition.

4.2 Data availability

4.2.1 Introduction

This section reports on the income components collected in a wide variety of countries. An examination of this information may illuminate the differences in current practice and enable general conclusions to be drawn about which components it is and is not feasible to include in a working definition of income.

One important issue is whether any existing household survey collects all (or most) of the income components needed to construct a complete income definition as developed in Chapter 2. A corollary issue is whether omissions can be compensated for by other means.

4.2.2 The metasurvey

Appendix 4 provides the results of the results of a "metasurvey" (survey about surveys) of 106 income components that are actually collected on household income surveys across the world. Good data collection practice requires asking the most detailed questions about those components most difficult to collect and more summary questions about easier-to-collect concepts. Accordingly, the data collection instrument was organised into nine sections, each oriented toward a different class of components of income and the aim was to be as exhaustive as possible. The nine types of income were: (A) income from employment, (B) fringe benefits, (C) income from property, (D) income from universal government programs, (E) income from government and private social insurance, (F) income from government means-tested transfer programs, (G) private transfers, (H) deductions from income, and (K) income from other sources.

Respondents were asked to note the following about each component:

- whether it was collected at all;
- if not, indicate whether it was imputed (allocated) by the statistical agency conducting the survey;
- if so, then whether it was collected as a separate income component or jointly with another component; and
- if jointly, which components were collected together.

If a component was collected only by inference in some sort of summary catch-all question, then the respondent was asked to note this fact. Respondents were also asked to indicate if an income component was not applicable to their country. Four countries—Finland, the Netherlands, Norway, and Sweden—reported on the data available to them from the administrative records they use to report income distribution statistics. Appendix 4 Table 1 lists the 106 income components. For the purposes of this chapter, the income components have been re-arranged to follow the income classification laid out in Chapter 2 Table 2.1(and in Appendix 1), and they have been assigned codes which are consistent with but expand on those in Table 2.1.

Responses were received from individuals providing information on 30 income surveys in 25 countries on all 5 continents. Note that as in all surveys, there are sources of error in the data presented. Not all respondents always understood what income component was being described in the short description provided on the

questionnaire and it was not always possible to understand how to describe the new income components contributed by the respondents. Besides language differences, there are substantial institutional differences among countries – for example in the availability of administrative records.

Appendix 4 Table 2 summarises the results of the investigation and Table 3 presents the complete answers to the questionnaire. Details of each reply and any updates to them are held on the Luxembourg Income Study website (www.lis.ceps.lu/canberra.htm). A component is considered collected if at least one survey in that country collects it. When counting the number of countries responding "yes", responses of "not applicable" are added as well (if a country does not have a program or income component, it implicitly collects its value - zero). However, it is not possible to tell whether a component is not collected because its value is assumed to be negligible – ie applicable but insufficiently important to be included in a survey.

4.2.3 The results

There were nine income components collected in 23 or more of the countries - wages and salaries from the main and other jobs (1.1A, 1.1B), bonuses (1.2B), nonfarm and farm self-employment income (2.1A, 2.1B), rental income (3), interest and dividends (4.1A, 4.2A), and employer-based pensions (5.1A). Other items are less well covered, and are discussed under each component of income below.

4.2.3.1 Employee income

As well as wages and salaries from the main and other jobs and bonuses, for which data were available in virtually all countries, a further five components of employee cash income were available for at least half the countries. Employer reimbursements for work expenses (1.1E, 1.1F), which should be deducted if they are paid with wages and salaries, are collected by virtually no countries, but this is unlikely to be an important omission.

Data availability on 'fringe benefits' is much more sparse. Only three are collected by at least half the countries reporting - company cars (1.7A) and subsidised meals (1.7B) in 13 countries, and subsidised housing (1.7D) in 14. Employers' social insurance contributions (1.6A-E) are even less well covered – data are collected by six or fewer countries.

4.2.3.2 Income from self-employment

Non-farm and farm self-employment income (2.1A, 2.1B) are collected by 24 and 23 countries respectively and royalties are collected by 15. However, imputed income from self-employment is much less well covered. Worth particular note is the relative dearth of information collected on home production for barter transactions (2.3). Whereas 14 countries did collect information on home production for own use (2.4), only six — China, Gambia, Mauritius, Mexico, the Netherlands and Switzerland — collected home production for barter. This income component is therefore key to creating an international income measure that would be comparable across countries at various stages of development.

Imputed income from owner occupation (2.5) is also available in less than half the countries: estimates are made by only 12.

4.2.3.3 Income from rentals

Income from rentals is available in all 25 countries.

4.2.3.4 Property income

Income from property is also widely collected. Interest received (4.1A) and dividends (4.2A) are collected in 24 countries; interest and dividends from estates and trusts (4.1B plus 4.2B) are collected in 15. Interest paid on mortgage and non-mortgage loans (11.7A and 11.7B) is collected by 13 and 12 countries respectively. Note that while in theory a distinction should be made between rent income received on land and rentals on non-land assets, with only the former being part of property income, it is doubtful that any household survey can make that distinction, especially since the rental of buildings almost always implicitly includes the rent of the land under the buildings. Only two countries, Mauritius and Switzerland, were able to identify rent from land.

4.2.3.5 Current transfers received

The first category of transfers is government and private social insurance benefits (5.1 and 5.2). Virtually all countries collected information on employer-based pensions (5.1A). Pensions paid from abroad (5.1B) are also collected by most countries (19 out of 25).

Of the government social security benefits, 15 or more countries collected information on retirement and survivors benefits (5.2A), on disability or disablement insurance (5.2B), on unemployment benefits (5.2C), on workers' compensation for on-the-job injuries (5.2D), and on veterans' benefits (5.2F).

Determining the full coverage of data collection on government social assistance programs is more difficult as some programs listed may not be offered in all countries, and the questionnaire has not yet been fully completed for Latin American countries in particular in this regard. By counting the failure to offer a program as collection (amount zero), note that information on universal family and child benefits (5.3A) is collected by 17 of the 25 countries surveyed, 13 collect data on maternity benefits (5.3B), 14 collect data on government scholarships and educational assistance (5.3C) and 17 on reductions in interest on student loans (5.3D). Means-tested benefits, including tax credits were collected by a reasonable number of countries (or they did not exist); all 10 components were collected by nine or more countries and all but one were collected by 11 or more countries.

Three private transfers are broadly collected - alimony received (5.5A) by 21 countries, and child support received (5.5B) and regular cash gifts (5.5C) by 19 and 20 of the 25 respectively.

4.2.3.6 Deductions of current transfers paid

Chapter 2 set out the importance of deducting transfers paid in a manner symmetrical to the inclusion of transfers received. However, only six were collected (or imputed) by ten or more countries - employee contributions to government-mandated insurance premiums (7.2B and 7.2C), income and property (real estate) taxes (7.3A, 7.4), and alimony and child support paid (7.5A, 7.5B). Between one-quarter and one-half the countries collected a number of other deductions. (Compulsory fees and fines is subdivided into those for hunting, shooting, and fishing (7.3B) and those for other

purposes (11.6A), because of SNA conventions - the former are considered taxes and the latter are considered expenditures; data collection is not complete for the separate components.)

4.2.3.7 Social transfers in kind

If adjusted disposable income is to be calculated, data on the value of social transfers in kind are required. Data availability is relatively sparse in this area. Information on rental allowances and food subsidies/vouchers is available for 15 and 14 countries respectively out of 25. However, most striking was that only one country (Australia) collects information on public education (9.1) programs, and only three – Australia, Germany, and the United States – collect information on government-subsidised health care services (9.2).

4.2.3.8 Other items

The survey collected information on a range of items which for some purposes might be added to or deducted from disposable income, though they are not included in the definition set out in Chapter 2. One-time gifts received (12.1C) were collected by 17 countries. In-kind inter-household transfers (12.1A) are collected by only six countries – Argentina, China, Gambia, Malaysia, Mexico, and Switzerland.

4.2.4 Conclusions

It is clear from this metasurvey that the majority of countries are some way from being able to construct the ideal measure of household income developed in Chapter 2. The income elements collected in most (around 75 per cent) countries are:

- Cash wages and salaries
- Bonuses
- Profit/loss from self-employment (unincorporated enterprise)
- Rental income
- Interest and dividends received
- Employer based private pensions (including foreign pensions)
- Government social insurance (ie social security) benefits
- Government social assistance benefits
- Regular inter-household cash transfers
- Other regular payments from outside the household

Perhaps one of the most surprising omissions from this list is income tax and employees' social insurance contributions. However, even if data are not collected or imputed by the data originator, it should be possible to impute these items with a reasonable degree of accuracy if total income is relatively complete.

It is clear that any income definition which includes imputed income of any kind will be extremely difficult to produce on a consistent basis across countries given the state of data availability on these elements.

4.3 Assessing the Validity of Income Distribution Results

4.3.1 Introduction

Previous chapters have identified a guiding principle that income distribution statistics should give a true and fair picture of the distribution of income. For the income components identified in the previous section as being relatively rarely collected, this may be because it is supposed - or has been established - that data could only be collected of an accuracy which would prejudice the provision of such a true and fair picture. The corollary of this is that the mere availability of data on an income component does not necessarily improve the accuracy of the resulting income distribution statistics. This section discusses the obstacles to providing a true and fair picture.

Income distribution statistics have 3 main components:

- data on incomes, usually at household level;
- 'equivalence scales' that adjust for different types of household needing different levels of income to achieve a given standard of living;
- price indices.

Income data in this context commonly refers to household 'disposable income' i.e. total income net of deductions such as direct taxes - though as the previous section has established, the term 'disposable income' is likely to refer to an income definition which differs at a detailed level from country to country. For example, in some contexts disposable, cash and near-cash, income is enhanced by adding income-in-kind which accrues, or is considered by analysts to accrue, to households. Occasionally, if the focus of interest is on the impact of taxes and transfers, the concept of adjusted disposable income may be examined together with disposable income.

The requirement for adjustments to the raw income data by the use of equivalence scales and price indices has already been discussed in Chapter 3.

Sections 3.2 to 3.4 discuss each of these sources of error or uncertainty in turn. The discussion focuses mainly on income distribution statistics related to distributions of disposable, cash and near-cash, income, but also considers broader concepts of income. Examples are drawn from Robustness Assessment Reports (RARs), a Canberra Group initiative in which national statistical institutes and other bodies have sought to assess the impact which deficiencies in income data may have on income distribution results. RARs have been produced for about 15 countries in Europe, 5 in Latin America and for Australia, Canada and USA. The study was therefore rather smaller in coverage than that on data availability reported on in Section 4.2. An important aim of RARs is that they report not just on data imperfections, but also on the practical implications of these for income distribution results.

4.3.2 Imperfections and ambiguities in income data

Income distribution statistics may fail to give valid answers to the questions noted in section 2, due to a number of possible imperfections in the raw income data from which they have been constructed:

- incomplete coverage of the population;

- some groups being over-represented in the income dataset, others under-represented;
- inaccurate income data on those who are represented in the dataset;
- other imperfections in income data as a guide to living standards, including a mismatch between the concept of income captured in the income data and the concept needed to provide valid answers to the questions of interest.

4.3.2.1 Incomplete coverage of the population

Income distribution statistics require income data from a representative sample of the population. In many countries, this is obtained from survey interviews. Such surveys often are restricted to people living in private households; people living in 'institutional' accommodation are therefore excluded. Institutional accommodation may include, for example, barracks for armed forces, hostels for students or nurses or migrant workers, jails, hospitals and care/nursing homes for frail elderly or disabled people.

4.3.2.2 Other groups who may be excluded from surveys are:

residents of remote areas, or in some countries all those outside major conurbations; people who are not citizens, including illegal immigrants; or people in large households. Such exclusions are less common. But they may be important where they occur, given the likelihood of some correlation between incomes and the characteristic which leads to their exclusion.

Assessment of the robustness of income distribution statistics requires:

- identification and quantification of excluded groups; and, unless these are a very small proportion of the total population,
- estimates of the incomes and living standards of the excluded groups; and
- an assessment of the implications for particular results.

The first of these is best carried out by those who commission or produce the income micro-dataset. They have the best knowledge of the sampling frame and its shortcomings and are therefore best placed to make estimates of the impact of those shortcomings, drawing on all relevant sources of information on the size and other characteristics of excluded groups.

The second is likely to be difficult: income data may not be available, from any source, for people living in institutions. If they are available, they may be difficult to interpret, because accommodation, heating, food and other consumption items may be provided or paid for by the institution. Nevertheless, the primary producers of income distribution statistics from the dataset should attempt to assess whether the groups are distributed widely across the income distribution or are thought to be more concentrated in a particular income range.

The third component of the assessment needs to be done separately for each income distribution report, drawing on the first two components. Some exclusions may be unimportant for answering some questions, e.g. the overall shape of the income distribution, but important for some other analyses. For example, the exclusion of people in jail may not have a large impact on estimates of the Gini coefficient in the USA. But for studies focussing on young people, and estimates of the proportion of people not in employment, the same exclusion may be important.

Groups at greatest risk of social exclusion may be least likely to be captured in income distribution statistics. Social exclusion is a major focus of interest, in some

countries, for social policy analysts who use income distribution statistics. So careful evaluation is needed of whether exclusions from the database will bias results.

Evidence from the RARs indicates that incomplete population coverage is generally not a threat to providing an accurate picture of the broad distribution of income.

4.3.2.3 Representativeness of sample

Where income microdata come from a sample survey, rather than from administrative (e.g. tax register) data, there is usually a significant problem of non-response. The proportion, of those selected for interview, who fail to respond can vary from about 10 per cent to over 50 per cent. There is clearly the possibility of income distribution statistics being distorted by differences between the incomes of respondents and non-respondents.

Assessment of the robustness of income distribution statistics requires:

- an assessment of the nature and size of response biases;
- an assessment of the implications for particular results.

The first of these is best done by those who produce the income micro-dataset, together with the primary producers of income distribution statistics from the dataset. This is often a difficult task. Various techniques can be employed. A non-response module, with 3 or 4 questions, may elicit some useful information from households who refuse a full interview. The geographical location of non-respondents is known to the survey organisation; it may be possible to match this with government or commercial databases on the prosperity of residents of particular streets or blocks, to estimate non-response biases. Comparisons with tax or benefit data, or other administrative data counts, or censuses, may indicate whether groups with atypically high or atypically low incomes are under- or over-represented.

The RARs indicate that for a number of countries, response rates are thought to be lower at the top and bottom of the income distribution. Inequality may thus be underestimated.

4.3.2.4 Inaccurate income data on those who are represented in the dataset

Inaccurate data for those who respond to surveys can result from:

- questions which fail to capture some income components;
- inaccurate responses to questions;
- inaccurate editing of data or transformation from one format to another;
- deliberate replacement of some data by other data, to preserve confidentiality or for other reasons.

The organisation that produces the income micro-dataset should report on editing rules that deliberately alter a household's recorded total and/or disposable income. It should also report on the extent of imputation of individual income components, so that dataset users can judge the potential size of imputation errors. Imputation regimes which are not consistently biased may nevertheless have an impact on results at the extremes of the income distribution. For example, the imputation regime for a component which is deducted to produce 'disposable income' may not adequately reproduce the true relationship between total income and the component in question.

The status of tax data should be reported: whether they have been imputed or taken from reported data. Comparisons between countries may be affected by different practices, with some countries having most confidence in total income data and imputing taxes according to the tax regime for the year in question, even if the taxes will be paid after the end of the year; while other countries may rely on reported tax payments. Other things being equal, the dispersion of disposable income is likely to appear higher in the latter case since, particularly for the self-employed, tax payments in one year may relate to taxable income in an earlier year.

Some of the procedures which help with assessing response biases may also help with identifying inaccurate responses. For example, it may be possible to compare the numbers reporting high earnings in the survey with results from tax records; and to use those records to assess the accuracy of the reported investment income of those with high earnings.

Comparisons of grossed up microdata with national accounts aggregates can provide an indication of the accuracy of income micro-data. These need to allow for differences in coverage, definitions and time periods. And national accounts data have their own shortcomings: Appendix 5 discusses the quality of the three National Accounts estimates of GDP – output, income and expenditure – and implications for the robustness of national accounts estimates in the present context.

Evidence from the RARs indicates that in many of the participating countries, microdata on incomes appear to capture too little property/investment income and that this may lead to underestimation of inequality. For example, Canada noted that "investment income is subject to non-response bias. Recipients of large amounts of investment income, representing a substantial proportion of the total for investment income, tend to be a small group of individuals concentrated in the upper end of the distribution. Not only is their representation in the distribution underestimated due to under-representation in the sample, there is the possibility that they may tend to be more likely not to respond when sampled for the survey. For middle and lower income individuals, there is a likelihood that small amounts of investment income (eg. Small amounts of interest from bank accounts) go unreported."

Income data for the self-employed are also generally regarded as unreliable as a guide to living standards, so statements about poverty among the working population need to be tested for sensitivity to inclusion of the self-employed. The UK noted that recorded income of the self-employed appeared to be a very poor guide to the level of consumption they could sustain: median expenditure by income quantile varied little between the bottom and middle of the distribution, and expenditure variation between the middle and top of the income distribution was less than for other groups. This resulted in distortions to the income of the bottom 10 per cent (decile) of the distribution after deduction of housing costs, and in the income share of the bottom quintile and the representation of non-pensioner couples in that group

The RARs also indicate that results for students, and hence for young adults as a whole, are vulnerable to incomplete population coverage and/or incomplete data. This may have a considerable impact on total low-income counts, where students live independently or are treated as a separate household when living with their parents. If transfers from parents and study loans are not included in student incomes, as Netherlands reported, then the measure of income will not reflect their potential consumption.

4.3.2.5 Other imperfections in income data

Income data may be strictly 'accurate', in the sense that they yield correct numbers for the concepts employed in the dataset, and yet fail to give a true and fair picture of how rich or poor some groups are, in the sense of the level of economic well-being that they can enjoy. There are several reasons why this can occur.

First, some groups may depend disproportionately on means of support not captured by a particular income definition. Students may depend on irregular lump-sum contributions from their parents – difficult to capture in a survey even if the survey attempts to include them. Welfare recipients (in the American sense) may receive significant assistance via food stamps and receipts of such support may not have been recorded. In some countries subsidised housing may be an important source of support for some groups.

The treatment of items deducted to arrive at disposable income may give a misleading picture in some instances. Failure to deduct travel-to-work expenses may overstate the achievable living standards of working people relative to their non-working counterparts. A similar issue arises with childcare costs. As discussed in Chapter 2, it is often difficult to distinguish 'essential' expenses of working from inessential expenses which are close to mainstream consumption and should not be deducted. Therefore there is no single treatment of such expenses which will give valid comparisons between all households.

For some groups, patterns of debt and debt repayment may alter the short-term cost of living and therefore the standard of living that can be supported with a given cash income. For example, people who have recently returned to employment may be required to pay off debts which creditors had previously allowed to continue, so the gains in terms of economic well-being from returning to work may be overstated if debt repayment is not taken into account.

Evidence from the RARs confirms the sensitivity of results to choice of income definition. US Census Bureau reports in recent years have shown how:

- median and mean income
- income quintiles; and, for some results, quintile group income shares
- distributions of households by dollar income bands
- the Gini coefficient

vary as the income definition is varied in its inclusion or exclusion of capital gains, government transfers, health insurance supplements to wage or salary income, social security payroll taxes, income taxes, medicare, medicaid, imputed rent (return to equity) for homeowners and other items.

The choice of other parameters of the income distribution statistics such as accounting period or statistical unit may also prove inappropriate for some groups. For example, the choice of an annual reporting period may not fit the circumstances of some self-employed people who may, as their normal practice, draw down on capital in some periods and build it up in others.

For households consisting of several unrelated people, eg students or young single adults, the assumption that all household members share a common standard of living may be false. So the dispersion of living standards may be underestimated. Conversely, when young people living with their parents are treated as a separate unit, then – if they are students or unemployed – their living standards are likely to

be underestimated; and the country's overall distribution of income among persons may be overestimated.

For all of these obstacles to valid income distribution results, producers of results should examine and report on the extent to which they may jeopardise the validity of the findings reported. Evidence from several countries (France, New Zealand, UK) indicates that, at the very bottom of the reported income distribution, household expenditure is typically not lower than for all other households. Particular care should therefore be taken, before those at the very bottom of the income distribution are described as the poorest or materially worst off members of society.

Some particular issues arise in relation to time series results. If there are changes in the way in which some goods or services are funded – e.g. a change from government's providing in-kind benefits to providing cash benefits – then a consistent cash income definition may give a misleading impression of how particular groups have fared over time. Where it is not possible to adjust the data to yield a truly consistent comparison over time, the implications for bias in results should be assessed and reported. Chapter 5 explores these issues in more detail.

As discussed in Chapter 2, in all countries some personal services are provided by the state, most frequently in the area of health and education. The extent of this provision varies across country and over time. The concept of adjusted disposable income was introduced which includes estimates for these services but there are considerable conceptual and practical difficulties in finding a sound basis for their valuation. (It was noted in Section 2 above that only one country collects data on both public education and government-subsidised health services.) Where adjustments cannot be made, or where their validity is imperfect or uncertain, the implications for the robustness of reported results should be explained. Where income distribution results do not encompass consumption or enjoyment of goods and services financed from sources other than the household's income, this limitation should be made clear, if there is thought to be any risk that the audience for a particular report will assume that the results reported relate to a broader concept.

4.3.3 Results sensitive to equivalence scales

Equivalence scales are designed to adjust incomes to account for differences in household size and composition. The rationale for their use is set out in Chapter 3. This pointed out that there is no demonstrably correct set of scale values, even for a single country at a particular time. Thus application of a particular equivalence scale provides another source of possible error in income distribution statistics.

There are several techniques which have been used to estimate scales (Buhmann et al, 1988; Whiteford, 1985). However, one cannot observe directly whether two different households have the same standard of living, and this prevents any of the available techniques yielding demonstrably robust results. The evidence may be sufficient to rule out some sets of scale values as implausible. But in the eyes of most informed observers, there remains a wide range of values which cannot be regarded as beyond the bounds of plausibility. Income distribution statistics therefore need to be tested for robustness to the choice of equivalence scales (ES for short). Results should be tested against four or more sets of ES, not just two sets of extreme values.

Producers of income distribution statistics should take particular care in reporting results for:

- groups where there are strong reasons to expect atypical costs of attaining a given living standard, e.g. people with disabilities that require extra household expenditure; this will depend in part on whether there is free in-kind assistance with e.g. transport or personal care;
- single-person households and large households; as these are furthest from the 'average' household size, they are more likely to be sensitive to the degree of economies of scale embodied in the choice of ES.

Experience suggests that results for changes over time (e.g. over a 10 year period) are not very sensitive to the choice of ES. However, some point-in-time results can be very sensitive. One study for the UK found that the percentage of single pensioners estimated to be below half average income in 1979 varied between about 5 per cent and 50 per cent, when ES were varied within a plausible range.

ES are generally assumed to be invariant with income – i.e. the relative needs of different household types are assumed to be the same for those on low incomes as for those on high incomes. This is not necessarily correct. But a more sophisticated assumption would be more difficult to implement. The simple approach appears reasonable as long as results are tested against a wide range of ES.

Sensitivity to choice of ES needs to be considered afresh for each set of income distribution results. Reports should identify those results that are very sensitive to the choice of ES.

4.3.4 Price indices

As discussed in Chapter 3, it may be appropriate to adjust income data by relevant price indices if comparisons are to be made between different time periods, different geographic areas or different groups within a population. The validity of income distribution results may therefore be undermined by:

- an inappropriate price index;
- an inaccurate price index; or
- no suitable index being available.

As noted in Chapter 3, a price index needs to be matched to the income concept being reported. If a perfect match between the components of the price index and the income definition is not possible, then producers of statistics should examine whether the mismatch may introduce significant bias into results.

The appropriate price index may nevertheless be inaccurate. This could arise from miscalculation of 'true' price indices e.g. the well-rehearsed debate about the extent to which the Consumer Price Index underestimates the effect of product improvements and thereby overestimates inflation. It could, alternatively, arise from the price index being calculated from an unrepresentative 'basket' of commodities, if the expenditure patterns reflected in the basket's weights are not those of the population whose income is being reported. An assessment of this can best be made by those who produce whatever price index is used in adjusting income distribution results.

Another possibility is that price changes vary across the income distribution but that indices are not available for different population groups. It may be that the best one can do is to identify and record results where the use of a single price index or

none at all may give a misleading impression. Again, this can best be considered and reported by the primary producers of income distribution statistics.

For comparisons which seek to compare numbers, in different countries - or different geographic areas more generally - below/above given absolute levels of income, some version of purchasing power parities (PPPs) may be employed. These are subject to the same difficulties as price indices - ie they may be ill-matched to the income definition being used or they may have been miscalculated. Again the extent of the bias introduced should be considered and reported by the producers of income distribution statistics.

Summarising, we may say that in comparing income distributions over time or across countries or between different population groups, in principle account should be taken of differences in the purchasing power of income. A CPI is a reasonable means of making comparisons over time, and PPPs across countries; but each of these types of index is subject to conceptual assumptions which will never be exactly valid.

4.4 Options for choice of a practical definition

4.4.1 Producing comparable estimates

Many of the questions which income distribution statistics are called upon to illuminate are comparative in nature – comparing one group with another and comparing the situation at one time period with that at another. From sections 4.2 and 4.3 we can conclude that a – perhaps the – major issue in making comparisons, whether spatial or temporal, between one income distribution and another is the comparability of the income definition used and of the data from which the statistics have been derived. Data availability differs from country to country, and may indeed often differ for the same country over time as survey questionnaires are altered either to increase the range of income components collected or cut back to encourage increased response rates. Quality of data may also differ, in respect of population coverage and non-response bias for example, and once again differences may occur not just between countries but over time as well. Even estimates that appear on the surface to use the same definitions and to be of the same quality can very soon be shown to be divergent once the 'fine print' is examined. There are therefore formidable obstacles to producing estimates which truly compare apples with apples rather present a series of 'fruit salads'.

Given this situation, it is of paramount importance that when producers of income distribution present their results, they should be accompanied by the most comprehensive documentation possible so that users can judge the relative quality of the datasets and derived estimates being compared. Chapter 8 is devoted to discussion of the issue of documentation – ie the provision of metadata.

In this section, the options for choice of a practical definition are discussed in the context of making cross-country comparisons. Indeed the main aim of the Canberra Group's work has been to develop guidelines which will result in greater comparability of data internationally, though of course it is to be hoped that they will also assist countries in making choices for national purposes. There are particular issues connected with cross-time and cross-country comparisons which are explored in Chapter 5.

4.4.2 Experiences from the Luxembourg Income Study (LIS)

The current 'state-of-the-art' in making cross-country comparisons of income distribution statistics is well illustrated by reference to the experience of the Luxembourg Income Study (LIS). Founded in 1983, LIS is committed to the open sharing of harmonised household income survey microdata at zero user cost while still preserving the confidentiality and privacy of survey respondents. In summer 2000, the LIS project contained more than 100 datasets, covering 28 nations over the 1970-1997 period, including the transition economies of Central and Eastern Europe, and was about to extend to the rapidly growing countries of the Pacific Rim.

Analyses of income distribution using the LIS datasets (for example, Atkinson, Rainwater and Smeeding 1995 – herafter referred to as ARS) have a valuable role to play in moving towards to improved income distribution estimates, in that they expose areas where comparability is lacking, particularly when this is not obvious from published summary statistics.

The LIS *modus operandi* is to obtain existing national household income survey data and to do the best it can to harmonise and make these data comparable. Data harmonisation improves comparability and therefore, the ratio of signal (true values) to noise (statistical or other differences) in datasets. With LIS, and with any other set of household income data, measure, choices must be made when creating income distribution statistics. The consistency of these choices will be absolutely essential to producing comparable outcomes across countries. We have already seen that these choices include:

- ***Income measure*** chosen and constraints imposed by data creator (e.g., top, bottom codes; imputations, etc.). Comparability may be affected by imputations, simulations (e.g., for income tax paid if total income only is collected), or other statistical techniques used to derive the selected income concept from survey income reported (section 3 above).
- ***Unit of account:*** household or other income sharing unit (Chapter 3).
- ***Unit of observation (or weighting of observations):*** person weights (counting each person's income as one observation) or household (other unit) weights (counting each unit as one observation). Most analysts choose the person weight, but not all, e.g., U.S. Bureau of the Census (1998) (Chapter 3).
- ***Time period:*** annual income (though this may need to be constructed in the case of some nations, e.g., from panel datasets or from surveys covering less than a month) (Chapter 3)
- ***Measure of inequality***: alternative summary measures, presentation techniques, etc. (Chapter 7).
- ***Equivalence scale issue:*** adjustment for differences in household size and all the issues therein addressed are important (Chapter 3).
- ***Population coverage***: most household surveys on which inequality estimates include the civilian non-institutionalised population. However, other groups such as the military, homeless, those living in foster homes, and particularly legal (and illegal) immigrants (foreign-born) may or may not be included, according to the sampling frame (household address list or national register) and national practices (section 4.3 above)

Cross-national comparisons of inequality and income distribution can thus vary enormously according to the definitions and choices made by the data analyst and the data collector. All of the above elements are open to choices made by data analysts and should be subject to sensitivity tests.

A cross-country, cross-time dataset such as LIS faces the additional problem that income aggregates may be missing for a country or time period because one or more components are not measured completely. Best practice differentiates "true" zero incomes (or negative incomes) from missing incomes which are coded or treated as zeros. A choice must be made to include or exclude incomplete reporters. Counting "zero" incomes is not the same as omitting these cases altogether.

LIS aims to continue to update the technical and institutional documentation available so that survey quality can be ascertained and so that the numerical values which LIS contains can be put into a social, legal, and political context. Comparisons of the income micro-data with corresponding macro aggregates are included as part of the technical documentation whenever possible.

4.4.3 A practical definition of income for international comparisons

Given the long experience of LIS in trying to construct internationally comparable definitions of income which can be implemented in practice, it was logical to draw on this in the Canberra Group's work. The recommended practical measure of income for making international comparisons is set out in Table 4.1, using the classification of income components adopted in Chapter 2 and Appendix 1. This is based on the measure of current income which LIS provides, disposable personal income (DPI). DPI includes only cash and near-cash components, in order to get as close as possible to an apples-to-apples comparison. The definition in Table 4.1 includes own account production as well because of its importance to developing countries in particular. In all other respects the definitions are the same.

WE RECOMMEND THAT TABLE 4.1 BE ADOPTED AS THE INCOME DEFINITION TO BE USED FOR INTERNATIONAL COMPARISONS OF INCOME DISTRIBUTION

Table 4.1 Components of disposable income

1	**Employee income**
1.1	Cash wages and salaries
2	**Income from self-employment**
2.1	Profit/loss from unincorporated enterprise
	Imputed income from self-employment
2.4	Goods and services produced for barter, less cost of inputs *
2.5	Goods produced for home consumption, less cost of inputs *
3	**Income less expenses from rentals, except rent of land ** **
4	**Property income**
4.1	Interest received less interest paid
4.2	Dividends
5	**Current transfers received**
5.1	Social insurance benefits from employers' schemes
5.2	Social insurance benefits in cash from government schemes
5.3	Universal social assistance benefits in cash from government
5.4	Means-tested social assistance benefits in cash from government
5.5	Regular inter-household cash transfers received
6	***Total income (sum of 1 to 5)***
7	**Current transfers paid**
7.2	Employees' social insurance contributions
7.3	Taxes on income
8	***Disposable income (6 less 7)***

* Not included in LIS DPI
** Included in property income in LIS DPI

Individual country datasets in LIS include all manner of pears and bananas which are part of the national 'fruit salads' of income definitions. However, as section 2 illustrated, no two countries choose to compose their fruit salad to the same recipe. Thus the LIS income categorisation scheme can also be unfolded so as to enlarge the scope and definition of household income to include greater detail and breadth. For example, new variable definitions for the IVth wave of LIS (1994-1997 datasets) include separate categories for new forms of public transfer income, e.g., guaranteed child support, child care subsidies, allowances for care of invalids, and greater detail among original LIS income categories (e.g., a finer breakdown of pension income sources). But this is at the expense of cross-country comparability.

Although apples alone may be an incomplete measure of economic well-being, the current state of data availability precludes anything more wide-ranging. The approach has to be one of finding the 'lowest common denominator' definition across countries and then moving incrementally to a wider definition as country practices converge. However, it should be noted the conflict which can arise here with the production of consistent time series data.

Data on a particular income component may be unavailable in a country dataset for a variety of reasons, as discussed in section 4.2. Amongst these is the possibility that it may simply be irrelevant, in that income of that nature can be assumed to be

nil or neglible. To the extent that this is so, the absence of item from country A's dataset may not in fact affect the quality of the comparison with country B where the item is included.

Since the publication of the ARS volume, numerous national and international studies have begun to use the "LIS-DPI" definition. For instance, OECD has produced a series of studies on income and poverty which were compiled by national statistical offices based on the ARS disposable income definition using the definitions discussed below (eg OECD, 2000). Similarly, the InterAmerican Development Bank (IDB) has begun to harmonise Latin American datasets based on the LIS model (e.g., Szekely and Hilgert 1999), but with considerable attention to production of goods for home consumption.

The main differences between disposable income set out in Table 4.1 compared with the measure of disposable income set out in Chapter 2 and Appendix 1 are:

Elements of total income

- Goods and services provided to an employee as part of the employment package ('fringe benefits')
- Imputed income from owner occupied dwellings (imputed rent)

Deductions from income

- Regular cash inter-household transfers paid

In addition, construction of total income would require data on employers' social insurance contributions and adjusted disposable income would require data on social transfers in kind. Extension of the definition set out in Table 4.1 to cover any of these elements would be a step towards a more complete definition of income.

At the same time, sight should not be lost of the need to improve the quality of existing data used to make comparisons, for example, property income.

4.4.4 Towards a more complete income definition

The Canberra Group identified four areas as the most fruitful to pursue in view of what is achievable in practice as well as what is likely to contribute most to producing a fairer and more accurate picture of income distribution. These are:

(a) Better estimates of property income, self-employment income and own account production

(b) Imputed rent for owner occupied housing,

(a) Social transfers in kind (STIK) or non-cash government benefits,

(b) Capital gains

Each is discussed in turn below. Note that these issues are also at the forefront of others' discussions of more complete and more comparable income distributions, for example Eurostat (Eurostat 1998, 2000a).

4.4.4.1 Property Income, Self-Employment Income and Own Account Production

Although all three of these items are included in Table 4.1, they are areas where improvement of the quality of existing data could make a substantial contribution to improving completeness. Household surveys are notoriously bad at measuring income from capital and self-employment income, as section 4.3 noted. The quality of

property income reporting is poor because of inaccurate recall, infrequent receipt, absence of the rich in the achieved sample, or any combination of these reasons. Some improvements may be effected by use of secondary data sources as a basis for imputation or simulation, though these bring their own errors and are no real substitute for fully articulated survey data, difficult as these are to collect.

The value of goods produced for home consumption, or the value of own account production, is of great importance to the economies of developing countries and though it is much less so in developed countries to exclude it is to decrease the international comparability of income statistics. The difficulties encountered in producing good estimates of own account production are discussed in section 9.2.3.

4.4.4.2 Net Imputed Rent for Owner-Occupied Dwellings.

The issue of imputed rent is one of great importance to income distribution studies. First, imputed rent is very important in many nations. For instance, in Spain, 86 per cent of households are homeowners (Eurostat 2000), while in other richer northern European nations (e.g., Germany) the fraction of homeowners is much smaller, around 50 per cent (Smeeding et al. 1993). Second, home ownership (and owner occupation) confers an annual flow of consumption services which may offset other costs. Third, rental housing is often subsidised as well. If renters pay below market rents, with market rents made up by governments, there is an implicit rental subsidy in non-owned units as well. All three forms of imputed rent may be important in nations where "public ownership" of housing is widespread.

The main problem is the accurate measurement of imputed rent. In theory, imputed rent is the difference between the cost of renting one's living arrangements (in a competitive market) minus the cost actually incurred in owning the home (or renting it at a below market price). Thus one needs estimates of the gross rental value of the unit, minus owner's costs such as taxes, depreciation, repair and upkeep, interest charges, property taxes, and other shelter costs. Proper estimation of imputed rent therefore requires a great deal of additional information about the unit itself (quality, size, location, unit features such as bathrooms, space, etc., are all required) if we are to estimate market rent. Further, the owner's actual costs (taxes, upkeep, utility charges, etc.) must also be assessed since true imputed rent is the difference between these two items. (See also Eurostat 1998 and 2000a on their approach to this issue.)

Net imputed return on the equity in one's own home could also be estimated as the annual benefit from converting one's net home equity into an annuity. If included in income, one must be careful that it is measured in a way that leads to greater international standardisation instead of nation-specific measures of its value. One suggestion is to use a low government interest rate multiplied by the net value of home equity (Smeeding et al, 1993). Yet one must still be wary of unreasonably high land values in certain large cities (eg Tokyo, Hong Kong, New York) that would distort the valuation of housing services for residents there. This method, while producing "comparable" estimates may yield unreasonably high estimates of imputed rent. For instance, low income elderly homeowners in the United States who own their homes outright (no mortgage) still spend 30 to 40 per cent of their incomes on shelter costs due to property taxes, repairs, utilities, upkeep, etc. (Johnson and Smeeding, 2000). Thus the more complicated method of estimating market rental value net of costs might be required if the easier but "comparable" method fails to provide accurate estimates (Smeeding, 1982).

Finally, the service-yielding asset can be bought and sold on real estate markets. Hence, the value to the consumer is close to the market value of the service flow, since the owner could presumably sell the housing unit and rent it back from the new owner were it more profitable to do so. While imputed rent can therefore be valued to consumers at its market price; this is not always the case with non marketed in-kind benefits such as social transfers in-kind, including publicly-subsidised or publicly-owned housing which is rented at below-market value.

Estimates of net imputed rent at the macro level are made by most countries for their national accounts. Producers of income micro data may therefore wish to investigate the methodology and data sources used to make these estimates with a view to drawing on them in producing micro level estimates.

4.4.4.3 Social Transfers In-Kind.

Producing estimates of adjusted disposable income requires the inclusion of the value of some services provided to households by government, such as health care and education, including early schooling (pre-school) when provided as a right of citizenship (eg école maternal in France) or when publicly subsidised. Most governments also provide other types of in-kind social security benefits for their citizens. The most popular are government social and health care services for the elderly, disabled and benefits for public education tied to previous government employment (e.g., educational support for veterans in the United States). Health care benefits may be in the form of reimbursements.

Many countries also provide in-kind social assistance to their low-income populations. Some may be in near-cash form, such as food (food stamps in the United States) and cash housing allowances (United Kingdom, Sweden) and these are already included Table 4.1. Beyond these near-cash benefits, some other social assistance benefits in kind are also aimed at the poor. Heating (cooling) subsidies and food subsidies are also found in some nations. These also include public housing units and related benefits in-kind, such as free health care for the poor where others have to make some contribution. These benefits also differ from near-cash benefits in that they have a value to the recipient that is sometimes very hard to estimate.

The absence of any estimates of STIK in a measure of income used to compare countries presents difficulties when the provision of such services differs greatly between them. In a country where STIK are relatively sparse, a higher income will be required to support a particular standard of living than in a country where a wide range of benefits are provided, all things being equal. Within country comparisons are also affected when the benefits from STIK are spread unevenly across the income distribution. Thus in principle the development of estimates on a comparable basis should have high priority if the general accuracy as well as the international comparability of income distribution statistics is to be improved.

However, a serious concern for cross-national comparisons is developing a consistent set of benefits to include, and then a consistent methodology to value these programs for recipients. All health care systems are not alike, nor are all education systems. Those who are sick should not be considered as ‘better off’ as a result of benefiting from subsidised health programs than those who are not. Furthermore, the quality of programs, particularly education, is likely to vary within countries. Measuring the quality of universal in-kind benefits and then valuing them in money terms is quite difficult for estimates required for purely national purposes. To produce

estimates on a cross-national basis is even more problematic. The conceptual issues involved have been set out in Chapter 2.

One major concern in measuring the value of all in-kind benefits is that recipients—particularly low income recipients—may be willing to accept smaller amounts of cash income instead of non-cash benefits. In theory, one could convert these benefits to cash using their Hicksian cash equivalent value, not their market value or cost to governments (Smeeding 1977). However, estimating this value correctly is problematic because counterfactual behaviour, ie unsubsidised expenditure on government-provided goods and services such as basic education or health care, is not observed. In many circumstances, legislators have chosen to provide direct assistance for particular needs rather than providing cash that the recipient could spend how he or she wanted to. Valuation issues arise and are magnified due to the lower cash incomes of recipients, underlining the fact that the recipient may be willing to trade the rights to his or her benefits for a lower amount of scarce cash income than the cost of those benefits. On the other side, the accounting transparency of national accounts and income distribution statistics warrants valuing in-kind benefits at their cost to government. (It is of course possible that in some cases market costs might exceed government costs for such goods as health insurance due to reduction of sales and marketing costs. Hence, these two concepts may also differ substantially.)

United Kingdom, Denmark, and Australia all publish annual estimates of the effects of government benefits and taxes on household incomes, including health benefits, education, and housing benefits. In the United Kingdom these benefits amount to a full one-third of public spending and to a roughly equal amount in Australia. The effect on inequality of including imputed values for these benefits in income is very large. In Australia, the ratios of the income share of the top 20 per cent to the bottom 20 per cent falls from a range of 5.5 to 5.7 for disposable income to 3.0 to 3.5 for disposable income plus in-kind benefits. In the United Kingdom the final figure is four to one (Harris, 1999). Hence, these benefits are likely to have important effects on income distribution measures, depending on how they are valued.

In general the studies of Denmark, Australia, and the United Kingdom value in-kind or social benefits at their cost to the government as did an earlier LIS study of six nations (Smeeding et al, 1993). All show that, in general, households with children (who have a large imputed education benefit) and retired households (who receive a high imputed benefit from health-care services due to their lower average health status and greater needs for care) benefit at the expense of younger, single persons and childless couple units**.** Because social benefits such as health care and education tend to be of relatively equal value to parties which receive them, and since their imputed value is a higher fraction of income for low income households these benefits can dramatically reduce income inequality. In particular single parents, larger low income families with children, the disabled, and the low income elderly benefit the most.

Adding the imputed value of these benefits to the income of low income households creates a situation where many units receive more in social transfer income in-kind than in cash income. This creates a dilemma because most such households, if given an equivalent cash benefit, might spend it very differently. The welfare implications of a $30,000 “total income” household with $15,000 worth of education benefits, $5000 worth of health benefits, and $10,000 in cash income for

a single mother with three children (one of whom is disabled), compared to the same household with a completely flexible $30,000 cash disposable income, forces us to face the question directly.

Over and above the issues laid out above, a series of methodological issues need also be addressed. If we are to add benefits of in-kind transfers to households, the large majority of this work needs to be carried out by imputation to individual households within an income micro-dataset. Because receipt of benefits by one household or another will change their ranking in the distribution, it is not possible to rank by cash disposable income (for instance) and then just add in some "averages" for social transfers in kind while maintaining the same household ranking. Each income addition or substitution requires another ranking. Smeeding (1977a) estimates that failure to re-rank reduced measured inequality by about 25 per cent. That is, the 1972 share of the bottom quintile with all benefits counted in "total" income and without re-ranking, produced a share of 8.0 per cent of total income. Re-ranking reduced the share of total income to 6.0 percent. Similarly, the appropriateness of the equivalence scale adjustment may have to be re-assessed. The relative needs of households with and without children may be very different when education is included in income, and the relative needs of different age groups will differ when health care is included.

In the area of housing benefits, the value should be determined using a method consistent with the imputed rental value methods described in 4.4.4.2 above. For instance, the cost to government of a rent subsidy can be estimated analogously to imputed rent, ie by the difference between the market value of a rental unit and the amount which the tenant actually pays for that unit (Smeeding, 1982). Hence, market rental values need be assigned to tenants to be used in conjunction with their rent actually paid (often some fraction of income). In the area of elementary and secondary education, one must be careful to include the variance in expenditure per pupil across geographic areas while also including some estimate of the value of school buildings, computers, and other capital inputs.

Finally, in order that the addition of STIK to income results in greater comparability, researchers have to reach agreement on such methodological and practical issues after experimentation with different methods. And then all must implement whatever guidelines and formulae have been agreed to measure the value of the in-kind benefits to the recipients.

4.4.4.4 Capital gains

There are two types of receipt which are excluded not only from Table 4.1 but also from the ideal measure of disposable income set out in Chapter 2, but which may have a significant impact on economic well-being. These are interest paid on consumer debt, classified as part of consumption expenditure, and realised holding gains, classified as a memorandum item.

Because of recent changes in asset ownership and unsecured consumer debt in nations such as the United States, both payments and receipts of interest have increased in recent years. For many low income households in the United States and in other nations, interest paid on credit card and other consumer debts exceeds their current income from capital giving them negative net receipts of interest (e.g., see Lupton and Stafford 2000).

One specific source of household economic resource, which is increasingly important in OECD countries, is realised holding, or capital, gains. Selling off assets that have risen in value can sometimes enable a household to meet its everyday needs for food, clothing, shelter, and the like. This is particularly the case among the aged who may have intentionally built up assets during their working lives in order to draw them down after retirement – in other words they are smoothing their incomes over their lifetimes.

The typical treatment of unrealised capital gains is to ignore them. One could in principle impute an income stream for those assets that do not pay interest or dividends. Such a general approach may be considered the more theoretically correct as it measures unrealised but available command over resources. But if one is mainly interested in whether a household can meet its everyday needs the relevant approach is to count only realised capital gains and losses. While counting realised capital gains and losses may produce large changes in income that should be prorated over a longer period with appropriate price deflators, it would be useful to both improve reporting on income from capital and to include realised capital gains and losses in our income measures, perhaps via a satellite account. Among the nations involved in the Canberra Group, Sweden is one of the few which currently counts realised capital gains as part of its official income definition. However, it is also important to note that Sweden derives its estimates of capital gains directly from income tax registers. If we were to use surveys to ask base price and selling price, the respondent burden, high income under-sampling, and refusal issues would most certainly loom large.

One final note of caution is that if capital gains and losses are included in the annual income measure, the pattern of change in income inequality may become very uneven and pro-cyclical. The addition of this income item clearly results in more instability and cyclical sensitivity in the resulting estimates of cross-national income inequality than is found in the line below it (which excludes this income component).

Chapter 5

Comparing Income Distributions Over Time

5.1 Introduction

Increasingly economists and social policy analysts are focusing attention on the long-run trends in income distribution. The availability of 20 to 40 years or more of estimates in many nations are making it possible for analysts to study the determinants and consequences of long periods of distributional change, for example the relationship between inequality and growth, trends in world income inequality and related issues. The future will bring more, not fewer, uses of such data, and policy discussions of national governments and international bodies may be heavily influenced by such trends and analyses of trends. For this debate to be a well-informed one, high standards must be set for time series data on income distribution.

This chapter discusses the compilation and analysis of time series data on income distribution. Conceptually, cross-time comparisons within a country are not really different from cross-country comparisons at a point in time. The general consistency requirements are exactly the same. However, trend data need a separate treatment for at least two reasons.

First, cross-time comparisons within a country appear to be based - and very often are based - on more consistent definitions and source data than are cross-country comparisons, mainly because they tend to come from the same producer. This is the "originator" of the estimate; the party with the broadest knowledge of the data. However, this assumption may be unwarranted if the producer changes definitions, survey practices, or experiences a host of other non-random sampling or non-sampling errors which change over time. There are, in fact, many cases where published time series are not internally consistent. A good general rule is that the longer the time frame, the more likely are non-random differences to occur. A major task is therefore to make the producer and the user aware of these problems, and for the producer to be as consistent as possible, to provide overlapping observations when changes are implemented, and to provide historical data on changes in time series.

The second reason is that the story gets much more complicated when we compare trends across countries, because we have to impose - in principle - a double (spatial and temporal) consistency constraint. Double international harmonisation across nations *and* over time is the ideal outcome. However, such a project is daunting at this time. Even when complete harmonisation across nations is a clear objective from the outset, experience has shown how difficult this is to achieve in practice.

Longitudinal panel data have a number of advantages over repeated cross-sectional surveys for the study of how particular types of household move within the income distribution over time, as set out in Chapter 6. However, they are not always the best vehicle for time series estimates because samples may be small and attrition bias may affect the results. Moreover, panel data sets are only representative of the national population beyond the base year if they are cross-sectionally refreshed in each wave of interviewing. That is, due to their basic nature, panels follow a set of persons sampled in a base year, thereby excluding immigrants and emigrants beyond that year unless a conscious effort is made to include them.

The Luxembourg Income Study (LIS) has made considerable progress towards point-in-time cross-national consistency. However, both LIS harmonisation techniques and differences in national surveys made available to LIS at different points in time hamper it from achieving double consistency over time. Hence, one must ask from a practical point of view, what can be accomplished with existing national time series. Even when continuous time series are available for different countries, is a fixed-effects correction enough to account for the methodological and/or definitional differences that are found in these time series?

This chapter will be of interest to three groups of statisticians and researchers:

- ***Time series data originators (producers).*** The national statistics offices (NSOs) and other survey organisations which collect and process national estimates on income distribution from primary sources (surveys, administrative records, tax data, and other sources), including the World Bank and other international organisations which collect their own survey data.
- ***Secondary time series data producers***. Organisations who use published or computed time series data to make large multi-period and multi-nation databases and who assure some degree of comparability over time (and sometimes across nations). Such producers include Tabatabai (1996), Deininger and Squire (1998), WIDER (1999) and others. These data need to be made available to users with a complete discussion of their strengths and weaknesses.
- ***Time series data users***. Those researchers and policy analysts who use these time series and may make sweeping assumptions about comparability over time and across nations. Here the enormous effort which goes into model specification and econometric estimation needs to be balanced with equally serious efforts to identify and make use of the best time series datasets, and to understand the biases in many existing data series.

The aim of this chapter is to set out guidelines which will result in the provision of better time series data in the future. Section 5.2 identifies the important sources of measurement errors across nations and over time. Sections 5.3 to 5.5 make recommendations to data producers, to secondary data series producers (those who provide an intermediary product which is used by others), and to end users of trend data respectively.

5.2 Impact of measurement error

The problem of measurement error is endemic to all income distribution studies, whether they focus on a single country or many countries, and has already been analysed in Chapter 4. The question considered in this section is whether the bias introduced by measurement error is aggravated in inter-temporal studies. Measurement error may be reduced by taking differences across years, and the signal

to noise ratio may be thereby increased. The distinction between measurement error that does and does not affect inter-temporal comparisons is, therefore, not meant to minimise the importance of measurement error but to focus attention on the relevant source of error.

The key measurement of concern to inter-temporal studies is measurement error that differs *both* across the income distribution *and* across years. So for example, estimates of differences in inequality between two years may be biased inasmuch as income underreporting is greater at the bottom than at the top of the distribution *and* this degree of differential underreporting also differs across years. If the differential underreporting does not vary over time, no bias is introduced to time series comparisons of relative income distribution measures.

Comparisons of trends between countries will be biased by errors which are time specific with common effects across countries but differential effects across the distribution, and by those which are time and country specific as well as having differential effects across the distribution. However, measurement error that differs across time and country but not across the distribution will not affect differences in trends across countries. Again, taking inter-temporal differences reduces the absolute level of noise but has an ambiguous effect on the signal-to-noise ratio.

Thus some but not all sources of measurement error affect inter-temporal inequality comparisons, within a country or across countries. The following generalisations emerge:

- Measurement error that is independent of ranking in the distribution affects neither level nor trend in inequality in a single country, nor does it affect cross-national comparisons. For example, if the institutional population omitted from survey data is equally spread across the distribution, their omission will have no effect on measured trends in income distribution.
- Measurement error that does not vary between years does not affect inter-temporal comparisons, but does affect income distribution measures each year. For example, underreporting of property income at the top of the distribution which does not vary over time will produce biased measures each year but comparisons between years will not be biased.
- Cross-national comparisons of trends in income dispersion measures are not affected by measurement error that is either time invariant, or time varying but common across countries.

The difficult issue that is faced by these comparisons is therefore the comparative error structure of data within countries, across countries, and over time. If biases remain constant, errors are liable to be reduced. As Chapter 4 has already stressed, it is vital that both primary and secondary data producers are aware of these errors and their impact, and make available information about them to the end users of the data.

5.3 Issues for the data originator

Many NSOs and other public sector organisations have produced time series estimates of income distribution – or annual estimates from which time series could be constructed - for national audiences for many years. Although many of these series are published and sometimes microdata are also made publicly available, there are cases where the publication is relatively low-key and even where estimates are only

available internally in the producing organisation. Wide dissemination of results and associated documentation is obviously important to inform public debate about issues of income distribution and economic well-being. It also ensures that they are open to peer group review, and this can be very beneficial in terms of improving estimates in the future.

However, as with all complex statistical series, care must be taken in disseminating income distribution time series and making information available about their statistical properties. Users should be able to find easily all the metadata they need to interpret the statistics correctly. All this is simply good statistical practice, which applies to income distribution statistics as much as any other statistical output.

Chapter 8 sets out general requirements on Robustness Assessment Reports (RAR's) for the documentation of survey practices, measurement techniques, data quality (sampling and non-sampling errors, imputations, simulations, etc.), income measures, inequality measures, top- or bottom-coding of data and so on. Production of RAR's – and their careful study by users - is the first step toward accurate assessment of data comparability. Trend analyses demand that this documentation be produced each time a new set of estimates are published.

Data originators have particular responsibilities when they are aware of changes which could have substantial effects on the validity of time series comparisons. Survey practices may change (for example, introduction of computer assisted interviewing); the questionnaire may be expanded to capture a wider set of income components; or it may be reduced to try to combat falling response rates. A completely different survey source may be adopted as the basis for the statistics. Of course many changes of this sort will have the aim of improving the quality of data produced, but there will be the unwelcome side-effect of reducing inter-temporal comparability. In such cases, it is the data originator's responsibility to draw attention to the developments, to make estimates of their impact, and if at all possible to make available an overlapping series so that long-running time series are not broken.

5.4 Issues for secondary dataset producers

The first problem for the producer of a "secondary" dataset - a collection of summary measures of income distribution drawn from a number of heterogeneous sources - is to set internal standards for accepting or rejecting estimates. Selection criteria must be based on consistency of definition and quality, and the temptation must be resisted to include estimates just because they will extend the range of countries or years covered. For instance, Deininger and Squire (1996) chose the statistics to be included in their dataset by requiring that they be from national household surveys for expenditure *or* for income, that they be representative of the national population, and that all sources of income or expenditure be accounted for, including goods produced for own consumption. As with primary data producers, the main duty of a researcher or organisation assembling a secondary dataset is to document the origin and characteristics of all estimates included, according to their selection criteria and the information made available by the primary data producer.

The role of secondary datasets is to make accessible and enlarge the range of "ready made" income distribution statistics. This process can take several forms, and it may be helpful to bear in mind the different origin of the "ready made" income distribution statistics contained in secondary sources:

- calculated from individual national micro datasets, where there may be differences between "original" and "public use" datasets;
- calculated from collections of harmonised micro datasets such as LIS; as again these may differ from those available in the original source;
- calculated from tabulations published by (or supplied by) national sources; here it should be noted that national sources may give differing degrees of detail (eg the data published in *Statistical Yearbooks* may have fewer ranges than in a specialised publication on income distribution), and that the published sources may be revised or published in alternative forms (eg based on different definitions);
- calculated from tabulations in another secondary dataset;
- summary statistics published by (or supplied by) national sources;
- summary statistics obtained directly from another secondary dataset producer or the publication of another analyst.

In all cases, the calculations involve decisions about how to treat the 'raw' data available. There is for example the application of procedures of top-coding. This may happen in the course of the collection of the data, or as a decision of the researcher to reduce the noise that is typically concentrated in the tails of the distribution. Changes in these procedures may significantly affect the comparability of results. At the bottom of the distribution, there is the issue how to treat zero or negative incomes. These may be bottom-coded, be set to zero or a small positive number, or may be omitted. All of this needs to be documented.

A second example is the procedure for estimating quantile shares and inequality indices when the original data are only available in grouped form from primary sources, or are available only in grouped form to researchers. For example, if the disposable income of each household within a microdataset is not available to the secondary data producer, but only, say, median income for each decile group, any attempt to fit a Lorenz curve (see Chapter 7 for definition) will be subject to error and the result is bound to differ from what would have been obtained had the full dataset been available. It would be advisable, and relatively inexpensive, to include in secondary datasets not only the recalculated series but also the original statistics. Equally, the upper and lower bounds with grouped data (obtained with different assumptions about the within-class distribution) are readily calculated and should be included.

In general, the procedures applied in processing the data should be fully documented, and the user allowed as wide a range of choice as possible. It should be noted that choices such as those regarding interpolation method or treatment of zero incomes may be implicit within the statistical package adopted, or the formulae applied in the calculations, and that this may affect the conclusions drawn.

There is a long tradition, in the field of income distribution, of creating secondary datasets. A comparison of such compilations suggests some desirable features for a secondary dataset:

- ***Consolidation***. In principle, multiple observations for the same country and the same date are justified where there are differences in definition (for example, household weights vs. person weights), or where different methods of calculation have been used. When there is no apparent reason for a difference, multiple observations need to be traced back to their original sources in order to identify the cause. It is important that data originators provide sufficient information for this to be possible. In view of their use in the past, keeping duplicate figures

contained in earlier secondary datasets is valuable because it facilitates comparisons, but it should be clear that their status is that of *memorandum items*.

- ***Comprehensiveness***. When other secondary sources are used, the coverage of such sources should be exhaustive. Omitting observations that fail to meet some pre-specified criteria may be convenient, but it may be preferable to include these unsatisfactory observations with a proper cautionary note.
- ***Full documentation***. Precise references and table numbers of the source data and a full account of all adjustments made should be given, so that observations in the dataset can be reproduced and their genealogy reconstructed.
- ***Replication***. As secondary datasets become available on-line, their producers are likely to update and revise them, occasionally or on a regular basis. To address replication problems, there should be a numbering of different releases of the datasets, and all versions should be conserved and remain available.

The burden assumed by secondary dataset producers is a huge one. They attempt to overcome all of the theoretical (Chapters 2 and 3) and practical (Chapter 4) biases found in "original" datasets. Moreover, they attempt to make these series comparable over time and sometimes across countries. Their task is a most difficult and complicated one, and since the devil is always in the details it is important that these details are always made readily available.

5.5 Issues for the end user

This section discusses issues relevant to users and presenters of trend data: researchers, social statisticians, policy analysts, and others.

5.5.1 Detecting Trends

The problems that may arise include:

- ***Two point trends***. Comparable household income microdata may only be available for two periods. Having two periods permits the user to estimate the change between them, but it may convey a misleading impression of the underlying trend. There is considerable danger in taking a very small number of years (two as a minimum) to extrapolate long-run trends.
- ***Business cycle effects***. Because of cyclical variations in inequality, trends based on an arbitrary time period (e.g., 1980 to 1995) might produce misleading comparisons if its fit with the business cycle differs between nations. If trends in inequality is pro-cyclical - as is the case in the United States - peak (year) to trough (year) trend estimates are biased downwards; trough to peak trends are biased upwards. The opposite holds if inequality trends are counter-cyclical. Comparing peak-to-peak or trough-to-trough provides the least biased estimates and this requires a lengthy time series of estimates (e.g., see Burkhauser, Crews, and Jenkins 1998).
- ***Mixing datasets and definitions***. The only 'time series' available may have been constructed using several income definitions and/or several datasets over time. In general, mixing cursorily different datasets to form a single trend is not recommended as the trend will reflect *both* the "real" inequality change *and* differences across datasets.

Figure 5.1 illustrates all three of these issues. There are three data points for country X, those for 1980 and 1990 drawn from one survey source and that for 1993 from another survey, whilst the curved line represents a hypothetical business cycle. The 1980 and 1990 data indicate a downward trend in inequality, but when the third data point is added, inequality increases and the "trend" line through all three points is moderately upwards. The "true trend" line and the "actual" curved inequality trend line are both hypothetical, but illustrate the fact that peak-to-peak or trough-to-trough lines are consistent with the observed trend across the three (mixed) datasets.

Figure 5.1
Inequality in country X: an illustration of three pitfalls

(a) The Danger of Making a Trend Estimate from Only Two Points
(b) Peak to Peak; Trough to Trough
(c) Mixing Datasets

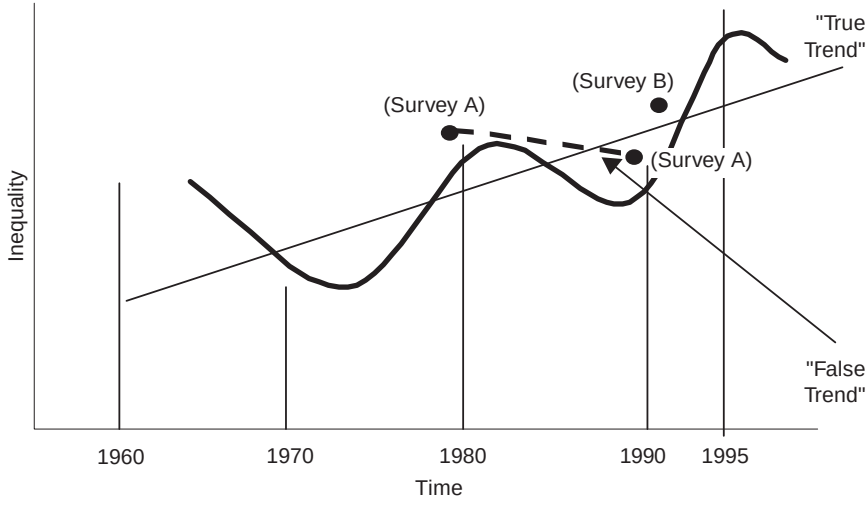
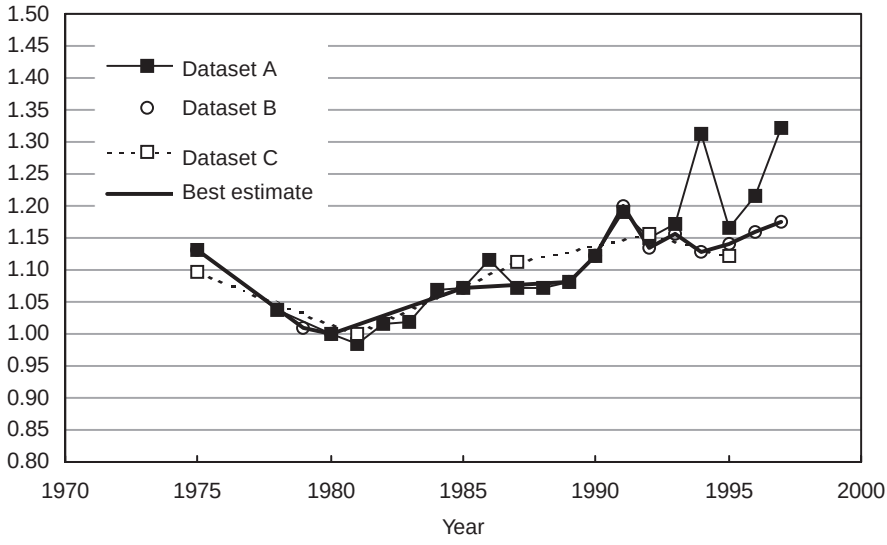


Figure 5.2 provides an example of the potential impact of differences in income definitions and reference unit over time and across datasets. Here three sets of data are used for the same country. The trend in dataset C shows a modest increase in inequality since 1980, but a decline from 1991 to 1995. This dataset biases inequality upwards at any point in time by ignoring the fact that young adults living with others (e.g., parents) share in household economies of scale. This difference should not bias trend estimates of inequality unless living arrangements or numbers of young adults change drastically over the period in question.

Figure 5.2
Trends in Income Inequality: Gini Coefficients in country Y



The income definition used in data set A includes realised capital gains (highest line in figure). Capital gains are sensitive to both business cycles and tax laws. In 1990 there was an abrupt upward shift of the Gini coefficient due to changes in tax laws. This shift produced a discontinuity in the time series which is "overcome" in Figure 5.2 by assuming a one-time "fixed effect" and shifting the new trend downwards to equate with the old in 1990. Therefore the 1990-1997 trend connects with the pre-1990 line in 1990. (The definition in data set C (the dotted line) is not affected because the definition of disposable income excludes capital gains.)

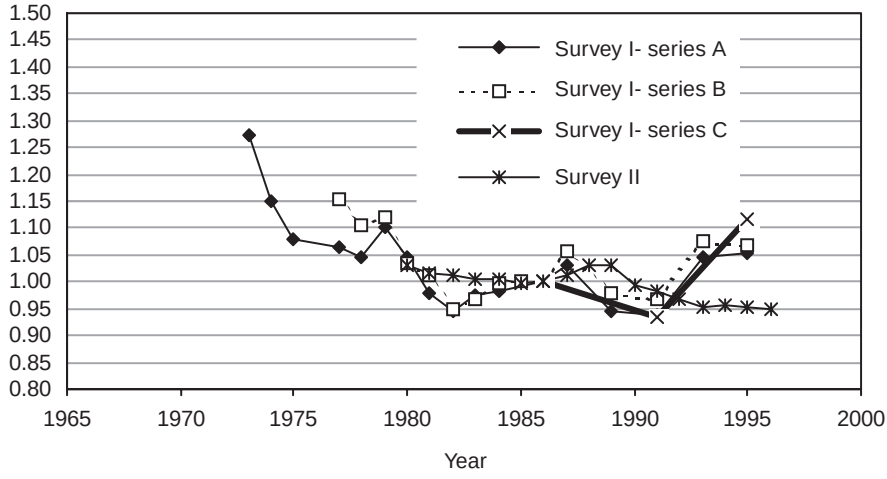
The trend line for data set B (middle line in Figure 5.2) keeps the same tax unit definition and other definitions, except it excludes capital gains. Estimates using data sets A and B still indicate an upward trend in inequality. However, the increase in inequality with capital gains (top line) is more drastic and less regular than that found in the series without capital gains (middle line). Hence, when multiple estimates are selected trends may not be very clear. Inequality has risen modestly or rapidly in the 1990s depending on which income definition and data series is selected.

If one has detailed knowledge of the different time series available, one can interpolate among the various estimates to produce as "clean" a series as possible- see for example the bold line in Figure 5.2. Clearly some judgements were made in creating this series, for example capital gains treatment, starting and ending point, choice of unit, etc. These should be made clear by the researcher with alternative estimates or series made available to the reader.

Another example is provided in Figure 5.3. During the 1980s and until mid 1990s changes in income inequality appear significantly different according to whether they are measured on data from Survey I, or from Survey II, both from the same country. The discrepancy emerges both for changes over shorter periods, and for the overall change over the entire period, with Survey II showing a tendency toward greater

inequality and the Survey I the opposite tendency. Of the three measures derived from Survey I, series C is similar to series A and B , but with a greater rise in inequality during the 1990s.

Figure 5.3
Trends in Income Inequality: Gini Coefficients (1986=1) in country Z



The situation illustrated in Figure 5.3 is not unusual, with several different sets of income distribution data available for a single country all of which can be used to make trend comparisons: tax records; cross-sectional household surveys covering income; and longitudinal income surveys, each with their own biases. Comparison of alternative time series estimates may help reinforce one another, or they may not. But in any case, the analyst should use all of the available evidence in making their judgments about which series, sets of series, or combinations of series produce the most reliable estimates.

5.5.2 Significance of Changes

There are no generally accepted statistical standards for judging the significance of changes over time in measures of income dispersion. In the literature, some authors have used clear cut standards, e.g., a “1.0 point change in the Gini” (Atkinson et al, 1995, p. 39), or some fixed changes, e.g., “a 5 to 10 percentage point change” (OECD,2000), or a “3 to 7 percentage point change” (Gottschalk and Smeeding, 2000; Smeeding, 2000). But these have not been based on formal tests of significance or on standard errors of the estimated summary statistic. Such estimates could only be made from information made available by dataset providers or from the raw data itself. In the absence of raw data authors must fall back on their own standards, or those imposed by the data providers.

Nor is statistical significance the only yardstick by which the importance of a change over time in income distribution should be judged. The end user ultimately has to use their own judgment about the policy significance of any observed changes.

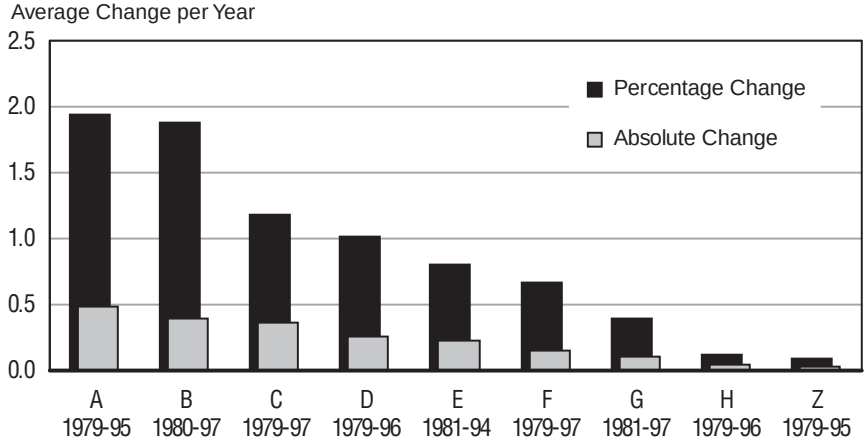
5.5.3 Trends versus episodes

A further issue in the analysis of inter-temporal changes of income distribution is the distinction which may be made between "trends" and "episodes." So far, the term "trend" has been used as the intuitive notion of "average" long-run change. However, to the extent that measures of income dispersion alternate periods of small and irregular changes with sudden accelerations—be they in the direction of higher or lower inequality—the search for a long-run single trend may be misleading. It may instead be better to think in terms of "episodes" when inequality fell or increased (Atkinson, 2000). As the analysis of long-run movements of income inequality is still a relatively unexplored field of research, opinions differ whether the focus should be on sequences of episodes rather than trends. However, two points are relevant here.

First, conclusions drawn about trends depend crucially on the choice of the start and end points. For example, in Figure 5.2 the pattern is one of falling inequality until 1980 and then rising inequality since then, faster in the 1980s than in the 1990s. Hence, beginning a time series of inequality in country Y in 1975 produces a very different pattern than from 1980 or 1990. The long-run movement of inequality can be obscured by different presentations of data time series.

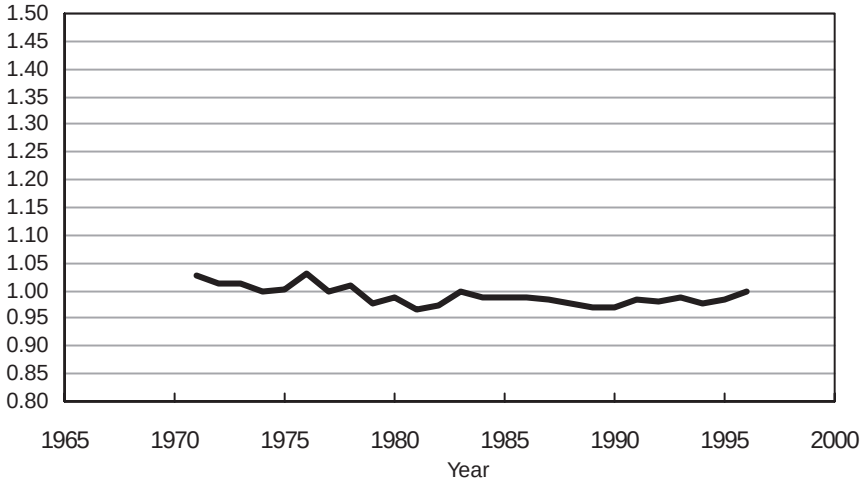
Second, an apparently common trend across nations may disguise very different patterns of shorter period changes. As an example, consider the "summary bar chart" in Figure 5.4. The method is to calculate the annual percentage change in the Gini Coefficient (from the first to the last data year) and to also calculate the absolute change year-to-year (from the first to the last year) for each country. This technique overcomes the problem of comparisons based on different length time series (long series for some countries, shorter for others). It also allows comparisons of percentage point change (absolute change) and percentage change (relative change). These are quite different because the base Gini coefficients vary by a factor of roughly two-to-one across nations at any point in time.

Figure 5.4
Trends in Income Inequality (Gini coefficients)
Percentage Change per Year and Absolute Change per Year: 1979-97



The shortcoming of this method is that the bar chart smoothes over periods of change where inequality first falls then rises. For instance, Figure 5.4 indicates small but very similar changes in inequality in country Z(1979-1995), and in country H (1979-1996). In fact, the pattern in country H is just that—very little change since 1969 (Figure 5.5). Conversely, in country Z inequality fluctuated considerably between 1979 and 1995, and distinct episodes of falling and rising inequality were submerged within one summary trend number (Figure 5.3). Thus both assessing percentage changes *and* showing the actual pattern of change add to our knowledge because trends and episodes of inequality are not always the same. Moreover, it needs to be noted that difference between beginning and end points is meaningful only when a trend exists, as it may be impossible to reduce a complex time series to U or inverse U shapes alone.

Figure 5.5.
Trend in Income Inequality: Gini Coefficients (1983=1) in country H



WE RECOMMEND THAT PRIMARY AND SECONDARY PRODUCERS OF INCOME DISTRIBUTION STATISTICS BE MORE AWARE OF THE NEEDS OF USERS FOR TIME SERIES DATA AND THAT IMPROVEMENTS IN AVAILABILITY OF BOTH DATA AND METADATA BE GIVEN PRIORITY

Chapter 6

Income Dynamics

6.1 Introduction

The use of cross sectional data is extensive in most income research and policy analysis, while the use of longitudinal data is not as common. This is mainly due to the extra cost and complexity of longitudinal surveys. However, there is much to be gained from the use of longitudinal data. Cross-sectional data give excellent information about "net effects" and "net change" of income at given points in time, but longitudinal data allow for the exploration of changes experienced by individuals through time. The analytical power of longitudinal data has numerous advantages, such as exploring potential relationships between various socio-economic variables of interest and guiding the development of public policy. The focus of this chapter will be on the relative advantages and disadvantages, uses and policy implications that are associated with longitudinal data. The first section focuses on the advantages and disadvantages of longitudinal data relative to cross-sectional data. Then some examples of longitudinal surveys are provided as well as potential research areas for which they are well-suited.

This chapter does not explore the complex technical methodological issues associated with a good longitudinal panel. Issues such as estimation (design of longitudinal weights) and adjustments for attrition have been documented in detail in other literature. This portion of the Guidelines looks rather at the analytical opportunities available from longitudinal approaches to measuring household income distribution.

6.2 The relative advantages and disadvantages of longitudinal surveys

A central feature of longitudinal data is the measurement of change at the individual level. To understand the processes involved in life histories, one needs to collect data at key transition points from the same cohort of individuals across time and over an extended period of time. Cross-sectional data collected on repeated occasions enable one to monitor the effects of societal change on the prevalence of population characteristics - "net effects" - while longitudinal data are essential to investigate changes in individuals within the population as well - "gross effects".

Longitudinal income studies can unravel how particular life events develop, and draw inferences and conclusions about their long term impact. Although cross-sectional data provide a representative sample of the population, they cannot capture, on a cohort basis, such changes such as fluctuations in income, family characteristics or what events tend to coincide in the life cycle at the individual or micro level. For example, poor educational attainment in children may be attributed in part to low parental aspirations if changes in the former precede changes in the latter. A cross sectional survey could establish only a correlation between parents' aspirations and children's educational attainment, with no basis on which to establish either cause or effect. Longitudinal data would give some broader insight as to the nature of some of the 'cause and effect' relationships with children's educational attainment.

However, the value of longitudinal studies has to be judged against both the cost and the complexities of collecting the data. The most serious of these are data quality issues associated with 'attrition', the loss of sample members over time. Subjects may disappear from the study because they have moved, changed their names (through marriage) or are simply no longer interested in taking part; others move in and out of the study depending on their availability at the time a particular survey wave is to be carried out. This can seriously weaken the research. Sample loss reduces the number of units (people or households) available for data analysis - a particular problem in longitudinal analysis, which demands complete records across the time span of the research.

Attrition is also a potential source of bias in the data. If those who leave the study are not typical of those who started it, the longitudinal data will become biased to this extent. On the other hand, unlike cross-sectional data, longitudinal data contains full information about the characteristics of the sample when the study began. Accordingly, if loss to the sample through attrition occurs differentially across groups, e.g. groups say defined by social class of parents, then the sample can be re-weighted at any point in time to re-construct the key distributions of such variables and compensate for this loss to some degree by this weighting. Unless a longitudinal panel is regularly replenished, it will also gradually become less representative of the population as a whole to the extent that immigrants will not be captured within the sample.

Other possible data quality issues are those that relate to external sources of variation. Three sources of external individual variation that longitudinal data may contain are: age, period and cohort effects. All three need ideally to be accommodated for in the research design. Data collected at a particular point in time in a longitudinal study may be a product of the age of the individual concerned (age effect), the time when the individual was born (cohort effect) and the period at which data were collected (period or secular effect). To assess the size of the cohort effect and control it, one needs to collect data from individuals of the same age but born at different points in time (cohorts). To assess and control the age effect, we need to collect data from individuals of different ages in the same period. To assess and control the period effect, we need to collect data from individuals of the same age at different periods.

As longitudinal surveys are far more complex than cross sectional surveys, the costs of conducting a longitudinal survey are also higher. Large scale longitudinal studies tend to be expensive to carry out, and if they last a long time, require considerable commitment from a dedicated team to keep the study going. Continuing funding in between waves is always a problem. This is why, rather in the nature of a

small business, effective longitudinal studies need a well-funded infrastructure to ensure their continuation.

Longitudinal data are not only complex to collect, they also present additional difficulties to analyse and to present in a way which is user-friendly. Each wave of data can be regarded as adding another dimension to each sample unit, and the longitudinal linking of data presents formidable problems both of processing and interpretation. However, with modern information technology such problems are reducing in importance.

6.3 International examples of longitudinal income surveys

Four current and extensive longitudinal surveys from various nations are outlined below. Each measures a wide array of socio-economic variables that may be used to explore the many complex socio-economic relationships. The surveys that will be discussed include the Canadian Survey of Labour and Income Dynamics, the American Panel Study of Income Dynamics and The Survey of Income and Program Participation and the European Community Household Panel Survey which covers most EU member states. Other relatively long-standing longitudinal surveys include the German Socio-economic Panel Survey, the British Household Panel Survey and the United States National Longitudinal Surveys of Labor Market Experience.

6.3.1 Survey of Labour and Income Dynamics

The Survey of Labour and Income Dynamics (SLID) is one of several longitudinal household surveys being mounted by Statistics Canada. SLID is a multi-purpose survey designed to track the experiences of individuals in the labour market, their level and sources of income and changes in family life. The sample consists of overlapping panels, each one lasting six years. Each panel starts with about 15,000 households. All members are followed through time and new people with whom they live during the six year period are also covered. In addition to extensive historical information, covering marital history, fertility, work experience and educational attainment, persons 16 and over are interviewed every January about their labour market activities throughout the previous year. Detailed income information is obtained from their tax records, unless they do not file a tax return or would prefer to provide this information by interview. Income interviews are conducted in May. SLID's panel first started in 1993, and ended in 1999 (the launch of the third panel).

Major SLID research areas range from employment and unemployment dynamics and labour market transitions linked to the life cycle, to job quality, workplace inequality issues, family economic mobility (dealing in shifts in income level), low income dynamics (or flows into or out of poverty), demographic events and the relationship between work and education. SLID is the first household survey ever to provide Canadian data on the fluctuations in income that a typical family or individual experiences through time, which will give greater insight on the nature and extent of low income in Canada.

6.3.2 Panel Study of Income Dynamics

The Panel Study of Income Dynamics (PSID), begun in 1968, is a longitudinal study of a representative sample of U.S. individuals (men, women, and children) and the family units in which they reside. It emphasises the dynamic aspects of economic and demographic behaviour, but its content is broad, including sociological and psychological measures. As a consequence of low attrition rates and the success in following young adults as they form their own families and re-contact efforts (of those declining in one interview in prior years), the sample size has grown from 4,800 families in 1968 to 6,434 in 1999. As of 1997, the PSID had collected information about more than 60,000 individuals spanning as much as 30 years of their lives. It now collects information on the original families and their spin-offs once every other year.

6.3.3 Survey of Income and Program Participation

A second American major longitudinal survey is the Survey of Income and Program Participation (SIPP) which provides a major expansion in the kind and amount of information available to analyse the economic situation of households and persons in the United States. The information supplied by this survey provides a better understanding of the level, and changes in the level, of well-being of the population and of how economic situations are related to the demographic and social characteristics of individuals. The data collected in SIPP are especially useful in studying Federal transfer programs, estimating program cost and effectiveness, and assessing the effect of proposed changes in program regulations and benefit levels. Analysis of other important national issues such as tax reform, Social Security program costs, and national health insurance can be expanded and refined, based on the information from this survey. It collects information from around 37,000 households once every four months for three years. It was begun in 1983.

6.3.4 European Community Household Panel Survey

The European Community Household Panel Survey (ECHP) aims to collect comparable micro-level (persons/households) data on income, living conditions, housing, health and work in the EU. This is a completely new European survey, though in some countries it has utilised existing panels, and is the most closely co-ordinated component of the EU system of social surveys. The survey follows the same private households and persons over consecutive years from 1994. In 1995 over 60,000 households were surveyed. Indicators include: income from work, private income, income distribution, social exclusion, poverty, housing, health, medical care, education, retirement, unemployment and divorce.

6.4 Some applications of longitudinal surveys

Longitudinal data sources may take several years to pay dividends in terms of analytical results, but these results can be extremely useful to the development of social and labour market policy. Several longitudinal research themes can contribute to the formation to public policy, in particular: labour market dynamics, economic mobility and low income dynamics.

6.4.1 Labour Market Dynamics

The term employment and unemployment dynamics refers to movements in the labour market experienced at the level of the individual such as shifts between employment, unemployment and inactivity. Studies in recent years based on cross sectional data indicate very large movements in the labour market over the period of a year or even a month. Such studies can improve our understanding of how the labour market functions, and are thus useful supplements to "snapshot" labour market data that measure "net" change over some fixed time period. However, longitudinal data can provide insight into such issues as to what extent is unemployment experienced repeatedly by the same individuals, and how does the duration of unemployment spells vary over the business cycle? The longitudinal design allows studies of this type using completed spells, which can yield superior results to those obtained using truncated spells.

Other topics studied include using the longitudinal design to determine flows into employment and unemployment and the events that trigger such movements. For example, what are the major determinants of labour market withdrawal? What family events act as triggers for labour market transitions? What precedes a transition into self-employment? Do family income (both its level and stability) and wealth appear to have an impact on a worker's decision to become self-employed?

Along the same theme, life cycle related labour market transitions is a group of studies that puts more emphasis on the individual's family circumstances or living arrangements and deals with major labour market transitions that dominate particular stages of the life cycle. Three main life cycle transitions of particular interest are: school-to-work transitions, transitions from work to retirement and work absences/ temporary labour market withdrawal associated with childbirth or child-rearing.

School-to-work transitions can include long periods of inactivity and unemployment following school-leaving and are a labour market policy concern, not only because of lost productivity in the short-term, but also because of the concomitant use of social assistance, the onset of discouragement and so on. These dynamic movements have a direct impact on income flows over time. Issues of interest in this area include labour market integration of high school dropouts, time required for school leavers to find their first full-time job, stability of the first full-time job, wage and occupation in relation to education and major field of study, and back-to-school transitions following early ventures into the labour market.

Issues around transitions from work to retirement and impacts on income include the distribution of wealth among seniors and the pre-retirement group, and how wealth conditions retirement decisions. The potential exists for studying the labour market phasing-out process, for example, self-employment following retirement from a paid job, or shifts to part-time or lower-wage pre-retirement jobs.

Work absences/temporary labour market withdrawal associated with childbirth or child-rearing are the third major area of life-cycle transitions. It is possible to study reintegration patterns, for example, wages before and after the absence, work arrangements and hours worked on returning to work. There may be some interest in the patterns associated with various family types, in particular, lone-parent families. Another possible research area will be the labour market impacts of family dissolution as they relate to working mothers.

6.4.2 Family Economic Mobility

The increase in earnings inequality in some nations has manifested itself through a growing gap between older and younger workers, particularly among men. The availability of longitudinal data offers some prospect of understanding the individual trajectories underlying changes in inequality. Longitudinal data can be used to assess the long-term impact of the drop in real earnings in families and whether earners spend more time in lower income levels that did previous generations.

This group of studies deals mainly with the measurement of stability versus change in the economic well-being of families. An important research topic in this area is family formation and dissolution.

When a major family event occurs, it often can trigger significant change in income. Cross-sectional data show that family dissolution and re-formation is an everyday reality in many countries. Longitudinal sources of data hold some promise for understanding the financial origins and outcomes of these family changes. If such a change involves the gain or loss of a breadwinner, it can have major repercussions on the family's financial picture.

Longitudinal sources of data can also be used to investigate how family events, particularly marriage and separation, are related to children entering or leaving low income and poverty. For example does parental separation increase the risk that a child falls below a given poverty line compared to a child whose parents did not separate that year. Or, conversely, how does marriage or a new common-law union increase the probability that a child will move out of a low income situation.

6.4.3 Low Income Dynamics

Dynamics of low income is related to the previous theme, but the emphasis is more clearly on low income. Studies of low income and poverty, such as the flows between two years, which use cross sectional data look at a short period, can give an exaggerated impression of the amount of turnover that occurs in the low income population or the persistence of low income spells. In the longer term longitudinal data may be used to estimate "turnover" in the low-income population, from year to year and over a longer period, which may provide a more accurate picture of the nature of poverty.

Associated questions concern the determinants of flows into and out of low income. What are the demographic and labour market events that tend to trigger a movement into or out of low income? What role do government transfer payments play in flows out of low income? Longitudinal data are of potential use in studying the degree of economic dependency on these social programs over time, and the part played by each in bolstering family income.

Families that are economically disadvantaged in spite of their labour market involvement - "the working poor" - are a particular concern, in that their precarious position may trigger labour market withdrawal. The data may be of interest in income security policy research, especially given the move towards building work incentives into income support programs.

The uses of longitudinal data are extensive and varied, and can provide many insights into the nature of socio-economic relationships that may be of interest to researchers and policy makers alike. Unlike cross-sectional data, which give a very

accurate representation of net change at any given point in time of what is happening to the population as a whole, longitudinal data provide insight into the impact that particular events have on an individuals outcomes and transitions. The Survey of Labour and Income Dynamics, Panel Study of Income Dynamics, Survey of Income and Program Participation and European Community Household Panel Survey are examples of longitudinal surveys that are providing and will continue to provide valuable information on such research topics ranging from the dynamics of poverty to tracking life cycle transitions in the labour market to examining family economic well being. The knowledge garnered form these areas of research are paramount to understanding the complex socio-economic relationships of today's societies and to help guide governmental programs and polices to achieve their goals.

Chapter 7

Data Presentation

7.1 Introduction

All the usual 'best practice' rules for presenting statistics apply equally to income distribution analysis. Charts can provide very valuable insights, but the information content they can bear without becoming cluttered is limited, otherwise it becomes difficult to draw clear inferences. Three dimensional charts are not recommended for the presentation of two dimensional data, despite their aesthetic appeal, because of the distortion which the addition of a third dimension may bring. It may sometimes be illuminating to present three dimensional data in chart form, but generally speaking more detailed data require a tabular format. In any case, the data underlying a chart should always be available to the user. Income statistics represent some of the most complicated data produced by statistics offices and a major challenge for their producers is how to present them in a user-friendly way. The aim of this chapter is to discuss various ways of presenting data on household income, and the pitfalls which should be avoided.

Section 7.2 follows the recommendations provided in chapter 3 on different units of classification and provides examples of how to present income data for different units of analysis. Section 7.3 discusses the use of the mean and the median as measures of central tendency. In section 7.4 income dispersion measures are explored. Examples are provided of different ways of presenting inequality and discuss some of the problems related to the use of different inequality measures. Section 7.5 focuses on the presentation of different components of income.

7.2 Units of analysis and classification

Chapter 3 recommended the household as the preferred unit for income distribution analysis, because this is the level of aggregation of individual incomes at which an assumption of income sharing is most valid. However, even if the unit of analysis is the household, one may wish to present the data in different ways; for example, reweighting household income so that it represents the number of individuals instead of the number of households (see section 3.3.6).

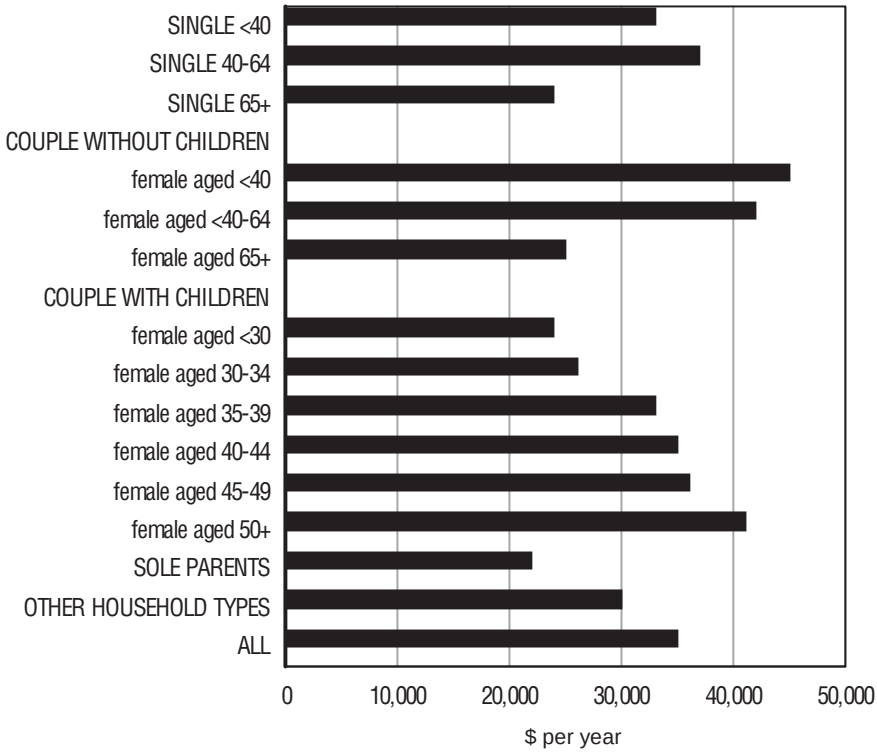
Thus in presenting income distribution results, producers should make it clear what assumption is inherent in the units of analysis, for example that all members of a household share equally in the household's income, *and* how people are counted.

Users need to know whether a statement that ' the bottom 20 per cent of the income distribution receive 8 per cent of total income' means that the bottom 20 per cent of individuals receive 8 per cent of total income *or* that the bottom 20 per cent of household – who might be more or less than 20 per cent of the population – receive 8 per cent of total income.

In presenting income distribution statistics, it is often useful to categorise households according to characteristics which are thought to correlate with income. For example, one frequently used way of classifying households is to take into account factors such as the age and number of children in the household or how many economically active adults there are in the household. Needless to say there are substantial differences in economic well-being between households where the number of economically active adults differs but all other characteristics are the same. Again, the data producer must make clear the basis on which households are assigned to categories: is a 'single parent' a single person with children, or a single person with children and with no other adult in the household. Similarly, the definition of terms such as 'child' and 'economically active' must be readily available to the user. For example, a 'child' may be defined by their age, or by their educational status (whether or not still in full-time education), their kinship to other members of the household, or any combination of these factors.

Often it is personal characteristics such as gender and age, education, seniority or type of activity which are considered important, but these cannot be used as a classification of households. For example, the income of individuals and households may vary substantially at different stages in their lives. Households with young children will in general have a lower economic well-being compared to older couples where there are no children residing at home, and old-age pensioners will usually have lower income compared to working age households. In such cases a common method is to classify households according to the personal characteristics of the household head (or the reference person) and the number of adults and children in the household. Figure 7.1 gives a hypothetical example of how households can be classified into different types and of the text which should accompany such a chart to clarify the classification. Households types are here constructed both on the basis of household size (singles, single parents and couples with and without children) and according to age.

Figure 7.1
Average household equivalent disposable income: by life-stage type, 1996 ($ per year)



Single – one adult living alone
Couples – one man, one woman, living as married
Children – persons aged 16 or under, or over 16 and still in full-time education
Sole parents – households comprising 1 adult and 1 or more children

When comparing the economic well-being of different household types, income is usually adjusted by the use of equivalence scales (section 3.3.5). When presenting statistics where the aim is to compare the income level of different household types, producers and users of income statistics should be aware of the fact that results may be strongly influenced by the choice of equivalence scales. Producers should make it clear whether or not an equivalence scale adjustment has been made to the data in a table or chart and metadata should be readily available (in the accompanying Robustness Assessment Report) setting out the particular scale used and the sensitivity of the results to the use of different scales.

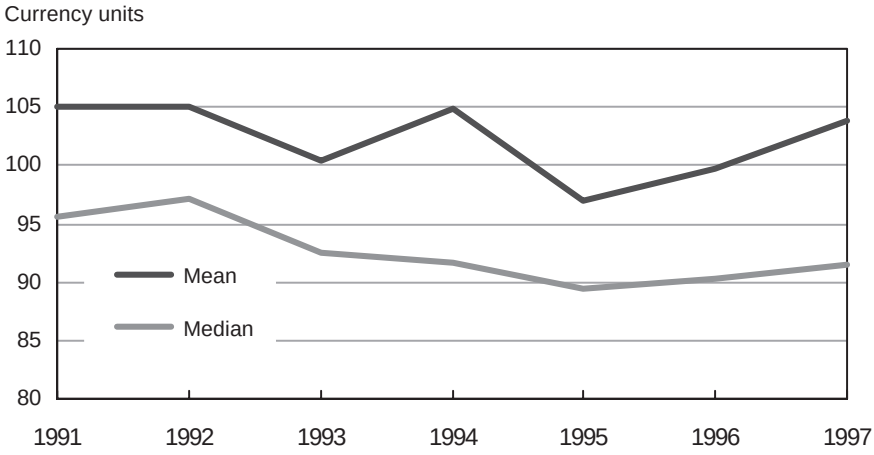
7.3 Summary measures of income level: the mean and the median

The most frequently used measure to describe income levels is the arithmetic mean, ie the sum of all income divided by the number of observations. One advantage of the mean is that it is easy to measure and interpret. However, one of its drawbacks is its vulnerability in respect to extreme values and to asymmetry of the distribution.

An alternative measure of central tendency is the median, ie the middle observation of the distribution. Compared to the mean, the median is a more stable and robust measure and less affected by extreme values and sample fluctuations. This can be illustrated in the following example. Figure 7.2 presents changes in average and median household equivalent income. As can be seen from the graph the median shows a gradual decline in income from 1992 to 1995 and a modest rise from 1995 to 1997. However, the trend in average income is quite different from median income. We note for instance a sharp increase in average income from 1993 to 1994, followed by a huge drop from 1994 to 1995. From 1995 to 1997 there is once more a strong increase in income.

In this hypothetical example, the reason for the difference between the two measures can be explained by a sharp increase in investment income in 1994 and in 1997. This component of income is heavily concentrated at the top of the distribution and its magnitude has a strong impact on the mean, but not on the median.

Figure 7.2
Changes in mean and median household equivalent disposable income



Despite its weakness as a measure of central tendency, the mean remains the most frequently used measure of income level by most producers of income statistics. It is also the obvious choice when presenting data on the composition of household income. For the lay user it is more satisfactory if the different income components sum to total income, which will be the case when the mean is used. It is not however true of the median except in exceptional cases. On the other hand, the median is

often the preferred measure when a threshold for 'low' or 'high' income is required. The reason for this is that many define poverty in terms of the relative distance to the "general" level of income. The median is often considered superior to the mean as an indicator of the general or standard level of income for the whole population for the reason already mentioned, ie less vulnerability to changes taking place at the tails of the distribution.

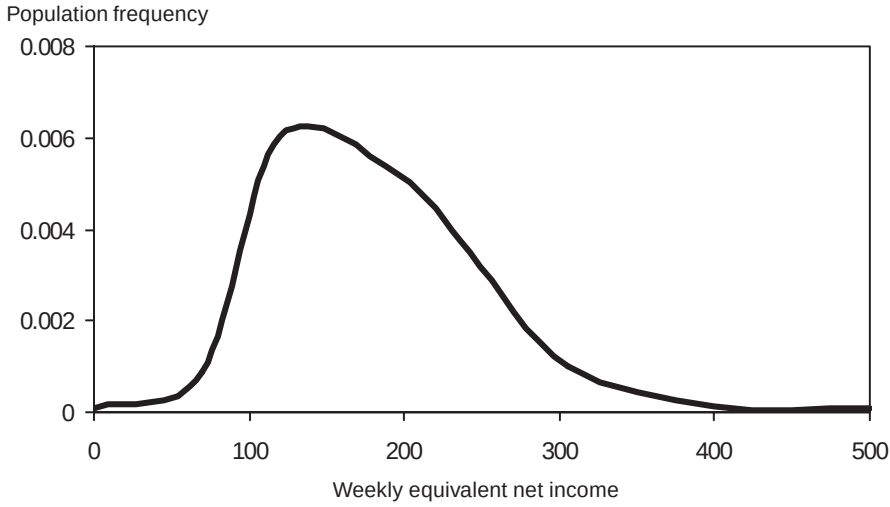
7.4 Measures of income dispersion

The difference between the mean and the median can be regarded as one measure of income dispersion. In most countries average household income will be higher than the median household income. The reason for this is that the distribution of income is usually skewed towards the lower end of the distribution. The higher the ratio between the mean and the median, the greater the inequality. However, this is a relatively crude measure and a number of other possible measures of income inequality have been developed.

The frequency diagram

The most basic presentation of income dispersion is the frequency diagram, which plots the chosen measure of income (total income, disposable income, adjusted disposable income) for each sample unit. Figure 7.3 show a typical income distribution. Although hypothetical, this illustrates the fact that the income is not distributed as a normal distribution but is positively skewed towards the upper end of the distribution.

Figure 7.3
Frequency distribution of income

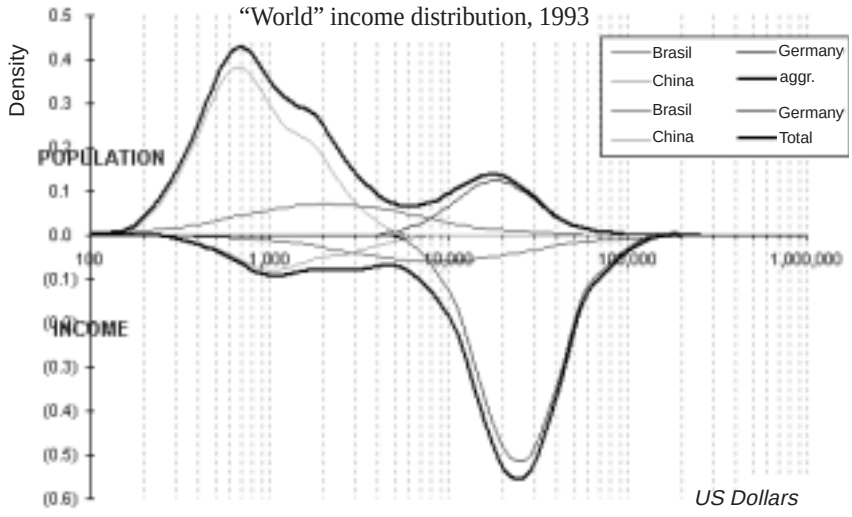


A more complex development of the frequency diagram is illustrated in Figure 7.4. This has been devised in response to the growing demand for global income distribution information. The lines above the x-axis are population densities and those below the x-axis are income densities. The area between each of the curves and the x-axis is 1. This makes it possible to additively decompose a total distribution into its components. Three countries are represented on the chart, A, B and C. They are expanded to take up weights for large regional country groupings on the assumption that these distributions – in this symbolic representation – are similar. Thus this only illustrates how to analyse world income distribution and does not purport to be a world distribution as such.

To show how it may be interpreted, we can see that more than 40 per cent of the 'world' population have incomes below $1000 per year and that they receive only 6 per cent of total 'world' income. We can also see that most are from 'A' and some are from 'B'. Being a flatter scale given the logarithmic scale, we can see that the inequality in B is enormous: the population spreads across the whole income spectrum shown on the chart. We can also see that while the 'world' population distribution has two peaks, the corresponding income distribution has a single peak and is skewed heavily to the right hand side of the chart.

Because of the area-retaining properties of this diagram, a uniform shift to the right in income will not change the shape of the curves but will shift the overall distribution to the left or the right. This makes it easy to compare various distributions – for different countries or for different years – on one graph.

Figure 7.4
Quasi-exact depiction of the world income distribution



7.4.1 The Lorenz curve

The frequency diagram presents a ranking of units according to their income, and this basic procedure is at the foundation of most measures of income dispersion. The Lorenz curve is closely related. Units of analysis (persons or households) are placed on the horizontal axis according to ascending income, and the vertical axis presents the cumulative proportion of total income accruing to them. The closer to the diagonal the curve lies, the more equal is the distribution.

The Lorenz curve is frequently used to compare income distributions. If the curves of two distributions do not intersect this can be interpreted as if one distribution 'Lorenz-dominates' the other, i.e. one distribution is unambiguously more equal than the other. This is illustrated in Figure 7.5. This figure shows the distribution of equivalent household income for two countries for the income year 1999. The Lorenz curve for country A is much closer to the diagonal indicating a more equal income distribution than for country B, and at no point do the two curves intersect. Figure 7.6 compares the income distribution of country B with that of country C. Because the curves now intersect we cannot conclude that country C has a more equal distribution of income compared to country B, or vice versa.

Figure 7.5
Lorenz curves for the distribution of equivalent household disposable income

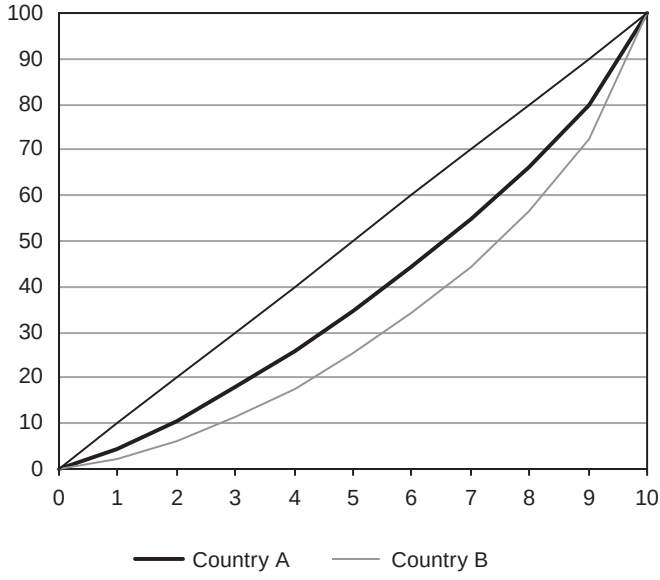
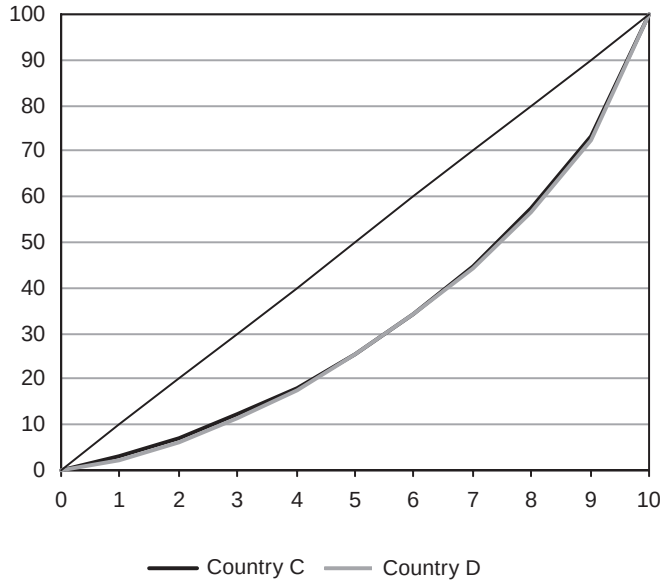


Figure 7.6
Lorenz curves for the distribution of equivalent household disposable income



7.4.2 The Gini coefficient

As has been illustrated above, one weakness of the Lorenz curve is the problem of interpretation when two curves intersect. However, the Lorenz curve provides the theoretical basis for several important inequality indexes or summary measures. One of the most widely used summary measures of income dispersion is the Gini coefficient. The Gini coefficient measures the Lorenz area, the area between the curve and the diagonal, as a proportion of the total area of the lower triangle. The Gini coefficient may vary from 0 (all units have equal income) to 1 (maximum inequality). It is expressed either as a fraction or as a percentage.

One advantage of the Gini coefficient is that it provides a simple summary measure of inequality that is fairly easy to interpret for both producers and professional users of income statistics. The higher the coefficient, the greater the inequality. However, despite its simplicity and popularity the Gini coefficient also suffers from some weaknesses. It has for instance been criticised for being too sensitive to changes taking place around the mean of the distribution, and to be less sensitive to changes that occur at both tails of the distribution. One consequence of this is that one distribution that includes one observation with extremely high income, can report the same coefficient as another distribution that has several observations with very low income. For this reason producers of results should be careful not to present inequality figures based on the Gini alone. Instead the Gini estimates should be presented in combination with, for example, decile distributions or other summary measures that are more sensitive to other parts of the distribution. Some of these will be discussed below.

One other drawback of the Gini coefficient and other mathematical measures of dispersion is that they often are difficult to understand for the public and policymakers.

One particular issue that analysts of income distribution should be concerned about when presenting Gini coefficients is sampling error. Most countries produce income statistics that are based on representative sample surveys. In sample surveys there will also be sampling errors which will also affect the Gini coefficient. Estimates of sampling variance may be essential for judging the significance of inequality rankings, for instance in respect to trends in income distribution or cross-country comparisons (see also section 5.5.2). (Small) changes in the Gini coefficient may be within the bounds of sampling error and so no inferences about changes in income distribution may be drawn from them.

It might be argued that non-sampling errors may be quantitatively more important than sampling errors in respect to cross-country comparisons of inequality (Atkinson et al. 1995). Measures of sampling errors should, nevertheless, always be presented alongside the Gini coefficients in order to avoid drawing false conclusions on (small) changes in inequality.

7.4.3 Quantile groups

Another common approach also based on a ranking of units of analysis (eg households or individuals) according to ascending income involves calculating shares of total income accruing to a given proportion of the units, for example decile (10 per cent) or quintile (20 per cent) groups. If income were distributed equally among the units each decile (quintile) would have a 10 (20) per cent share of total income. Decile and quintile groups are particular examples of quantile groups. In the following discussion, decile groups are referred to throughout, but the comments are equally applicable to any other quantile groups chosen.

When presenting summary data on decile groups either the mean or the median may be taken to represent the relative position of that decile group. As discussed in section 7.4.1 above, the median is generally to be preferred particularly at the tails of the distribution. An alternative approach is to present decile points (often simply referred to as deciles). The decile point is the exact value that separates two decile groups. The person with the highest income within decile group 1 will, for instance, be the first decile in the distribution (or the 10^{th} percentile), whereas the person with the lowest income among the richest 10 per cent will be the 9^{th} decile (or the 90^{th} percentile).

Dividing the population into quantile groups and then comparing the share of income of each group is a very useful way of analysing trends in income inequality within a country or to study cross-country differences. By comparing, say, decile distributions one gets information not just on whether one distribution is more unequal than another, but also information on where within the distribution differences occur, without recourse to a full frequency diagram. This point is illustrated Figure 7.7. The figure shows the distribution of equivalent household disposable income in 12 hypothetical countries across different income classes, where the income classes are constructed on the basis of decile groups. For the purposes of this diagram, lower-income units are defined as those in the three bottom decile groups, middle-income units are those in the four middle decile groups while high-income units are those in the top three decile groups.

Figure 7.7
Share of household disposable income between decile groups

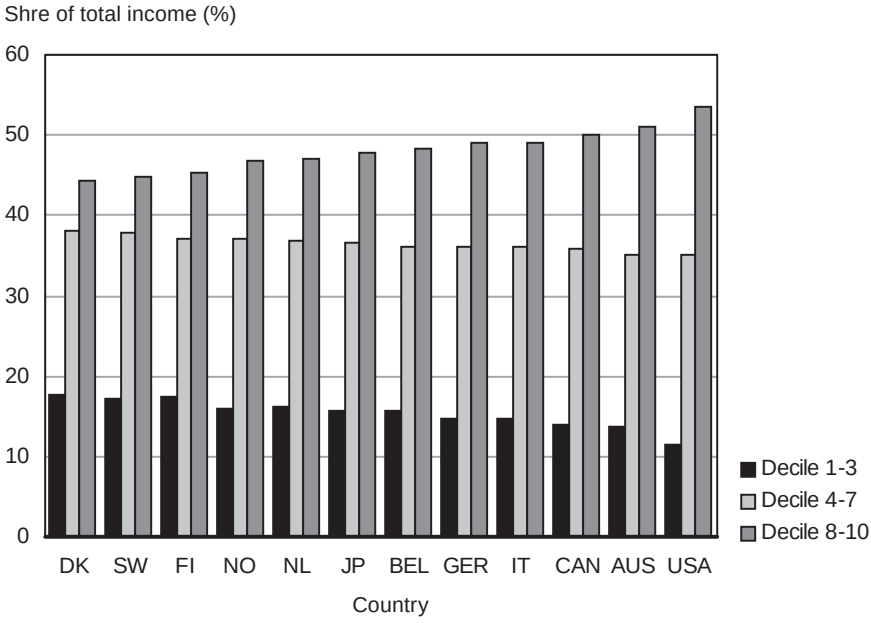
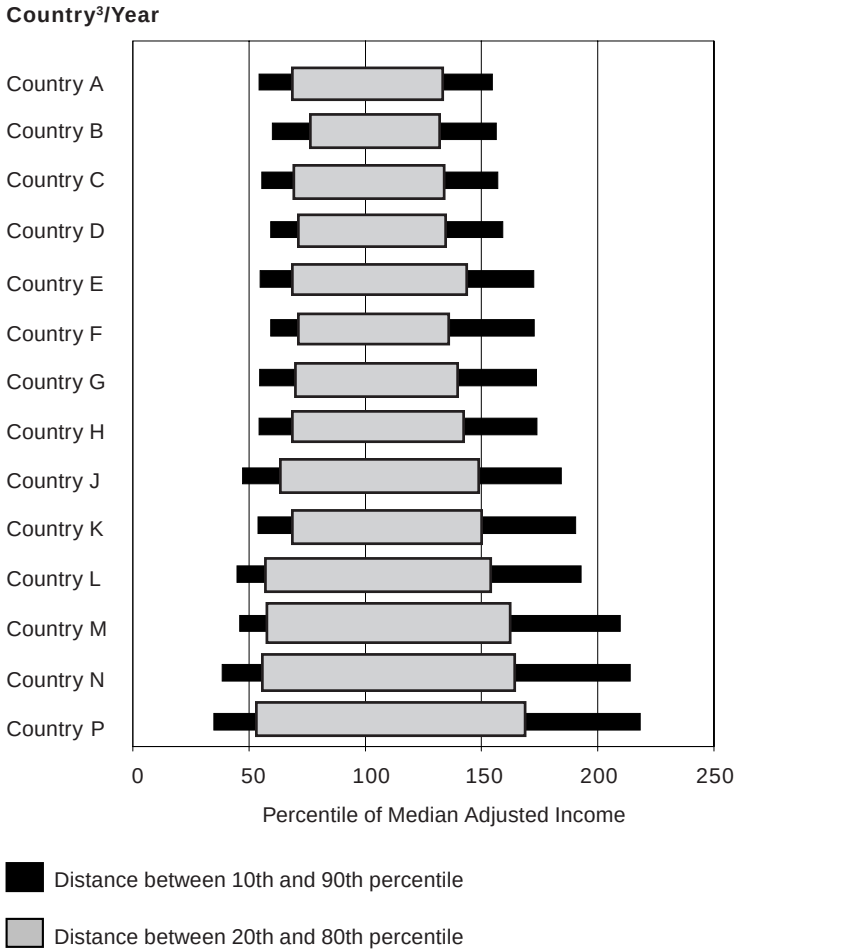


Figure 7.8 gives an example of how income distribution may be presented based on quintiles. The figure shows the distance between the "rich" and the "poor" in a number of hypothetical countries, and the bars in the graph indicate the distance between the 1st and the 4th quintile, and between the 1st and 9th deciles. The length of each bar represents the gap between high and low income individuals scaled so that 100 equals median income in each country.

Figure 7.8
The distance[1] between the 1st and the 4th quintiles and the 1st and 9th deciles



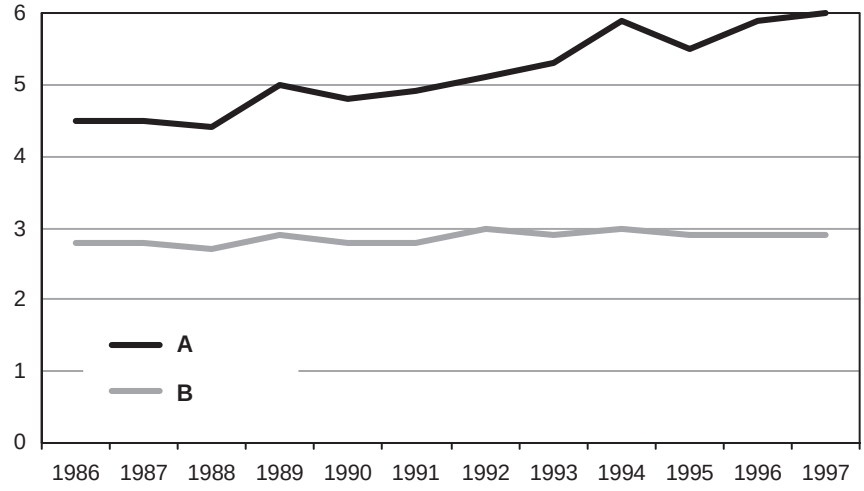
Notes:
1 Social distance is measured by percentile position relative to adjusted median income (100) and by the decile and quintile ratios.
2 Incomes are adjusted by E=0.5 where adjusted DPI=actual DPI divided by household size (S) to the power E: Adjusted DPI=DPI/S^E.
3 Countries are ranked by decile ratio.

However, as was the case for the mean and the median, presentations based on decile group shares and decile points may sometimes give contradictory results. When inequality is measured on the basis of differences in decile points, rather than decile group shares, the influence of extreme values at both tails of the distribution will be much less pronounced. This is illustrated in Figure 7.9, which shows the ratio between the income share of decile group 10 to that of decile group 1 together with the ratio of the 9th decile to that of the 1st decile. Note, however, that the ratio of the 1st and 9th deciles does not reflect the distribution of income amongst 20 per cent of the population. These groups at the tails of the distribution are also those which often are of particular interest to policymakers and in public debate, but are also those for which incomes may be the least reliable indication of economic well-being (see Chapter 8 – Robustness Assessment Reporting).

As can be seen from the figure, the ratio of the decile group shares increased substantially in the period indicating an increase in income inequality. The share of income of the richest tenth of the population increased from 4.5 times the share of the poorest tenth in 1986 to 6 times higher in 1997. However, the figure also shows that the ratio between the decile cut-offs remained virtually unchanged in the same period.

Figure 7.9

Ratios between decile group shares of income (A) and between decile points (B)



Ideally producers of income statistics should present statistics of decile points, decile group shares and decile group averages. However, it may not always be possible to do so because of data imperfections. For example, it would be problematic to present cross-country comparisons based on decile shares, eg the share of total income that the richest or poorest 10 per cent of all households receive, when some national datasets have been bottom or top coded while others have not. In addition

countries differ in respect to the coverage of certain income components that are particularly unevenly distributed, for example investment income (Atkinson et al, 1995). For these reasons it is recommended that when presenting international comparisons of decile ratios - and where there are known to be such data imperfections like those mentioned above - then these figures should primarily be based on decile points rather than decile shares. On the other hand, when presenting trends in income distribution within the same country and provided that there has been no substantial change in respect to income definitions etc., the presentation of decile shares is a very useful way of monitoring changes in income distribution.

7.4.4 Other summary measures

Among producers of income statistics and analysts of income distribution the Gini coefficient is the most frequently used summary measure of inequality. There exist, however, a number of other summary measures of inequality. An exhaustive list will not presented here but readers are advised to consult one of the many methodological handbooks on the measurement of income inequality for more detail, for example Nygård & Sandström (1981) or Cowell (1995). Instead this section focuses on a few summary measures that are frequently presented as a complement to the Gini coefficient, because they are more sensitive to changes taking place at different parts of the income distribution.

The distinguishing feature of the Atkinson index is its ability to reflect movements in different segments of the income distribution. The user can place greater weight on changes in a given portion of the income distribution by setting the *e* parameter (referred to as the level of "inequality aversion"). This parameter can be set between 0 and 1. The index becomes more sensitive to changes at the lower end of the income distribution as *e* approaches 1. Conversely, as the level of inequality aversion falls (that is, as *e* approaches 0) the Atkinson index becomes more sensitive to changes at the upper end of the distribution.

Two measures that are frequently used to measure changes taking place at the upper tail of the distribution are the Squared Coefficient of Variation (SCV) and the Theil's entropy. The Coefficient of Variation is the standard deviation divided by the mean. When squared it is additively decomposable. Like the Gini coefficient, the SCV measure has a minimum value of 0, but the maximum value depends of the number of units. The second measure, the Theil's entropy, also has no fixed maximum value, but the more unequal the distribution is the more the entropy deviates from zero.

In most cases the broad picture of how income dispersion differs either over time, between countries, or between groups within a country, will be unaffected by the choice of summary measure. However, the different indices do have differing properties and so this is not always so: the message conveyed by alternative summary measures may sometimes be contradictory. It is therefore important that more than one measure should be calculated and presented, and that the measures should be chosen with the particular aspect the user wishes to portray in mind.

7.5 Income composition

When analysing income both within and between countries one also sometimes wishes to compare income composition. In interpreting differences between income composition between countries, the user has to be aware of institutional differences which may have a bearing. For example, countries differ in the extent to which the welfare state supports households. Also, support to households may be organised in different ways, for example child allowances may be provided as cash support in one country and as tax reductions in another.

One way to compare income composition between countries or between population groups is to calculate those different income components which sum to disposable income. Since there may be differences between population groups within countries and between countries it is desirable to compare income composition net of negative transfers such as income tax. However, information on these transfers, for example income tax, is usually only available in total and cannot be directly related to each component of gross income. Thus an imputation may have to be made to obtain disposable income by apportioning and then deducting taxes in proportion to those income components which are liable to tax, and deducting other negative transfers in proportion to all income components.

The basis for this type of calculation is mean values for all income components. One has to adopt the mean in order to have all the components to sum to total income. However, as mentioned earlier one of the drawbacks of the mean is that outliers may overly influence the upper and lower tails of the distribution.

Income composition is probably most successfully presented in table form, unless very few (no more than three) income categories are to be shown. Although layer charts and stacked bar charts are sometimes used, it is difficult to draw a complete picture covering all categories of income from them.

Chapter 8

Robustness Assessment Reporting

8.1 Introduction

Good practice dictates that any set of statistics should be accompanied by sufficient information about the sources and methods used for their compilation that allows them to be used appropriately and for correct inferences to be drawn from them. In recognition of this, many national statistical institutes have developed generalised quality frameworks to be completed for each of their statistical series. Examples include Statistics Canada's Data Quality Framework and the US Bureau of the Census's Quality Profile. These ensure that comparable and consistent information is available on each statistical output from which the user can judge their fitness for purpose.

Given the complexity of income distribution statistics, the wide range of definitions that can be used and the level of error or uncertainty to which the results are prone, ready availability of such information – metadata – is doubly essential. The user must be able to judge the fitness for purpose of a set of income distribution in the particular context in which they wish to use them. Without full documentation, misinterpretations and misuse can all too easily take place.

The Canberra Group developed a Robustness Assessment Report (RAR) which should encapsulate the information needed to assess fitness for purpose. This drew on Luxembourg Income Study (LIS) Technical Documentation and on work commissioned by Eurostat. The RAR template is reproduced in Appendix 6 and discussed in this chapter, as are the different types of reporting that may be appropriate at different stages in producing and using income distribution statistics. Examples of completed templates for a variety of countries may be found on the LIS website (www.lis.ceps.lu/canberra.htm).

8.2 Guiding principles

Any person or institution who publishes income distribution statistics has a responsibility to assess whether their results give a true and fair picture of those aspects of income distribution which they are reporting on. However, any individual person or institution would find this too large and difficult a task, if they had to work alone. Assessments in publications which provide results need to be able to draw on 'primary' assessments for each country/database. Chapters 4 and 5 suggested that

some assessments can best be made by those who produce the income distribution database or the primary income distribution statistics in a country.

It is therefore recommended that these database/primary statistics producers:

- identify and quantify the groups excluded from the database; and, if possible, report on their estimated incomes and living standards;
- describe in detail the data source from which the estimates are derived, the data collection methodology, and any features which may mean that estimates are biased;
- assess the nature and size of response biases;
- report on data editing and imputation: the rules applied; the impact on reported incomes at the extremes of the income distribution; any potentially significant differences between the pre- and post-editing and imputation income distribution for specific groups; whether direct taxes have been imputed, in calculating net incomes; and any uncertainties about the validity of any imputations which are substantial in extent;
- define the terms used – for example, the term 'disposable income' may represent a wide variety of income definitions;
- report on the sensitivity of results to different assumptions, for example different equivalence scales;
- include comparisons with other sources of similar estimates, highlighting any where alternative sources provide substantially different results and if possible identifying why this should be so;
- reference relevant previously published methodological work;
- report on how/if data have been grossed, and on comparisons between the grossed income micro-data and National Accounts income estimates, allowing as far as possible for differences in coverage, definitions and time periods.

Additionally, the primary producers of income distribution statistics in a country should identify:

- any changes, either in the coverage of income components in the data which underpin the statistics, or in the extent to which particular goods and services have been financed from disposable income;
- any groups for which income data are known or thought to be a poor guide to their contemporary living standards; this should include statements on the self-employed and those at the very bottom of the reported income distribution: either statements reflecting assessments made for the country in question, or - if no assessment is available – a caution that evidence from other countries suggests that, for these groups, income data may be a poor guide to living standards;
- any substantial price or price-index differentials which are sufficiently large to undermine the validity of income comparisons for some groups;
- any other factors (besides those listed above), either in the dataset or in the social policy environment, which producers of income distribution analyses need to be aware of.

All these factors are covered in the RAR template. They are very similar to the recommendations on robustness reporting made in the 1998 report of Eurostat's Task Force on Social Exclusion and Poverty.

For each dataset, as well as a detailed Robustness Assessment Report on these issues it is suggested that a one page summary be prepared, highlighting the most important problems with income distribution statistics from that dataset. The example below is a summary prepared for a hypothetical household income survey.

Robustness of income distribution results to data imperfections

Income statistics have mainly been based on a continuous household income survey, 8,000 households (set sample) annually.

About 2 per cent of the population are not covered in the survey. Effects on the overall picture of income distribution are thought to be small; estimates for the very elderly and for young adults may be affected, with average income estimates for young adults being biased upwards.

- Response rates are 60-70 per cent, so non-response bias is potentially a major threat to robust results. Information on non-response biases and their effects is limited but under-representation of ethnic minorities and of very high income households may lead to under-estimation of inequality. There are some indications that low income young single adults are under-represented. Analysis of socio-economic classification of the areas where non-respondents live, using small-area postcodes, suggests below-average response rates among people in publicly owned housing, who generally have low incomes.

- Item non-response - extent and effects unknown but expected to be small; non-response to major income items usually triggers ejection from the dataset.

- Comparisons with National Accounts suggest shortfalls (in the grossed survey data) of 25 per cent or more for self-employment income and investment income. And comparisons with tax records suggest the survey understatement is most severe towards the top end of the income distribution.

- Estimates of the "working poor" are vulnerable to suspect data on the incomes of self-employed people. Inequality estimates are sensitive to a lesser extent: excluding the self-employed raises the bottom decile's share of disposable income by about 10 per cent, and lowers the top decile's by 5-10 per cent.

- Even excluding the self-employed, household expenditure in the bottom 5 per cent of the income distribution is typically higher than in the next 5 per cent; so results for the bottom 5 per cent or 10 per cent should not be interpreted as capturing those with the lowest living standards.

- Some results are sensitive to the treatment of housing costs assistance for low income households. Omission of cash substitutes affects both the upper end of the income distribution - via employee's company cars - and the lower end via e.g. concessionary travel fares for pensioners.

Overall, results which give a heavy weight to the self-employed - including estimates of "the working poor" - or to the bottom 5 per cent of incomes are unsafe as a guide to consumption capabilities. Response patterns and the shortfall in investment income may lead to inequality being understated (unless corrective action is taken, as it is in some official statistics). Response rate variations may create other significant, but undetected, biases. Incomplete coverage of students, and apparently low response rates among low income single youngsters, suggest results for young single adults should be treated with caution.

Primary producers have particular responsibilities when reporting on income distribution estimates which form – or could be used to form – a time series from which inferences about trends may be drawn. In this case there is a responsibility to draw special attention to changes in any of the characteristics listed above which may affect the appropriateness of making comparisons with estimates already published for previous years. Primary producers should:

- assess the robustness of results each time a new set of estimates is published;
- draw attention to changes in definitions, survey coverage, imputation practices, survey practices (eg introduction of computer-assisted interviewing), etc, which may affect the comparability of the new estimates with those for previous periods
- make available an assessment of the impact of these changes on comparability.

Producers of secondary analyses of income distribution should:

- assess the robustness of their results, given the general findings made available from the primary producers;
- consider whether their audience will interpret 'income' in the way that matches the income definition employed; and if necessary, assess the robustness of their results in relation to the choice of definition;
- test their results against a range of alternative equivalence scales (and, if relevant, price indices);
- and then report, alongside their income distribution results, whether those results can confidently be said to give a true and fair picture of the answers to the questions addressed in the publication.

It is helpful if both primary and secondary producers of income distribution statistics make available to the analyst a summary bibliography of any important studies that they are aware of which analyse sources of error affecting income distribution statistics or that present research having a bearing on their interpretation.

Different forms of reporting are likely to be appropriate for different types of publication. For example, the 1998 Eurostat Task Force report distinguished between:

- press releases and other brief publications which present 'headline' results only
- more detailed reports
- Compendium, anthology or omnibus publications

and made recommendations on how, in each context, to report on the reliability of results. These are reproduced in Appendix 7.

For short summary reports, if the findings reported are restricted to those known to be robust, then it may not be necessary to discuss robustness. If most of the results in a table are robust, it may be appropriate just to mark those results that are not.

WE RECOMMEND THAT INCOME DISTRIBUTION DATASETS BE ALWAYS ACCOMPANIED BY ROBUSTNESS ASSESSMENT REPORTS AS SET OUT IN THE TEMPLATE CONTAINED IN APPENDIX 6, SO THAT USERS MAY JUDGE THEIR FITNESS FOR PURPOSE

Chapter 9

Issues for the Future

9.1 Introduction

These guidelines have been based on current best practice and have been formulated in the context of current economic and social conditions. The Canberra Group recognised that neither of these is static, and that guidelines such as these have to be subjected to periodic review and update, in the best traditions of similar guidelines such as the System of National Accounts and other international standards. It is the hope of the Canberra Group that the international statistical community will not only adopt these guidelines but that they will also ensure that they are kept up-to-date with developments in both the practice of income distribution compilation and in the economic and social realities that they are called upon to illuminate.

> WE RECOMMEND THAT THESE GUIDELINES ARE PERIODICALLY REVIEWED TO ENSURE THAT THE ADVICE IS KEPT UP-TO-DATE WITH DEVELOPMENTS IN THE PRACTICE OF INCOME DISTRIBUTION COMPILATION AND IN THE ECONOMIC AND SOCIAL CONTEXT IN WHICH THE STATISTICS ARE USED

However, some of the issues which will have to be confronted in the future in the field of income distribution were raised in the Canberra Group. It was not an objective of the Group to resolve them. They are set out in this chapter as a sort of *aide memoire* in the hope that they might be taken up by similar groups or in other fora in the future. However, this is not an exhaustive exposition of all the challenges which are facing or in the future will face those who try to measure household income and its distribution. They are those which emerged in the course of discussion as being of qualitative and quantitative importance, but up to now countries have not found a satisfactory empirical solution to their measurement, or at least not one which has been widely accepted.

The issues fall into two groups:

- those which are already affecting the way in which the concept of household economic well-being is interpreted but for which generally acceptable measures have not yet been developed;

- external developments in economic and social conditions which are likely in due course to require statisticians to revise their concepts and therefore also their measures of household economic well-being.

These two groups of issues are discussed in sections 9.2 and 9.3.

9.2 Where next for household economic well-being?

Three particular topics emerged as needing resolution if measured household income is to continue to capture what contemporary society views as 'economic well-being'. They are:

- transfers between and within households
- relationships between income, expenditure and wealth
- non-monetary income produced and distributed through the production of goods and services within the household economy.

All three have already been discussed in these guidelines but they have generally been viewed as out-of-scope at the present time. This is not because they are not seen as important, but because more research and discussion by the international statistical community are needed before it would be possible to extend practical definitions in these directions.

9.2.1 Transfers within and between households

The transfer of resources within the household is an issue of growing importance to those concerned with social welfare. Chapter 3 recommends that the household should be the preferred unit of analysis for the study of income distribution, and indeed this accords with current best practice: the vast majority of income distribution studies assume that all resources are shared equally between family or household members for good theoretical and practical reasons. However, this is to some extent a 'second best' solution. It implies that there are no inequalities resulting from unequal distribution between members of households. Evidence from a limited number of surveys suggests that this assumption does not accord with the reality of household dynamics in a significant number of situations. Factors such as economic power, source of income (eg own earnings, own receipt of government transfers), and an individual's own needs, influence intra-household distribution. As a result, individual household members often fare better or worse than the average member. However, we have very little understanding of how households distribute aggregate income among their members to maximise household welfare, a process that is certainly highly culture-specific.

What is certain is that the measurement of intra-household transfers is very difficult indeed at the present time, and much more research is needed before estimates could be made with any confidence. However, such research is increasing in priority in order to understand better the relationship between gender roles, child welfare and poverty. And the distribution of intra-household transfers can provide valuable information on how social assistance programmes for poor families might best be designed in the future.

It is worthwhile noting that the fact of unequal sharing between members of a household is implicitly recognised by the government social assistance systems in some countries, when child assistance is paid to the child's mother rather than their father.

In these guidelines, irregular inter-household transfers have been excluded from the income definition constructed in chapter 2, and even for regular transfers we have seen that in practice countries usually record those received but rarely those paid. However, in many societies remittances given to and received from family members outside the household have an equal status to transfers within the household. These may even include cross-border flows where there is a tradition of migrant working. In some developing countries these remittances can account for sizeable fractions of household income and to ignore them is to produce inaccurate estimates of the individual welfare of both giver and receiver.

9.2.2 Relationships between income, expenditure and wealth

As established at the outset of these guidelines, income is most often considered to be the best (or least worst) measure of individual welfare or utility. However, both consumption and wealth are important complementary measures of economic well-being. Whereas income data indicate the living standard that the recipient could prudently afford, consumption data can give a more direct picture of how they actually live. Ownership of wealth not only provides the potential for future consumption but assets – or lack of them – may restrict the owner's access to credit and therefore affect their current consumption as well. Very little is known about the way in which wealth is shared within households. The issue of intergenerational transfers of wealth through inheritance and their effect on wealth distribution is also of growing importance.

Thus income is inextricably linked with consumption and wealth. Chapter 2 developed a conceptual framework in which income, consumption and accumulation can be related to each other, but this framework has not been developed towards practical implementation in these guidelines. It is rare to have available fully articulated survey data covering all three aspects. Integrated income, expenditure and wealth surveys are conducted in some countries and some also collect data on savings, other capital transactions and on net worth. However, even when a full set of such data are available for a single household it may often be difficult to reconcile them in a balance sheet sense, because of different recall periods, reporting units and so on. Where countries have tried to do this, their experiences could be instructive in finding a practical way forward towards more consistent data across all three concepts.

For some purposes, one might want to include in the estimation of consumption a measure of the flow of services from durable goods purchased in an earlier period. The inclusion of an imputation for the flow of services from an owner-occupied dwelling has already been extensively discussed from the income perspective, but there remain questions about how much further this treatment should be extended to other goods such as cars and other consumer durable goods.

The treatment of irregular inter-household transfers in kind – gifts – is another issue raised but not resolved in Chapter 2. The suggestion there is to treat such items as transfers of expenditure in that they are part of the recipient's consumption but the donor's expenditure. However, this is a novel idea and has still to be fully tested both practically and conceptually.

There is therefore a considerable research agenda here, complementary to that pursued by the Canberra Group in respect of income.

9.2.3 Non-monetary income from household production

In Chapter 2, the imputed value of the goods and services produced and consumed within the household was included in the definition of income, as part of imputed self-employment income. The value of consumption of own production of goods is within the production boundary as defined in the SNA and most countries – certainly in the developing world - make estimates of this item in aggregate, though as we have seen in Chapter 4 data may not be available at the micro level. The value of the production of paid domestic services is also within the SNA production boundary and should also appear in the micro-data in the form of income in kind and in cash. The third type of household production consists of formal and informal unpaid volunteer services and those other domestic and personal services that are consumed within the household, which are explicitly excluded from the SNA production boundary. In Chapter 2, they were excluded from the definition of income.

Among the services produced and consumed within the household, a further distinction can be made between 'personal services' (mainly physiological and recreational such as eating, sleeping, exercising etc) and the rest. 'Personal services' are defined as those services consumed by an individual that cannot be performed by anyone else for them. The remaining domestic and personal services, such as doing laundry, cooking meals, caring for adults and children, household upkeep and management, as well as unpaid volunteer services could be delegated to someone else while achieving the desired result, if circumstances such as income, market conditions and personal inclinations permitted. These have been termed productive unpaid household services, but are outside the SNA production boundary.

Although work to assess the importance of this production began as long ago as the 1920s in academic circles, it has only recently been gaining wide acceptance, with the integration of relevant data collection activities, particularly time use surveys, into national statistical programmes. It has been recognised in many fora that there is a need to take account of non-SNA production in national policies as well as of its implications for development planning and programming. It is particularly important in making visible the unpaid work of women especially, but also of men, and their contribution to economic and social well-being. Two basic approaches have been put forward for valuing this production: the direct assessment of the labour input (the input-based approach), or the valuation of the outputs produced (the output-based approach).

In the input-based approach, the amount of labour time expended on non-SNA production is assessed – usually through a time use survey – and then multiplied by some wage rate to impute an income to this production. However, there is as yet no generally accepted method for determining appropriate wage rates. For example, one could use the opportunity cost of the time of the person performing the service – ie the wage rate they could command in the labour market based in their

personal characteristics. The difficulties in this approach can be easily seen when one realises that the same service – say cooking a meal – would be valued very differently according to who performed it. Alternatively, one could use the market wage rate of a specialist who provides a similar service in the market – for example a domestic cleaner or a cook. However this ignores the differing skill levels of a specialist and the domestic amateur. The third option, most widely accepted, is to use the wage rate of a general purposes domestic employee whose level of productivity and range of tasks matches most closely the unpaid worker, though even here there are difficulties of applicability and of obtaining suitable wage rate data. Further variations on these three methods exist. In addition there is the difficulty of whether wage rates net or gross of income tax and social contributions should be used.

For the output-based measure, the outputs of the service provided – the meal, the clean house etc – are valued at equivalent market prices and then the value of intermediate inputs (foodstuffs, cleaning materials, electricity etc), of capital consumption and, in theory, of any indirect taxes, are subtracted to obtain the income from the service element only. This method requires the identification and quantification of the outputs and then their valuation at the prices at which the household sold part of the output or at the prices at which they can buy an equivalent product in the market. This valuation can be problematic, for example because of the difficulty of matching some of the household outputs with market counterparts when exact or even approximate equivalents do not exist in the market.

One of the major uses to which statistics on household production may be put is in the construction and analysis of household satellite accounts. To construct such accounts, the principal functions of households in the household economy are taken as: providing housing, clothing, meals and care. These functions lead to the production of goods and services that are consumed by the household itself. Volunteer work is also included though its output is consumed outside the household. The value of the goods and services produced is computed in one of the ways suggested above. A number of countries have begun to produce such accounts, at least on an experimental basis.

Given that, at least in principle, monetary estimates of the imputed value of income from household production can be derived, the issue is then how might one deal with this large volume of non-market income in the preparation of statistics of income distribution. It seems highly likely that its distribution across households and individuals will be different from that of money income and that consequently measures of income distribution and inequality may change substantially. How could such results be interpreted in terms of analysing household economic well-being?

The international statistical community has yet to reach a shared understanding on definitions and methods in this area. However, it is a topic which has grown greatly in prominence over the recent years and international collaboration and discussion will be required if the result in a few years time is not to be similar to the current situation for the distribution of market income – ie divergence of national and international practices and hence lack of internationally comparable statistics.

9.3 Challenges for income measurement from economic transformation

There are many changes taking place today in economies and societies across the world which challenge current concepts and methods for the measurement of household income and wealth. This section presents a very small subset of these changes, identified by the Canberra Group as of quantitative and qualitative importance but for which, as yet, no empirical solutions have been found. As in section 9.2, there is no attempt to be exhaustive. However, it is hoped that this small selection will give some indication of the challenges that lie ahead for practitioners in this field.

Two changes have been selected:

- Changes in the role of the public and private sectors
- The fundamental role that micro-enterprises and self-employed play in the labour market

In the future, the quality of income distribution measurement will depend on finding satisfactory solutions to the theoretical and operational problems they pose.

9.3.1 Changing role of the public and private sectors

Across the world, the public sector is gradually withdrawing from activities related directly to the production of goods and services but instead playing an increased regulatory role. In the area of social public expenditure, the principle of solidarity has lost ground to the principle of individual accountability and the private sector is playing an increasingly important role. In many countries, there is a tendency to replace in-kind public services (eg health, education) by monetary transfers to be used to purchase a similar service in the market. The belief is that efficiency will improve and the recipient will also gain through being able to choose their service supplier.

The changing roles of the public and private sectors in relation to pension provision will have an important impact on the way in which social insurance and non-employee pensions schemes are dealt with in the future. Whenever an individual financial fund is established, and when the value of that fund is related to that of funds with variable value and interest, many problems of statistical measurement arise. Furthermore, it is not always easy for the owner of the fund to have a clear picture of its financial state at any point in time.

The difficulty of valuing the benefits of social transfers in kind has already been discussed at length in Chapter 2 and again in Chapter 4. If the present trend towards private provision of these services continues and if the financing of these services changes from present patterns, a different set of challenges will emerge. At present, private health insurance is common in some countries and private education is increasing in importance. The valuation and distribution of individually purchased services of this kind are certainly easier to measure at the micro level. However, where there is a quality difference between the publicly and privately provided service, this also will need to be reflected in some way.

Thus if the importance of the private sector involvement in the provision of social benefits increases, the system of accounting of the private sector will also increase in relevance. In many ways this is a quite different financing system and statistical measures will have to evolve accordingly.

9.3.2 Informal sector

Employment in micro-enterprises, especially in the informal sector, has increased at high rates in many countries in the last twenty years. Although total income from informal sector enterprises may be small compared with income from other sources in the economy as a whole, it nevertheless represents a very large percentage of the total income of those households engaged in the sector. When this is taken in conjunction with the high proportion of the population employed in the sector, it is plain that the accurate measurement of informal sector income is of importance in the evaluation of household income especially at the lower end of the distribution. Better measurement of informal sector activity is one of the keys to better understanding of the size and nature of illegal activity in an economy.

Due to the nature of informal sector enterprises, this measurement has however posed difficulties which have proved intractable, and so remains a major challenge in the assessment of income distribution. OECD is about to publish a manual on the informal sector.

These challenges have also been taken up by another City Group, the Delhi Group on Informal Sector statistics, as they affect developing countries. The questions studied by the Delhi Group include:

- How to identify the informal sector – in terms of the work arrangements of those employed? the 'informal' characteristics of the enterprise (for example lack of separate accounts)? its relationship with the concept of 'unregistered', 'unrecorded', 'unobserved' (the latter including enterprises engaged in illegal activity for example)?
- Difficulties of direct measurement through surveys, because of the heterogeneity of the sector, short lifetimes of individual enterprises, mobility of location, seasonality of operation, and so on.

By its very nature, informal sector activity is difficult to capture through conventional data collection methods. The owner of such a business is unlikely to file tax records so may have no need to produce conventional accounts and may thus find it difficult to provide estimates of their profit or loss. Record-keeping of any kind may not exist. This will affect the reference period over which it is practical to ask survey respondents to recall their incomings and outgoings in respect of their business activity. Their expenditure for business purposes may in any case be difficult to distinguish from household expenditure.

Clearly there is a need for further development and testing of possible methodologies for estimation of income from informal sector activity. Unless a significant effort is made, data on this type of income will not be available and, therefore, income distribution estimates will lack a very important component.

Appendix 1

Definitions of the Components of Income

1. EMPLOYEE INCOME

Employee income is the sum of remuneration received from an employer in both cash and non-cash form.

Cash or near cash

1.1 Cash wages and salaries

Includes:

Wages and salaries paid in cash for time worked or work done in all jobs

Remuneration for time not worked (such as annual holidays)

Overtime

Fees paid to directors of incorporated enterprises

Piece rate payments

Sums paid for fostering children, even though the payments may be made out of a government assistance programme (regarded as payment for labour)

Additional comments

Payment for fostering children is included because it is viewed as being more akin to a payment for services provided by the household, rather than a social transfer.

Any reimbursements for work expenses from an employer should be deducted if paid with wages and salaries (eg business travel and accommodation costs)

1.2 Tips and bonuses

Includes:

Tips and gratuities

Thirteenth month payment

Bonuses paid in cash

1.3 Profit sharing including stock options

Includes:

Benefits based on profit sharing, excluding cash bonuses

Additional comments

Stock options are included here, even though in some cases they cannot be converted into cash income until sometime after they have been transferred to the employee. There is ongoing debate about the correct value to be given to stock options.

1.4 Severance and termination pay

Includes:

Payments designed to compensate for employment ending before the employee has reached the normal retirement point for that job.

Redundancy payments

Excludes:

Lump sum payments paid at the normal retirement date, which are regarded as capital transfers.

Additional comments

The normal retirement point is likely to vary between jobs. For example, it is common for members of the armed forces and police forces to be entitled to retirement pensions and other benefits at a relatively early age. Severance/ redundancy pay is typically payable when an employee leaves an employer before the normal retirement age depending on contractual arrangements.

1.5 Allowances payable for working in remote locations etc, where part of conditions of employment

Includes:

Allowances paid to cover expenses such as living in special quarters or in a special when relocation is part of the conditions of service of the job.

Excludes:

Allowances for purely work-related expenses such as those for travel and protective clothing (regarded as a cost to the employer)

Additional comments

This item covers allowances made to military and other employees on special postings. If the income estimates are being compared to expenditure estimates, the expenditure estimates should exclude the corresponding purely work-related expenses.

Cash value of 'fringe benefits'

1.6 Employers' social insurance contributions

Includes:

Employers' contributions to private retirement (pension) plans

Employers' contributions to private health insurance

Employers' contributions to life insurance

Employers' contributions to other employer insurance schemes (e.g. Disability)

Employers' contributions to government insurance (social security) schemes (including payroll taxes levied for social insurance purposes)

Additional comments

Some employers, especially government employers, operate unfunded social insurance schemes, that is, they pay out pensions and other benefits on an as-required basis without explicitly setting aside appropriate funds at the time the liability arises. The potential economic well-being of employees for whom social insurance contributions are made is clearly greater than for those for whom contributions are not made, but whose income is identical in all other respects. In such cases, this item requires a notional liability to be estimated.

The item is included in the definition of total income, but a corresponding amount is subtracted as a transfer paid when deriving disposable income.

Practical implementation

Employees for whom employers are making social insurance contributions often do not know the size of the contributions, and so cannot provide the information in household surveys. This is certainly the case where the employer operates an unfunded scheme. Therefore this item will often have to be estimated by simulation modelling and/or by obtaining data from the social insurance funds directly. For successful modelling to be undertaken, it may be necessary to collect certain indicative data items from respondents.

Given the difficulties of estimating this item, it may not be possible to do so with the same frequency with which some other income components are estimated. However, it is an important item when analysing income distributions. Firstly, it is likely that including this item will increase the spread of the income distribution because it is a form of remuneration likely to be favoured by those who already have relatively high cash incomes. Secondly, it is likely that this item is becoming more important over time as so-called 'remuneration packaging' increases. Thirdly, the extent of this form of remuneration packaging is likely to differ between countries because of differing taxation and other institutional factors.

1.7 Goods and services provided to employee as part of employment package

Includes:

Value of transport, telephone bills, housing, medical expenses, low interest subsidy on finance, child care, subsidised vacations, etc enjoyed by the employee but paid for by the employer. (Where employee expenditure is subsidised, rather than paid for in full by the employer, only the employer's contribution is included here.)

Excludes:

Employer's social insurance contributions, which are included as a separate item

Purely work-related expenses (regarded as a cost to the employer)

Additional comments

In some cases, the employee may receive cash payments under this item, but it will normally be as reimbursement or part-reimbursement for expenditure on a specific form of good or service, and therefore the benefit can be seen as the provision of goods and services by the employer. Thus the item covers all the items which may be given to an employee as part of the employment package but which cannot be translated into money that is freely available for any purpose of the employee's choice.

2. INCOME FROM SELF-EMPLOYMENT

Income from self-employment is income which is in part a return to labour, but is not employee income. It also often includes a significant proportion of income that is a return to capital invested in unincorporated enterprises (and hence is called 'mixed income' in the SNA).

Cash or near cash

2.1 Profit/loss from unincorporated enterprise

Includes:

Net operating profit or loss accruing to working owners of, or partners in, unincorporated enterprises

Excludes:

Directors fees earned by owners of incorporated enterprises, which are treated as employee income

Dividends earned by owners of incorporated enterprises, which are included in property income

Profits from capital investment in unincorporated businesses (by 'sleeping partners'), which are included in property income

Rental and royalty income, which are included as separate items

Additional comments

Net operating profit or loss is gross revenue minus operating costs, wages and salaries paid to employees, including social contributions, taxes paid on production and imports, interest paid on business loans, and depreciation of fixed assets. Net operating profit includes in kind goods and services taken out of the enterprise by the owners or partners. Gross revenue includes subsidies received.

A loss is treated as negative income.

Some countries will find it useful to distinguish the income of farmers from other self-employed income.

Practical implementation

Interest payments should always be recorded as a separate item if at all possible to maximise the scope for editing and reconciling data internally and reconciling at an aggregate level with national accounting data and the like – see discussion under 4.1.

2.2 Royalties

Includes:

Royalties earned on writings, inventions and so on not included in profit/loss of unincorporated enterprises

Additional comments

Royalties are regarded as income from self-employment because they are a return to the royalty-holder for effort expended.

In kind, imputed

Households not only consume goods and services which they purchase from others, but also goods and services which they produce themselves or obtain through bartering. Valuation of those goods and services is inherently difficult because there is no market place transaction to which reference can be made. However, it is important that household production for own consumption or barter is included in measures of income where they are a significant element of economic well-being, as discussed below for the individual items. If they are omitted, comparisons between countries, over time or between income groups are likely to be impacted.

The items included in imputed income are goods or services produced for barter, goods produced for home consumption, and income less expenses from owner-occupied houses.

2.3 Income from goods and services produced for barter

Includes:

Value of goods and services produced for exchange with another household, less expenses incurred in production.

Additional comments

Inclusion of this item is particularly important in countries where the non-cash economy is significant.

Practical implementation

There should be a corresponding item in any household expenditure estimates that are compared with household income estimates.

In practice, bartered production may not be easily distinguished from own account consumption and the bartering process may be recorded as gifts between households. Further practical difficulties may arise if bartering involves a mix of final consumption and intermediate consumption, for example, if milk is bartered for seeds for planting.

2.4 Goods produced for home consumption

Includes:

Value of goods produced and consumed within the household less expenses incurred in production.

Additional comments

Inclusion of this item is particularly important in countries where subsistence agriculture is significant.

Practical implementation

There should be a corresponding item in any household expenditure estimates that are compared with household income estimates.

2.5 Income less expenses from owner-occupied dwellings

Includes:

The imputed value of the services of the services provided by a household's residence after deduction of expenses, depreciation and property taxes.

Additional comments

The treatment of housing presents difficulties in compiling data for comparison either over time or across countries. Some people own a house outright and thus have no regular outgoings for housing. Others live in subsidised housing and have comparatively small outgoings. Often it is some of the poorest households who live in rented accommodation and have to face the highest rental costs.

In order to even the treatment of housing, the SNA treats every house owner as an unincorporated enterprise which leases the house back to household.

The value of the lease is set at the market rent for a similar house and the imputed income is equal to this value less the costs incurred by the household in their role as landlord.

Practical implementation

The value of the rent of owner occupied dwellings should in principle be the market rental value of an exactly similar house. As the rental values of houses depends critically on location and the rental market may be very shallow in many areas because few houses of the same type or in a particular region are rented, it can be difficult to determine appropriate market rents to be used in estimating this item. Particular problems can be expected in remote rural areas and also in shanty dwellings around the large urban areas of developing countries.

The value of the income from the rent is estimated as the imputed rental value less input costs, including maintenance. As with the costs of material for own-account production, the input costs of expenses, depreciation and property taxes should be excluded from consumption expenditure. While it is not likely that estimates of consumption expenditure would include depreciation, care has to be taken that they do not include expenses incurred by owner occupiers such as the purchase of repair materials from hardware stores.

If interest paid on loans used to purchase owner-occupied dwellings cannot be estimated separately from other forms of interest paid such as that on consumer debt, the combined item should be included as negative property income, thereby offsetting interest earned in the property income aggregate.

3. INCOME LESS EXPENSES FROM RENTALS, EXCEPT RENT OF LAND

Includes:

Rentals from dwellings, business buildings, vehicles, equipment, etc not included in profit/loss of unincorporated enterprises

Receipts from boarders or lodgers

Excludes:

Rent from land

Additional comments

In the macro accounts, rental income other than for land is regarded as income from self-employment because of the significant entrepreneurial effort usually required to acquire or create and then to maintain the rented items. In contrast, rent from land is regarded as property income. However, current practice in the micro statistics in many countries is to treat rental income as property income. Thus in the framework set out in Table 2.1, it is shown as a separate category to allow either treatment.

Practical implementation

In practice, the rent of land that has buildings on it cannot usually be separated from the rental value of the buildings themselves. Therefore this item will normally include all rental income except rent for agricultural land.

In practice, it may not be possible to obtain estimates of rental income for some unincorporated enterprises separately from aggregate profit or loss. If this occurs, then the income will be aggregated to income from self-employment.

4. PROPERTY INCOME RECEIVED

Property income represents the receipts less expenses accruing as a result of putting assets at the disposal of another, for which there is a monetary return. However, see the discussion of imputed return accruing to owners of owner-occupied dwellings, under 2.5 above.

4.1 Interest received less interest paid

Includes:

Interest received not included in profit/loss of unincorporated enterprises Interest received from assets including bank accounts, certificates of deposit, bonds and the like

Pension or annuity income received in the form of interest from private insurance schemes where contributions to the scheme are not mandated by government or associated with employer contributions to the scheme, that is, the contributions are entirely at the discretion of the contributor

Additional comments

In principle, interest should be recorded on an accruals basis, that is when it is due to be received and not when it is actually received. This difference can sometimes be significant, but at a household level it is likely that only interest received can be estimated.

In these Guidelines, the recommendation is to express income net of all interest payments. It may not always be possible to obtain estimates of interest paid that distinguish between interest relating to business loans (which is to be regarded as an operating cost in deriving profit or loss), interest relating to mortgages on owner-occupied housing, and interest relating to consumer credit. If interest paid on business loans cannot be estimated separately from other forms of interest paid, the combined item should be included here as negative property income, thereby offsetting interest earned in the property income aggregate. Separate estimates of interest receivable and interest paid should be made if at all possible, however.

For some analyses it may be useful to identify interest on consumer debt separately and deduct it not from income but at the same stage that consumption expenditure is deducted from disposable income to reach saving. In this case consistency with the SNA would be restored only with the calculation of saving rather than being preserved more generally.

4.2 Dividends received

Dividends represent the return to someone who has invested in an enterprise but does not work in it themselves. For incorporated enterprises they will simply be called dividends. For other enterprises they are referred to by national accountants as withdrawals from non-corporate enterprises. This latter term should include payments to sleeping partners.

Includes:

Dividends paid by incorporated enterprises

Income received from stock holdings and mutual fund shares

Withdrawals from non-corporate enterprises that are not included in income from self-employment, such as payments to 'sleeping partners'

Pension or annuity income received in the form of dividends from private insurance schemes where contributions to the scheme are not mandated by government or associated with employer contributions to the scheme, that is, the contributions are entirely at the discretion of the contributor

Practical implementation

In principle, dividends should be recorded on an accruals basis, that is when they are due to be received and not when they are actually received. This difference can sometimes be significant, but at a household level it is likely that only dividends received can be estimated.

4.3 Rent from land

Includes:

Rent from land not included in profit/loss of unincorporated enterprises

Excludes:

Rental income from buildings on land

Practical implementation

See discussion under 3 - Income less expenses from rentals, except rent of land

5. CURRENT TRANSFERS RECEIVED

Transfers are payments and receipts which are made without a matching "quid pro quo" in the period in which they are paid/received – for example retirement pensions. They tend to be regular or predictable in certain circumstances, and often are compulsory under law or some similar obligation. Both social insurance contributions and benefits are transfers. From the household's point of view, benefits are received (and contributions paid) whereas for the social insurance fund the direction of flows is reversed.

Social insurance benefits – cash or near-cash

5.1 Social insurance benefits from employers' schemes

Social insurance benefits are paid in return for contributions paid by, or on behalf of, the recipient or their beneficiaries. With unfunded employment related benefit schemes, the contributions may be notional but the main criterion is that there is an obligation to pay an employment related benefit.

Includes:

Employment related pensions and other insurance benefits paid from private employers' schemes and government schemes run entirely for benefit of government employees

Pensions and other benefits from overseas governments

Military pensions

Unemployment, sickness, disability, medical, etc benefits paid from private insurance schemes that qualify as social insurance

Payments for education of employees' families that are part of the remuneration package

Excludes:

Lump sum retirement payouts

Benefits from private insurance schemes where contributions to the scheme are not mandated by government or by an employer, that is, participation in the scheme is entirely at the discretion of the contributor

Additional comments

Some social insurance schemes allow (or force) a participant to take some retirement benefits in the form of a lump sum payment, often at the date of retirement. In such cases, subsequent regular payments are lower than they otherwise would have been if no lump sum had been paid. The SNA prescribes that all retirement benefits be treated as social insurance benefits and thus as current transfers. This avoids the need to obtain information on the amount of lump sum and regular payments separately, and keeps all contributions and benefits in the same account. However, for income distribution analysis it is preferable to treat lump sum payments as capital transfers because they are one-time, and thus this item appears in Table 2.2 rather than Table 2.1.

The benefits paid here correspond to the social insurance contributions covered by that part of 7.1, Employers' social insurance contributions, and 7.2, Employees' social insurance contributions, which are paid into private social insurance schemes.

Benefits from private insurance schemes where contributions are entirely at the discretion of the contributor may either be non-life insurance and therefore outside the scope of income as defined in Table 2.1, or they may be akin to payments from an annuity or similar investment instrument. The latter should be treated as property income and are included in either 4.1 or 4.2 above.

Practical implementation

When collecting data on social benefits in household surveys, it is advisable to have a comprehensive list of possible social benefit payments as a checklist.

5.2 Social insurance benefits in cash from government

Social insurance benefits are paid in return for contributions paid by, or on behalf of, the recipient or their beneficiaries. With unfunded employment related benefit schemes, the contributions may be notional but the main criterion is that there is an obligation to pay an employment related benefit.

Includes:

Employment related pensions and other insurance benefits paid from government schemes

Excludes:

Payments from government schemes run entirely for benefit of government employees. They are treated as employers' schemes (see 4.1). Lump sum retirement payouts

Medical expenses reimbursed by government, which are treated as social transfers in kind.

Additional comments

The benefits paid here correspond to the social insurance contributions covered by that part of 7.1, Employers' social insurance contributions, and 7.2, Employees' social insurance contributions which are paid into government social security schemes. See also comment on lump sum retirement payouts under 5.1 above.

Practical implementation

When collecting data on social benefits in household surveys, it is advisable to have a comprehensive list of possible social benefit payments as a checklist.

Social assistance benefits from government schemes – cash or near-cash

5.3 Universal (ie not means-tested) social assistance benefits in cash from government

Includes:

Age, widows, unemployment, sickness, disability, etc pensions and allowances that are not employment related or dependent on direct contributions to an insurance scheme by the beneficiary

Maternity, family and child benefits

Scholarships and other educational assistance from government

Reduction in interest on student loans where not means-tested

Tax credits (see discussion under 7.3, Taxes on income)

Excludes:

Rental allowances (housing subsidies)

Medical expenses reimbursed

Other social benefits in kind

Practical implementation

When collecting data on social benefits in household surveys, it is advisable to have a comprehensive list of possible social benefit payments as a checklist.

5.4 Means-tested social assistance benefits in cash from government

This item covers those benefits paid by government to individuals, families or households whose income from other sources (and/or their savings) fall below certain levels.

Includes:

Age, widows, unemployment, sickness, disability, etc pensions and allowances

Maternity, family and child benefits

Scholarships and other educational assistance from government

Reduction in interest on student loans where means-tested

Tax credits (see discussion under 7.3, Taxes on income)

Excludes:

Rental allowances (housing subsidies)

Medical expenses reimbursed

Other social benefits in kind

Practical implementation

When collecting data on social benefits in household surveys, it is advisable to have a comprehensive list of possible social benefit payments as a checklist.

Private transfers in cash

5.5 Regular inter-household cash transfers received

Includes:

Compulsory alimony and child support received

Voluntary alimony and child support received on a regular basis

Regular payments from households in other countries

Other regular income support payments from people living in other households, such as received by children studying away from home or elderly relatives living in another household

Excludes:

Payments from relatives that are not for income support, for example, repayment of a loan

Additional comments

While there will be an element of arbitrariness in determining whether voluntary support is provided on a regular basis or not, it is important to include the notion of regular voluntary payments because there are different institutional factors between countries governing what is likely to be court imposed and what is not. It would seem logical that payments should be covered even if not paid under a court order as long as they are regular and recognised by the donor as exclusions from his/her regular disposable income and by the recipient as included in his/hers.

In principle it may be desirable to include also regular payments to children studying away from home and elderly relatives on the same basis, especially since different countries treat children studying away from home differently when defining households.

The counter-entry to this item is 7.5, Regular inter-household transfers paid.

Practical implementation

Whatever practical implementation there is for this item, it is essential that the same implementation be used to collect data for item 7.5. If not, there will be double counting or undercounting of disposable income.

5.6 Regular support received from non-profit institutions including charities

Includes:

Regular assistance provided by non-profit institutions serving households

Strike pay from unions received on a regular basis

Scholarships from charitable trusts

Excludes:

All lump sum and one-time payments

6. TOTAL INCOME

(sum of 1 to 5)

Total income is the addition of all cash and non-cash receipts from entities outside the household, including government, enterprises, non-profit organisations and other households. It comprises income from employment, property income and transfers received. Total income also includes the imputed value of goods produced by the household for its own consumption and imputed rent of owner-occupied dwellings.

Practical implementation

Some elements of total income are much harder to estimate than others. The first aim should be to include all the elements that represent cash flows received by households. Priority should then be given to estimating the non-cash elements that are likely to have the biggest impact on income distribution analysis in the country concerned. These issues are discussed in Chapter 4.

7. DEDUCTIONS FROM INCOME OF CURRENT TRANSFERS PAID

This category of compulsory payments comprises mainly taxes on income and compulsory social contributions. These items (along with inter-household family support paid) are deducted from total income to provide a measure of disposable income.

7.1 Employers' social insurance contributions

This item is identical to 1.6. These contributions are paid by employers on behalf of employees and are treated as income from employment in the total income measure. They are deemed to be transferred immediately back to designated social insurance schemes whether run by the employer or not. They are not therefore available for consumption during the accounting period.

Practical implementation

However item 1.6 is implemented, the same treatment should be used here.

7.2 Employees' social insurance contributions

Includes:

Employees' contributions to government and private social insurance schemes (pension, health, etc.) mandated by government or the employer

Excludes:

Contributions to private social insurance schemes which are entirely discretionary on the part of the contributor

Additional comments

Total contributions to social insurance schemes consist of that part paid by employers (7.1) as well as that paid by employees (7.2).

In some social insurance schemes, it is possible for employees to make higher contributions, complementary to those which are mandatory, as a form of investment, in order to obtain higher benefits. In such cases it may not be possible to differentiate between the mandatory and voluntary contributions and both may have to be included here.

7.3 Taxes on income

Includes:

Income taxes less refunds

Compulsory fees and fines for hunting, shooting and fishing

Additional comments

To reconcile exactly with national accounts figures, income taxes should be recorded on an accruals basis. The most significant accruals adjustment is the tax refund many households receive at the end of a fiscal year to rectify overpayment during the year. Other households may receive an additional tax liability statement if there has been an underpayment during the year. Such refunds and additional liability statements should be deducted from or added to tax payments. For self-employed persons, tax is sometimes payable on earnings in the previous year. In these cases it is the tax due in the current year which should be recorded, not the tax which would be due in the subsequent year on the current year's earnings.

Although tax credits are sometimes set against tax receipts, this is not always so and conceptually, and sometimes in practice, they should be treated separately from tax refunds. Tax credits, or tax allowances, serve to reduce the amount of tax payable. In macro data the amount of tax payable is given only after taking tax credits into account. For income distribution work, it may sometimes be desirable to calculate what tax would have been payable in the absence of tax credits and show total tax credits as an off-setting item in order to see the redistributional effects of different tax credit regimes.

There may be cases for some households where tax credits exceed tax liabilities. In some countries this remaining credit is simply lost to the beneficiary. In other countries, the remaining credit may be payable in cash to the beneficiary. In this case, the payments are shown as social assistance and included in item 5.4, Means tested social assistance benefits in cash. It is possible that in such cases, the macro data may not show these credits as payable by the tax authorities who may net them against other tax receivable.

Some fines and fees charged by government may be called taxes or commonly referred to as such. Because these vary so much from country to country and the extent of service which may be received in return for paying the fee vary so much, it has proved impossible to determine a persuasive criterion by which to determine what should be regarded as taxes and what as fees for a service. The convention adopted in the SNA is that fines and fees paid for hunting, shooting and fishing licences should be regarded as taxes and all other fines and fees paid to government should be regarded as payments for a service. These latter will then form part of the consumption expenditure of the household concerned. In practice, if a distinction between these fees and other fines and fees cannot be made in household survey data sources, it is unlikely that major errors will result.

Practical implementation

The value of a household's income tax liability may not be directly available from the data used to compile income statistics, especially if annual data is not being collected. Estimates of income tax payable will then have to be simulated. There are also difficulties in estimating tax payable by a household when it is levied on individual income.

In some countries it is easier to collect post-tax earnings, in which case income tax liability has to be calculated and added to the earnings figures in order to estimate total income.

7.4 Regular taxes on wealth

Includes:

Land taxes (excluding those on agricultural land which are taxes on production)

Taxes based on assets which are paid regularly

Property taxes paid by tenants

Additional comments

Taxes on property paid by owner-occupiers or by land-lords out of rental receipts are classified as taxes on production and are one of the costs deducted in reaching a figure of income from imputed rent of owner-occupiers or of rentals. If a tenant is responsible for paying property taxes directly and in addition to rent, they are included in this item.

Only those taxes on assets which are paid regularly are included here – for example, taxes on ownership of assets such as cars and boats. Intermittent taxes such as inheritance taxes are paid out of wealth and are therefore included in Table 2.2 as wealth taxes.

Practical implementation

For tenants who are not liable to pay property tax separately, it is desirable to separate out the tax element from the rent but data limitations may prevent this – although the tax payments will be known by the landlord, they may be unknown to the tenant and therefore difficult to collect in a household survey.

7.5 Regular inter-household cash transfers

Includes:

Compulsory alimony and child support paid

Voluntary alimony and child support provided on a regular basis

Other regular income support payments to people living in other households including those in other countries, such as children studying away from home or elderly relatives

Excludes:

Payments to relatives that are not for income support, for example, repayment of a loan

Additional comments

This item is the counter-entry to 5.5, Regular inter-household transfers received.

Practical implementation

Whatever practical implementation there is for 5.5, it is essential that the same implementation be used to collect data for the corresponding item under transfers paid. If not, there will be double counting or undercounting of disposable income

7.6 Regular transfers to non-profit institutions including charities

Includes:

Union dues, membership payments to charitable bodies (eg professional societies)

8. DISPOSABLE INCOME

(6 less 7)

When aggregated across households, total income includes a considerable amount of double counting. It includes both social insurance contributions and benefits, and regular family support appears in the income of both the household paying and the household receiving this support.

Disposable income is defined as total income minus direct taxes and compulsory transfers and inter-household family support payments. This total across all households eliminates double-counting for both individual households and for the economy as a whole. This concept of income provides a measure of those resources available for consumption and for discretionary saving.

9. SOCIAL TRANSFERS IN KIND (STIK) RECEIVABLE

The items covered by social transfers in kind include individual services of government such as public health and education; provision of social security and social assistance benefits in kind (some of these are also sometimes referred to as consumer subsidies) and medical expenses which are initially met by individual households but are subsequently reimbursed by government. (This last is a very common means of financing medical services in some countries, particularly in continental Europe.)

Includes:

Medical expenses reimbursed under government social insurance schemes

Medical services provided under government social insurance schemes

Rental allowances (housing subsidies)

Food subsidies or vouchers

Subsidy element of publicly owned housing

Public education

Medical services (where not provided under a social insurance scheme)

Cultural and recreational services

Transport subsidies for particular categories of households (eg free or reduced price travel for the elderly)

Excludes:

The value of any nominal payments made by households for the services

Additional comment

The subsidy element of public housing should be estimated in a way analogous to the derivation of the rental value of owner-occupied dwellings.

10. ADJUSTED DISPOSABLE INCOME

(8 plus 9)

Although the recipients of social transfers in kind have no choice about how to use the income equivalent of the transfers, by including the value of the transfers adjusted disposable income relates to actual consumption in the same way as disposable income relates to consumption expenditure.

Appendix 2

Reconciliation of micro-macro concepts and terminology

1. Introduction

The aim of this Appendix is to try to establish bridges between the micro and macro approaches to categorising income and to establishing distribution of income across household groups. First, the different categories of income and different ways of building income aggregates as set out in Table 2.1 are examined. The aim is to identify a series of "boxes" into which agreed types of income can be put so that they may be assembled in different orders to meet the needs of different types of analyses coming from the two traditions. Then the different aggregates are examined to see how far they can be harmonised either by determining a common basis or, where this is not suitable, at least be linked clearly. Lastly the reconciliation is extended beyond income to cover the consumption and accumulation of households, with reference to Table 2.2.

1.1 Type of income or means of payment

The macro approach to household income statistics categorises income according to the type of transaction which gives rise to the flow without regard to the medium in which the payment is made. The micro approach, based on the way household survey data is collected, has the opposite orientation. The means of payment is the main discriminatory factor and the rationale for the payment is subsidiary. Thus the first step in trying to harmonise these two approaches is clearly to look at a two-dimensional categorisation where both source of income and means of payment are taken into account. The four types of income are as follows:

i. flows coming from involvement in economic activity (production), for which wage and salary earnings are prototypical;

ii. flows coming from the ownership of financial and other assets, such as interest,

iii. transfers of a compulsory nature such as taxes, and

iv voluntary transfers such as inter-household gifts and other receipts.

The seven means of payment are

A. payments received, typically in cash, where the recipient is free to use them for any purpose without restriction of any kind. They form the largest part of most households' income. For simplicity these will be referred to as receipts in cash;

B. payments received as part of the employment contract but in such a way that the recipient has no choice about how they are spent. They include fringe benefits such as the provision of a company car and reduced cost travel or utilities. The car is typically provided without payment, the low-cost travel or electricity may be first paid by the household then any excess reimbursed. For simplicity, these payments are referred to as receipts in kind;

C. there are other payments some of which are made to some employees as part of the employment contract, some from other sources, where the recipient has no choice but to save the receipts. For simplicity these are referred to as receipts of forced saving;

D. some increases in welfare come from the production of goods for use by the household. For these an imputation is made of an income equal to the value of the corresponding goods in the market-place less any direct costs involved in producing the goods. The imputed rent of owner occupied dwellings(OOD) is treated in a similar way. These items are referred to as income from own account production of goods and OOD;

E. for some measures of welfare, it may be interesting to include estimates of the value of services produced and used within the household. These are referred to as income from own account production of services;

F. another extension to the concept of welfare includes including in consumption the services provided free or at reduced cost by government to households, notably health, education, welfare and cultural services. These are called social transfers in kind. In order to have an income concept equivalent to this extended value of consumption, imputed receipts of social transfers in kind are recorded;

G. lastly it is occasionally necessary to record some receipts net of the corresponding payments so a further column is added where the corresponding outgoing is recorded.

The groups of rows for four types of income cross-classified by seven columns for the seven means of payment are presented in annex table 1. In the text which follows, each of the non-empty cells is examined to see how the detailed income items specified in Chapter 2 and Appendix 1 fit into this two-way table. The numbering scheme used for individual income elements is that set out in Table 2.1 (ie 1.1, 1.2 etc), but where a finer disaggregation is used in Appendix 4 where the items commonly available in income surveys are detailed this is also used below (ie 1.1A, 1.1B etc). Where no code is given, information on that item was not collected in the metasurvey reported on in Appendix 4.

2. Receipts in cash (Column A)

Recall that this is the shorthand expression used for payments received, typically in cash, where the recipient is free to use them for any purpose without restriction of any kind. The column also includes some ‘negative receipts’ where counterparts are recorded separately.

2.1 Income from involvement in production

There are two entries for cash receipts coming from production. The first concerns wages and salaries earned by employees and the second the earnings of the self-employed

Employees

Item 1A below shows the items which would appear in the first cell of annex table 1, the row relates to wages and salaries, the column to payments received in cash.

Item 1A:	Wages and salaries received in cash
1.1A	Wages and salaries (main job)
1.1B	Wages and salaries (other jobs)
1.1C	Payments for fostering children
1.1D	Parenting payment
1.1E	Employer reimbursements for non-discretionary work expenses (deduct if included in wages and salaries)
1.1F	Employer reimbursements for discretionary work expenses (deduct if included in wages and salaries)
1.2A	Tips
1.2B	Bonuses
1.3	Profit-sharing including stock options
1.4	Severance pay
1.5	Allowances payable to military families, to expatriate workers, workers in remote locations etc as part of conditions of employment

Business expenses such as items 1.1E, employer reimbursements for non-discretionary work expenses, and 1.1F for the discretionary counterpart are taken to be part of the production expenses of the employer. They thus only feature in annex table 1 or 2 if they are included in wages and salaries, when they should be deducted from 1.1A or 1.1B as shown above.

Self-employed

The remuneration a self-employed person takes out of his or her unincorporated enterprise includes an element which rewards the labour expended and also an element covering the return to the capital employed. For this reason, the SNA refers to the receipts as mixed income. Some countries will find it useful to distinguish the income of farmers from other self-employed income but it should be noted that large scale agricultural enterprises, or even smaller ones which are incorporated, would be treated differently in the SNA with those farmers being treated as employees of the enterprises and their income included with other employees in the sections above.

Two special activities should be included with other self-employment. These are the (net) income from renting property, vehicles or equipment and the royalties earned by individuals on writings, inventions and so on. As for farmers, this is only so if the individuals have not formed themselves into corporate entities in which case these earnings would be included under income from employment. Recall however that income from rentals has been shown as a separate category in Table 2.1 because of the differing treatments between countries – some include rentals with self-employment income as in the SNA but others include them with property income.

Item 2A:	Mixed income received in cash
2.1A	(Net) nonfarm self-employment
2.1B	(Net) farm self-employment
3	Rental income other than on land earned by households as unincorporated enterprises
2.2	Royalties earned by households as unincorporated enterprises
2.3	Net income(after expenses) of home production for barter transactions

2.2 Property income

Property income is the name given to income which arises from lending some sorts of assets to another user. There are three main categories of such income, interest from financial capital, dividends on shares and rent from land.

A distinction is made in the SNA between renting buildings and equipment where the owner is responsible for the upkeep of the asset and provides a service to the lessor and renting assets where there is no such upkeep. Renting housing or equipment is regarded as a production activity and the income received is treated as part of mixed income and included in Item 2A above. (Technically this was the treatment recommended in the 1968 SNA also though a number of countries did not follow the recommendations and the UN Provisional Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households (M61, United Nations, 1977) also followed the practice of treating house rentals as property income.)

Whether rentals on housing is treated as income from employment or property income only matters if there is analytical interest in the distinction between these two forms of income. Both are included in the total of the two, primary income, which is the usual focus of attention.

Interest

The SNA proposes recording interest in a rather complex manner. Interest as observed should be separated into an element representing a payment for a service and a “pure” interest element. If interest is so split, interest receivable by households is higher, and interest payable is lower, than otherwise. The difference between these values of calculated interest and interest as observed is to be recorded as consumption expenditure on bank services. In consequence, disposable income and consumption will be higher than otherwise but saving will be the same as if no split is made. There is still controversy about how far this is practicable for households in total, still less for a disaggregation of households. This distinction is not followed through in the tables here.

The table shows the following entry in the column for cash receipts;

Item 5A:	Interest received:
4.1A	Interest received
4.1B	Interest from estates and trusts

Note that in Table 2.1, payments of interest are deducted from interest receipts as part of item 4.1. This ensures that income is always expressed net of interest payments on loans of any kind – business loans, mortgage loans for owner occupiers or landlords, or for consumption – which is consistent with SNA advice. However, in order to allow the possibility for measuring the flows of interest received and interest paid separately, Table 1 is structured so that payments are shown in a separate column G – see 5G and 6G below.

Dividends

Dividends represent the return to someone who has invested in an enterprise but does not work in it themselves. For incorporated enterprises they will simply be called dividends. For other enterprises they are referred to by national accountants as withdrawals from non-corporate enterprises. This latter term includes payments to sleeping partners.

Item 7A:	Dividends received
4.2A	Dividends received
4.2B	Dividends from estates and trusts
4.2D	Profits from capital investment in unincorporated businesses

Rent on land

As explained above, only rent on land appears as property income. Other rental payments are included in mixed income.

Item 9A:	Rent on land received
4.3	Rent on land received by households as unincorporated enterprises

2.3 Transfers

The third main set of flows concerning the measurement of income are transfers. From the macro point of view, all current transfers are recorded before the derivation of disposable income. The only issue of principle to decide is whether a transfer should be classified as current or capital in nature. However, from a micro point of view there are two additional concerns. The first is whether some current transfers are properly classified as part of income or whether some are more akin to expenditure. The second is whether the SNA division between current and capital transfers can be followed exactly in micro analyses. Chapter 2 recommends how transfers may be divided between those which should be regarded as part of income

and those which may be treated as transfers of expenditure rather than income. The first group includes compulsory transfers and other regular, quasi-compulsory, transfers between households, and between households and non-profit making institutions serving households (NPISHs). The second includes more voluntary and irregular transfers. In this section both the receipts and payments of the first group of transfers is discussed. The treatment of voluntary transfers is described below under the section looking at the extension of the accounts to consumption and capital accumulation.

Compulsory transfers and regular interhousehold transfers

These include taxes on income, payments related to pensions and other social insurance generally and family support payments. Taxes on income are compulsory transfers paid by households to government. The other categories listed are both paid and received by households though not always by the same household.

Social insurance, social security and social assistance

A comprehensive recording of social insurance payments and receipts requires a fairly complex recording. Here there are three items referring to pensions. The first is the contribution made by employers on behalf of active employees. This is recorded as part of employee compensation. The employees then make a transfer to their employer (or a designated pension scheme) of a contribution which includes the whole of this contribution from the employer plus, frequently, a contribution by the employee. This is the second element relating to pensions. The third is the social insurance benefit paid to retirees or other beneficiaries. Both employer and employee contributions to pension schemes are recorded at the time they are made (thus deducting from disposable income of contributors) and benefits from schemes are recorded when actually paid (thus adding to disposable income of beneficiaries). This is reflected in differences in patterns of income and expenditure as between households still in the labour force and those retired. The process of recording the benefits and contributions in these three stages means that it is possible to see exactly how the existence of such schemes affect the redistribution of income from those in work to those not in work.

Criticism is made of the SNA because not all pensions are handled this way but only those qualifying as a social insurance scheme. This is one where the employer or government obliges participation. Note that this includes many schemes described as private pensions schemes if belonging to such a scheme is a condition of employment. It is only schemes undertaken voluntarily, without employer or government compulsion, which are excluded. A large proportion of them will relate to self-employed or even non-employed individuals. Even these people may be covered in some social insurance schemes, however, notably social security. To emphasise that most private pension schemes are included in social insurance, excluded schemes are referred to as non-employee pension schemes. These schemes are treated as use of saving to acquire financial assets which then yield a return. The evolution of these financial assets is tracked by the accumulation of interest, dividends etc. The rationale for treating non-employee pension provision in this way is (i) the practical difficulty of determining when a private individual is providing for a pension rather than simply deploying his/her saving effectively, (ii) policy interest in schemes with a “third party” involvement.

At first sight, it may seem that the benefits paid by a pension fund are similar to the payments of interest and dividends and so should be treated as property income. There are several reasons why the SNA does not do this. The first is that contributions are not like property income payments of interest; in the case of a funded pension scheme, they are additions to the capital of the fund which remain the property of households. However, not all pension schemes are funded; many, especially in continental Europe, are financed on a-pay-as-you-go basis. This means the employer incurs a liability with no matching asset. The process is then more one of redistributing income from present workers to previous workers and for this reason, the SNA treats social insurance contributions and benefits, like insurance premiums and claims, as transfers and not as property income.

Social insurance benefits received

This covers all the benefits received under state social security schemes whether means-tested or not, whether they are dependent on past contributions or not (typically this last is often referred to as social assistance) as well as the benefits coming from employer-run social insurance schemes. Pensions will be recorded here and so for retired households, this item will probably represent the largest single contribution to total income. Equally for those not in work and dependent on social welfare, this item will tend to dominate other income receipts. As explained in Chapter 2, these Guidelines diverge from SNA recommendations by treating lump-sum retirement benefits as capital rather than current transfers, so these are not included in the component list of items 10A, 11A and 12A.

Items 10A, 11A, 12A: Social insurance benefits received

5.1A	Employer-based pensions or other periodic retirement including pensions bought with additional voluntary contributions (AVC)
5.1B	Foreign pensions
5.3A	Family or child benefits/credits/allowance
5.3B	Maternity benefits/allowances/grants
5.2A	Government social security (retirement and survivors) benefits
5.2B	Government disability insurance/incapacity/disablement benefits
5.2C	Government unemployment benefit/job search allowance - not means tested
5.2D	Government compensation to workers for on-the-job injuries
5.3C	Government scholarships & education assistance (excluding loans)
5.1D	Private scholarships & education assistance (excluding loans) from parent's employer
5.3D	Reduction in interest on student loans
5.2E	Government sickness/medical benefit
5.2G	Payments for child care to permit employment
5.2F	Veterans' benefits (injury, pension etc)
5.4A	Means-tested child support assurance (public) benefits
5.4B	Means-tested public assistance or general welfare benefits
5.4C	Means-tested public assistance for elderly
5.4D	Means-tested unemployment benefits

Items 10A, 11A, 12A: Social insurance benefits received (concluded)

5.4E	Means-tested disability support - means tested
5.4F	Means tested age pension
5.4G	Other means-tested transfer programs (catchall items where greater precision not possible)
5.4H	Child tax credit
5.4I	Earned income tax credit
5.4J	Other tax credits

For some income components collected in the metasurvey reported on in Appendix 4, it was not clear whether the payment of a benefit from a private insurance scheme was from a mandatory employer-based scheme or from a private scheme in which the beneficiary took part voluntarily. In this Appendix, the latter has been assumed and so these items are shown as claims on non-life insurance policies and included in item 24A below.

For a discussion of the entries relating to tax credits, see the discussion of taxes on income below.

Social insurance contributions paid

This cell in column A covers only the contributions made by employees to this scheme. Contributions by the employers are considered below when column C is discussed.

Item 17A:	**Social insurance contributions paid by the employee**
7.2A	Employees' contributions to mandatory private social insurance schemes (pension,health, etc.)
7.2B	Employees' contributions to government social insurance schemes
7.2C	Employees' contributions to government-mandated unemployment insurance

Regular interhousehold transfers

Initially it seems that the SNA does not include transfers between households. This is only because in almost all applications so far, households are treated in aggregate and thus inter-household transfers net out. As soon as the sector is sub-divided, though, it is necessary to include these transfers just as it is necessary to include transfers between different levels of government when that sector is disaggregated.

Item 13A:	**Regular inter-household transfers received**
5.5A	Alimony received from another household
5.5B	Child support received from another household
	Payments covered by receipts from another household
5.5C	Regular cash transfers received (gifts) from another household

Item 19A: Regular inter-household transfers paid

7.5A	Alimony paid to another household
7.5B	Child support paid to another household
7.5C	Payments made on behalf of another household
7.5D	Regular cash transfers paid (gifts)to another household

Payments on behalf of another household may be regular or irregular. It is assumed that most which would be recorded in household microdata would be regular and therefore included here. If they are known and appear to be mainly irregular, they would appear in item 21A below.

2.4 Taxes on income, wealth etc.

For many households, these constitute the only current transfers which is strictly speaking compulsory. They include taxes on income, recurrent taxes on wealth and some items such as vehicle licence duties when the vehicle is not used for business. To reconcile exactly with national accounts figures, they should be recorded on an accruals basis. The most significant accruals adjustment is the tax refund many households receive at the end of a fiscal year to rectify overpayment during the year. Such refunds should be deducted from tax payments.

Although tax refunds and tax credits are both sometimes set against tax receipts, this is not always true for tax credits and conceptually and sometimes in practice, they should be treated separately from tax refunds. Tax credits, or tax allowances, serve to reduce the amount of tax payable. In macro data the amount of tax payable is given only after taking tax credits into account. For income distribution work, it may sometimes be desirable to calculate what tax would have been payable in the absence of tax credits and show total tax credits as an off-setting item in order to see the redistributional effects of different tax credit regimes.

There may be cases for some households where tax credits exceed tax liabilities. In some countries this remaining credit is simply lost to the beneficiary. In other countries, the remaining credit may be payable in cash to the beneficiary. In this case, the payments are shown as social assistance and included in item 12A. It is possible that in such cases, the macro data may not show these credits as payable by the tax authorities who may net them against other tax receivable.

The need to include imputed rent of owner-occupied dwelling in order to remove distortions from income (and more particularly expenditure) comparisons is described below in connection with item 3D. It should be noted that it is important not to double-count property taxes. Property taxes paid by owner-occupiers or by land-lords out of rental receipts are classified as taxes on production and are one of the costs deducted in reaching a figure of income from imputed rent of owner occupiers or of rentals. The normal assumption is that most tenants are responsible for paying property tax as well as the agreed rent. If a tenant is responsible for paying property taxes directly in addition to their rent, they are included here.

Item 18A:	Taxes on income, wealth etc.
7.3A	Income taxes net of refunds
7.4	Property (real estate) taxes
7.3B	Compulsory fees and fines for hunting, shooting, fishing

3. Receipts in kind (Column B)

Column B in table 1 contains only one cell. This entry covers all the benefits provided by an employer to an employee which are described as being "in kind" excluding contributions to social insurance schemes.

Item 1B covers all the items which may be given to an employee as part of the employment package but which cannot be translated into money that is freely available for any purpose of the employee's choice. The list used in Appendix 4 and reproduced below is typical but may not be exhaustive. The amount included for items 1.7A to 1.7F is difference between the invoiced amount and the part the employee is responsible to pay.

Item 1B:	Wages and salaries received in kind
1.7A	Company cars
1.7B	Subsidised meals
1.7C	Subsidised (low-interest) loans
1.7D	Subsidised housing, electricity
1.7E	Subsidised child care
1.7F	Subsidised vacations

4. Receipts of forced saving (Column C)

4.1 Employers' social insurance contributions

The rather complicated way in which contributions to and benefits from social insurance schemes are recorded has been explained above. The relevant item in column C concerns only the contributions paid by employers into such schemes on behalf of their employees. Like the receipts in kind just considered, these contributions form part of the employment contract and are sometimes also described as "fringe benefits". The employee is better off having the employer contribute to a pension scheme on his/her behalf but these contributions must be saved and cannot be spent immediately.

Item 1C:	Employers' social contributions
1.6A	Employers' contributions to private retirement (pension) plans
1.6B	Employers' contributions to private health insurance
1.6C	Employers' contributions to life insurance
1.6D	Employers' contributions to other employer insurance schemes (e.g. disability)
1.6E	Employers' contributions to government insurance (social security) schemes (including payroll taxes)

The schemes covered include both government mandated schemes applicable to all employees and those run by employers for the benefit of their employees only. They may cover pension provision only or other forms of social insurance for example insurance against disability and unemployment as well as health generally.

This item appears a second time in column C, this time as a deduction from income in cell 16C.

Item 16C:	Employers' social contributions
1.6A	Employers' contributions to private retirement (pension) plans
1.6B	Employers' contributions to private health insurance
1.6C	Employers' contributions to life insurance
1.6D	Employers' contributions to other employer insurance schemes (e.g. disability)
1.6E	Employers' contributions to government insurance (social security) schemes (including payroll taxes)

4.2 Property income

Items 5A and 7A show the receipts of interest and dividends. In principle, both interest and dividends should be recorded in the macro-data on an accruals basis, that is when it is due to be paid and not when it is actually paid. This difference can sometimes be significant. Although it is unlikely that such information will be available for use in household distribution statistics, table 1 contains cells for these adjustments for the purpose of allowing a full reconciliation at macro level.

Item 5C:	Interest due less paid.
Forced saving - interest due less interest paid	

Item 7C:	Dividends due less paid.
Forced saving- dividends due less dividends paid	

4.3 Pension fund adjustment

There is in fact a fourth SNA item concerning pensions. Households pay contributions into social insurance schemes and receive benefits from them. Over a year, there will be a disparity between the two which shows up as a change in the net equity of

pension funds. The funds are regarded as belonging to households and thus should be included in household saving. The SNA places this adjustment to saving in the use of income account on order to exclude it from disposable income but still include it in saving

The item belongs in the category of receipts of forced saving and like the accruals adjustments above, it may not be possible to incorporate this in household distribution statistics at present. If it could be disaggregated, it would be a step towards recording the evolution of the distribution of wealth.

Item 8C: property income attributed to insurance policy holders.

17.3 Increase in the value of life insurance policies

4.4 Capital gains

Section 2.5.3 recommends that all holding gains should be excluded from measures of income. However, real holding gains within the accounting period should be an optional item for inclusion in aggregate measures of income. Neutral holding gains should be confined to explaining changes between opening and closing balance sheets.

Item 15C: Real holding gains or losses

This item is related to but not identical with:

17.4 Realised capital gains

20 Unrealised capital gains

5. Own account production of goods and owner occupied dwellings (Column D)

5.1 Own account production

The imputed value of this item is put into a separate column as part of mixed income from self-employment.

Item 2D: Own-account production

2.4 Income element of home production for home use (i.e. excludes value of items bought for use in production process)

5.2 Owner occupied housing

In principle, the national accounts for all countries should include estimates for this item, though it may be difficult to break them down for groups of households.

Item 3D:	Operating surplus from owner-occupied dwellings
2.5	Net imputed return on the equity in one's own home

6. Own account production of services (Column E)

Household well-being also depends on the services which are produced and consumed by the members of the household itself, such as cooking, housekeeping and child-rearing. Unlike the production of goods for own use and the imputed rent from owner-occupied dwellings, the SNA does not make any allowance for these services. Neither are they included in income as defined in Chapter 2. There are great difficulties in putting a value on them and for many policy analyses, for example to examine tax burdens, inflation or the balance of payments, it would not help to have monetary values placed on household services and include them in GDP. This is not to say that they are not economic activities or that they are unimportant. For studies of household well-being, it may be desirable to include such estimates if they exist and so item 4E is included in the table for such a possibility. The valuation of own consumption of household services is discussed in Chapter 9.

Item 4E: Income from own account household services
Income from services produced and consumed within the household

7. Social transfers in kind (Column F)

The items covered by social transfers in kind include public health and education; provision of social security and social assistance benefits in kind (some of these are also sometimes referred to as consumer subsidies) and medical expenses which are initially met by individual households but are subsequently reimbursed by government.

Item 14F:	Social transfers in kind
9.1	Public education
9.2	Government-subsidised health care services
9.3	Medical expenses reimbursed under government social insurance schemes
9.4	Rental allowances (housing subsidies)
9.5	Food subsidies or vouchers

Item 14F:	Social transfers in kind
9.6	Subsidy element of publicly owned housing
9.7	Surplus food and clothing

8. Corresponding outgoings (Column G)

Each of the columns A to F are measured to show total flows. Where appropriate, some 'negative receipts' are shown in the section of Table 1 where counterpart entries are deducted in moving from total income to disposable income. In the case of interest, a decision has to be made whether to measure the flows of interest received and interest paid separately or netted one against the other. These Guidelines recommend a net measurement. However, the table is structured to allow both possibilities by including the outgoings in a new column, column G.

It was noted above that mixed income from self-employment should be recorded before deducting interest payments. Rather, the possibility is allowed of showing separately interest paid in respect of production activities (which would include interest on mortgage payments for owner-occupied dwellings) and interest payments related to consumption. If such a separation can be made, then interest paid in respect of production can be deducted from mixed income to derive an income term the SNA calls entrepreneurial income. However, experience suggests that it is seldom possible to make this separation on income and entrepreneurial income is seldom calculated. Thus it may only be possible to have data for items 5G and 6G jointly.

Item 5G:	**Interest payments related to production.**
4.1D	Interest paid on mortgage loans
4.1E (part)	Interest on non-mortgage loans related to business activities
Item 6G:	**Interest payments related to consumption.**
4.1E (rest)	Interest on non-mortgage loans other than loans related to business activities

The entry in column C for forced saving was referred to above. This relates to the difference between interest payments when they are due to be paid and when they are actually paid. If the outgoing interest payment is recorded when paid rather than when due, part of item 5C will relate to interest payments and part to receipts.

Item 9A showed receipts of rent on land. Item 9G shows the counterpart item of payments of rent on land. Since not all land is rented by and to households, these items will not necessarily balance.

Item 9G:	**Rent on land paid.**
	Rent on land paid by households

9. Introducing income aggregates

Table 1 consists of 20 rows showing different sorts of income flows and seven columns showing different means of payment. By making aggregates from successive rows and examining them for different combinations of columns we obtain a high degree of flexibility in defining income aggregates as well as a means of reconciling micro and macro data sources.

Income from production

The sum of rows 1 to 4 give income from production. Receipts in cash come from wages and salaries (item 1A) and mixed income from self-employment (item 2A). These two items will always typically be available from micro data sets. Item 1B relates to wages and salaries received in kind and item 2D relates to mixed income from the production of own-account production of goods. For many OECD countries these items may be small though they will have much greater importance in a developing country context. Where they are important, micro data sets are more likely to cover them.

Item 1C relates to employers' contributions to both state and private social insurance schemes. This item may often not be available from micro data sets but it is of significant size in most countries. Together, the three items in row 1 give the macro aggregate of "compensation of employees". Since the size of item 1C is known in total, it may be excluded from the macro aggregate when comparing how closely the data on wages and salaries from the micro and macro sources match.

Item 3A relates to operating surplus from the rent of owner-occupied dwellings. Inclusion of this item in micro data is theoretically desirable since the different status of home ownership can distort income distribution statistics which ignore it. In aggregate, a figure is available from macro data sets but distribution by type of household may provide serious practical problems.

Item 4E is the optional element allowing for an estimate of the value of services produced and consumed within the household. These data are seldom available from regular macro-economic data sets and will most often exist if at all as a result of a special exercise which may or may not be otherwise related to income distribution data sets. If it is included, then the sum of all elements in rows 1 to 4 will exceed the macro-economic estimate of income from employment and self-employment by this amount.

Property income

There are three types of property income received in cash; interest, dividends and land rent. These are shown in column A. Corresponding outgoing payments of interest and land rent are shown in column G. The items which conceptually reconcile micro and macro data for interest and dividends are the forced saving items shown in column C. In practice, however, problems of recording the flows in both micro and macro data sets may mean that full reconciliation is a more complex process.

The other element entering property income is the amount accruing to insurance policy holders, especially holders of life policies. This element should be well established in macro data sets but is very probably not to be found in micro data.

Total property income is the sum of all entries in rows 5 to 9 for columns A to E less column G. (Column F is empty for these rows.)

9.1 Primary income

This is the total of income from production and property income. The total for column A only may sometimes be all that is available from micro data sets. The total across columns A, B, C, D and G should be exactly that total shown as primary income for households coming from national accounts and macro data sets. The existence of the different columns means that different totals may be determined at will. Total

primary income in cash is column A only as already noted. Primary income in cash and in kind is the sum of columns A and B. Primary income in cash and in kind including all own account production is the sums of columns A, B, D and E.

9.2 Total income, disposable income and adjusted disposable incomme

The other main element of income received consists of compulsory transfers and regular inter-household transfers. These entries are shown in items 10A, 11A, 12A and 13A. The first three relate to social insurance benefits, the latter to alimony and other regular interhousehold transfers. In addition, social transfers in kind are shown in item 14F.

When these items are added to the total of primary income, a value of total income is reached.

Optionally, real holding gains and losses may also be added (item 15C) to give a measure of extended total income.

All the items appearing in column A should be available from micro data sets. Items 14F and 15C are available in total from macro aggregates. It may be possible to produce an allocation of social transfers in kind to individual households using one of the methods discussed in Chapter 2. By definition, this will add to the same total as the macro data. Having real holding gains and losses disaggregated by groups of households would be interesting but presents serious practical problems since any data collected in micro data sets is likely to relate to realised rather than real gains and losses.

Rows 16 to 19 represent payments of compulsory transfers and regular interhousehold transfers. Item 16C represents the payment of employers' contributions to social insurance schemes and item 17A the element that employees themselves contribute out of their wages and salaries. Item 19A is the outgoing payment of regular interhousehold transfers and item 18A represents payments of income tax.

Deducting all of these items from total income gives a figure of disposable income. As before, we may calculate it in respect only of cash receipts (column A) or more broadly. If we include column F, social transfers in kind, than the total we derive is known in national accounts as "adjusted disposable income".

By excluding lump-sum retirement payments from social benefits and treating them as capital transfers in microdata analyses, although primary income as shown in Table 1 is in principle exactly the same for micro and macro data, subsequent aggregates will diverge by the amount of these lump-sum retirement payments.

10. Extending the table to consumption and accumulation

It is straightforward to extend table 1 to cover consumption and accumulation. This is done in table 2. Now columns that related to incomings relate to outgoings and vice versa.

10.1 Consumption expenditure

Most disposable income is used to finance consumption. A number of items of consumption expenditure are listed separately in Table 2.2 of Chapter 2 because for some purposes it may be desirable to analyse them alongside elements of income.

The first set of items cover costs associated with work but which are not paid for explicitly by the employer. These are the costs of getting to work and back, and the costs of caring for dependants while absent.

11.1A	**Transportation costs**
11.1B	**Child care costs**

Medical expenses covered by social insurance schemes have been covered in items 10A, 11A and 12A but there will be some elements of medical care not covered in this way. These form part of consumption expenditure and it may be of interest to identify them separately in order to reach total medical costs.

11.5A	**Medical expenses other than those reimbursed under social insurance schemes**

Under item 18A, the convention on miscellaneous government fees and taxes was described whereby only licences for hunting, shooting and fishing are regarded as taxes. The remainder of this item falls also under consumption expenditure in macro-data as it is regarded as a fee for services provided by government. Data limitations may preclude the separation of entries H22a and H22b in which case a judgement should be made as to which is the predominant part.

11.6B	**Compulsory fines and fees other than for hunting, shooting and fishing**

For some purposes, it may be desirable to separate from the cost of goods and services purchased the value of the tax attaching at the point of sale. For most countries this can only be derived synthetically and then deducted from the recorded value of consumption expenditure.

11.6A	**Sales or value-added taxes**

Voluntary interhousehold transfers

Chapter 2 discusses those interhousehold transfers which may be considered transfers of expenditure. These are collected together in Item 21A, expressed as outgoings net of incomings.

Item 21A:	**Interhousehold transfers**
12.1A	In-kind interhousehold transfers
12.1B	Interhousehold transfers paid (gifts)
12.1C	One-time cash interhousehold transfers received (gifts)

Voluntary transfers between households and other units

There are a number of transfers which take place between households and other sectors of the economy which need to be considered. These are payments to and from charities, lotteries and insurance, both life and non-life (accident insurance). In each case a treatment has been proposed in Chapter 2 which is not in strict accordance with the SNA and which will induce a slight difference in some but not all aggregates. This is done in part because the SNA does not consider explicitly the impact of disaggregating flows between groups of households and in part to provide a basis for income distribution studies which pays attention both to desirable analytical properties and practical difficulties.

Items 22A and 22G: Transfers to and from NPISHs

5.6A	Union sick or disability pay
5.6B	Union strike pay
5.6C	Support from charitable organisations
7.6A	Union and professional dues
7.6B	Donations to charitable organisations

Lotteries and gambling

Lotteries and gambling are regarded in national accounts terms as relating solely to redistribution. The difference between total stakes placed and winnings paid is deemed to be a "service" provided by the lottery/gambling enterprise. This difference is shown as expenditure by households. Since the (remaining value of the) stakes and winnings are equal and represent inter-household transfers, they are not shown explicitly in the SNA, indeed are explicitly omitted.

The assumption that stakes and winnings balance between households assumes government and enterprises do not gamble (which we may accept as reasonable) but also that all gambling involves only local households. This is not strictly so. In some countries (e.g. Monaco) the net inflow may be significant; for some Caribbean islands where UK football pools are much followed, there may be a net outflow. Probably for most countries this concern is more theoretical than practical.

If there were perfect data on stakes and winnings across income classes, it would in principle be possible to separate the stakes into the service part and the part that was the "pure" gamble. This is not a very transparent process, though. The proposal is therefore to show the total stakes as part of household consumption and to show the winnings (where known) as negative expenditure off-setting these.

Item 23A: Lotteries and gaming stakes less winnings

12.2B	Lottery or gambling winnings
	Lottery or gaming stakes

Non-life insurance

Non-life insurance is taken to be synonymous with accident insurance and to include term life insurance. Whole life insurance is discussed below.

The recording of insurance flows is rather complicated in the SNA because of the need to present insurance companies and policy holders consistently. A simpler presentation should probably be sought for household micro datasets and analysis. Here is the SNA story in brief. Insurance companies actually pay out bigger claims than they receive in premiums. They do this by investing premiums paid at the start of the year and keeping the investment income earned. The SNA says in principle those investment earnings should accrue to the policy holders who then pay them back as "premium supplements". Then we take the difference between actual premiums and premium supplements on the one hand and claims payable on the other and call this the service charge of the insurance company. The relevant part of this is included in household consumption. The remaining part of the composite premium is a transfer paid by households and claims are transfers received by households. For the insurance company, these transfer payments in and out are equal (at least in the long term) but it is not certain that for the household sector they do; there may be some cross-subsidisation between households and enterprises, for example.

Micro-data for premiums and claims may be more complete and more reliable than for lotteries and gambling. At first sight, therefore, it looks as if we could follow the SNA procedure if we wished. This means allocating the premiums supplements across income classes, though and so involving one of the columns which we may want simply to leave as a "reconciliation to SNA" item. A more transparent solution would leave actual premiums in household consumption and again show claims as negative consumption for the sorts of reasons advanced above concerning lotteries. The premium supplements would appear in total only as a reconciliation item in disposable income and a matching expenditure. Thus the recording of premium supplements does not affect saving.

For some income components collected in the metasurvey reported on in Appendix 4, it was not clear whether the payment of a benefit from a private insurance scheme was from a mandatory employer-based scheme or from a private scheme in which the beneficiary took part voluntarily. In this Appendix, the latter has been assumed and so these items are shown as claims on non-life insurance policies and included in item 24A below. Benefits from employer-based schemes would be included in item 10A above.

Item 24A:	**Non-life insurance premiums less claims**
12.3A	Premiums on non-employee health insurance
12.3F	Premiums on non-employee unemployment insurance
12.3D	Private disability insurance/incapacity/disablement
12.3G	Private unemployment benefit/job search allowance
12.3E	Private compensation to workers for on-the-job injuries
12.3B	Medical expenses reimbursed by private sickness, accident or medical insurance schemes
12.3C	Private sickness/medical benefits
	Premiums on other accident (non-life) insurance
	Claims paid under other non-life insurance

10.2 Saving

Saving is the difference between total income, actual consumption and the voluntary transfers listed in this section. Note that by definition, saving for columns B, E and F must be zero because there is consumption exactly matching the non-cash income. If some of the own-production of goods is for capital formation, it will show as saving in column D. The elements of cash income of unrestricted use (column C) all automatically form part of saving.

Saving is used to finance capital acquisition but may be supplemented by the receipt of capital transfers, receipts from the sale of assets, receipts from non-employee pensions or from new borrowing. These resources are accounted for by the acquisition of new capital formation (either fixed capital or changes in inventories), by the net acquisition of valuables (fine jewellery, antiques, old masters), by the purchase of non-produced assets (mainly land in the case of households) or a residual acquisition of financial assets or incurrence of liabilities.

In these Guidelines, lump-sum retirement payments are also recorded as an addition to saving. A lump-sum retirement payment, particularly when it is opted for at the discretion of the recipient, is not likely to be treated as just another source of income but be earmarked for some specific purpose. Often this will relate to the acquisition of financial or other assets which will provide a future income flow, but even when it is used for current expenditure such as a luxury holiday, this is likely to be regarded as dissaving rather than regular spending out of income.

Item 33G:	**Lump-sum retirement payments**
17.2	Lump-sum retirement payments

Although this part of the table is not elaborated in detail, it is useful to see the potential to take forward the breakdown suggested for income through to consumption and accumulation.

10.3 Accumulation entries

A household may raise funds by disposing of assets or borrowing. These items are clearly not to be included in income and so do not feature in the list of items in chapter 2. In table 2 of this chapter, though, they would be classified in column G as sales of fixed capital (a house for instance), sale of valuables (the family silver), sale of land or incurrence of financial liabilities.

There are, however, some entries in chapter 2 which national accountants would also treat as accumulation entries. These are payments in respect of inheritances and life insurance.

Inheritances

Inheritances are a transfer and as with some other items above are not generally recorded in the national accounts since inheritances between households net out for the sector as a whole. The consolidation may not exactly cancel across the whole economy to the extent that inheritances occur between resident and non-resident households.

With disaggregation inheritances should be recorded explicitly as capital transfers. Although the receipt of an inheritance can be captured in microdata, the payment cannot since by definition the donor will no longer be part of the household population at the time the payment is made. This will introduce an asymmetry into the microdata. This topic is not pursued here.

Items 32A and G:	**Capital transfers**
17.1	Inheritances received
	Inheritances paid

Life insurance

Life insurance policies are treated in the SNA as a form of saving. (The reasons behind this are discussed above in connection with describing social insurance schemes.) Payments of premiums and receipts of claims are treated as financial transactions and thus appear as part of the entries in row 25.

The two items from chapter 2 which appear here are items 4.1C and 4.2C which relate to annuity income from a self-financed scheme and 5.1C which covers the possibility of withdrawing money from a pension scheme prematurely as may be possible on changing jobs for instance.

Items 34A and G:	**Transactions in financial assets and liabilities**
4.1C plus 4.2C	Pension or annuity income from self-financed investments
5.1C	Withdrawal from pension schemes

11. Reconciliation with SNA/macro aggregates

In terms of the columns of table 1, the sum of A, B, C and D less G gives a figure for primary income of households conceptually identical with the SNA. Various micro-studies may optionally exclude some or all of B,C and D; they may include E and G.

The figure for disposable income of households summed across columns A, B, C and D less G will be less than the SNA definition to the extent that:

Lump-sum retirement payments (to the extent that they can be identified) are treated as capital transfers and not as current social benefits;

net irregular transfers of expenditures between household in cash and in kind payable by domestic households to foreign households are less than the corresponding inflow from households;

lottery and gambling winnings exceed the “pure” stakes (this will be equivalent in theory to transactions with the rest of the world, in practice it will reflect also data deficiencies);

insurance claims by households exceed actual premiums and premium supplements paid by them;

transfers paid to NPISHs exceed payments from NPISHs to households .

It is worth summarising again briefly why this divergence from the macro-standards is proposed.

From the household rather than the national point of view, decisions on the types of expenditure quoted are closely related to decisions on consumption expenditure. Nor is it rational for a household to consider incomings from these sources as regular income. Neither is it clear that such receipts should determine the group within a household distribution analysis into which the recipient household falls. In practical terms, the macro-level differences will generally be small. The micro-data sources are likely to poor in regard to each of these and attempts to include them may distort the results rather than enhance them

By including column F in disposable income, the SNA concept of adjusted disposable income of households is reached, subject to the five reservations above.

The total of consumption from columns A, B and D is identical with household consumption expenditure in the SNA. If column F is included, actual household consumption is obtained; identical with the SNA/macro concept.

The total of saving across columns A, C and D is identical with the SNA macro figure for household saving, except for lump-sum retirement payments.

12. Conclusion

This Appendix has developed a possible theoretical concordance in terms of definitions and presentation between income concepts in the micro and macro traditions. As far as possible, the practices of both traditions have been respected and flexibility allowed to derive aggregates familiar to both sets of practitioners.

Transfers within households are not treated explicitly within the SNA so new procedures are suggested here, guided by analytical usefulness from the point of view of disaggregation household studies. This involves most importantly a distinction between compulsory transfers and regular family support on one hand and voluntary transfers on the other. It also extends the distinction between consumption expenditure and actual consumption to cover non-compulsory household transfers which are then treated rather as a transfer of expenditure than a transfer of income.

Both primary income and saving are fully reconciled between micro and macro aggregates. Five items remain where the suggestions here would produce minor discrepancies with the SNA but the options to preserve strict consistency remain available.

Table 1: Income distribution from both a micro and macro perspective

		A:	B:	C:	D:	E:	F:	G:
		Receipts in cash	Receipts in kind	Receipts of forced saving goods and OOD	Own-account production– production - services	Own-account in kind	Social transfers	Corresponding outgoing
1	Income from production	Wages and salaries	Wages and salaries	Employers' social insurance contributions - private schemes - govt schemes				
2		Mixed income from self-employment			Mixed income from own-account production - goods			
3					Operating surplus from owner-occupied dwellings			
4						Income from own account household services		
Sub-total	I				*Income from production*			

Table 1: Income distribution from both a micro and macro perspective (continued)

			A:	B:	C:	D:	E:	F:	G:
			Receipts in cash	Receipts in kind	Receipts of forced saving goods and OOD	Own-account production– production - services	Own-account in kind	Social transfers	Corresponding outgoing
5		Net property income	Interest received		Interest due ess paid				Interest payments – related to production
6									Interest payments – related to consumption
7			Dividends received		Dividends due less received				
8					Property income attributed to insurance policy holders				
9			Rent (on land)						Rent (on land)
Sub-total	II					*Property income (net)*			
Sub-total	III					***Primary income (=I+II)***			

Table 1: Income distribution from both a micro and macro perspective (continued)

		A:	B:	C:	D:	E:	F:	G:
		Receipts in cash	Receipts in kind	Receipts of forced saving goods and OOD	Own-account production– production - services	Own-account in kind	Social transfers	Corresponding outgoing
10	Compulsory transfers and regular family support paid	Social insurance benefits - private schemes - govt schemes less lump-sum retirement payouts						
11		Social security benefits						
12		Social assistance benefits						
13		Regular family support						
14							Individual consumption of government and NPISHs	
Sub-total	IV	**12.1 Total income (=III+ compulsory transfers and regular family support received)**						
15	Optional item	***12.2***	***1.3***	Real holding gains or losses	***12.4***		***12.5***	
Sub-total	V	**12.6 Extended total income (=IV+ optional item)**						

Table 1: Income distribution from both a micro and macro perspective (concluded)

		A:	B:	C:	D:	E:	F:	G:
		Receipts in cash	Receipts in kind	Receipts of forced saving goods and OOD	Own-account production– production - services	Own-account in kind	Social transfers	Corresponding outgoing
16	Compulsory transfers and regular family received			Social insurance contributions by employers - private schemes - govt schemes				
17		Social insurance contributions by employees - private schemes - govt schemes						
18		Taxes on income , wealth etc.						
19		Family support payments						
Sub-total	VI	**12.7 Disposable income (=IV or V –compulsory transfers plus regular family support paid)**						

Table 2: Extension to consumption and accumulation

		A:	B:	C:	D:	E:	F:	G:
		Receipts in cash	Receipts in kind	Receipts of forced saving	Own-account production – goods and OOD	Own-account production - services	Social transfers in kind	Corresponding incoming
20		Consumption expenditure less social transfers in kind to other households	Wages and salaries, mixed income received in kind		Consumption of own account production of goods and OOD	Consumption of own account household services	Individual consumption of government and NPISHs[1] plus transfers in kind from other households	
21	Irregular transfersof expenditure in cash and in kind	Irregular transfers in cash to other households domestically and in the rest of the world lessponding incomings						
22		Transfers to NPISHs						Transfers from NPISHs
23		Lotteries and gaming stakes less winnings						
24		Non-life insurance premiums less claims		Property income attributed to insurance policy holders				
25				Adjustment for the change in net equities of households in pension funds				
		Saving		***Saving***	***Saving***			

Table 2: Extension to consumption and accumulation

		A:	B:	C:	D:	E:	F:	G:
		Receipts in cash	Receipts in kind	Receipts of forced saving	Own-account production – goods and OOD	Own-account production - services	Social transfers in kind	Corresponding incoming
26	Accumulation	Fixed capital formation		Fixed capital formation				Sales of fixed capital
27		Changes in inventories		Changes in inventories				
28		Acquisition of valuables						Sales of valuables
29		Acquisition of land						Sale of land
30		Private pension contributions						Private pensions benefits
31		Capital taxes paid (inheritance taxes)						Capital transfers received (inheritances)
32								Lump-sum retirement payouts
33		Acquisition of other financial assets		Interest due less paid; dividends due less paid; adjustment for the change in net equities of households in pension funds				Incurrence of other financial liabilities
		Net accumulation		Net accumulation				

1. When the corresponding income element is on an entitlement basis, the expenditure item should show the take-up basis plus an adjustment showing the implicit transfer item (entitlement less take-up). When the income element is on an insurance basis, the expenditure item should be identical.
Saving equals disposable income less consumption less irregular transfers of expenditure in cash and in kind. This can only appear for the two cash columns plus the own account column where saving is exactly equal to fixed capital formation and changes in inventories of own produced goods.
Net accumulation in column A = saving column A less accumulation entries in column A less accumulation entries column G
Net accumulation in column D = saving column D.

Appendix 3

Purchasing Power Parities

1. What is a Purchasing Power Parity?

A purchasing power parity (PPP) is an index which attempts to show how many units of country A's currency are needed to buy the same basket of goods and services that one unit of country B's currency does. PPPs are thus commensurate with exchange rates but whereas exchange rates for most countries are mainly determined by the basket of goods and services which are traded internationally, PPPs are determined by all goods and services consumed within the country including goods produced for own consumption which do not reach a market. The more the pattern of exports and imports of a country resemble the pattern of all goods and services circulating in the economy, the closer the exchange rate and PPP are likely to be but they will only be exactly the same by coincidence. In all countries there are services provided by government which are not imported and exported and there are many goods, including construction and usually construction materials that are generally not traded internationally because of logistic difficulties for the former and the fact that the value to weight ratio for the latter means that it is not economic to move these over very large distances. In addition, flows of long-term and short -term capital may influence the exchange rate, a factor which also invalidates the use of exchange rates to measure the purchasing power of a currency in terms of the goods and services in circulation there.

In comparing income levels across countries, it is necessary to work either in terms of ratios which are scale free or to use a means of conversion from one currency to another. In this context a PPP is indisputably better than an exchange rate since it is related to the relevant basket of goods and services that income earners are likely to want to buy rather than those which are imported and exported. This is important for all countries but especially so for developing countries whose basket of exports may be dominated by very few primary products.

2. How is a PPP calculated?

In making price comparisons over time, the starting point is usually to think of Paasche and Laspeyres indices. Both are weighted averages of price relatives, that is the ratios of the price of various goods and services in the current period (t) with those in the base period (0). The Laspeyres index weights these price relatives together

using the volumes of the base period and the Paasche index uses the volumes of the current period.

A simple two-country PPP is exactly analogous to this. Price relatives are formed for goods and services available in each country at a point in time, each price being expressed in local currency. These are then weighted together using either the weights of country A or of country B. With intertemporal comparisons, a Fisher index can be formed by taking the square root of the product of the Paasche and Laspeyres indices and the same can be done for PPPs also.

For time series there is no question of the order in which comparisons between various points in time should be made – they should be chronological. For a group of countries there is no a priori ordering available so comparisons are made between all pairs of countries and then geometric averages made of all direct and indirect comparisons. (An indirect comparison is to compare country i with country k and then country k with country j, thus giving an indirect comparison between i and j.)

3. Periodicity

Intertemporal price indices relate the prices of two points in time and cannot be applied to a different point in time; the price index for period t should not be applied to period t+k. Similarly, all PPPs refer to a single reference year and should not be applied to a different year. It is sometimes thought that if exchange rates stay fixed, then PPPs will also stay fixed, maintaining the same relation to them. This is not correct as can be seen by considering the case of floating exchange rates. These change as the baskets of goods and services imported and exported change. PPPs change as their baskets of goods and services change, whether the exchange rate is fixed or floating. Usually the changes will be fairly small from year to year just as year to year inflation rates are fairly small but if there is a radical restructuring of prices (say from the introduction of a VAT type tax) then the changes will be more significant.

4. Updating PPPs

Calculating PPPs is a fairly major undertaking and thus it is not done routinely for all countries for every year. The OECD and Eurostat make comparisons for all OECD member countries (which include all EU member countries) plus a few others. For the EU countries, price relatives are collected every year and one third of the weights are updated every year (a rolling benchmark). For other countries both price relatives and all weights are updated every three years. The results for 1999 will be published early in 2001. For other countries, less frequent comparisons are undertaken, usually on a regional basis, and brought together by the World Bank.

Because it is necessary to have a time series of PPPs, a method for interpolating years between the reference or benchmark years is used. This depends on the fact that movements in PPPs tend to be fairly gradual. The method used is the following.

> Take the PPP of country A relative to B for year t.
>
> Take local inflation from year t to t+1 in both country A and country B (pA, pB)
>
> Then PPP (t+1) = PPP (t) times pA divided by pB

For example, if the PPP for year t is 2, it needs 2 units of A's currency to buy same as 1 unit of B's in year t. By year t+1, the same basket of goods and services will cost pA.2 local currency units in country A and pB.1 local currency units in country B. So PPP(t+1)= PPP(t) *pA/pB.

This methodology can also be used to make forward projections of PPPs while waiting for the next benchmark results.

The OECD web site contains a table of PPPs for each year from 1970 to 1999 for all member countries (currently //www.oecd.org/std/nadata.htm).

5. Which PPP?

A PPP can be calculated for a single product or a group of products at various levels of aggregation. The higher the level of aggregation, the less the results are influenced by seeming outliers, "seeming" because it not always being possible to determine whether such figures represent a real difference in price structures between two countries or whether there has been some error in pricing. The key results cover GDP and about ten main components of expenditure. The results for GDP are the ones most often quoted and used but for income distribution work, this is not the best choice.

Because of the institutional differences across countries concerning the extent of government provision of health, education and other individual services, two sets of consumption figures are calculated. One of these relates to consumption expenditure and relates to a measure of expenditure excluding social transfers in kind. That is the only health and education expenditure attributed to households is what they actually pay for. The other consumption measure is actual consumption and relates to a measure of expenditure including social transfers in kind. This is closer to a welfare measure than consumption expenditure and is more comparable across countries in that all health and education is included whether provided by the state or privately.

PPPs are built up from expenditure data but in that they show the purchasing power of money, they can be applied to income measures also. Which PPP to use will depend also on the exact measure of income of interest. To convert income measures excluding social transfers in kind, PPPs for consumption expenditure should be used; for income measures including social transfers in kind, the PPPs for actual consumption should be used.

In principle it would be possible also to calculate a PPP for household consumption excluding all rent. Unfortunately, though, PPPs are not additive because they are derived from Fisher indices and thus it is not possible for the reader of the published reports to make these sort of calculations exactly. However for most countries information on the PPPs relating to housing are available so some judgement can be made about when these could have a significant effect on the results.

It is interesting to note in passing that it was the PPP work on the alternative aggregates for household consumption including and excluding social transfers in kind which lead to this approach being incorporated in the revised national accounts manual published in 1993.

6. Representativity and comparability

No statistics are perfect and it is useful to consider one of the most problematic areas for PPPs. In deriving price relatives for two different points, whether points in time or different geographical points, in principle one wants the two prices to refer to exactly the same product. This is a problem for inter-temporal indices where the specification of goods changes over time but is even more acute in the cross-country case. Not only are the goods likely to have different specifications, but the degree of representativity of a given product will be different from country to country. Taking representative goods may distort the price relatives because some quality differences will be included in prices. Taking exactly comparable goods may equally distort the results because they are not representative of the basket of goods actually bought.

In order to address this problem, PPPs are now calculated on regional bases whereby countries which are more or less similar in terms of the types and quantity of products purchased are compared together. Regional groupings are then linked by means of link countries which participate in more than one group. For each group several hundred prices are collected with some overlapping items, such as staple food products, in order to minimise the risk of error from non-representativity and non-comparability.

A more difficult problem concerns services. While it is possible to determine the physical characteristics of goods and ensure their consistency or allow for differences, it is virtually impossible to do this satisfactorily for services. The services provided in a street market and in an ultra-hygienic air-conditioned supermarket are different but quantifying the difference is near impossible when the choice between which is preferable is so subjective. There is no ready answer to this problem. The PPP exercise relies on the assumption that the same good in all outlets carries equivalent service margins and that each professional person is equally productive in all countries so that wage rates can be used as measures of the services they provide. It is easy to criticise these assumptions but so far no better alternatives which have general acceptance have been put forward.

7. PPPs for different income groups?

The question of representativeness applies also to different income groups within a single country. Pensioners benefit from hip replacements; young families buy baby clothes and so on. Some of the differences may also be income related. Even if a jumbo size of frozen vegetables is cheaper than a smaller size, poorer families may not be able to afford the greater absolute cost or, perhaps, do not have a freezer in which to store it. Alternative price indices are sometimes calculated for different household groups depending on family circumstance; they are seldom calculated for decile groups although this is how income distribution is most often presented.

In order to compare income levels in absolute levels at two points in time within a country, an adjustment must be made for the increase in inflation. Lacking group specific price indices, a general measure of inflation such as a CPI is often used for this adjustment. This may be justified in terms of explaining how the command over goods and services has changed over time. Because it is applied to all groups, measures of distribution within the year will be unaffected by what is in effect a simple, universal scaling. Thus it is a much less good measure of how welfare has

changed if prices have been changed in such a way that they affect different groups differently and this comes back to the question of representativity. If government alters the rates of income tax, the consequences for income distribution are apparent in post-tax income. If there is a change from direct to indirect taxation, there will be an apparent increase in post tax income negated by a change in the purchasing power of this income due to the increase in prices due to the increase in indirect tax rates. If all groups are equally affected by these changes, there would be a self-correcting effect but this is most unlikely since often a change in taxation policy is specifically intended to affect income distribution.

The use of a general CPI to adjust for inflation can be seen to be problematical for certain elements of income included in the recommended definition of disposable income. Income in kind should be deflated by a price index relating to the goods and services in question, imputed rent of owner occupied dwellings by a housing price index and so on.

These problems become even more difficult when applied in the international context. In part this is because of the different institutional arrangements concerning tax liability from country to country as well as the provision of government services. There is another aspect even less tractable, however. If we compare the baskets of goods and services bought by income groups in two countries, one richer and one poorer, it may be that the basket bought by the middle quintile in the richer counter is more like the basket bought by the richest quintile in the poorer country than that of the middle quintile. Thus matching similarly labelled groups may not necessarily improve the comparison in the manner expected.

In practice, PPPs are not available for income groups. As for inter-temporal comparisons it would be necessary to collect not only price information but also quantity detail (jumbo versus small packaging) for specific income groups. This is such a data demanding exercise, it is difficult to see a full implementation on anything other than an experimental basis for the immediate future. Using a single PPP for all housheold groups is simply a scalar effect like using a single price index to convert from prices of one year to prices of another. It may be better than nothing (possibly quite a lot better, especially in times of high inflation) but does not take into account that inflation typically hits different household groups differentially (especially in times of high inflation) because inflation is usually associated with strong shifts in relative prices and not just an across the board increase nor the fact that price differentials in different countries may be influenced by government behaviour to affect different household groups separately. Using a PPP instead of an exchange rate (which would also have to be applied universally) is still to be unequivocally recommended but it should be noted that gives a measure of the *average* (not median) command over a basket of goods and services standard for the two countries concerned and can say nothing about the relative dispersion of prices within a country.

8. Conclusion

Four general recommendations can be made on the use of PPPs.

1. A PPP is a better way to convert a measure of the command over goods and services from one currency to another than an exchange rate.
2. PPPs relate to particular years and it is important to use the PPP for the year in question (or approximate it using the formula above).
3. PPPs exist at different levels of aggregation and for income distribution work, it will generally be desirable to use an aggregate other than GDP, the exact choice depending on the definition of income in use. For example, a measure of income excluding subsistence agriculture and housing costs should in principle use a PPP which is calculated excluding these items also.
4. No single conversion factor applied to all aspects of income distribution can take account of differences in welfare brought about by the pattern of price differentials as they apply to different household groups within a country.

Appendix 4

Availability of income data

This Appendix presents the detailed results of a metasurvey of availability of data on the components of household income, carried out by the Canberra Group.

Responses were received from individuals providing information on 30 income surveys in 25 countries on all 5 continents. Note that not all respondents always understood what income component was being described in the short description provided on the questionnaire and that it was not always easy to understand how to describe the new income components contributed by the respondents. Besides language differences, there are substantial institutional differences among countries. Consequently, errors may be present and further revisions are possible. During the course of analysing the survey results, the list of income components was reconciled with that presented in Chapter 2 and Appendix 1 and income components were added and eliminated, so revisions for that reason can be expected as well. The classification system which is used in Chapter 2 (Tables 2.1 and 2.2) and in Appendix 1 has been extended in order to cover the greater level of detail of income components used for the metasurvey. This is set out in Table 1. The last column of this table gives the original codes used in the questionnaire.

Respondents were asked to note the following about each component:

(1) whether it was collected at all;

(2) if not, indicate that by "N" unless it was imputed (allocated) by the statistical agency conducting the survey (denoted "I");

(3) if so, then whether it was collected as a separate income component (denoted "S") or jointly with another component (denoted "J"); and

(4) if jointly, which components were collected together.

If a component was collected only by inference in some sort of summary catch-all question, then the respondent was asked to mark the component "N". In the follow-up, respondents were also asked to mark "O" if an income component was not applicable to their country. Four countries—Finland, the Netherlands, Norway, and Sweden—reported on the data available to them from the administrative records they use to report income distribution statistics.

Table 2 summarises the results of the investigation. "Not collected" responses (N) are distinguished from blanks; the latter indicate that no usable response was received or no inquiry was made (new components). When counting the number of countries responding "yes", responses of "O" are added as well (if a country does not have a program or income component, it implicitly collects its value -- zero). Also, a component is considered collected if at least one survey in that country collects that component. For example, both components 1.6A and 1.6B are considered collected by the United States even though their Current Population Survey (USA 1) collects 1.6B and not 1.6A while their Survey of Income and Program Participation (USA 2) collects 1.6A and not 1.6B.

The complete answers to the questionnaire, as edited by the authors, may be found on the Luxembourg Income Study web site, //lis.ceps.lu/links/canbaccess.

Table 1
Income Component code list

Code	INCOME COMPONENT	
1	**EMPLOYEE INCOME**	
	Cash or near cash	
1.1	**Cash wages and salaries**	
1.1A	Wages and salaries (main job)	A1
1.1B	Wages and salaries (other jobs)	A2
1.1C	Payments for fostering children	A6
1.1D	Parenting payment	A8
1.1E	Employer reimbursements for non-discretionary work expenses (deduct if included in wages and salaries)	H10
1.1F	Employer reimbursements for discretionary work expenses (deduct if included in wages and salaries)	H11
1.2	**Tips and bonuses**	
1.2A	Tips	A3
1.2B	Bonuses	A4
1.3	**Profit-sharing including stock options**	A5
1.4	**Severance pay**	A7
1.5	**Allowances payable to military families, expatriate workers, those in remote locations, etc.**	K1
	Cash value of fringe benefits	
1.6	Employers' social insurance contributions	
1.6A	Employer contribution to private retirement (pension) plans	B1
1.6B	Employer contributions to private health insurance	B2
1.6C	Employer contributions to life insurance	B3
1.6D	Employer contributions to employer other insurance schemes (e.g. disability)	B4
1.6E	Employer contributions to government insurance schemes (including payroll taxes)	B5
1.7	**Goods and services provided to employee as part of employment package**	
1.7A	Company cars	B6
1.7B	Subsidised meals	B7
1.7C	Subsidised (low-interest) loans	B8
1.7D	Subsidised housing, electricity	B9
1.7E	Subsidised child care	B10
1.7F	Subsidised vacations	B11

Table 1 (continued)
Income Component code list

2	INCOME FROM SELF-EMPLOYMENT *Cash or near cash*	
2.1	Profit/loss from unincorporated enterprise	
2.1A	(Net) non-farm self-employment income	A9
2.1B	(Net) farm self-employment income	A10
2.2	**Royalties earned by households as unincorporated enterprises** *In kind income, imputed*	C2
2.3	**Net income (ie after expenses) from home production for barter transactions**	A12
2.4	**Net income (ie after expenses) from home production of goods for home use**	A11
2.5	**Net imputed return on the equity in one's own home**	K6
3	**INCOME LESS EXPENSES FROM RENTALS OTHER THAN LAND EARNED BY HOUSEHOLDS AS UNINCORPORATED ENTERPRISES**	C4b
4	**PROPERTY INCOME**	
4.1	**Interest received *less* interest paid**	
4.1A	Interest received	C1
4.1B	Interest from estates and trusts	C5 (part)
4.1C	Pension or annuity income in the form of interest from self-financed investments	K8(part)
4.1D	Interest paid on mortgage loans	H1
4.1E	Interest paid on non-mortgage loans	H2
4.2	**Dividends**	
4.2A	Dividends received	C3
4.2B	Dividends from estates and trusts	C5(part)
4.2C	Pension or annuity income in the form of dividends from self-financed investments	K8(part)
4.2D	Profits from unincorporated business capital investment	C8
4.3	**Rent from land earned by households as unincorporated enterprises (net of expenses)**	C4a
5	**CURRENT TRANSFERS RECEIVED** *Social insurance benefits, cash or near-cash*	
5.1	Social insurance benefits from employer's schemes	
5.1A	Employer-based pensions or other periodic retirement including pensions bought with additional employee voluntary contributions	A13
5.1B	Foreign pensions	A14
5.1C	Withdrawal from pension scheme (non-periodic draw from retirement account)	A16
5.1D	Private scholarships & educational assistance (excluding loans)	E11
5.2	**Social security benefits from government schemes**	
5.2A	Government social security (retirement and survivors) benefits	E1
5.2B	Government disability insurance/incapacity/disablement benefits	E2
5.2C	Government unemployment benefit/job search allowance	E4
5.2D	Government workers' compensation (on-the-job injuries)	E6
5.2E	Government sickness/medical benefits	E13
5.2F	Veterans' benefits (injury, pension, etc.)	E16
5.2G	Payments for child care to permit employment	E15
	Social assistance from government schemes – cash or near-cash	

Table 1 (continued)
Income Component code list

5.3	**Income from universal government schemes**	
5.3A	Family or child benefits/credits/allowance	D1
5.3B	Maternity benefits/allowances/grants	D4
5.3C	Government scholarships & educational assistance (excluding loans)	E10
5.3D	Reduction in interest on student loans	E12
5.4	**Income from means-tested government schemes**	
5.4A	Child support assurance (public) benefits	F1
5.4B	Public assistance or general welfare benefits	F2
5.4C	Public assistance for elderly	F3
5.4D	Means-tested unemployment	F8
5.4E	Means-tested disability support	F9
5.4F	Means-tested age pension	F10
5.4G	Other transfer programs (catch-all item)	F11
5.4H	Child tax credit	F12
5.4I	Earned income tax credit	F13
5.4J	Other tax credits	F14
	Private transfers in cash	
5.5	**Regular inter-household cash transfers received**	
5.5A	Alimony received from another household	G1
5.5B	Child support received from another household	G2
5.5C	Regular cash inter-household transfers received	G5
5.6	**Regular support received from non-profit making institutions such as charities**	
5.6A	Union sick or disability pay	K3
5.6B	Union strike pay	K4
5.6C	Support from charitable organisations (regularly received)	K7
5.6D	Other regular payments from outside household	G7
7	**DEDUCTIONS FROM INCOME OF CURRENT TRANSFERS PAID**	
7.1	**Employers' social insurance contributions (equals 1.6 above)**	
7.2	**Employees' social insurance contributions**	
7.2A	Employee contributions to private mandatory social insurance (pensions, health, etc.)	H8
7.2B	Employee contributions to government-mandated insurance premiums (including payroll taxes)	H9
7.2C	Government-mandated employee contributions to unemployment insurance	H19
7.3	**Income taxes net of refunds and compulsory fees and fines for hunting, shooting and fishing**	
7.3A	Income tax net of refunds	H15
7.3B	Compulsory fees and fines for hunting, shooting, and fishing	H22a
7.4	**Property (real estate) taxes (paid regularly)**	H16
7.5	**Regular inter-household transfers paid in cash**	
7.5A	Alimony paid to another household	H3
7.5B	Child support paid to another household	H4
7.5C	Payments on behalf of another household	H5
7.5D	Regular inter-household transfers paid (gifts)	H7

Table 1 (concluded)
Income Component code list

7.6	**Regular cash transfers to non-profit-making institutions including charities**	
7.6A	Union and professional dues	H14
7.6B	Regular cash contributions to charities	(not collected)
9	**SOCIAL TRANSFERS IN KIND**	
9.1	Public education	D3
9.2	Government-subsidised health care services	D2
9.3	Medical expenses reimbursed by government sickness, accident, or hospital insurance	E8
9.4	Rental allowances (housing subsidies)	F4
9.5	Food subsidies or vouchers	F5
9.6	Publicly owned housing subsidy	F6
9.7	Surplus food and clothing	F7
	OTHER ITEMS NOT CONSIDERED AS PART OF INCOME IN THESE GUIDELINES	
	Household consumption expenditure	
11.1A	Unreimbursed unavoidable work-related transportation costs	H12
11.1B	Unreimbursed unavoidable work-related child care costs	H13
11.5A	Medical expenses not reimbursed by insurance	H18
11.6	Indirect taxes on household expenditure	
11.6A	Sales or value-added taxes	H17
11.6B	Compulsory fees and fines other than for hunting, shooting, and fishing	H22b
12	*Irregular transfers of expenditure in cash and kind, net*	
12.1	**Irregular cash transfers and in-kind gifts received from other households and from charities less those received**	
12.1A	In-kind inter-household transfers paid	G3
12.1B	One-time inter-household transfers paid (gifts) *less*	H6
12.1C	One-time cash inter-household transfers received (gifts)	G4
12.2	**Lottery and gambling stakes less winnings**	
12.2A	Lottery or gambling stakes *less*	(not collected)
12.2B	Lottery or gambling winnings	K5
12.3	**Non-life insurance premiums less claims**	
12.3A	Privately purchased health insurance premiums *less*	H20
12.3B	Medical expenses reimbursed by private sickness, accident, or hospital insurance *and*	E9
12.3C	Private sickness/medical benefits *and*	E14
12.3D	Private disability insurance/incapacity/disablement benefits *and*	E3
12.3E	Private worker's compensation (on-the-job injuries)	E7
12.3F	Privately purchased unemployment/redundancy insurance premiums *less*	H21
12.3G	Private unemployment/job search allowance	E5
	Capital transfers received	
17.1	**Inheritances**	**G6**
17.2	Lump sum retirement payouts	A15
17.3	Increase in value from life insurance	K2
17.4	Realised capital gains	C6
20	**Memorandum item:** Unrealised capital gains	C7

Table 2 Summary of Income Component Data Collection

Component	Country																								19-Nov-00
	Arg	Aus	Bra	Can	Chl	Chn	Col	CR	ES	Fin	Gam	Ger	Itl	Kor	Mly	Mau	Mex	Nth	NZ	Nor	Per	Swd	Sw	UK	US	# collecting
1. Employee income																										
1.1A	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	25
1.1B	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	24
1.1C		X				X				X	X	X	X		X		X		X	X		X	X	X	X	14
1.1D		X		X						X	X	X		X	X		X		X			X	X	X	X	13
1.1E										X													X	X		3
1.1F										X													X			2
1.2A	X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	22
1.2B	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	24
1.3				X		X				X		X		X		X	X	X	X	X		X	X	X		13
1.4	X	X				X			X	X		X				X	X	X	X	X		X	X	X	X	15
1.5		X				X				X	X	X					X	X	X				X		X	10
1.6A										X					X					X					X	4
1.6B									X	X		X			X			X							X	6
1.6C										X					X					X						3
1.6D															X		X	X		X						4
1.6E						X						X			X		X	X		X						6
1.7A		X				X			X	X			X		X	X		X		X	X	X	X	X		13
1.7B						X			X	X			X	X	X		X	X		X	X	X	X	X		13
1.7C										X								X		X		X	X			5
1.7D		X			X	X	X		X	X					X	X	X	X		X	X	X	X			14
1.7E						X					X	X					X	X		X		X	X			8
1.7F						X			X	X							X	X		X			X			7

Table 2 Summary of Income Component Data Collection (continued)

Component	Country																								19-Nov-00
	Arg	Aus	Bra	Can	Chl	Chn	Col	CR	ES	Fin	Gam	Ger	Itl	Kor	Mly	Mau	Mex	Nth	NZ	Nor	Per	Swd	Sw	UK	US	# collecting
2. Income from self-employment																										
2.1A	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	24
2.1B	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	23
2.2		X		X		X				X	X			X	X	X	X	X	X	X		X	X	X	X	16
2.3						X					X					X	X	X					X			6
2.4			X		X	X		X		X	X	X			X	X	X	X		X	X		X			14
2.5					X				X	X	X	X	X		X		X	X		X	X		X			12
3. Income from rentals	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	25
4. Property income																										
4.1A	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	24
4.1B plus 4.2B		X		X		X				X		X			X	X	X	X	X	X		X	X	X	X	15
4.1C plus 4.2C	X	X	X		X		X	X	X	X	X		X			X	X		X		X	X	X	X	X	18
4.1D		X				X				X	X	X	X				X	X	X	X		X	X	X		13
4.1E		X				X				X	X	X	X				X	X	X	X		X	X			12
4.2A	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	24
4.2D						X				X					X	X	X		X	X			X	X		9
4.3																X			X				X			3

Table 2 Summary of Income Component Data Collection (continued)

Component	Country																								19-Nov-00
	Arg	Aus	Bra	Can	Chl	Chn	Col	CR	ES	Fin	Gam	Ger	Itl	Kor	Mly	Mau	Mex	Nth	NZ	Nor	Per	Swd	Sw	UK	US	# collecting
5. Current transfers received																										
5.1A	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	24
5.1B	X	X	X		X	X	X	X	X	X	X		X			X	X	X	X	X	X			X	X	19
5.1C				X						X		X	X			X	X	X	X			X	X	X		11
5.1D						X					X								X				X			4
5.2A		X		X		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	19
5.2B		X		X		X				X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	17
5.2C	X	X		X		X				X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	19
5.2D		X		X		X				X	X	X	X	X			X	X	X	X		X		X	X	15
5.2E																X			X				X			3
5.2F		X				X				X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	17
5.2G		X		X						X	X	X			X		X		X					X		9
5.3A		X		X	X	X				X	X	X	X		X	X		X	X	X		X	X	X	X	17
5.3B		X		X	X	X				X	X	X							X	X		X	X	X	X	13
5.3C		X		X		X				X	X	X					X	X	X	X		X	X	X	X	14
5.3D	X	X			X			X		X		X	X	X	X	X	X	X		X		X		X	X	17
5.4A		X		X						X	X	X	X		X	X	X		X				X	X	X	13
5.4B		X		X		X				X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	18
5.4C		X		X		X				X	X	X		X	X	X	X	X	X	X		X	X	X	X	17
5.4D	X	X		X	X					X	X	X		X	X	X	X	X	X		X	X	X	X	X	18
5.4E		X		X	X					X	X	X		X	X	X	X		X			X	X	X	X	15
5.4F		X		X	X	X				X	X	X		X	X	X	X	X	X	X		X	X	X	X	18
5.4G		X		X	X	X		X	X	X	X	X		X		X	X	X	X			X	X	X	X	18
5.4H		X		X						X	X	X				X	X		X	X		X		X		11
5.4I		X		X						X	X	X				X			X	X		X		X	X	11
5.4J		X		X						X	X	X				X			X			X		X		9

Table 2 Summary of Income Component Data Collection (continued)

	Country																								19-Nov-00
Component	Arg	Aus	Bra	Can	Chl	Chn	Col	CR	ES	Fin	Gam	Ger	Itl	Kor	Mly	Mau	Mex	Nth	NZ	Nor	Per	Swd	Sw	UK	US	# collecting
5.5A	X	X		X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	21
5.5B	X	X		X	X				X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	19
5.5C	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X		X		X		X	X	X	20
5.6A										X		X					X	X	X			X	X	X	X	9
5.6B										X		X					X	X	X				X	X	X	8
5.6C										X	X								X					X		4
5.6D	X	X			X	X			X	X	X	X			X	X	X	X	X		X		X	X	X	17
7. Deductions from income of current transfers paid																										
7.2A				X		X										X	X		X				X	X		7
7.2B		X				X				X		X				X		X		X		X	X	X		10
7.2C		X		X		X				X	X	X					X		X				X	X		10
7.3A		X		X		X				X	X	X			X	X		X	X	X		X	X	X	X	15
7.3B																										0
7.4		X				X				X	X	X						X	X	X		X	X	X	X	12
7.5A		X		X						X	X	X	X		X	X	X	X	X	X		X	X	X		15
7.5B		X		X		X				X	X	X	X		X	X	X		X	X			X	X	X	15
7.5C		X								X	X					X	X		X				X	X		8
7.5D						X					X								X				X			4
7.6A		X		X						X						X	X		X	X			X			8
7.6B																										

Table 2 Summary of Income Component Data Collection (continued)

Component	Country																								19-Nov-00 # collecting
	Arg	Aus	Bra	Can	Chl	Chn	Col	CR	ES	Fin	Gam	Ger	Itl	Kor	Mly	Mau	Mex	Nth	NZ	Nor	Per	Swd	Sw	UK	US	
9. Social transfers in kind																										
9.1		X																								1
9.2		X										X													X	3
9.3						X													X				X			3
9.4		X								X	X	X	X		X	X	X	X	X	X		X	X	X	X	15
9.5		X				X				X	X	X	X		X	X	X			X		X	X	X	X	14
9.6		X								X	X	X	X			X	X					X	X			9
9.7						X				X	X	X	X		X	X	X		X	X		X	X			12
sidered as part																										
11.1A		X								X	X						X		X	X		X	X			8
11.1B		X		X						X	X	X							X	X		X	X		X	10
11.5A				X						X	X			X					X	X		X	X			8
11.6A		X				X					X	X														4
11.6B		X				X					X				X				X				X			6
12.1A	X					X					X				X		X						X			6
12.1B		X				X				X	X				X		X		X				X			8
12.1C	X	X	X		X	X	X		X	X	X	X	X			X	X		X	X			X		X	17
12.2B		X				X			X			X					X	X	X	X			X		X	10
12.3A		X		X		X				X		X				X		X	X				X			9
12.3B		X								X	X	X					X	X	X	X		X	X	X	X	12
12.3C											X								X				X			3
12.3D										X	X	X				X	X	X	X	X		X	X	X	X	12
12.3E																			X							1
12.3F						X					X					X							X			4

Table 2 Summary of Income Component Data Collection (concluded)

	Country																								19-Nov-00
Component	Arg	Aus	Bra	Can	Chl	Chn	Col	CR	ES	Fin	Gam	Ger	Itl	Kor	Mly	Mau	Mex	Nth	NZ	Nor	Per	Swd	Sw	UK	US	# collecting
12.3G										X	X					X	X	X								5
17.1		X				X			X			X			X		X		X	X				X	X	10
17.2		X				X				X		X	X			X	X	X	X	X		X	X		X	13
17.3		X								X	X	X	X				X	X		X			X		X	10
17.4	X		X	X		X		X		X		X					X			X		X			X	11
20						X											X									2

1. Only Gambia, Mauritius and Switzerland were able to identify separately rentals other than from land. This line shows those countries with data available for rents in total.
2. The survey did not cover this item (regular cash contributions to charities)
3. Only China was able to separately identify those compulsory fees and fines other than for hunting, shooting and fishing. This line shows those countries with data available for total compulsory fees and fines.

COUNTRY/SURVEY:

Arg	Argentina	Permanent Household Survey
Aus	Australia	Survey of Income and Housing Costs; Household Expenditure Survey
Bra	Brazil	National Household Survey
Can	Canada	Survey of Labour and Income Dynamics
Chl	Chile	National Socioeconomic Survey
Chn	China	Urban Household Survey; Rural Household Survey
Col	Colombia	National Household Labor Force Survey
CR	Costa Rica	Multipurpose Household Survey
ES	El Salvador	Multipurpose Household Survey
Fin	Finland	Income Distribution Survey (administrative records)
Gam	The Gambia	Household Poverty Survey
Ger	Germany	Income and Consumption Survey; Socioeconomic Panel Study
Itl	Italy	Bank of Italy Survey of Household Income and Wealth
Kor	Republic of Korea	National Survey of Family Income and Expenditure
Mly	Malaysia	Household Income Survey
Mau	Mauritius	Household Budget Survey
Mex	Mexico	National Survey of Income and Expenditure in Households
Nth	The Netherlands	Income Panel Survey (administrative records)
NZ	New Zealand	Household Economic Survey
Nor	Norway	Income Distribution Survey (administrative records)
Per	Peru	National Household Survey of Life and Poverty Conditions
Swd	Sweden	Income Distribution Survey (administrative records)
Sw	Switzerland	Income and Consumption Survey
UK	United Kingdom	Family Expenditure Survey; Family Resources Survey
US	United States	Current Population Survey; Survey of Income and Program Participation

Appendix 5

Robustness of National Accounts Estimates

1. Overview

National accounts are compiled by bringing together data from a range of statistical surveys and from administrative sources. Making a firm robustness assessment of the result is therefore a somewhat different task than the processes described elsewhere in relation to microdata surveys. Nevertheless, since it is recommended to compare data coming from household surveys with data from the national accounts, an attempt to assess the reliability of the latter is in order.

It is perhaps easiest to start by asking how reliable is gross domestic product (GDP), the aggregate from national accounts which is most often quoted and is therefore most easily recognised by those not familiar with the whole national accounts system. There are three ways of measuring GDP: as the sum of value added generated by all the enterprises in the economy (the output measure); as the sum of all the incomes generated in the process (the income measure); or by measuring the goods and services purchased with this income (the expenditure approach). Conceptually all three measures are identical; and the steps taken to ensure that this is also so statistically affect the robustness assessment. It is therefore necessary to look briefly at the quality of all three measures before making an overall assessment of quality.

2. The output measure

All enterprises in the economy are grouped by statisticians into industries according to a standard international classification and these industries are then surveyed with standard survey techniques to asses the value added of each. The accuracy of the results depends on a number of factors which differ from industry to industry.

In most countries up to eighty per cent of enterprises employ five or fewer people but the remaining twenty percent of large firms account for up to ninety per cent of value added. Large firms are not equally spread across all industries. Mining, shipbuilding and electricity generation are often only undertaken by large firms. Restaurants, window cleaning and shoe repairing are seldom the main business of large enterprises. Some industries such as agriculture, construction and transport are characterised by the presence both of some very large enterprises and a proliferation of many small one. Loosely speaking, we may say that survey results for industries dominated by large firms tend to be better than for those where small scale activity

is the norm. A particular difficulty is measuring the activity of self-employed people who slip through the statistical net either accidentally or deliberately. This phenomenon is usually referred to as the "hidden" or "informal;" economy. Increasingly statistical offices are taking special measures to try to ensure a reasonable estimate of this type of activity.

The characteristics of an industry may vary from country to country. For example most bakeries in France are small scale; in the UK there are large-scale bakeries. In Poland most fishing is done by large-scale trawlers; in Greece artisanal fishing is predominant. Thus the robustness of measures for the same industry may vary from one country to another because of local traditions.

Another reason for variation concerns statistical development. In many OECD countries, the pattern of industrial enquiries was laid down in the sixties and seventies when manufacturing industry was seen as the driving force of an economy, the source of most employment and of most value added. Since then the importance of service industries has increased but the statistical coverage of them has seldom increased commensurately. Initially this may have been due to the perception that many services were state provided (health, education and even cultural services). These and the financial services provided by the banking sector were always reasonably well measured by administrative data. The growing importance of private services was only recognised at a time when statistical offices were going through a period of budget stringency which made survey expansion into this field exceptionally difficult. Nor was it helped by the fact that, since services can be provided by people on the move or operating from home, many fall into the "hidden" economy.

In almost all countries, developing as well as developed, agriculture tends to be fairly well measured because of its political and cultural importance.

Summarising, then, we may say that in many countries agriculture and large scale manufacturing industry are well measured as are publicly provided and financial services. Private services tend to be much less well covered.

3. The income measure

All value added can be translated into income terms. Let us take as an example a slightly simplified account for a firm with employees. One element of value added, probably a significant proportion, represents payments to employees. Another element (probably small or maybe non-existent) represents taxes payable to government in relation to productive activities for example rates on buildings and sometimes taxes on the labour force. What is left to the enterprise is distributed either as dividends to share-holders (if any), interest on loans or is retained as pre-tax income. Information on all these elements is available to the statistical office from the administrative records of the taxation departments - though usually only at such a degree of aggregation that identification of individual enterprises is impossible.

A reconciliation with the components of the output estimates of value added, described in the previous section, is possible but needs to take into account different definitions and time of recording of the two sources. Most importantly, the statistician doing the reconciliation must make judgements about the likely mis-reporting under both systems. Are the tax authorities or the survey statisticians more likely to capture the activities of those reluctant or unable to provide accurate information? This

applies again and in particular to self-employed persons, many of whom fall in the "hidden" economy.

Cynicism or professional pride may prejudice us towards assuming that the statistical measure is preferable to the administrative one. This is not necessarily so; tax offices go to a great deal of effort to ensure the efficacy of the tax collection system and make detailed estimates of any income which has escaped their system.

4. The expenditure measure

There are five main components of GDP when measured from the expenditure side. By far the largest is consumption. This can be divided in a number of ways but for the present purpose, it is most useful to look at a two tier disaggregation. Services such as administration and defence produced by government on behalf of the whole community (public goods) typically constitute seven to eight per cent of GDP in most OECD countries. These services are measured via the government budget and are thus fairly well measured. (As with most if not all administrative data there may be a problem matching definitions of concepts and time of recording but these do not give rise to major errors.)

Consumption which benefits households accounted for about 65 to 75 per cent of GDP in OECD countries in 1996. In the Scandinavian countries, more socialist than the other countries at the time, about 70 per cent of the total (thus about half of GDP) represented expenditure by households and the remaining 30 per cent was the value of public services such as health, education and social services provided by government. For the US, in contrast, over 90 per cent of household consumption represented expenditure by the households and less than 10 per cent government services.

Household consumption expenditure is estimated using a wide range of sources. One of the most important sources is the household budget survey. Everything described under the RAR for such surveys is relevant in this context therefore. In addition, some other sources are used to augment budget surveys, especially where these are known to be deficient, for example expenditure on drink and tobacco which is systematically underreported, expenditure on large, infrequent purchases such as cars and household appliances or expenditures affecting groups poorly represented in the budget survey - for example luxuries bought by those in the highest income ranges.

Within the national accounts, estimates are also made for "institutional households" such as boarding schools, hospitals and prisons. Sometimes some non-profit institutions are also included; though with the introduction of the 1993 guidelines these should be shown separately.

Investment represents about one quarter of GDP and comes from surveys with very similar characteristics to those described under the output estimate of GDP.

The remaining components of GDP are exports and imports. (Imports are deducted from the sum of other expenditures to reach GDP.) Exports and imports of goods are traditionally measured via the administrative controls of the customs service. Data from this source is less reliable now than in the past because the decline in the applicability of customs duties means there is less incentive for a stringent control on the information provided to the customs authorities; and the increasing

use of containers makes verification more expensive and more difficult. In some cases, for example within the European Union, this administrative data source has dried up and statistical surveys must be instituted to make good the loss. Measuring imports and exports of services was always much less easy and much less accurate than measuring goods and is becoming even more difficult with increased use of the internet for international sales.

5. Reconciling the three measures

Some indication was given above of the possibility of reconciling the output and product measures of GDP. It is also possible to reconcile output and expenditure measures. This is done product by product. Typically it will be assumed that the estimates of drink and tobacco coming from production is more reliable that the consumption recorded in household budget surveys and so the household consumption figure will be altered accordingly. On the other hand, expenditure by households on taxis is likely to be more reliable than information from a survey of taxi drivers and in this case a correction is made in the other direction. By working through a large number of products, the overall quality of the accounts is improved by ensuring that the data finally used make best use of all the various statistical and administrative sources available rather than relying on a single source. The theoretical structure of the inter-relationships between output, income and expenditure imposes a very powerful constraint on the extent of error that can still persist in a balanced set of accounts. In addition, the fact that accounts are compiled regularly, at least annually and sometimes quarterly, gives another opportunity for plausibility checking since the time series evolution of the accounts at detailed level has also to be plausible.

A national accountant will defend his figures on the grounds that conceptually they are comprehensive, with estimates included even for difficult to measure areas, and they have been very comprehensively reviewed through these reconciliation mechanisms. Since they integrate data from a variety of sources, it is argued that their general level of quality is higher than any one source taken individually.

If we want a comprehensive account for household income, consumption and accumulation, we may have no choice but to use some national accounting figures, especially in the area of imputed income to households, say in respect of pension contributions or provision of state services. In other areas, for example income from wages and salaries or household consumption expenditure, we may use detailed figures from a household budget survey but constrain these to the national accounts figures because the coverage is more exhaustive (including institutional households say) and because it is assumed the reconciliation exercise has improved the quality of the initial estimates.

One problem of reconciling household budget data with national accounts should be noted. The national accounts time series are frequently revised retrospectively but it is seldom the case that reconciliation with alternative data sets is carried through in detail. Thus a data set once reconciled may not remain so for all time.

Appendix 6

Robustness assessment report for income distribution data

[COUNTRY]

This report is intended to identify known or suspected imperfections in micro-data on incomes, which may affect the validity of income distribution results or require particular care in their interpretation; and to report estimates of the impact of these imperfections on results.

Reports for other countries/datasets may be found on the Canberra Group's Internet site: http://www.lisweb.ceps.lu/links/canbaccess.htm

Dataset and years covered by this report:

Compiled by:

Name:

Institution:

Address:

E-mail:

Phone:

Fax:

Date:

Status of this report (*Final/provisional*)

Any additional comments:

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1. NAME, DESCRIPTION AND MAJOR FEATURES OF DATASET

1.1 **What is the name of the dataset?**

1.2 **What is the sampling frame for the dataset?**

1.3 **What are the main purposes of the survey/register from which the dataset is drawn?**

1.4 **How is the data obtained?**

(*E.g. face-to-face interview with head of household. Indicate how much of the data is obtained by proxy*.)

1.5 **If data is drawn from more than 1 source, how is the data linked?**

1.6 **What are the achieved sample size and response rates?**

(*Explain how response rate is calculated. Explain the rules for counting a household as 'responding' e.g. whether all adult members of the household have to respond*.)

1.7 **What is the measurement period for income?**

(*Annual? Weekly? Report separately for each income component if different*.)

1.8 **Is data collected throughout the year, or at 1 or more points in time?**

(Explain the arrangements (a) for the dataset as a whole, e.g. are different households sampled at different times of the year; and (b) for individual households - is data collected only once, covering the whole of the income measurement period, or is data collected for sub-periods and then aggregated?)

1.9 **Is income data "current" or retrospective?**

(*Record (a) usual (b) maximum time lags between end of period covered by data and date of collection*.)

1.10 **Where classifying variables may change within the income measurement period (e.g. employment status or hours of work), how are values assigned for these variables?**

1.11 **Have any of these features changed during the past 10 years? Has the definition of income** variables or derived variables changed over the past 10 years? *(If so, give details; and indicate the likely effects on income distribution results, if not reported below)*

1.12 Is the data longitudinal?

2. COMPLETENESS OF COVERAGE OF THE POPULATION

2.1 **What is the total population of the country?**

(*Individuals; and households/families if these are recorded in 2.2. Indicate the year*.)

2.2 **Which of the groups below are excluded, completely or in part, from the sampling frame or the dataset, and what are the likely effects on income analyses?**

(*Specify the relevant groups*)

	Exclusion	Size of group excluded (individuals)	Likely effects on income analysis
2a	Geographical areas		
2b	Groups defined by place of birth, citizenship, immigration status, nationality or ethnic origin		
2c	Homeless people		
2d	People in hospital, care or nursing homes		
2e	People in hostels (students, nurses etc)		
2f	Children's homes		
2g	Military, police, their families, civilians living in military installations		
2h	Foreign armed forces, diplomats etc		
2i	Prisoners		
2j	Others (*E.g defined by economic activity, age, income level, family size*)		

2.3 **What are the likely effects of non-coverage on results for particular groups?**
(E.g. the very elderly, or young males)

2.4 **Have there been any non-trivial changes in coverage in the past 10 years? If so, what are their likely effects on income distribution results?**

2.5 **Has the size of particular excluded groups changed significantly over time? If so, what are the likely effects on results for changes in income distribution?**

2.6 **[Longitudinal datasets only] What are the arrangements for covering people who 'join' the population via birth, immigration or movement out of an excluded group, or who leave it due to death, emigration or movement into an excluded group?**

3. SAMPLE DESIGN, NON-RESPONSE BIASSES, WEIGHTING

3.1 **What are the sampling fraction(s) and sample design?**
(*Was the sample stratified? If so, how?*)

3.2 **What is known about the effects of sample design on sampling error?**

(*Quote design factors for key income estimates, e.g. mean income from employment, if available. Identify any estimates known to have particularly large design factors*.)

3.3 **Is a standard set of weights available? If so, what is their purpose and how are they derived?**

(*Describe in detail the dimensions employed - e.g. age of individual adults in 10-year age bands - and the reliability of any independent estimates used; and the grossing regime, e.g. CALMAR with range of weights constrained to 1:2.5.*)

3.4 **What non-response biasses are known or strongly suspected?**

(*Describe and quantify wherever possible. Indicate how far weighting, if available, is thought to correct for these*.)

3.5 **What conclusions can be drawn - from comparisons with tax records, benefit records or other administrative records - about possible non-response biasses likely to affect income distribution estimates?**

(*If not already recorded under 3.4. Indicate any weaknesses suspected in administrative records. Indicate how far weighting, if available, is likely to affect these potential biasses*.)

3.6 **What comparisons have been made** *(besides those reported above)* **with other data sources, to assess possible response biasses? What do these comparisons show?**

3.7 **Are there any groups** (*besides those identified above)* **where non-response problems are suspected** *(e.g. immigrants working without work permits)*.

3.8 **Overall, which income estimates are thought to be most at risk of substantial non-response bias?** *(Report separately for point-in-time estimates and estimates of income distribution changes over time)*

3.9 **Have their been any non-trivial changes, over the past 10 years, in sample size, sample design, or apparent response biasses? If so, what are their likely effects on income distribution results?**

3.10 **[Longitudinal datasets only] What are the extent and pattern of attrition from the dataset? How is this handled? What are the implications for the picture of (a) changes in cross-section income distribution (b) income mobility?**

4. ITEM NON-RESPONSE, IMPUTATION AND EDITING

4.1 **Which 3 income components have the largest incidence of item non-response? What is the incidence for these 3?**

(*Measured as ratio of "don't know plus refusals" to numbers reporting non-zero amounts. Exclude any cases where the entire individual, family or household has been omitted from the dataset. Exclude any components for which >95% of respondents report zero income*.)

4.2 **Are any other income components significantly affected by item non-response?**

(*Where "don't know plus refusals" exceed 10% of numbers reporting non-zero amounts*.)

4.3 **Are any important categorical variables - e.g. age, economic status - significantly affected by item non-response?**

4.4 **What imputation techniques have been used for the variables identified above?**

(*E.g. hot-decking, closest class mean, neural networks. Indicate the classes into which data was divided for imputation purposes. Indicate whether any missing income variables have not been imputed.)*

4.5 **What top- or bottom-coding has been employed? How many observations are affected? What is the estimated effect of top- or bottom-coding?** *(Report separately for point-in-time estimates and estimates of income distribution changes over time)* **How have negative incomes after tax been treated?**

4.6 **Is the reporting of income net of direct taxes affected by imperfect data on direct taxes?If so, what are the main practical effects on estimates of the distribution of net incomes?** *(Specify whether net income is obtained from reported net incomes, or gross incomes minus imputed tax. Explain how direct taxes are collected in practice by the tax authorities, e.g. via end-of-year assessment or via 'pay-as-you earn' with end-of -year adjustments)*

4.7 **What other editing has been employed, affecting over 5% of the sample? How large an impact is this thought to have on measured incomes? What editing and/or checking takes place at the data-collection stage** *(e.g. via CAPI checks built into computer programs)?*

4.8 **Which income results are thought to be most sensitive to any imperfections (known or suspected) in imputation and editing?**

(*Indicate whether statements are based on quantitative analysis, informed judgement or just guesses.*)

4.9 **Is any income data collected using income bands rather than by seeking precise figures? If so, how are values assigned and what are the likely effects on the accuracy of results?**

4.10 **Have their been any non-trivial changes, over the past 10 years, in the incidence of item non-response, or in imputation or editing? If so, what are their likely effects on results for changes in income distribution?**

4.11 **[Longitudinal datasets only] To what extent is data from earlier time periods used to impute income data, or characteristics used in imputing income data? What are the likely implications for the reliability of income distribution and income mobility results?**

4.12 **[Longitudinal datasets only] Are different grossing regimes provided or used for longitudinal analysis?**

5. ACCURACY OF INCOME DATA

5.1 **How much of the income data was collected by proxy?**

5.2 **How much of the data on earned income was (a) supplied by employer (b) checked against employer's statements? How much of the data for other income components is checked against documentation?**

5.3 **How does grossed income data from the micro dataset compare with National Accounts estimates? What are the implications for income distribution estimates?**

(*It may be helpful to use the table below. If comparisons are available for separate components of investment/property income, report these as well as an aggregate comparison. Comment on any weaknesses in National Accounts data, and difficulties with the comparison with micro-data; if a separate assessment of these points is available, quote the main findings here and give details of where the assessment can be obtained. Other data sources may be used if they are judged superior to National Accounts or provide useful additional information.*)

Income Component	**Grossed estimate from micro-data as % of National Accounts**	**Comments**	**Implications for distribution estimates**
Wages and Salaries			
Self-employment income			
Occupational pensions			
Investment income			
Transfers			
Other income			
Direct taxes			

5.4 **Is the picture of employment patterns, in the incomes micro-dataset, consistent with information from Labour Force Survey or other data sources?**

(*Relevant aspects of employment patterns are: percentage of adults in work - or of adults under 65; percentage holding more than 1 job.*)

5.5 **How is self-employment income captured in the data source?** *(State whether from business accounts - if so, how the time period of the accounts relates to the time period covered by the other income data, and how losses are treated - or from drawings from the business, or some other concept.)* **How reliable is self-employment income data judged to be? Is self-employment income reported net or gross of taxes?**

5.6 **Have there been significant changes, over the past 10 years, in differences between the income captured in the micro-data used for income distribution statistics and other sources of income data?** *(If so, report the main changes)* **If so, what are their likely effects on results for changes in income distribution?**

5.7 **Has the relative size of different income components changed significantly over time? If so, what are the likely effects on results for changes in income distribution?**

5.8 **Have there been significant changes, over the past 10 years, in differences between the employment levels captured in the micro-data used for income distribution statistics and other sources of employment data?** *(If so, report the main changes)* **If so, what are their likely effects on results for changes in income distribution?**

5.9 **Any other comments?**

6. VALIDITY OF INCOME DATA AS GUIDE TO CONSUMPTION CAPABILITIES

6.1 **What comparisons have been made of median or mean net income with expenditure for (a) quantiles of the income distribution (b) particular groups e.g. the self-employed, farmers? What do these show? What are the implications for the validity of income data, as a guide to quantiles'/groups' capacity to consume those goods and services normally financed from household disposable income?** *(Report separately for point-in-time estimates and estimates of income distribution changes over time)*

6.2 **In your country, do cash substitutes - e.g. food stamps, company cars - make significant additions to the incomes of particular groups or segments of the income distribution? What are the implications for the interpretation of income distribution results?** *(Report separately for point-in-time estimates and estimates of income distribution changes over time)* **What information is available in the incomes micro-dataset?**

6.3 **What types of housing are subsidised, and to what extent? Are the beneficiaries concentrated in one segment of the income distribution? What income distribution results are sensitive to this, and to the treatment of imputed rents for owner-occupiers?** *(Report separately for point-in-time estimates and estimates of income distribution changes over time)*

6.4 **Any other comments?**

7. HOUSEHOLDS, FAMILIES, INDIVIDUALS, CHILDREN

7.1 **What are the units of observation for income data?**
(*E.g. is data collected for both "household" and "individuals"?*

7.2 **How are "households" and/or "families" defined? How is 'head of household' or 'head of family' defined?**

7.3 **Which income components are <u>not</u> reported at the level of individuals?**

7.4 **Is it possible to aggregate from "individuals" to "families" or "households"? What are the smallest and largest units for which income can be calculated?**

7.5 **How accurate are estimates, from the incomes dataset, of the <u>relative</u> numbers of households, families and individuals? Are reliable control totals available?**

7.6 **How are "children" defined?**

7.7 **Is income data collected for children? If so, is it assigned to them or to other household members?**

7.8 **How are individuals assigned to a "household" or "family"? (E.g. children away from home at educational institution; adults away from home on military service, in hospital or on work.)**

7.9 **Are the family relationships between different members of the household clearly identified? Is it possible to identify when members do <u>not</u>, in general, share incomes/budgets?**

7.10 **How are students and their income treated?**

7.11 **Have any of these conventions** *(in 7.1 - 7.10)* **changed significantly in the last 10 years? If so, what are the likely effects on the picture of income distribution changes?**

7.12 **Are any of these features particularly important for the analysis of income distribution data for your country?**

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8. GENERAL ASSESSMENT QUESTIONS

Relevance:

8.1 **Which are the main uses of this source of data?**

8.2 **Who are the main users?**

8.3 **When was the survey started?**

8.4 **Are time series available? If yes, from when?**

8.5 **Have there been any major breaks in series?**

Timeliness:

8.6 **What is the time period required from the end of the data collection to making the data available for use (processing time)?**

Accessibility:

8.7 **Which forms of dissemination are used?**

8.8 **Are the data released as an anonymised micro-data set for the public?**

8.9 **Are there any meta data included in your publications?**

Comparability:

8.10 **Are the concepts and definitions used in the survey compliant with any international standard (as for example the 1977 UN Guidelines on Income Distribution, Consumption and Accumulation of Wealth)?**

Coherence:

8.11 **Is the income source harmonised with other income sources used within the office?**

8.12 **If not, which other sources do you use for income statistics?**

Appendix 7

Extract from "Recommendations of the task force on statistics on social exclusion and poverty," Eurostat, 1998

Requirements for a First Release or Press Notice and for Statistics in Focus

The level of detail for background information will inevitably be affected by the type of publication and the results presented. However, there is minimum level of information which is necessary to adequately inform users. This information should not only notify the user of any problems which may exist but should also indicate the effect of any such problems on the data presented. For example, any statements about poverty among the working population should assess the effect of the self-employed, in relation to concerns about the reliability of self-employment income data.

The minimum requirement for first releases and for Statistics in Focus is as follows.

- For information to be presented in a way that does not tempt the reader to place more interpretation on the figures than they can reasonably bear. This can be done by appropriate presentation in graphs, tables and text.
- Terms as used in the text, such as income and social exclusion, should be defined.
- Where information is from sample surveys, an indication of sampling errors should be given: the recommended indicator for measuring sampling error would be relative standard error i.e. coefficient of variation: standard error divided by mean. Certain limit(s) should be defined, and if relative standard error exceeds the limit(s) the figure will not be published

Alternative diagrammatic representations can be extremely effective in presenting information of this nature.

- If some information is derived from administrative sources for any country, a clear indication of this will be required. Where known problems with the administrative source exist these should also be documented. A typical example would be bias in terms of coverage.

The following warnings may be required according to different topics reported on:

- biases which affect results either due to non-response or from measurement error, for example, the poor quality of income information for self-employed individuals or the non-coverage of those not living in households
- figures which may be sensitive to the assumptions made in processing
- differences, between countries, in the importance of factors not captured in the data sources (e.g. non-cash support)
- any major conflicts with other sources

Reference should be made to any figures systematically pointed by National Statistical Institutes as being significantly different to those produced within that country. In such instances the comparability of harmonised data across countries may outweigh but not ignore concerns over comparability with national sources

These notes might be incorporated into the body of the text, or might be included in an information box.

Requirements for more detailed reports

In more detailed reports which are generally aimed at a more informed audience such warnings as described above should routinely appear in the text and tables, and be elaborated upon as appropriate in the text or appendices. But in addition, appendices should include information on the following:

- Definitions of all terms and concepts used: net disposable equivalised income, social exclusion, income cut-offs, reference person, child, and so on
- Source of information: the sampling methods used, sample sizes. The limitations of the methods used should be indicated, in particular where these vary between countries.
- Any biases due to design of the collection method such as the increasing unrepresentative nature of panel surveys. Reference should also be made to any factors which vary between countries.
- Coverage of the source such as limitations of the sampling frame, in particular the non-coverage of the population living in institutions and communal establishments, geographic limitations, and any specific exclusions.
- Levels of non-response or omission both overall, that is persons for whom entire records are unavailable, and item non-response, that is availability of a particular variable. The use of proxy information should be detailed, with an assessment of the quality of such information. How non-responses or omissions are treated should also be covered.
- Any available information comparing those included in the statistics with those not covered
- Editing, imputation, and classification errors when adjusting for item non-response
- Weighting and grossing systems when adjusting for person non-response
- The sensitivity of comparisons to treatment of subsidies for housing, transport etc. (e.g. reduced bus rail fares for elderly people)
- Equivalisation: the scales used in the report and sensitivity of results to alternative scales including those in national use

- Specialised measures.
- Sampling errors: a description of sampling errors and their use, provision of design effects, and guidance to users on the calculation of coefficient of variation.
- Comparability over time, in particular any changes which affect comparisons with figures published for previous periods
- Comparability with other sources. Reference should be made to the alternative national publications. In addition, any conflicts with national sources should be highlighted and if possible explained.
- Summary of implication of data imperfections on analytical statements
- Reference any occasional analyses contained in previous volumes in the series or special reports on technical issues
- Forms of dissemination and contact points

Compendium, anthology or omnibus publications

An increasingly important statistical output, is the production of publications which aim to paint pictures of society. Eurostat and many countries produce statistical yearbooks which cover peoples' lives in a variety of social and economic themes.

For these types of publication, which draw on a wide range of statistical sources, it becomes inappropriate and impractical to provide detailed quality assessments and metadata for all the individual sources. Nonetheless the key principles of only using robust statements, and highlighting where the underlying statistics are problematic remain of paramount importance.

Moreover these publications, which would not normally include previously unreleased statistics, should take care to include references to original sources, as well as explaining the concepts used, and the implications of using different sources.

For anthologies such as Eurostat's Social Indicators pocket book, given that the data are not therein released for the first time, it is not appropriate to provide detailed quality assessment or metadata. Nonetheless, items should be selected for inclusion in these publications on the basis that the key messages are robust. Where the messages are ambiguous or misleading without textual explanations these items should be excluded.

Bibliography

Atkinson, A. B., L. Rainwater and T. M. Smeeding. 1995. *Income Distribution in OECD Countries: Evidence from the Luxembourg Income Study*. Social Policy Studies No. 18. Paris: OECD.

Atkinson, A.B. 1997. "Bringing Income Distribution in From the Cold," *Economic Journal*, 107: 297-321.

Atkinson, A.B. 2000. "Is Rising Income Inequality Inevitable? A Critique of the Transatlantic Consensus," WIDER Annual lecture #3. Helsinki, Finland: United Nations World Institute for Development Economics Research.

Atkinson, A.B. and A. Brandolini. 1999. "Promise and Pitfalls in the Use of 'Secondary' Data-sets: Income Inequality in OECD Countries," mimeo. Oxford, UK: Nuffield College, Oxford University.

Australian Bureau of Statistics (ABS). 1995. *A Provisional Framework for Household Income, Consumption, Saving and Wealth*. Canberra, ACT: ABS. June 1995.

Barreiros, L. and D. Ramprakash. 1996. 'Revision of the UN Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households'. Paper prepared for the Twenty-fourth General Conference of the International Association for Research in Income and Wealth. Lillehammer, Norway, 19-23 August 1996.

Brandolini, A. 1998. "A Bird's-Eye View of Long-Run Changes in Income Inequality," mimeo, Research Department. Rome, Italy: Bank of Italy.

Brandolini, A. 1999. "The Distribution of Personal Income in Post-War Italy: Source Description, Data Quality, and the Time Pattern of Income Inequality," *Giornale degli Economisti e Annali di Economia*, 58: 183-239.

Buhman, B., Rainwater, L., Schmaus, G. and Smeeding, T. 1988. Equivalence scales, well-being, inequality and poverty: sensitivity estimates across ten countries using the Luxembourg Income Study database, *Review of Income and Wealth*, **Series 33** (2): 1115-42.

Burkhauser,R., A. C. Crews, and S.P. Jenkins. 1999. "Testing the significance of income distribution changes over the 1980's business cycle: an international comparison". *Journal of Applies Econometrics* 14(3), May-June, 253-272.

Burniaux, J-M, Dang, T-T, Fore, D., Förster, M., d'Ercole, M.M. and Oxley, H. (1998): *Income Distribution and Poverty in Selected Countries*, Economics Department, Working Papers No. 189, OECD, Paris.

Central Statistical Office. 1981. "The Distribution of Income in the United Kingdom, 1978/79," *Economic Trends*, 327: 82-91.

Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, and The World Bank (International Bank for Reconstruction and Development). 1993. *System of National Accounts 1993*. Brussels/Luxembourg: Eurostat; Washington, DC: IMF and The World Bank; Paris: OECD; New York, NY: United Nations. S*T/ESA/STAT/SER.F/2/ Rev.4*.

Cowell, F. 1995. *Measuring income inequality*. Harvester Wheatsheaf, New York.

Cowell, F. 2000. "Measurement of Inequality." In A.B. Atkinson and F. Bourgignon (eds.), *Handbook of Income Distribution*. New York: Elsevier-North Holland Publishers, pp. 87-166.

Deininger, K. and L. Squire. 1996. "A New Data Set Measuring Income Inequality," *World Bank Economic Review*, 10: 565-591.

de Vos, Klaas & M. Asghar Zaidi (1997): Equivalence Scale Sensitivity of Poverty Statistics for the Member States of the European Community. *Review of Income and Wealth*, Series 43, No. 3.

Dupré, Marie-Thérèse. 1997. 'The Current Status of the Concept of Income from Employment and Its Relationship with Existing Income Concepts'. Paper prepared for the Advisory Income Steering Group. Statistical Office of the European Communities, Directorate of Social and Regional Statistics and Structural Plans. Luxembourg, 13–14 January 1997. *Document AISG/5/1997*.

Eurostat (Statistical Office of the European Communities). 1995. *European System of Accounts (ESA 1995)*. Luxembourg: Office for Official Publications of the European Communities.

———. 1998a. 'Recommendations of the Task Force on Social Exclusion and Poverty'. Luxembourg: Eurostat. *Mimeographed*.

———. 1998b. "Procedure for Calculating Imputed Rents." Working Group: Statistics on Income, Social Exclusion and Poverty," DOC.PAN103/99. Luxembourg, Eurostat, December.

———. 2000a. "Seminar on Income Methodology for Statistics on Households: Draft Long Conclusions." Working Group: Statistics on Income, Social Exclusion and Poverty," DOC.E2/SEP/10/2000. Luxembourg, Eurostat

———. 2000b. "Summary of Criticisms and Suggestions Concerning Methods of Calculating Imputed Rents," DOC.PAN144/2000. Luxembourg, Eurostat, February.

Flora, P. 1987. *State, Economy and Society in Western Europe 1815-1975, Volume II*. Frankfurt: Campus Verlag.

Förster, M. 1993. "Comparing Poverty in 13 OECD Countries: Traditional and Synthetic Approaches". LIS Working Paper No. 100. Luxembourg.

Förster, M. 2000. "Trends and Driving Factors in Income Distribution and Poverty in the OECD Area," Labour Market and Social Policy Occasional Paper no 42, Paris: OECD.

Franz, A., D. Ramprakash and J.W.S. Walton. 1998. 'Statistics on the Distribution of Income, Consumption and Accumulation of Households (DICAH)'. Report to EUROSTAT. Vienna, London and Luxembourg. August 1998. *Mimeographed*.

Franz, A. 1996*a*. 'Revision of the UN Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households'. Paper prepared for the Twenty-fourth General Conference of the International Association for Research in Income and Wealth. Lillehammer, Norway, 19-23 August 1996.

———. 1996*b*. 'Manual on the Distribution of Income, Consumption and Accumulation of Households'. Report prepared for the Advisory Income Steering Group. Statistical Office of the European Communities, Directorate of Social and Regional Statistics and Structural Plans. Luxembourg, 13-14 January 1997. *Document AISG/3/1997*.

Goode, R. 1977. 'The Economic Definition of Income'. In *Comprehensive Income Taxation*, ed. J.A. Pechman, pp. 1-36. Washington, DC: The Brookings Institution.

Gottschalk, P. and T.M. Smeeding. 2000. "Empirical Evidence on Income Inequality in Industrialized Countries." In A. B. Atkinson and F. Bourgignon (eds.), *Handbook of Income Distribution*. New York: Elsevier-North Holland Publishers, pp. 261-308.

Gottschalk, P. and T.M. Smeeding. 1997. "Cross-National Comparisons of Earnings and Income Inequality," *Journal of Economic Literature*, XXXV (June): 633-687.

Harris, T. 1999. "The Effects of Taxes and Benefits on Household Income," *Economic Trends*, 545 (April): 27-63

Hicks, J.R. 1946. *Value and Capital: An Inquiry into Some Fundamental Principles of Economic Theory*. 2nd edition. Oxford: Clarendon Press.

ILO (International Labour Organization). 1979. *An Integrated System of Wages Statistics: A Manual on Methods*. Geneva: International Labour Office.

———. 1994. *Household Income and Expenditure Surveys*. Sources and Methods: Labour Statistics, Vol. 6. Geneva: International Labour Office.

———. 1998*a*. *Measurement of Income from Employment*. Report prepared for the Sixteenth International Conference of Labour Statisticians. Geneva, Switzerland, 6-15 October 1998. *ICLS/16/1998/II*.

———. 1998*b*. *Final Report of the Sixteenth International Conference of Labour Statisticians, Geneva, Switzerland, 6-15 October 1998*. Geneva: International Labour Office.

International Expert Group on Household Income Statistics ('Canberra Group'). 1997. *Papers and Final Report of the First Meeting on Household Income Statistics, Canberra, Australia, 2–4 December 1996*. Belconnen, ACT: Australian Bureau of Statistics. February.

———. 1998. *Papers and Final Report of the Second Meeting on Household Income Statistics, Voorburg, The Netherlands, 9-11 March 1998*. Voorburg and Heerlen: Statistics Netherlands. May.

———. 1999. *Papers and Final Report of the Third Meeting on Household Income Statistics, Ottawa, Ontario, Canada, 7-9 June 1999*. Ottawa, Ontario: Statistics Canada. November.

Jain, S. 1975. *Size Distribution of Income. A Compilation of Data*. Washington, DC: The World Bank.

Jäntti, M. and S. Danziger. 1998. "Income Poverty in Advanced Countries", LIS Working Paper No. 193, Luxembourg.

Johnson, D. and T.M. Smeeding. 2000. "Who are the Poor Elderly? An Examination Using Alternative Poverty Measures," mimeo, Center for Policy Research, The Maxwell School, Syracuse, NY: Syracuse University, January.

Kravis, I.B. 1962. *The Structure of Income. Some Quantitative Essays*. Philadelphia: University of Pennsylvania Press.

Kuznets, S. 1963. "Quantitative Aspects of the Economic Growth of Nations: VIII. Distribution of Income by Size," *Economic Development and Cultural Change*, 11(2): 1-80.

Lupton, J. and F.Stafford. 2000. "Five years older: much richer or deeper in debt?" mimeo, Panel Study of Income dynamics, Institute for Social Research, Ann Arbor, MI., University of Michigan

National Research Council. 1995. *Measuring Poverty – A New Approach*, National Academy Press.

Norrlof, Claes. 1985. 'Issues in the Revision of the International Income Distribution Guidelines'. Paper prepared for the Nineteenth General Conference of the International Association for Research in Income and Wealth. Noordwijkerhout, Netherlands, 25-31 August 1985.

Nygård, F. and A. Sandström 1981. *Measuring Income Inequality.* Stockholm: Almquist & Wiksell International.

Paukert, F. 1973. "Income Distribution at Different Levels of Development: A Survey of Evidence," *International Labour Review*, 108: 97-125.

Ramprakash, D. 1997. 'Revision of the UN Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households: Framework Issues'. Report prepared for the Advisory Income Steering Group. Statistical Office of the European Communities, Directorate of Social and Regional Statistics and Structural Plans. Luxembourg, 13–14 January 1997. *Document AISG/4/1997*.

Ryscavage, P. 1995. "A Surge in Growing Income Inequality?" *Monthly Labor Review*, 118(8): 51-61.

Sawyer, M. 1976. "Income Distribution in OECD Countries." *OECD Economic Outlook. Occasional Studies*. Paris: Organisation for Economic Co-operation and Development.

Sen, A. 1992. *Inequality Reexamined*. Cambridge, MA: Harvard University Press.

Simons, H.C. [1938] 1980. *Personal Income Taxation: The Definition of Income as a Problem of Fiscal Policy*. Midway Reprint. Chicago, IL: The University of Chicago Press.

Smeeding, T.M. 1977a. "The Anti-Poverty Effectiveness of In-Kind Transfers," *Journal of Human Resources*, XII (Summer): 360-378

Smeeding, T.M. 1977b. "The Economic Well-Being of Low Income Households: Implications for Income Inequality and Poverty." In M. Moon and E. Smolensky (eds.), *Improving Economic Measures of Well-being*. New York: Academic Press, pp229-256

Smeeding, T.M. 1982. *Alternative Methods for Valuing Selected In-Kind Transfers and Measuring Their Impact on Poverty.* U.S. Bureau of the Census Technical Report #50. Washington, DC: Government Printing Office, April.

Smeeding, T.M. 1996. 'The IARIW Session on International Standards on Income and Wealth Distribution: A Summary'. Paper prepared for the First meeting of the International Expert Group on Household Income Statistics. Canberra, ACT, 2-4 December 1996.

Smeeding, T.M. 2000. "Changing Income Inequality in OECD Countries: Updated Results from the Luxembourg Income Study (LIS)." In R. Hauser and I. Becker (eds.), *The Changing Distribution of Income*. Berlin, Germany: Springer-Verlag, in press.

Smeeding, T.M., P. Saunders, J. Coder, S. Jenkins, J. Fontall, A. Hagenaars, R. Hauser, and M. Wolfson.. 1993. "Poverty, Inequality and Family Living Standards Impacts Across Seven Nations: The Effect of Noncash Subsidies for Health, Education and Housing," *Review of Income and Wealth*, 39(3)(September): 229-256

Smeeding, T., M. Ward, I. Castles, and H. Lee. 2000. "Cross-Country Comparisons of Inequality," mimeo, Canberra Group Meeting, LIS, Luxembourg, May.

Statistics Canada. 1995. *Income Distribution by Size in Canada*, Ottawa, Catalogue No. 13-207-XPB.

Statistics Canada. 1997. *Household Facilities and Equipment*, Catalogue No. 64-202XPB.

Statistics Canada. 1980. *Income of Spending Units and Economic Facilities: A Study of Concepts and Relationship* Catalogue No. 8-3301-518.

Szekely, M. and M. Hilgert. 1999. "What's Behind the Inequality We Measure: An Investigation Using Latin American Data for the 1990s," mimeo. Washington, DC: IDB, December 3.

Tabatabai, H. 1996. *Statistics on Poverty and Income Distribution: An ILO Compendium of Data*. Geneva: International Labour Office.

United Nations Economic Commission for Asia and the Pacific. 1979. *Economic and Social Survey of Asia and the Pacific, 1978*. Bangkok: United Nations.

United Nations Economic Commission for Europe. 1957. "Income Distribution in Western Europe." In *Economic Survey of Europe, 1956*, part III. Geneva: United Nations.

United Nations Economic Commission for Europe. 1967. *Incomes in Post-War Europe: Study of Policies, Growth and Distribution*. Geneva: United Nations.

United Nations, 1977. *Provisional Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households*. Studies in Methods, Series M, No. 61. New York, NY: United Nations. *ST/ESA/STAT/SER.M/61*.

———, 1981. *A Survey of National Sources of Income Distribution Statistics*. Studies in Methods, Series M, No. 72. New York, NY: United Nations. *ST/ESA/STAT/SER.M/72*.

———,1985. *National Accounts Statistics: Compendium of Income Distribution Statistics*. Statistical Papers, Series M, No. 79. New York, NY: United Nations. *ST/ESA/STAT/SER.M/79*.

———, and United Nations Economic Commission for Europe, Conference of European Statisticians. 1989. 'Items in the Revision of the SNA which are Relevant from the Point of View of Statistics of Income of Households: Note by the Secretariat'. Work Session on Statistics of the Distribution of Income of Households, Working Paper No. 3. Geneva, 25-27 September 1989.

Expert Group on Household Income Statistics

The Canberra International Expert Group on Household Income Statistics met between December 1996 and May 2000 to develop standards on conceptual and practical issues related to the production of household income distribution statistics. The aim was to improve national and international statistics in this field. These recommendations are the culmination of the Group's work. They will be of interest both to data compilers and to data analysts as well as to a wide range of users of these important statistics.

ISBN 0-9688524-0-8

———, Department for Economic and Social Information and Policy Analysis, Statistical Division. 1998*a*. *Household Accounting: Experiences in the Use of Concepts and Their Compilation*. Vol. 1, *Household Sector Accounts*. Studies in Methods, Handbook of National Accounting, Series F, No. 75. New York, NY: United Nations. *ST/ESA/STAT/SER.F/75*.

———, ———, ———. 1998*b*. *Household Accounting: Experiences in the Use of Concepts and Their Compilation.* Vol. 2, *Household Satellite Extensions*. Studies in Methods, Handbook of National Accounting, Series F, No. 75. New York, NY: United Nations. *ST/ESA/STAT/SER.F/75*.

U.S. Bureau of the Census. 1998. "Money Income in the United States: 1997 (With Separate Data on Valuation of Noncash Benefits)," *Current Population Reports*, Series P-60, No. 200. Washington, DC: Government Printing Office.

Walton, J.W.S. 1996. 'Towards a Revision of the UN Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households'. Paper prepared for the Twenty-fourth General Conference of the International Association for Research in Income and Wealth. Lillehammer, Norway, 19-23 August 1996.

———. 1997. 'Links between Micro-Level Concepts of Income and the National Accounts'. Report prepared for the Advisory Income Steering Group. Statistical Office of the European Communities, Directorate of Social and Regional Statistics and Structural Plans. Luxembourg, 13–14 January 1997. *Document AISG/1/1997*.

Whiteford, P. (1985) *A Family's Needs: Equivalence Scales, Poverty and Social Security*, Research

Paper No. 27, Development Division, Canberra, Department of Social Security.

World Institute for Development Economics Research (WIDER). 1999. *World Income Inequality Database*, Beta 3. Helsinki, Finland: WIDER, November 8.