OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth

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OECD Better Life Initiative

OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth

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Foreword

Much of the recent work on developing metrics to go "beyond GDP" has focused on non-monetary dimensions of people's well-being, i.e. *on their quality of life. However, there are also important limits to the available information needed to adequately measure economic well-being, understood as people's command over resources or material living conditions. Understanding and improving people's well-being requires improved evidence in both areas in order to better inform policy makers and citizens alike of where, when and for whom life is getting better or worse. This is particularly important at a time when the most severe and prolonged recession in our life time still imposes a large toll on the lives of many people across the world.*

This report, which proposes a framework to support the joint analysis of household income consumption and wealth at the micro level – together with its companion report, which provides guidance on the measurement of the distribution of household wealth – is the result of the work of an OECD expert group, chaired by Bob McCall from the Australian Bureau of Statistics, which over the period 2011-2012, has endeavoured to improve existing metrics for measuring people's economic well-being at the micro level, i.e. *at the level of individuals and households. These two reports are part of the OECD's Better Life Initiative – a pioneering project launched in 2011, which aims to measure well-being and progress by looking at both people's material conditions and quality of life through eleven dimensions ranging from income and wealth, jobs and earnings, housing to health conditions, skills, social ties, work-life balance, civic engagement, personal security, environmental quality and subjective well-being.*

Household income, consumption and wealth are the three constituents of household economic well-being. At the aggregate level, the System of National Accounts (SNA) provides international standards for computing total amounts of these different components of household economic resources, and for detailing the links between them. However, the SNA refers to the household sector as a whole, and does not provide information on the distribution of the different types of resources among households with different characteristics. In addition, the goal of the SNA – to provide a consistent description of the full range of relations within the economic system – implies that the measurement of the various flows and stocks pertaining to the household sector may sometimes depart from households' own perceptions of their economic situation.

At the microeconomic level, survey and administrative-based measures of household income constitute well-established metrics for assessing the distribution of household economic well-being. International standards for measuring household income exist (i.e. *the 2011 edition of the* Canberra Group Handbook on Household Income Statistics)*, and most countries have put in place data collections in this field. But household income is only one dimension of household economic well-being. Both income and wealth determine people's consumption possibilities, while low levels of either income or wealth may not always imply a low level of consumption. The absence of a perfect correlation between income, consumption and wealth at the household level underscores the necessity of an integrated framework of analysis.*

The need for such a framework is best illustrated by the experience of several advanced economies in the period that preceded the 2008 financial crisis. While many observers, including the OECD, had drawn attention to the significant rise in income inequalities that had occurred since the mid-1990s, controversies surrounded the interpretation of these trends, i.e. whether they reflected permanent factors or rather an increased volatility of income flows, particularly at the lower end of the income scale. Some observers argued that higher inequalities in the distribution of household income were not matched by similar changes in the distribution of household consumption, interpreting this as evidence that household permanent income was not becoming more unequal. We know now that many households, including low and middle income ones, were accumulating unsustainable levels of debt, encouraged by higher house prices and easier access to credit. An integrated framework supporting the analysis of the distribution of all types of economic resources would, arguably, have allowed assessing the size of the imbalances that were accumulating, putting policy makers in a much better position to anticipate and react.

This report and the companion report on the distribution of household wealth fill an important gap in the existing statistical guidance at the international level. They benefitted from valuable inputs from the experts who actively participated in the OECD Expert Group, from comments provided by members of the OECD Committee on Statistics, and from contributions from those institutions (the national statistical offices of Australia and Switzerland, the Bank of Italy) that supported this work through their financial and in-kind contributions. I hope that these two reports will encourage more countries to undertake systematic data collections in this field, and to favour a progressive convergence in measurement approaches and classifications across countries.

As for other areas of statistics, there is still much to be learned, and this report sets out what we currently know about good practice. As our knowledge grows, this good practice will need to be revised in the light of the experience gained. My hope is that, as in the case of statistics pertaining to other dimensions of people's well-being, the guidance provided in this report will evolve over time in the direction of a full-fledged international statistical standard.

Martine Durand
OECD Chief Statistician
Director of the OECD Statistics Directorate

Preface

This Framework for Statistics on the Distribution of Household Income, Consumption and Wealth *(ICW Framework) has been developed in response to a growing demand for statistics that measure economic well-being from a household, or micro, perspective. Household economic well-being is a reflection of the consumption of goods and services by households, and of the income and wealth that supports such consumption.*

Micro statistics are currently most developed for the income dimension of economic well-being. But an examination of income alone cannot provide the insights required to identify that part of the population most in economic need, and to fully explain the economic decisions that households make in response to their specific circumstances. This report has been prepared to provide a framework for household micro data that comprehensively covers the three dimensions of economic well-being, namely income, consumption and wealth, in a fully integrated way.

The most recent international framework in the area is the Canberra Group Handbook on Household Income Statistics, Second Edition *(Canberra Group, 2011). The 2011 edition updated the first edition published in 2001, and was consistent with the resolution on standards for household income and expenditure statistics adopted by the International Conference of Labour Statisticians in December 2003. The ICW Framework presented here does not replace the 2011* Canberra Group Handbook *but rather provides a more complete picture of the relationship of income statistics to consumption and wealth statistics, and clarifies some income concepts in light of those relationships.*

The micro perspective of the ICW Framework presented in this volume complements the broad economy/production perspective of the macro statistics articulated in the System of National Accounts (SNA) by supporting the distributional analysis of economic well-being and by placing more emphasis on the non-market activity of households. The relationship between the ICW Framework and the SNA is described in detail, so that data prepared under the two frameworks can be analysed together in a meaningful way.

The ICW Framework was developed under the auspices of the OECD Committee of Statistics (CSTAT). The work was carried out by the OECD Expert Group on Micro Statistics on Household Income, Consumption and Wealth, whose members were drawn from a wide range of countries and that I had the honour of chairing. The Expert Group undertook two complementary tasks at the same time. The first was the preparation of the ICW Framework, while the second was the Guidelines for Micro Statistics on Household Wealth, *the first internationally agreed set of guidelines for the collection of household wealth micro statistics (OECD, 2013). Concurrently, the OECD Expert Group to Measure Disparities in a National Accounts Framework was established to consider how existing micro data could be used to produce measures of disparities between groups of households that are consistent with SNA concepts and totals for the household sector. The outputs of this second Expert Group are being released as a stream of OECD Working Papers.*

Drafts of the two reports by the OECD Expert Group on Micro Statistics on Household Income, Consumption and Wealth were submitted to the CSTAT for comments under the written procedure in January 2013. Both publications reflect the comments provided by CSTAT delegates, and are published under the authority of the CSTAT. Countries are encouraged to adopt the ICW Framework as a guide to developing and analysing statistics on the different components of household economic well-being. It is hoped that the release of this report will provide further impetus to work by the statistical community on these issues, through the establishment of an ongoing forum for the discussion and resolution of issues arising from implementation of the ICW Framework, the creation of a "city group" on consumption, and the establishment of a process for moving to a set of international standards.

Bob McColl
Australian Bureau of Statistics
Chair of the OECD Expert Group
on Micro-statistics on Household Income, Consumption and Wealth

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Expert Group members contributed to the individual chapters either as lead authors or contributors: for Chapter 1, OECD; for Chapter 2, United Kingdom, Eurostat, Australia and Israel; for Chapter 3, Australia, Netherlands, Portugal, European Central Bank, Israel and Canada; for Chapter 4, United States, Portugal, Eurostat, Korea and Israel; for Chapter 5, Poland, Portugal, Mexico, Eurostat and Israel; for Chapter 6, OECD and Israel; for Chapter 7, OECD, Romania, Eurostat, Israel and Canada; for Chapter 8, Australia, Poland, Denmark and Eurostat; for Chapter 9, OECD, US, Eurostat, CEPS/INSTEAD, LIS and Australia; for Chapter 10, OECD; for Annex A, Eurostat; for Annex B, OECD; and for Annex C, OECD.

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Executive summary

This publication presents an internationally agreed framework to support the joint analysis of micro-level statistics on household income, consumption and wealth. The publication aims to extend the existing international frameworks for measuring household income and consumption at the micro level to include wealth, and describes income, consumption and wealth as three separate but interrelated dimensions of people's economic well-being.

The design of social and economic policies can benefit greatly from distributional analysis of the various types of household economic resources. Historically, analysis of each type of economic resource has typically been done in isolation, with each category being considered as a separate proxy of household economic well-being. When these distributions are studied jointly, however, analysts can obtain additional insight into the economic well-being of the population, which would allow better identifying people who may be at risk of poverty and/or economic distress and better targeting policies and programmes to households in need.

Integrated analysis at the household level has significant data requirements that go beyond the measurement efforts currently undertaken in most countries. While no internationally recognised statistical frameworks to underpin such integrated analysis at the micro level currently exist, the need for development work in the area has been acknowledged in various forums, such as the report of the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz et al., 2009).

In response to the growing demand for relevant statistics, the OECD Committee on Statistics established an Expert Group in 2011, with wide international representation, to develop a framework for integrated micro statistics on household income consumption and wealth, and to develop guidelines for the collection and presentation of household wealth statistics. This report presents the integrated Income, Consumption and Wealth Framework (ICW Framework) developed by the Expert Group. The Expert Group also prepared the companion report, *Guidelines for Micro Statistics on Household Wealth*.

There is considerable alignment between the concepts presented in this report and those presented in the System of National Accounts (SNA), the framework used for macro statistics. But there are also some differences. In particular, the micro framework presented here focuses exclusively on households, and it consequently views transactions from a household perspective. In contrast, the SNA has a broader perspective, and sometimes transactions are viewed in different ways by different sectors. As both frameworks are influenced by the practicalities of collecting data relevant to the concepts to be measured, the different uses of micro and macro statistics influence the way those practicalities are considered.

People consume goods and services as an integral part of living. For some, their consumption is limited to the very basics of food, clothing and shelter. Others are able to consume much more. Broadly, consumption is the use of goods and services to directly satisfy an individual's personal needs and wants. Consumption expenditure is the value of the goods and services consumed.

Considered simply, and everything else being equal, people with higher levels of consumption or consumption expenditure can be regarded as having a higher level of current economic well-being than those with lower levels of consumption. However, for a fuller understanding of their economic well-being, it is necessary to also consider those economic resources such as income and wealth that enable consumption to take place now and in the future.

In essence, income is the on-going flow of economic resources received. For example, it includes money received in return for working, as profit from business undertakings and ownership of property, as a pension, or as government benefits. It also includes non-monetary receipts, known as in-kind income, such as the goods and services provided directly by employers as a form of wages and salaries, consumption goods and services provided directly by government, and the net value of goods and services produced for barter or for one's own consumption, such as in subsistence farming.

Wealth is the total stock of economic resources that is held at a point in time. It includes, for example, cash, businesses, real estate, motor vehicles, shares, and other non-financial and financial assets. Debts and other liabilities are negative wealth, and their value is subtracted from the value of non-financial and financial assets when measuring wealth, to give what is sometimes referred to as net worth.

For given levels of consumption and wealth, and everything else being equal, people with higher income can be regarded as having a higher level of economic well-being than people with lower income. With higher income, they have greater opportunities to increase consumption now, if desired, and to save income that might be used to finance consumption in the future. Similarly, for given levels of consumption and income, and everything else being equal, people with greater wealth can be regarded as having a higher level of economic well-being than people with lesser wealth. They have greater opportunities to increase consumption now, if desired, and to use their wealth to generate income and/or finance consumption in the future.

Thus income, consumption and wealth can be seen to be three different dimensions of economic well-being, and the ICW Framework is built around an integrated view of these three dimensions. In addition to describing the central concepts of income, consumption and wealth, this publication describes their relationships and additional concepts that, together, form a self-contained and complete system of describing the economic well-being of households.

These relationships can take many forms. First, both income and wealth can be utilised to enable consumption: if, over a period of time, income is greater than consumption, then saving adds to wealth; conversely, if income is less than consumption, dissaving subtracts from wealth. A second important relationship between wealth and income is the capacity for some forms of wealth to generate income, e.g. bank accounts usually earn interest and real estate can earn rent. Third, in addition to income, economic resources can be received in the form of capital transfers: while, in very general terms, income comprises those receipts that can be expected on a regular basis, capital transfers

are not received on a regular basis and tend to be large. All capital transfers received are added to the stock of wealth; they are assets obtained from another party where the recipient makes no payment to the provider of the asset. If payment is made, then there has been a purchase of an asset using wealth already owned, and there has been an exchange of one form of wealth for another.

Economic resources can be used or disbursed for purchasing consumption goods and services, using consumption goods and services obtained as income in kind, undertaking non-consumption expenditure such as payment of taxes or other current transfers, paying interest on consumer credit, and paying capital transfers. Overall, expenditure payments – whether consumption expenditure, current transfers paid, or payments on consumer credit – can be expected to be made on a regular basis, while capital transfers paid are payments that are made irregularly and tend to be large.

In addition to saving/dissaving, changes in the stock of wealth over a period of time reflect capital transfers received and paid, and some non-transactional flows: "other changes in the volume of wealth" such as those resulting from a natural disaster or war; holding gains and losses reflecting the impact of changing asset prices, and sometimes known as capital gains and losses; and the adjustment to pension, annuity and life insurance entitlements, which is required because ongoing payments of these entitlements are treated as income but sometimes partially constitute a run-down in savings.

This report has used the household as the primary unit for analysing micro data on income, consumption and wealth. A household is either an individual person or a group of persons who live together under the same housing arrangement and who combine to provide themselves with food and possibly other essentials of living. Households are best suited to most analysis of economic well-being because of the sharing of common economic resources between household members and because of the economies of scale achieved when dwellings and other household facilities are shared.

Because larger households can be expected to experience economies of scale from sharing, the per capita requirements of larger households are likely to be less than those of smaller households to achieve the same level of economic well-being. Equivalence scales can be used to adjust for these differences.

For some analysis, it may be appropriate to use smaller units than households, such as the family economic unit or the individual person. For data collection, however, information is best gathered at the household level for some items, especially those associated with housing, and at the level of all members of the same household for other items.

While most analysis relates to household variables, users of micro data are often more interested in analysing people according to the characteristics of their household rather than the household *per se*. Therefore it is recommended that tabulations of micro data report both the number of households with characteristics of interest and the number of people who live in those households. The latter are sometimes known as person-weighted statistics. This report recommends that summary statistics such as quantile ratios and Gini coefficients always be person-weighted.

The choice of the time period to be considered in analysing household income, consumption and wealth also has an impact on the detailed definition of the various flows and on the practicalities of collecting the required data. The preferred reference period for

implementing the integrated framework is one year, since some important types of income are received only once a year or may fluctuate substantially between seasons.

The report also discusses some of the practical issues involved in collecting integrated data on income, consumption and wealth. Considerable data are required to provide a full picture of a household's economic well-being in all three dimensions, with a significant reporting burden on respondents if the data are collected in a single survey. Therefore, this report also considers the combined use of both survey and administrative sources to obtain the relevant data, and of statistical matching as a tool to bring together data from different sources. Finally, the report describes a range of tools that can be used to present and analyse information about households' economic well-being in multiple dimensions, including the use of composite measures that combine all three dimensions into a single statistic.

The report recommends that the ICW Framework proposed in this publication be tested by countries and suggests that, in due course, the recommendations of the OECD Expert Group should be refreshed in the light of evolving practice, and developed into formal statistical standards. The report concludes by highlighting some of the limitations of the framework, and suggests a research agenda that would support further advances in the field of household micro statistics on economic well-being.

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Chapter 1

Introduction

This chapter describes the purpose of the Framework for Statistics on the Distribution of Household Income, Consumption and Wealth, *or the ICW Framework, its relationship with other international frameworks, and the way in which it was developed. It concludes with an overview of the structure and contents of the rest of the publication.*

Introduction

This publication presents an internationally agreed framework to support the joint analysis of micro-level statistics on household income, consumption and wealth. The publication aims to extend the existing international guidance for measuring household income and consumption to include wealth, and provides a new focus on income, consumption and wealth as three separate but interrelated dimensions of people's economic well-being.

Purpose of the framework

The design of social and economic policies can benefit greatly from data on the distribution of different types of economic resources among households with different characteristics. These data are needed to inform on the income circumstances of different households (including the redistributive impact of the tax and transfer systems), their consumption patterns, and the distribution of household assets and liabilities.

Analysis of the distribution of each type of economic resource is typically done in isolation, with each category being considered as a separate proxy of household economic well-being. When these distributions are studied in combination, however, analysts can obtain additional insight into the economic well-being of the population, such as identifying people who may be at risk of poverty and/or economic distress. Some households with low income, for example, may report adequate levels of consumption expenditure or wealth holdings, or vice-versa. Policies and programmes can be better targeted to households in need based on information on the joint distribution of all types of economic resources. These policies hold the promise of delivering improved economic well-being to individuals and better individual and societal outcomes across a range of dimensions of social concern.

Measures based on the joint distribution of the different types of economic resources can also provide insight into factors that impact on economic performance. They are, for example, relevant to analysing the barriers and incentives that affect labour force participation, and the effects of markets, policies and regulations on aggregate economic performance. For example, the coincident measurement of household income, consumption and wealth at the micro-level can inform on how changes in the level and composition of taxation and government spending can influence the level of aggregate demand in the economy in an effort to achieve the goals of full employment and economic growth.

However, integrated analysis at the household level has significant data requirements that go beyond the measurement efforts currently undertaken in most countries. No internationally recognised statistical frameworks to underpin such work currently exist.

The ICW Framework presented in this publication has been developed by an OECD Expert Group established in 2010, operating under the aegis of the OECD Committee on Statistics (CSTAT). The framework aims to describe the concepts of household income, consumption and wealth in an integrated and comprehensive way that is relevant to the analysis of household economic well-being. In the development of the ICW Framework, consideration was given to the practicalities of collecting and presenting the required micro-data, and some of the associated issues are discussed in later chapters of the publication. Consideration was also given to the relevant frameworks and standards that already exist, as outlined later in this chapter.

The ICW Framework is intended to assist national statistical offices and other data producers to develop data sets on income, consumption and wealth at the household level that are suitable for integrated analysis, and for facilitating comparisons between countries. The guidelines presented in this document are designed to be widely applicable, with relevance to countries that are at different stages of statistical development, that have different statistical infrastructures, and that operate in different economic and social environments.

Development of the framework

Historical background

For many years, national accounts based on the international standard of the System of National Accounts (SNA) have provided the essential information about countries' overall economic performance, including that of the household sector. For the household sector, the SNA provides aggregate measures of the various dimensions (disposable income, in-kind public transfers, consumption expenditure, investment, assets and liabilities) that shape household economic well-being. However, the national accounts do not provide information on the distribution, at the micro level, of these economic resources.

The need for distributional statistics has long been recognised. Following the 14th session of the United Nations Statistical Commission in 1966, a system of distribution statistics that covered household income, consumption and the accumulation of household wealth was to be gradually developed by the United Nations Statistical Office. The work was tied in with both the System of National Accounts (SNA) and the now obsolete System of Balances of the National Economy.[1]

In 1977, the United Nations Statistical Office published the *Provisional Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households* (United Nations, 1977). The aim of these Provisional Guidelines was to assist countries to collect and disseminate income distribution statistics and to support the international reporting and publication of comparable data. The need to link micro-level income distribution statistics with macro-level national accounting standards was emphasised. The Provisional Guidelines were to be revised concurrently with the revision of the 1968 SNA. The Conference of European Statisticians (CES) in particular began work to revise the Provisional Guidelines in the late 1980s and organised a number of work sessions and seminars on statistics on household income with this goal in mind. Special attention was paid to the revision of the SNA, as the revision process of the 1968 SNA had led to conceptual changes about the household sector and about the concept of income in

particular. However, due to limited resources, progress in the revision of the Provisional Guidelines was limited.

In the following years, there were various developments in international standards for micro data, although the emphasis tended to be on income statistics. In 2008, the CES completed an in-depth review of statistics on income, living conditions and poverty. An outcome of the CES review was the formation of a small international task force to undertake a limited update of the *Final Report and Recommendations of the Expert Group on Household Income Statistics* (2001), commonly referred to as the *Canberra Group Handbook* (CGH). The purpose of the update was to incorporate new developments in the area of household income measurement and to expand the guidelines to take into account these new developments. The objective was to help achieve greater harmonisation of income concepts and measurement at the household level across countries. The second edition of the *Canberra Group Handbook* (UNECE, 2011) was conceptually aligned with the international standards set out in the resolution on "standards for household income statistics" adopted by the International Conference of Labour Statisticians (ICLS) in December 2003 (ILO, 2004).

Over the past few years, various studies and reports have underlined the need for further development in the integrated analysis of household income, consumption and wealth data at the level of individual households.

- The *Canberra Group Handbook* (2001) recommended further research into the "relationships between income, expenditure and wealth". It noted that "… income is most often considered to be the best (or least bad) measure of individual welfare or utility. However, both consumption and wealth are important complementary measures of economic wellbeing" (p. 109). In 2011, the second edition of the *Canberra Group Handbook* stated that "data to enable harmonised analyses that consider the joint distributions of income, consumption and wealth require internationally agreed standards and frameworks to support practitioners and data users in the field" (p. 120).
- The Final Report (2003) of the 17th International Conference of Labour Statisticians stated: "Assistance should be provided to countries in establishing their programmes for collecting, compiling, and disseminating the statistics covered in the resolution on household income and expenditure statistics. To do this effectively and as a training tool, a technical guide could be prepared in collaboration with other interested institutions to give detailed guidance on the implementation of the guidelines in the resolution" (ILO, 2004).
- The 2008 CES in-depth review of income, living conditions and poverty statistics, mentioned above as instrumental in updating the *Canberra Group Handbook*, noted: "A wider initiative is needed to work towards an integrated framework of income, expenditures and wealth… by setting up a possible city group" (CES, 2008).[2]
- In 2009, the Commission on the Measurement of Economic Performance and Social Progress, established by the French Presidency, had the "aim… to identify the limits of GDP as an indicator of economic performance and social progress, including the problems with its measurement; to consider what additional information might be required for the production of more relevant indicators of social progress; to assess the feasibility of alternative measurement tools, and to discuss how to present the statistical information in an appropriate way" (Stiglitz et al., 2009, p. 7). The first five

recommendations of the Commission's Report have direct relevance to the development of measures of household income, consumption and wealth.

- *Recommendation 1:* When evaluating material well-being, look at income and consumption rather than production.
- *Recommendation 2:* Emphasise the household perspective.
- *Recommendation 3:* Consider income and consumption jointly with wealth.
- *Recommendation 4:* Give more prominence to the distribution of income, consumption and wealth.
- *Recommendation 5:* Broaden income measures to non-market activities.

- Recommendation 16 of the report to the G20 Finance Ministers and Central Bank Governors ("The Financial Crisis and Information Gaps", IMF, 2009) noted: "As the recommended improvements to data sources and categories are implemented, statistical experts (should) seek to compile distributional information (such as ranges and quartile information) alongside aggregate figures, wherever this is relevant. The Interagency Group on Economic and Financial Statistics (IAG) is encouraged to promote production and dissemination of these data in a frequent and timely manner". The G20 report encouraged the OECD to continue its efforts to link national accounts data with distributional information.

Together, all these reports underscore the need for statistics that measure economic well-being from a household/individual perspective, in addition to the broad economy/production perspective used in the System of National Accounts. While micro statistics are currently most developed for the income dimension, they need to be extended to include consumption and wealth in an integrated way, so as to allow the joint analysis of these three dimensions of economic well-being. Indeed, no international standards currently exist for the compilation of micro statistics on household wealth, although the publication of the companion report *Guidelines for Micro Statistics on Household Wealth* (OECD, 2013) represents an important milestone towards that goal. The integrated measures of economic well-being need to be comprehensive, and should ideally include the non-market economic activity of households. Finally, the micro measures would need to be related to the macro measures so that both sets of measures can be analysed together in a meaningful way.

Reflecting the growing demand for further progress in this field, the June 2010 meeting of the OECD Committee of Statistics (CSTAT) discussed a proposal prepared by Statistics Canada for a new activity aimed at developing an integrated framework for household income, consumption and wealth statistics at the micro level. A large number of countries supported this proposal, which was included in the Programme of Work of the OECD Statistics Directorate for the 2011-12 biennium. An Expert Group was set up in late 2010 to pursue this new work, alongside work to provide guidance on the development of micro statistics on household wealth.

OECD Expert Group on Micro Statistics on Household Income, Consumption and Wealth

The OECD Expert Group on Micro Statistics on Household Income, Consumption and Wealth brought together experts with experience in the collection and analysis of household economic resources at the micro level from a wide range of countries and from different regions of the world (Australia, Canada, Denmark, Hungary, Israel, Italy, Japan,

Korea, Mexico, the Netherlands, New Zealand, Poland, Portugal, Romania, Sweden, Switzerland, the United Kingdom and the United States). The OECD Expert Group also included representatives from the statistical office of the European Union (Eurostat), the UNECE, the European Central Bank and the Luxembourg Income Study, as well as analysts invited by the Secretariat based on their expertise in the field. Individual members and the organisations to which they were attached are listed in the *Acknowledgments* at the front of this publication.

The Group had three primary objectives:

- To develop statistical standards for those domains of household economic resources where they are currently lacking, i.e. wealth.
- To assess the consistency of standards in the various domains and present them within a coherent statistical framework (including the development of guidelines for the analysis and dissemination of these statistics).
- To consider practical challenges to the collection of information on the joint distribution of household income, consumption and wealth.

This publication is the result of the Expert Group's work on its second and third objectives. This work was closely linked to work pursued on the Group's first objective, which has resulted in the companion publication *Guidelines for Micro Statistics on Household Wealth* developed in parallel by the Group. The Expert Group operated mainly via electronic communication, supported by three face-to-face meetings. For each chapter in this publication, a lead person and two to three co-contributors were assigned. The lead person worked with the co-contributors and was responsible for managing all the outputs related to the production of a draft chapter. The OECD Secretariat assured the final editing of the report, and took the lead in incorporating comments provided by Delegates to the OECD Committee on Statistics in the finalisation of this report.

Relationship with other international standards

Harmonisation with other international standards was an important objective that guided the work of the Expert Group in developing the ICW Framework presented in this publication. Since micro statistics on household wealth are often analysed in conjunction with other micro and macro data, consistency enhances the usefulness of the statistics and facilitates the statistical integration of the different dimensions of household economic resources. The main standards that are relevant here are: *i)* the 2008 System of National Accounts; *ii)* the 2011 *Canberra Group Handbook on Household Income Statistics*; *iii)* the recommendations of the 17th International Conference of Labour Statisticians on household income and expenditure statistics, contained in its 2003 report; and *iv)* the 2006 UNECE/CES recommendations for the 2010 Censuses of Population and Housing.

The ICW Framework has been developed to maintain full consistency with the income concepts defined in the 2011 *Canberra Group Handbook* and the recommendations of the ICLS. The 2006 UNECE/CES recommendations for the 2010 Censuses of Population and Housing provided the basis for the definition of households used in this report.

There is considerable alignment between the concepts presented in the ICW Framework and those used in the SNA. But there are also some significant differences, reflecting the different focuses of the two frameworks and the different data sources that can be utilised in compiling data sets within the two frameworks. The similarities and

differences between the two frameworks are discussed in Chapter 3 and are described in more detail in Annex B of this publication.

Outline of the publication

This publication contains nine chapters and three annexes. A brief outline of the key features of each of the following chapters is presented below.

- Chapter 2 ("Economic well-being") provides a brief description of the concept of human well-being, with a particular emphasis on economic or material well-being. In doing so, the chapter highlights the importance of considering income, consumption and wealth together as part of a broader conceptual framework. The chapter concludes by setting out the broad policy, research and analytical uses of the micro-level information collected in these fields.
- Chapter 3 ("Integrated framework") outlines the main concepts used to describe and measure economic well-being at the micro-level, i.e. at the level of individuals and groups of individuals. It shows how the concepts of income, consumption and wealth relate to each other, and presents them in a self-contained and comprehensive framework. The chapter then describes other concepts that are relevant to the measurement of economic well-being, such as statistical units, reference periods and equivalence scales. Finally, the chapter discusses the relationship between the ICW Framework and other standards, presenting areas where this framework differs from the SNA, and highlighting some of the limitations of the proposed framework.
- Chapter 4 ("Household income") draws on the 2011 *Canberra Group Handbook* to describe the main uses of micro data on household income, and provides details about the component elements of household income that feature in the ICW Framework. The chapter also discusses sources of income data, and key statistical and measurement issues to be considered when collecting, compiling and disseminating micro data on household income.
- Chapter 5 ("Household consumption") focuses on consumption as the basis for meeting household economic needs. The chapter presents concepts and definitions associated with consumption, the different ways to use the information, and methods of collection, analysis and dissemination of micro data on consumption.
- Chapter 6 ("Household wealth") summarises much of the content of the companion OECD report *Guidelines for Micro Statistics on Household Wealth* that was developed in parallel to the ICW Framework. The chapter describes the main uses of household wealth micro-data, the main concepts and definitions relevant to measuring the stock and changes in household wealth, sources of wealth data, and key statistical and measurement issues to be considered when collecting, compiling and disseminating wealth data.
- Chapter 7 ("Integrated statistics") provides practical guidelines on how to collect household income, consumption and wealth statistics at the micro-level in an integrated way. The chapter discusses the collection of data through household surveys and from administrative records, and the creation of integrated data sets through the use of data-matching techniques to combine data sets from different sources.
- Chapter 8 ("Analytical framework") covers three important topics relevant to the analysis of income, consumption and wealth statistics. First, it discusses the use of equivalence scales as a means to improve comparisons between households of different size and

composition, extending the applicability of equivalence scales from income statistics to cover consumption and wealth micro-data. Second, the chapter describes different ways of undertaking the multi-dimensional analysis of income, consumption and wealth at the micro-level, including the use of composite measures that combine all three dimensions into a single statistic. The chapter also presents a case study of how income and expenditure micro-data have been used in Denmark to examine the redistributive impact of government benefits and taxes.

- Chapter 9 ("Next Steps") recommends the use of the ICW Framework by countries and suggests that, in due course, the recommendations of the OECD Expert Group should be refreshed in the light of evolving practice, leading to the establishment of international statistical standards. It also recommends that a City Group, or similar working group, be established to develop detailed guidelines on the collection of consumption data. The chapter concludes by highlighting some of the limitations of the ICW Framework, and suggests a research agenda that would support further advances in the field of household micro statistics on economic well-being.
- Annex A ("Detailed statistical framework and relationships between elements") lists in more detail all the elements of household income, consumption and wealth that are included in Chapter 3 and shows the relationships between them.
- Annex B ("Comparison of micro and macro frameworks") provides a detailed comparison between all the elements of the ICW Framework and the SNA 2008.
- Annex C ("An explanation of social assistance, pension schemes, insurance schemes, and similar concepts") provides a detailed discussion of these various concepts, which have similarities but also differences, and the different ways in which they are treated in the ICW Framework.

Notes

1. The System of Balances of the National Economy, 1971, originated in the former Soviet Union and was used in countries with centrally planned economies.
2. City Groups are informal gatherings of representatives from national statistical agencies established to address selected problems in statistical methods. Some of these groups have become formally known as "city groups". Examples of city groups in the field of social statistics include the Canberra Group on Household Income Statistics, the Rio Group on Poverty Statistics, the Siena Group on Social Statistics and the Delhi Group on Informal Sector Statistics.

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Chapter 2

Economic well-being

This chapter provides a brief introduction to the concept of human well-being, with a particular emphasis on economic (or material) well-being. In doing so, it highlights the importance of considering income, consumption and wealth together as part of a conceptual framework. The chapter then goes on to explain the nature of the OECD framework for measuring human well-being, and the role of economic well-being within this framework. It concludes by setting out the broad policy, research and analytical objectives/uses of information collected in these fields.

Introduction

In recent years, there have been increasing concerns about the adequacy of traditional macro-economic statistics, such as GDP, as measures of people's current and future living conditions. Moreover, there are broader concerns about the relevance of these figures as measures of national or societal well-being. On the micro side, there are concerns about the comparability and comprehensiveness of the statistics being produced. Recognising these deficiencies, there has been widespread interest in adding to, and improving upon, existing measures of household income, consumption and wealth as part of a process of developing more comprehensive measures of human well-being.

Defining well-being

Although the concept of well-being is widely used, there is no commonly agreed definition of just what it is. Moreover, the terms well-being, quality of life, happiness and life satisfaction are often used interchangeably. Table 2.1 presents examples of the

Table 2.1. **Examples of well-being definitions**

Definition	Reference
"This is a dynamic state, in which the individual is able to develop their potential, work productively and creatively, build strong and positive relationships with others, and contribute to their community. It is enhanced when an individual is able to fulfil their personal and social goals and achieve a sense of purpose in society."	New Economics Foundation, 2008
"Well-being is a state of being with others, where human needs are met, where one can act meaningfully to pursue one's goals, and where one enjoys a satisfactory quality of life."	ESRC Research Group on Wellbeing in Developing Countries *www.welldev.org.uk*
"The individual's experience, or perception, of how well he or she lives is taken as the criterion of quality of life."	Naess, 1999
"Subjective well-being research is concerned with individuals' subjective experience of their own lives."	Diener, Suh, Lucas and Smith, 1999
"Subjective well-being consists of three interrelated components: life satisfaction, pleasant affect, and unpleasant affect. Affect refers to pleasant and unpleasant moods and emotions, whereas life satisfaction refers to a cognitive sense of satisfaction with life." Differently from the "traditional clinical models of mental health, subjective well-being does not simply refer to an absence of negative experiences".	Diener, Suh, Lucas and Smith, 1999
"We find that surveys of well-being utilise one or more of three definitions: 1) satisfaction with life 2) health and ability/disability, and 3) composite indexes of positive functioning."	Kahn and Juster, 2002
"Well-being has been defined by individual characteristics of an inherently positive state (happiness). It has also been defined on a continuum from positive to negative, such as how one might measure self-esteem. Well-being can also be defined in terms of one's context (standard of living), absence of well-being (depression), or in a collective manner (shared understanding)."	Pollard and Lee, 2003
"Well-being stems from the degree of fit between individuals' perceptions of their objective situations and their needs, aspirations or values."	Andrews and Withey, 1976

definitions of well-being used in the literature. These definitions can be broadly classified into three main groups:

- General or global definitions that do no detail the possible components of well-being.
- Component definitions that break down well-being into its constituent parts, dimensions or domains, or identify key characteristics considered essential to evaluate well-being.
- Focused definitions that either explicitly or implicitly refer to just one or a few components, of well-being.

Despite the absence of a single definition of well-being, OECD (2011) argues that most experts and ordinary people around the world would agree that it requires meeting various human needs, some of which are essential (e.g. being in good health), and includes the ability to pursue one's goals, to thrive and feel satisfied with their life. OECD (2011) also argues that since well-being is a complex phenomenon and many of its determinants are strongly correlated with each other, assessing well-being requires a comprehensive framework that includes a large number of components and that, ideally, allows gauging how their interrelations shape people's lives. Reflecting this multi-dimensional approach, the OECD's Better Life Initiative, presented in OECD (2011), identifies three pillars for understanding and measuring people's well-being:

- *Material living conditions* (or economic well-being), which determine people's consumption possibilities and their command over resources.
- *Quality of life*, which is defined as the set of non-monetary attributes of individuals that shapes their opportunities and life chances, and has intrinsic value under different cultures and contexts.
- The *sustainability* of the socio-economic and natural systems where people live and work, which is important for well-being to last over time. Sustainability depends on how current human activities impact on the stocks of different types of capital (natural, economic, human and social) that underpin well-being.

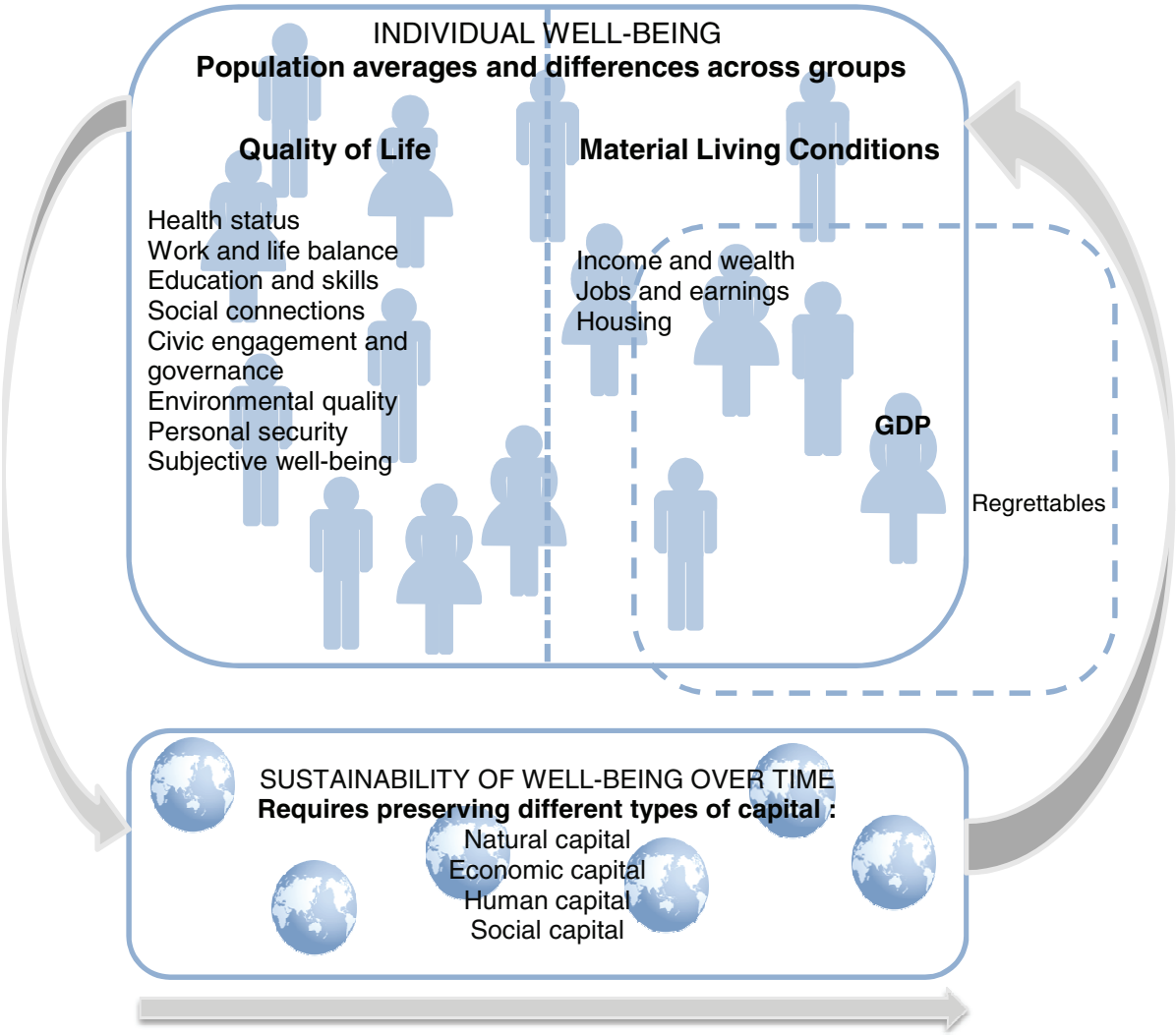
The OECD's approach draws closely on that proposed by Stiglitz et al. (2009) and by previous OECD work (Hall et al., 2010). The ICW Framework presented in this report has been developed from the viewpoint that material living conditions, or economic well-being, are a critical factor for overall well-being.

The importance of material living conditions for well-being

OECD (2011) argues that income and wealth are essential components of individual well-being. Income refers to the flow of economic resources that an individual or household receives over time. It includes wages and salaries and money earned through self-employment as well as resources received from other sources such as property, pensions and social transfers. These concepts and components of household income are further elaborated in the *Canberra Group Handbook on Household Income Statistics* (UNECE, 2011). In contrast, wealth is a "stock" concept: it refers to the value of accumulated assets at a given point in time. It includes the value of property, pensions and financial assets, along with physical assets such as vehicles and household goods. In calculating a measure of net wealth, debt and other liabilities are subtracted from the value of assets.

Income allows people to satisfy their needs and pursue many other goals that they deem important to their lives, while wealth makes it possible to sustain these choices over

Figure 2.1. **Framework for OECD's well-being indicators**



Source: OECD (2011).

time. Both income and wealth enhance individuals' freedom to choose the lives that they want to live. Moreover, increases in income have been associated with improvements in other dimensions of well-being, such as life expectancy, educational attainments, etc., although there are discussions on the strength of associations and the directions of causality. At the macroeconomic level, economic resources allow countries to invest in education, health, security, etc.

The importance of economic well-being to overall well-being has been recognised by almost all the institutions producing measures of well-being. For example:

- The Australian Bureau of Statistics includes household economic well-being as one of the dimensions of its Measures of Australia's Progress (MAP).[1]
- The UK Office for National Statistics has included "personal finance", which includes household income and wealth, its distribution and stability, amongst its proposed domains of national well-being (ONS, 2011) and has published proposals for reporting on economic well-being.

- The New Economics Foundation incorporates income into its framework for National Accounts of well-being (NEF, 2011).

The relationships between economic well-being and overall well-being is not always direct, particularly when comparing well-being over time, between individuals or through market prices. These issues are explored further in the sections below.

Changes in well-being over time

Generally, in a given society at a given time, income is positively related to reported subjective well-being, so that individuals with a higher income tend to report higher subjective well-being than those with a lower income. However, Graham and Pettinato (2002) present evidence that people's aspirations change over time so that their idea of the minimum satisfactory level of income increases over time (in a growing economy); this implies that one is forever chasing a receding target. Income growth may thus generate little increase in this component of well-being (even though, at each point in the growth process, the better-off are happier than the less well-off). This is consistent with the earlier work by Easterlin (1974), who reported that average national happiness does not appear to increase over long spans of time, in spite of large increases in per capita income, i.e. the so-called "Easterlin Paradox". Much of the above research is limited, however, in terms of fully understanding household economic well-being, as it relies on GDP per capita as a proxy of the typical income of each individual. These limitations come about both because GDP growth may differ from growth in household income and also because average income is generally a poor proxy of the typical (i.e. median) income.

Comparisons of well-being across individuals

Care also has to be taken when making comparisons between the well-being of individuals, especially when measured with a single indicator such as income. Economists have tended to argue that there is no meaningful way to make comparisons of welfare between different people, as there is no metric for comparing "utilities". Thus, since the degree of satisfaction of a person's preferences cannot be observed directly, assessments of well-being need to rely on proxies. The most commonly used proxy has been an economic variable, i.e. real income. Real income constrains a household's consumption possibilities while, for nations, production of both consumer and investment goods contributes to the well-being of households' today and in the future.

Sen (1999) argues that it is not enough to look at the resources available to individuals, because their abilities to transform those resources into functionings (i.e. their "capability" to "do and be") vary from individual to individual. A common illustration is that someone who needs a wheelchair will require more financial resources to achieve the same amount of mobility as someone who does not. Naturally, people's ability to transform the functionings they actually achieve into well-being also varies considerably between individuals.

Dunn, Gilbert and Wilson (2011) argue that the way in which individuals spend their money can influence the satisfaction they receive from their spending, whilst Taylor, Jenkins and Sacker (2011) report that an individual's financial capability – i.e. the ability to control their finances, make appropriate financial decisions, understand how to manage credit and debt and identify appropriate products and services – is an important determinant of the individual's subjective well-being, regardless of how much money they have.

These considerations highlight that simple comparisons of individual income levels are limited in their ability to compare levels of well-being across people. The capability approach therefore points towards the need for a richer and multi-dimensional perspective in order to make comparisons of individual well-being. This issue of variability between individuals and households is addressed, to a certain extent, by the use of equivalisation scales when analysing income, which take into account the composition of households.

Relationship between market values and well-being

The use of aggregate measures of economic resources drawn from the National Accounts, in particular Gross Domestic Product (GDP), as a proxy for economic well-being is based on the idea that valuing quantities through market prices assures that, in equilibrium and under various assumptions, these prices are representative of the marginal contributions of the different goods consumed to the utility of households.

Because economic activity is measured through market prices that, in a competitive market, equal the valuation of the marginal consumer (and are lower than the valuation of all non-marginal consumers), the benefit from consumption experienced by non-marginal consumers (the difference between their valuations and the prices they pay, known as consumer surplus) goes unaccounted for. Diamonds are counted as more valuable than water, for example, yet one could question whether diamonds contribute more to society's well-being, given that consumers of diamonds may have a higher valuation of water, which goes undetected as they pay only market prices. Further, the distortions caused by the presence of externalities (such as the cost to public health services from smoking, which result in the value of consuming a pack of cigarettes being lower to society than it is to the individual) and the existence of imperfectly competitive markets (such as the market for water) mean that market prices do not fully reflect marginal valuations. As a consequence, the amount paid for goods and services does not properly represent the utility or satisfaction, i.e. the actual well-being, obtained from those goods and services.

Development of economic indicators as proxies for well-being

The measurement and analysis of economic resources available to the population has a long-standing tradition, which has resulted in consistent, harmonised and regularly updated measures of economic resources. Within this tradition, two main approaches for measuring household income have emerged (UN, 2011):

- The macro approach, which has its roots in national accounts and in particular the accounting-based standards laid out in the System of National Accounts (SNA).
- The micro approach, which has its roots in microeconomics and particularly in the study of poverty and its effect on different socio-economic groups within society.

From the start, economists and statisticians have been aware of the limitations of using aggregate income measures as proxies for well-being. Marshall and Pigou were explicit that "economic welfare" is only one component of overall welfare, or well-being. Simon Kuznets, one of the pioneers of the System of National Accounts, in his first report to the US Congress in 1934, noted that "the welfare of a nation can, therefore, scarcely be inferred from a measure of national income…" (Kuznets, 1934). Similarly, the System of National Accounts explicitly recognises the limitations of GDP as a measure of well-being: "Movements of GDP cannot be expected to be good indicators of changes in total welfare

unless all the other factors influencing welfare happen to remain constant, which history shows is never the case" (UN, 2011, paragraph 1.69).

Policy makers have never focused single-mindedly on GDP growth as the single metric for measuring well-being. They try to enhance the overall well-being of citizens by taking into account a range of factors that reach beyond the total value of the goods and services produced by a country in a given year, to include distributional concerns and environmental quality. Further, economists and statisticians continue to explore ways to improve measures of well-being, including measures of economic well-being.

Many of the measures referred to by Stiglitz et al. (2009), which were discussed in Chapter 1, are already published by statistical institutions as part of their National Accounts. Thus, one of the main challenges is to raise the prominence of these measures. Another challenge is to ensure consistency in definitions and methodologies, e.g. through greater harmonisation of the definition of the household sector and the treatment of quasi-corporations.

Stiglitz et al. (2009) also argued that the availability, timeliness and comparability of micro data on household economic conditions need to be improved. This applies in particular to micro data on household wealth, an area where no international standards currently exist and where few countries undertake regular compilations.[2] Steps also need to be taken to develop instruments that would help to understand the relationship between income and other dimensions of people's material conditions, e.g. joint surveys on household income, consumption and wealth or the use of statistical-matching or data-linking techniques to combine different sources. In response to these demands, OECD (2011) identified the development of an integrated framework for measuring household income, consumption expenditures and wealth at the micro-level as one of the priorities for its future work.

The measurement of economic well-being: The importance of micro data

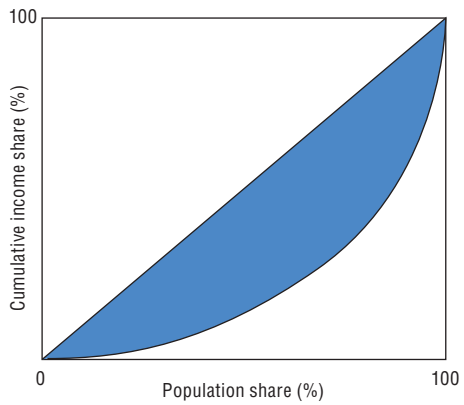
SNA data, or macro data, are sectoral aggregates compiled from many sources and presented within a broad framework that allows mapping the relations between different accounts and institutional sectors of the economy. Generally, SNA data provide only aggregated information for the household sector as a whole. As only aggregate information is needed for this purpose, greater use can be made of partial data sources, imputation or estimation. SNA data also have the advantage of being fully consistent. However, it is typically not possible to use these data to look at the distribution of household economic resources within a country.

In contrast, micro data sets can be used to analyse not only the levels (aggregates), but also the distributions of income, consumption and wealth across the population, for various subgroups, and over time. The data can provide important insights into the economic well-being of the typical person; for example, while average household income and wealth have increased substantially in many countries during the last two decades, not all households in these countries have gained from this, reflecting widening inequalities. For this reason, both the OECD (2011) and Stiglitz et al. (2009) argued that when assessing well-being, it is better to emphasise the perspective of households and individuals, rather than the aggregate conditions of the economy, since there may be a discrepancy between the economy-wide economic situation and the material well-being of households.

Both of these reports also emphasised the need to look at the distribution of economic well-being across individuals. This is especially important when there are disparities in achievements across population groups and when these are correlated across dimensions (e.g. when the likelihood of earning a low income is correlated with low educational achievement, poor health status, poor housing, etc.). Several authors have reported that the relative position of an individual in society also affects their subjective well-being, with those higher up in the income distribution generally reporting higher well-being even after controlling for their absolute income (Alesina et al., 2004; Luttmer, 2005; Ferrer-i-Carbonell, 2005; and Clark, 2003).

The collection of micro-data in this area allows producing supplementary statistics such as Lorentz curves and Gini coefficients. A Lorenz curve for income is created by ranking households (or individuals) from the poorest to the richest, and plotting the cumulative share of household income and the cumulative share of the number of households, as proportions of the total household income and the total number of households, respectively. The cumulative share of households gives a 45 degree line. When the cumulative share of income also gives a 45 degree line, this represents a situation where income is equally divided amongst all households. Higher income inequality is represented by an increase in the area between the cumulative share of household income curve and the cumulative share of households curve. Figure 2.2 provides an example of a Lorenz Curve.

Figure 2.2. **Example of Lorenz curve for income**



The Gini coefficient is a summary measure of income (or wealth) dispersion in the population that is derived from the Lorenz curve. Typically, Gini coefficients are scaled from 0 to 100 per cent, with a value of 0 indicating perfect equality and a value of 100 indicating that one household or individual has all the income. This measure is easy to understand, and has a number of appealing properties, such as summarising in a single number the income differences between each pair of people, rather than measuring distances relative to an arbitrary reference point such as the mean. This measure does nevertheless have shortcomings (e.g. it can exhibit inconsistencies between national and sub-national measures; and it cannot be interpreted for variables with negative values, such as net wealth); for a discussion of the properties of the Gini index, see Sen and Foster (1998).

Measures of low income, particularly when accompanied by low wealth, are also important, as low-income people typically experience deprivations in several domains, not

just material ones. Indicators of low income usually look at its prevalence (i.e. headcount measures of the share of the population falling below a given income threshold) and intensity (i.e. gap measures of the average income shortfall of the poor expressed as a percentage of the income threshold). The thresholds used in these measures can be either relative or absolute. An example of a relative threshold is that used for Eurostat's at-risk-of-poverty indicator, which defines individuals as being at risk of poverty if their equivalised household disposable income is below 60% of the national median. In contrast, the US Census Bureau uses absolute thresholds, updated annually for inflation, for its headline poverty statistics. In addition to such cross-sectional indicators of low income, longitudinal micro data are also used by numerous organisations to identify the extent of persistent economic hardship, along with the characteristics of people who move out of persistent poverty versus those who stay.

These approaches differ from the approach of several authors, e.g. Atkinson (1970), who have attempted to incorporate distributional considerations by adjusting measures of national income to reflect distribution. Arrow (1951) showed that, under a plausible set of assumptions, social orderings of various states cannot be based exclusively on individuals' preferences, and that distributional judgments are needed to choose between alternative philosophies of social justice. In other words, while summary statistics can be compiled to reflect differences in income distributions, a value judgment is required to choose one distribution as being preferable to another.

Further work is needed to establish the consequences of changes in the distribution of economic well-being, and whether the typical person living in a country characterised by a relatively more equal distribution of economic well-being is necessarily better-off in terms of economic well-being than those living in countries with more unequal distributions, particularly in the developed world. It is also not clear whether shifts in the distribution of economic well-being will benefit or hurt overall well-being. Moreover, one cannot simply shift distribution in a mechanistic way, i.e. leaving the rest of the society constant. Often, making the distribution flatter will have consequences for incentives, which is one of the reasons why the overall result is so difficult to assess. However, issues of distribution always enter political debate, which makes it important to measure distributional impacts transparently.

Households and individuals

While income is usually received by individuals, it is often pooled within households. In particular, parents share their income with their dependent children. Moreover, when people share a dwelling, they enjoy economies of scale in the provision of housing services, which is usually the largest single cost of living incurred by households. Thus, when looking at economic well-being it is generally more appropriate to do so at a household level. In order to allow for households with different compositions to be analysed in a sensible way, household incomes are normally adjusted through the use of an equivalence scale. This reflects the common-sense notion that, in order to enjoy a comparable standard of living, a household of, for example, three adults will need a higher level of income than a household of one person. Equivalisation is discussed in more detail in Chapter 4 (United Nations, 2011).

Non-market production of household services enhances material well-being

Final consumption, as defined and measured in the national accounts, focuses on marketable goods and services bought by households. While there is widespread

agreement that many non-marketable services (such as own-produced meals, child care, etc.) contribute to people's material well-being, most of these services fall outside the production boundary of the national accounts and do not enter into the standard measurement of living standards – the only exceptions being dwelling services that benefit home-owners. Ahmad and Koh (2011) have produced experimental measures of the monetary value of the own-account production of services by households for several OECD countries. Their estimates of the non-market consumption of household services highlight two main results. First, the value of own-account services of households is significant but varies across countries according to the method used to value the time that households devote to produce these services. Second, including own-account services produced by households in measures of consumption per capita does not fundamentally change the position of countries in international comparisons, although countries with lower per capita income and lower "marketisation" in the production of household services tend to catch up relative to others. Much more work is needed to consolidate the methodology and produce these estimates on a more systematic basis, as suggested in Eurostat (2003), Landefeld et al. (2009) and ONS (2011).

Accounting for changes in the quality of goods and services

Stiglitz et al. (2009) noted that another challenge for compilers of national accounts is capturing changes in the quality of the goods and services produced. Products that are complex, multi-dimensional and subject to rapid change account for an increasing share of economic output. This is obvious for goods like cars, computers and washing machines but is even truer for services, such as medical services, educational services, information and communication technologies, research activities and financial services. In some countries and sectors, increasing output is more a matter of increases in the quality of the goods and services produced and consumed rather than of increases in their quantity. Capturing this change in quality is a challenge, yet is vital to measuring real income and real consumption in an appropriate way. Under-estimating quality improvements is equivalent to over-estimating the rate of inflation, and therefore to under-estimating real income. The opposite is true when quality improvements are overstated.

The multi-dimensional nature of household economic well-being

Traditionally, analyses of economic well-being have focussed on a single dimension of household economic resources. In many developed countries, such studies have generally used income data, reflecting the relative frequency with which data on income are available and also that for many households income is the most important economic resource for meeting everyday living expenses.

However, the notion of household economic well-being is multi-dimensional, and is better understood by looking simultaneously at household income, consumption expenditure and wealth. While there are definitional and scope issues with respect to the measurement of each of these items (e.g. inclusion of non-market income sources in measures of household income; accounting for quality changes in measures of household expenditures; inclusion of human capital or pension wealth in measures of household wealth), it is important to look at them comprehensively, so as to assess the coherence of the various measures and to make sure that all critical elements are taken into account.

The importance of looking at consumption

It is the consumption of goods and services along with other inputs such as time that ultimately satisfies a household's needs and wants. Because of this, consumption is a more important determinant of economic well-being than income alone. Indeed, Brewer and O'Dea (2012) and others (see Noll, 2007 for a review) argue that it is preferable to consider the distribution of consumption rather than income on both theoretical and pragmatic grounds.

On a theoretical ground, households can smooth consumption by, for example, adjusting savings or drawing on wealth and borrowing. Incomes may also be more volatile, a finding that led to Friedman's "permanent income hypothesis", which suggests that decisions made by consumers are based on long-term income expectations rather than their current income. Therefore, because consumption expenditures fluctuate less than incomes, they can be considered a better proxy of living standards. This view is supported in a number of studies, e.g. Cutler and Katz (1992) and Jorgenson and Slesnick (1987), which find stronger relationships between consumption and subjective well-being than between income and subjective well-being.

Beyond these conceptual arguments, there is also the practical consideration that evidence from a range of countries suggests a general tendency for income to be under-reported by households with low levels of resources, whilst the reporting of expenditure by this group is relatively accurate (e.g. Meyer and Sullivan, 2011; Brewer and O'Dea, 2012). This income under-reporting partially explains the general finding that survey respondents reporting the lowest incomes typically do not have the lowest expenditure or material living conditions, although consumption smoothing may also play a role.

It should, however, be recognised that, as collecting data on expenditure, from which consumption is derived, involves the use of diary studies, there are also measurement issues associated with consumption. Evidence suggests that, in contrast to income, the under-reporting of expenditure is greatest amongst households with high levels of resources (Meyer and Sullivan, 2011; Brewer and O'Dea, 2012). This is compounded by further evidence suggesting that unit non-response in expenditure surveys may be higher for households at the upper end of the distribution (Sabelhaus et al., 2011).

Surveys collecting household expenditure data have become increasingly common in recent years. However, they are often undertaken less frequently than income surveys because of the resources required to collect accurate data. Despite this, some countries have had annual expenditure surveys in place for many years (e.g. the US Consumer Expenditure Survey since 1980, the UK Family Expenditure Survey (now the Living Costs & Food survey) since 1957, which provide a wealth of historic data on patterns of consumption.

Although estimates of household consumption used in economic analysis are produced from expenditure data, consumption also includes inter-household in-kind transfers of gifts and services and social transfers in kind. However, these aspects of consumption are generally missing from the data, due to the challenges involved in its collection. The distinction between consumption and expenditure and the issues around data collection are explored more fully in Chapter 5.

The importance of looking at wealth

Income provides only a partial view of the economic resources available to support consumption. Income, a flow measure, can be quite volatile for people making transitions

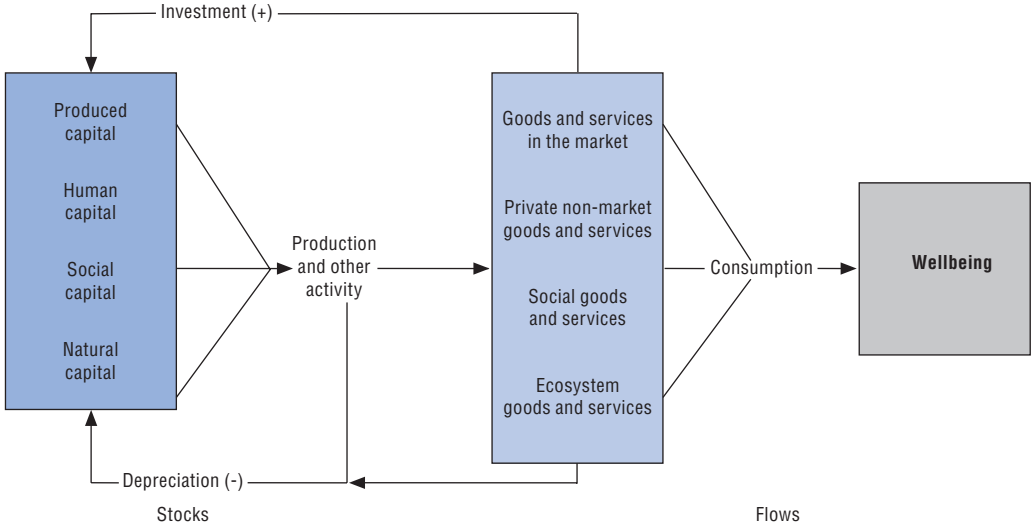
between jobs, changing their hours of work, moving into or out of study, increasing or reducing the time spent caring for children, or taking extended breaks from work. Wealth, a stock measure, is more stable over time, reflecting accumulated saving and investments. However, the value of wealth can drop dramatically in the event of crashes in the stock exchange or the real estate markets. Households can use wealth to consume more than income, or they may consume less than their income, and thus save. Wealth allows individuals to smooth consumption over time and to protect them from unexpected changes to income. Households that are "asset rich and income poor" can be expected to have a higher material standard of living than would be indicated by their income alone.

Households with reserves of wealth can also utilise these to generate income and to support a higher standard of living. While some wealth is held in assets that are not easily converted into money, its existence may allow people to borrow to finance expenditures, e.g. for house extensions, motor vehicle purchases, and so on.

Headey and Wooden (2004) and Graham and Pettinato (2002) report positive relationships between wealth and measures of subjective well-being. These studies suggest a well-being benefit from the presence of assets or from the ability to save, which may reflect lower expenditure needs and consequently the ability of income to meet needs. Brown, Taylor and Wheatley Price (2005), Borooah (2005) and Cummins et al. (2004) found a negative relationship between measures of indebtedness and measures of subjective well-being. However, it is difficult to determine a clear relationship between debt and subjective well-being. Large debts may indicate a very good credit rating, and can be used to finance investments rather than consumption. Secured debts, such as a mortgage, or debts for investments, have not been found to impact negatively on life satisfaction (Brown, Taylor and Wheatley Price, 2005; Cummins et al. (2004).

Stiglitz et al. (2009) argued that a broader definition of wealth, including natural capital and human capital, could provide a better understanding of material well-being.[3] Several institutions have incorporated these concepts in their conceptual frameworks. The UK's Social Impacts Taskforce (Harper and Price, 2011) also emphasises the capital approach in its framework for measuring well-being (Figure 2.3). These frameworks highlight that,

Figure 2.3. **The impacts of capital stocks for the sustainability of well-being**



Source: Harper and Price (2011).

without sufficient investment in capital stocks, future well-being could be reduced, for example if the stock of machinery is depreciated without investment in repair and replacement, current well-being may increase but at the expense of future well-being.

Uses of income, consumption and wealth micro data

The *Canberra Group Handbook* (UNECE, 2011) identified three main purposes for compiling information on the distribution of economic well-being:

- First, a desire to understand the distribution of material well-being within society, and how this is related to the way in which societies are organised.
- Second, the concern of policy makers to assess the impact of both universal and targeted actions on different socio-economic groups. Examples of policy issues where micro data on material well-being are important include welfare programmes, taxation and other fiscal policies, housing, education, labour market and health.
- Third, an interest in the distribution of material well-being and people's ability to acquire goods and services to satisfy their needs, e.g. studies of poverty and social exclusion, and research on consumer behaviour.

There are a number of important questions raised by United Nations (2011) and others that producers of statistics need to address:

- How unequal is the distribution of material well-being in a given country? How does this compare with earlier years, or with other countries?
- What are the characteristics and circumstances of households with low material well-being or of considered to be at risk of poverty? Which groups are in greatest need of financial support? How does this compare with earlier years, or with other countries?
- What are the characteristics of people who experience persistent economic hardship? How do the characteristics of people who move out of poverty compare with those of people who remain poor?
- Is the average or typical level of material well-being growing or declining over time? What might this mean for macro-economic policies?
- How do tax transfer systems affect the economic well-being of particular groups within the population?
- What is the impact of major life events on people's economic resources?
- Do people have sufficient resources in their working lives and in retirement to maintain an adequate standard of living?

Typically, the main focus of interest is on changes over time, with differences between countries coming a close second. While the national accounts provide essential information about the overall performance for an economy, and aggregate outcomes for households, it is micro statistics on household income, consumption and wealth that inform our understanding of the distribution of these resources over time, across regions or between sub-groups of the population.

Conclusions

This chapter has introduced economic well-being as an essential part of human well-being, and discussed some of the issues concerning the use of measures of economic well-being as indicators of overall well-being. In particular, the chapter has highlighted the

importance of micro data on income, consumption and wealth in order to examine the distribution of economic resources between individuals and households. It has also stressed the need for a multi-dimensional approach that considers these three dimensions together, in order to gain a more complete understanding of household economic well-being.

International organisations such as the OECD and Eurostat (the statistical office of the European community) are increasingly working together to develop wider measures of progress, well-being and sustainable development, allowing meaningful comparisons between countries. Examples of this include the "one-off" well-being module to be added to the EU Survey of Incomes and Living Conditions (EU-SILC) in 2013, the work of the European Net-SILC2 programme to combine income and material deprivation data from EU-SILC with expenditure data from Household Budget Surveys, and the development of indicators for monitoring changes in well-being over time.[4] The challenge is to get the right balance between meeting international needs and meeting the need for better statistics on national progress within a country.

The ICW Framework presented in this report has been developed with the aim of assisting in the development of comprehensive and consistent micro-data and statistics in these areas. The ICW Framework is fully consistent with other agreed standards and guidance on individual domains, such as UNECE (2011). It aims to bring these together into a single reference document to support research and analysis in both single and multiple dimensions. The ICW Framework is also designed to complement the SNA, which provides the main statistical framework for the analysis of household income, consumption and wealth data at the macro level.

Notes

1. *www.abs.gov.au/AUSSTATS/abs@.nsf/mf/1370.0*.
2. One current example of international co-ordination in the area of data collection on wealth is the Household Finance and Consumption Survey (HFCS), which is currently undertaken by the 17 euro-area countries and co-ordinated by the European Central Bank.
3. Several countries are developing measures of human capital. The OECD has established a consortium to improve measures of human capital. Liu (2011) summarises this work.
4. See *www.essnet-portal.eu/net-silc2*.

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Chapter 3

Integrated framework

This chapter outlines the main concepts used to describe and measure economic well-being at the micro-level, e.g. at the level of individuals and groups of individuals.

Introduction

Chapter 2 introduced economic well-being as an essential component of human well-being. The concepts adopted in this report have been chosen because they provide an accurate of description of the phenomena that analysts and policy makers are trying to capture, and because they have been judged to provide the most suitable foundation for compiling micro statistics on income, consumption and wealth that are comprehensive and that can be integrated with each other. They therefore provide a sound basis for examining each of the various dimensions of economic well-being and the relationships between those dimensions.

The integrated framework for micro data on income, consumption and wealth presented in this report (the ICW Framework) has much in common with the framework for macro data developed in the System of National Accounts (SNA). However, while maintaining consistency with the SNA in most respects, the micro data framework reflects a household perspective, not an economy-wide perspective. It also differs from the SNA in places because it has a focus on reflecting variations in economic well-being *within* the household sector, whereas the SNA has a focus on providing aggregate income, consumption and wealth measures for the sector as a whole. Differences between the two are discussed in this chapter, with a detailed listing of the differences provided in Annex B.

The first sections of this chapter describe the underlying concepts of income, consumption and wealth, and the relationships between them. They are followed by more in-depth discussion of two important cross-cutting issues – income in kind and its relationship to consumption and wealth, and the boundary between current and capital transactions. The sections that then follow discuss concepts that are required to give the context in which data on income, consumption and wealth can be analysed. These include the statistical units and reference period to which the data relate, the use of equivalence scales to obtain comparable data for different-sized units, valuation issues, and managing price differences over time and across geography. The chapter concludes discussing the relationship between the ICW Framework and the SNA and other international frameworks and standards, followed by a summary.

The chapter is supported by three annexes. Annex A presents the ICW Framework at a detailed level and shows the relationships between the various elements. Annex B is the detailed listing of the differences between the ICW Framework and the SNA. Annex C provides a detailed description of the terminology and concepts underlying social assistance, pensions, social insurance, other insurance and related items.

Income, consumption, wealth and economic well-being

People consume goods and services as an integral part of living. For some people, consumption is limited to the very basics of food, clothing and shelter. Others consume much more, with higher standards of food, clothing and housing, and also medical care, recreational goods and services, education and the like. Broadly speaking, consumption is the use of goods and services to directly satisfy a person's needs and wants. Consumption expenditure is the value of the goods and services consumed.

Considered simply, and everything else being equal, people with higher levels of consumption or consumption expenditure can be regarded as having a higher level of current economic well-being than those with lower levels of consumption. However, for a fuller understanding of economic well-being, it is also necessary to consider the economic resources of income and wealth that enable consumption to take place now and in the future.

In essence, income is the on-going flow of economic resources received. It includes money received in return for working, as profit from business undertakings and ownership of property, or as a pension. It also includes any corresponding non-monetary receipts, known as in-kind income. Income in kind includes, for example, the goods and services provided directly by employers as a form of wages and salaries, those provided directly by government, and the net value of goods and services produced for barter or for one's own consumption, such as from subsistence farming. The value of that part of income in kind made up of consumption goods and services is also included in consumption expenditure.

If income is greater than consumption expenditure, saving has taken place and wealth has been increased. However, if income is less than consumption expenditure, there has been dissaving and the stock of wealth has decreased.

Wealth is the total stock of economic resources held at a point in time. It includes, for example, cash held, the value of unincorporated businesses and property owned, motor vehicles, shares, and other non-financial and financial assets. Debts and other liabilities are negative wealth, and their value is subtracted from the value of non-financial and financial assets when measuring wealth.

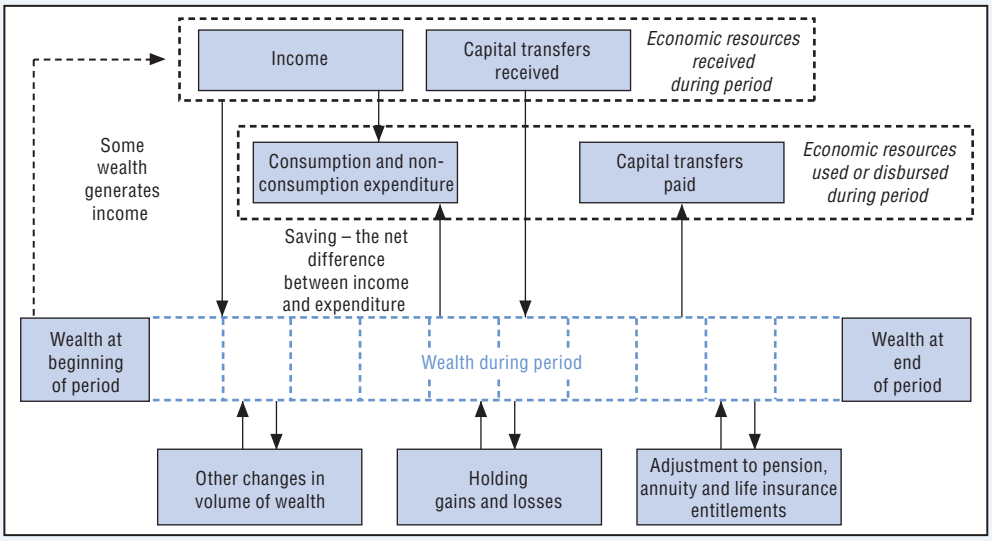
For given levels of consumption and wealth, and everything else being equal, people with a higher income can be regarded as having a higher level of economic well-being than people with a lower income.[1] Higher incomes give people a greater opportunity to increase consumption now, if desired, and to save income that might be used to finance consumption in the future.

Similarly, for given levels of consumption and income, and everything else being equal, people with greater wealth can be regarded as having a higher level of economic well-being than people with less wealth. The former have more opportunity to increase consumption now, if desired, and to use their wealth to generate income and/or finance consumption in the future. Even if wealth cannot be liquidated to finance current consumption, it can often be used as security to obtain a loan that can finance consumption. Loans obtained using wealth as security are likely to be borrowed at a more favourable interest rate than those available to people who have little or no wealth, regardless of whether the loan is used to finance current consumption or to purchase income-generating assets. Finally, some forms of wealth tend to experience asset price increases above the general rate of inflation, with the increased wealth used to finance future consumption.

Integrated framework of income, consumption and wealth

The Income, Consumption and Wealth Framework is built around the basic concepts of income, consumption and wealth and the relationships described in the previous paragraphs. Box 3.1 illustrates this integrated framework, along with some additional concepts and relationships.

Box 3.1. **Integrated framework of income, consumption and wealth**



Economic resources received over a period of time are regarded as either income or capital transfers received. In very general terms, income comprises those receipts that can be expected on a regular basis. In contrast, capital transfers are not received on a regular basis, tend to be large, and are often described as windfall gains. *Capital transfers received* are assets obtained from another party where the recipient makes no payment to the provider of the asset.

The economic resources already available at the beginning of the period constitute wealth. During the period, most income is added to the stock of wealth, even if only for a very short time. For example, wages are usually paid as a deposit into the employee's bank account or as cash in hand, both of which are forms of wealth. However, in-kind income comprising consumption goods and services is regarded, for simplicity in recording, as being consumed as it is received and is therefore not added to wealth (such as in stocks of food). All capital transfers received are added to the stock of wealth.

Economic resources can be used or disbursed by purchasing consumption goods and services, by using consumption goods and services obtained as income in kind, by undertaking non-consumption expenditure such as the payment of taxes or other current transfers (deducted in deriving disposable income), by paying interest on consumer credit, and by paying capital transfers. Very broadly, *current expenditure payments* – whether consumption expenditure, current transfers paid, or payments on consumer credit – are payments that can be expected to be made on a regular basis. On the other hand, *capital*

transfers paid are payments that are not likely to be made regularly and tend to be large. Most current expenditure and all capital transfer payments utilise economic resources held as wealth, even if those resources have only been held as wealth for a brief period of time (such as wages deposited in a bank account).

Wealth is the stock of economic resources held by a person at any point of time. Wealth comprises non-financial assets such as dwellings and financial assets such as cash and stocks (shares) in corporations. Financial assets may contain negative elements in the form of loans, and therefore wealth is sometimes known as *net worth*.

The value of wealth normally changes frequently either as economic resources are added or withdrawn, or as asset prices change. For most purposes, it is of little interest to track all the additions to and withdrawals from wealth, or the many price changes, but it is of interest to know the net position at the end of the period.

In addition to saving/dissaving during the period, changes in the stock of wealth reflect capital transfers received and paid, and some non-transactional flows: *other changes in the volume of wealth* such as those resulting from a natural disaster or war; *holding gains and losses* reflecting the impact of changing asset prices on wealth, and sometimes known as capital gains and losses; and the *adjustment to pension, annuity and life insurance entitlements*, which is explained as part of the more detailed discussion of wealth later in this chapter.

There are secondary relationships between income and wealth that can also be considered. Wealth is a stock of economic resources in itself, but that stock often generates additional economic resources. For example, personal businesses generate self-employment income, bank deposits usually earn interest, shares generate dividends, and home-owners receive rent. The economic resources generated may be in kind, e.g. owner-occupiers of dwellings receive income in the form of housing services from those dwellings. These relationships are shown in more detail in Annex A. Wealth may also be used as security to obtain a loan, which is then used to generate income and/or finance consumption at a more favourable rate than that available to people who have little or no wealth.

Income, consumption and wealth statistics comprise data on *stocks and flows*. Wealth is the stock of resources held at a point in time. The flows are the transactions making up income, consumption and other current expenditure, and capital transfers, plus the non-transactional flows listed above. The balance of these flows over a period of time determines the change in the stock of wealth between the beginning and the end of the period. Also, when investment transactions are made and one form of asset is exchanged for another, there are flows between the asset classes that make up wealth.

Since by definition the flows and stocks in the ICW Framework balance, the framework can be viewed as a set of accounts with an income account, a current expenditure account, a capital account, and a balance sheet. Such a perspective is particularly important when considering a data item such as saving, since saving is a residual value that can only be derived, e.g. by subtracting total current expenditure from total income.

In order for the accounts to "balance", it is essential that the definitions of the detailed components be consistent between the accounts. If it is not possible to obtain a high degree of consistency, it is not possible to reliably estimate residual values such as saving. Breakdowns of aggregates from the various dimensions (income, consumption and wealth) should also use consistent treatments and classifications, so that data from one dimension can be related to data from another dimension. For example, data on income from

investments should be defined and classified in a way that is consistent with the definitions and classifications underlying the wealth data on those investments.

Table 3.1 presents the main elements of the income, consumption and wealth framework, and describes how the transactional flows can be aggregated in an internally consistent manner. An overview of the framework elements, along with definitions for the key aggregates, are given in the following sections, with more detailed discussion in the following chapters. A further breakdown of the elements and a mapping of the relationships between them is provided in Annex A.

Table 3.1. **Income, consumption and wealth – main elements and relationships**

	INCOME	
I1	Income from employment (both paid and self-employment)	
I2	Property income	
I3	Income from production of household services for own consumption	
IP	**Total primary income**	= I1 + I2 + I3
I4	Current transfers received (excluding social transfers in kind)	
IT	**Total income**	= IP + I4
	Less current transfers paid	= E2
ID	**Disposable income**	= IT – E2
I5	Social transfers in kind (STIK)	= E4
IAD	**Adjusted disposable income**	= ID + I5
	CONSUMPTION AND OTHER CURRENT EXPENDITURE	
E1	Consumption expenditure	
E2	Current transfers paid	
E3	Interest on consumer credit	
ENC	**Total non-consumption current expenditure**	= E2 + E3
ET	**Total current expenditure**	= E1 + ENC
	Consumption expenditure	= E1
E4	Social transfers in kind (STIK)	= I5
EAFC	**Actual final consumption**	= E1 + E4
	CHANGE IN NET WORTH	
	Total income	= IT
	Less total current expenditure	= ET
KS	**Saving**	= IT – ET
KR	Capital transfers received	
KP	***Less*** capital transfers paid	
KNA	**Net accumulation of capital**	= KS + KR – KP
KO1	Other changes in volume of wealth	
KO2	Holding gains and losses	
KO3	Adjustment to pension, annuity and life insurance entitlements	
KO	**Total of other flows contributing to changes in net worth**	= KO1 + KO2 + KO3
KCW	**Change in net worth**	= KNA + KO
	WEALTH	
W1	Non-financial assets	
W2	Financial assets	
W3	***Less*** liabilities	
WT	**Total wealth (net worth)**	= W1 + W2 – W3
Wb	**Wealth at beginning of period**	
	Change in net worth	= KCW
We	**Wealth at end of period**	= Wb + KCW

Source: OECD (2013).

Income and other economic resources received

When considering a person's economic well-being in terms of the economic resources he or she receives, it is of primary interest to know the level of on-going consumption that could be supported by those resources. Therefore, it is essential to differentiate between the receipts (both cash and in kind) that are likely to be available on a regular and on-going basis and those that are not.

Many types of economic resources received by people meet the criterion of being regular and on-going. They include wages and salaries, profit from business activity, subsistence production, other production of goods and services for own consumption, dividends from the ownership of shares, economic support through social assistance and social insurance schemes, and economic support from family and friends.[2] Such receipts are regarded as income.

Sometimes the receipts may not be regular and on-going for certain individuals, but they are the type of receipt that would normally be expected to be regular and on-going. For example, a person may be employed only for a short period of time; therefore, employment income would not be regular and on-going for that individual, but because of its nature, it is always considered as income. Similarly, receipts such as social assistance and social insurance benefits or support from family or friends are regarded as income if they are intended to support the individual's current consumption, even if they are received only once. Such receipts are often provided because of a temporary halt to the receipt of employment or other regular income; alternatively, they may be explicitly provided to meet a short-term need for extra consumption, such as the extra costs associated with the birth of a baby.

Income is defined as all receipts, whether monetary or in kind, that are received at annual or more frequent intervals and other receipts that are provided with the intent of supporting the current consumption of the recipient. This excludes windfall gains and other such irregular and typically one-time receipts.

Income includes: *i)* income from employment (both paid and self-employment); *ii)* property income; *iii)* income from the production of household services for own consumption; *iv)* current transfers received other than social transfers in kind; and *v)* social transfers in kind. *Current transfers received* are receipts for which the recipient does not directly provide anything such as labour or the use of property in exchange for that receipt. While the various forms of income are explained in more detail in Chapter 4, specific comment is provided in the next three subsections below on income from the production of household services for own consumption, social transfers in kind, and pension funds, annuities and life insurance.

Some income components can be negative because they are considered as net items, where the costs of earning the income are subtracted from the gross receipts received. For example, the costs incurred by an unincorporated enterprise may be greater than its revenue, i.e. the enterprise makes an operating loss. Similarly, the mortgage interest payments and other costs of providing owner-occupied housing may be greater than the imputed rent received (see below). However, employee income is not considered on a net basis, i.e. expenses borne by employees (such as child care costs, transport costs, clothing costs, etc.) are not deducted from employee income.

Income from the production of household services for own consumption

There are a number of household services that many people produce for themselves that require capital or labour input. These services could be purchased in the market, at least notionally, and therefore have economic value and should be counted as an economic resource. This is especially the case where a significant part of the population acquires the services in the market but a significant part of the population also produces their own. If the services are produced within the household and not purchased, they are called production of household services for own consumption and are analogous to income in kind from self-employment. Household services for own consumption are separated into three main categories.

First is the net value of owner-occupied housing services. This is the rental value that could be obtained if an owner-occupied dwelling were rented on the market (gross imputed rent) less the costs incurred in owning the dwelling, such as maintenance expenses and interest costs on housing loans (net imputed rent).[3]

Second is income from services from household consumer durables. As with owner-occupied housing, household consumer durables normally provide their owner with services over a number of years. The economic resource flowing to the owner is notionally the rental value of the durables less the costs such as maintenance expenses, depreciation and interest on any loan used to purchase the items. While similar in nature to the net value of owner-occupied housing, it is separated out because it is much more difficult to obtain relevant data, and because on average it is likely to have less impact on the micro data, although it may be significant for some sub-population analysis.

Third is the estimated value of unpaid domestic services such as cooking, housekeeping, minor repairs and child-care. The valuation of such services is difficult and is discussed later in this chapter.

Social transfers in kind

Social transfers in kind (STIK) is a particular category of current transfers received that tends to be treated differently from other categories of current transfers received due to difficulties in definition and practical measurement. STIK are the goods and services provided by government and non-profit institutions to individuals that are provided free or at subsidised prices. For example, social transfers in kind include the value of the subsidised component of medical services provided for free or at below-market prices, including where medical expenses are initially met by individuals but are subsequently either fully or partly reimbursed by government. Other examples of STIK include government-provided education, partial or full government reimbursement of rent payments, and the subsidy element of publicly provided housing. The treatment is symmetrical, regardless of whether the subsidy is delivered as a lower initial cash price or as a rebate or refund on outlays; conceptually, the consumption levels are the same and the income component is the social transfer in kind.

Because of difficulties in defining which services should be included in STIK, and because of difficulties in determining how to distribute the value between recipients of some forms of STIK, this category of receipts is often omitted from micro estimates of income, but it is included in adjusted disposable income (see the definition in a later subsection).

While STIK is difficult to measure, the omission of STIK from income estimates is likely to distort many income comparisons. If STIK is omitted from income estimates, in income distribution and similar analysis it is implicitly assumed that the benefits received in the form of STIK are proportional to the value of income received from other sources. Within a country, this is unlikely to be true when comparing different groups of interest. For example, low-income people will normally receive proportionally more STIK than high-income people, and some forms of STIK, such as free or subsidised education, are targeted at families with children. Over time, both the level and form of STIK are likely to change, and population structures will also change, both of which will lead to distortions in time-series comparisons if STIK is omitted. Perhaps most importantly, the level and form of STIK can vary widely between countries, reflecting different institutional structures and other factors. Therefore international comparisons of income are also likely to be distorted by the omission of STIK.

Income from pension funds, annuities and life insurance

Receipts from certain types of pension funds, annuities and life insurance are generally regular and ongoing and are an important source of finance for the day-to-day living expenses of the recipients. From the perspective of the recipients, therefore, those receipts have the characteristics of income. However, in part at least, they usually represent the run-down of an asset held by the recipient with the institution making the payment. This conflict is resolved in the ICW Framework by treating the receipt as income and then making an adjustment to the value of wealth that records the decrease in wealth due to the dissaving that has actually taken place (see below).

Receipts excluded from income

Receipts that are not intended to support ongoing consumption and that are not likely to be available on a regular and on-going basis are not included in income, especially if they are large. They include inheritances, large gifts from family and other people, large gambling winnings, and similar windfall gains. If such receipts are large, and it is unlikely that similar amounts are received in the periods before and after the period being examined, the recipient is likely to use those resources to support consumption over several periods at least. Compensation and other benefits from accident insurance policies (non-life insurance policies, excluding those regarded as social insurance) are also excluded from income. In some cases, benefits paid from accident insurance may compensate for short-term costs incurred because of an accidental event. While they may not be available for spending over several time periods, neither would they be expected to boost the overall well-being of the recipient household beyond what it would have been if the accident had not taken place.

The impact of such receipts on economic well-being in the period in which they are received is generally not as large as in the case of receipts that are regular and on-going, and they are therefore excluded from the concept of income. Instead, they are regarded either as additions to wealth, and are referred to as capital transfers received, or as offsets to expenditure, and are referred to as negative consumption expenditure.

Capital transfers received refer to the acquisition of assets when the receiving party makes no payment to the provider of the asset. Conversely, cash received from the sale of a capital item is not income. Rather, the capital item has been exchanged for wealth in the form of cash.

Negative consumption expenditure refers to benefits received from accident insurance and small lottery and other gambling winnings. In both cases, the recipient has previously made a payment without knowing whether anything will be received in return. Therefore, both the payments and the receipts could be considered as transfers. However, it is useful to consider the net figure, which can be derived by subtracting the value of insurance benefits and gambling winnings from the insurance premiums and gambling outlays. On average, the net amount is likely to be positive, representing the return to the insurance company or the gambling promoter for organising the activity. It is appropriate to consider the *net* figure as consumption expenditure, because it is payment for providing a service. To achieve this, receipts from accident insurance and small receipts from gambling are treated in the ICW Framework as negative consumption expenditure, while insurance premiums and gambling outlays are treated as positive consumption expenditure. They are discussed further in this chapter.

It is not always clear whether the receipt of certain economic resources should be treated as income, as capital transfers, or as negative consumption expenditure, and more detail is provided later in this chapter. There are other economic flows that may benefit a person's economic well-being but are not regarded in the ICW Framework as income. These include volume changes in wealth not associated with transactions, and holding gains and losses, and are discussed further.

Income aggregates

The components of income can be aggregated in a number of ways, reflecting differences in analytic purposes and data availability. *Total income* is the sum of all the income elements described above, excluding social transfers in kind (STIK). STIK is omitted from this major aggregate because of measurement difficulties, as discussed earlier.

Total income can be split into primary income and current transfers received excluding STIK. *Primary income* is income from employment and income generated from the ownership of non-financial and financial assets. On the other hand, *current transfers received* refer to income obtained without the recipient directly providing labour or usage of assets in exchange for that income.

Not all the income received by people is available to them to spend as they wish. In order to evaluate the ongoing economic resources available to people to support their current consumption, it can be useful to consider *disposable income,* i.e. total income less current transfers paid.

Current transfers paid (which are described more fully in the next section) are subtracted from total income because they comprise payments that do not directly support the current consumption of the person making the payment. Moreover, to a varying extent, they are obligatory. The degree of obligation varies with the type of payment and the context in which it is paid. For example, payment of taxes is fully mandatory. Contributions to social insurance is mandatory in some countries but less so in others. Current transfers to other households, especially relatives, are socially obligatory in some societies, especially where there are minimal social insurance and social assistance benefits available. Other current transfers, including to non-profit institutions, are usually the least obligatory of the various categories of current transfers paid; however, since these non-obligatory payments are not available to support the current consumption of the payer, and

are not available to add to wealth that may be drawn on to support future consumption, they are also considered as current transfers and deducted when deriving disposable income.

Adjusted disposable income is disposable income plus STIK.

Consumption and other uses of economic resources

In the same way that a differentiation is made between income and non-income receipts of economic resources, it is necessary to differentiate between current expenditure, including consumption, and other ways that economic resources are used and disbursed.

Current expenditure includes only current payments, i.e. the acquisition of consumption goods and services and other payments that tend to be regular and on-going. It excludes large payments that are likely to be made only infrequently, unless they are payments for consumption goods and services such as a holiday.

Consumption relates to the usage of goods and services to satisfy a person's wants and needs in the time period under consideration. The goods and services may be purchased using money from the person's economic resources. Alternatively, they may be goods or services that have been received directly (in kind) as income in-kind, such as wages and salaries from employers; goods and services received in exchange as bartered income; in-kind current transfers received from family, friends, government or other organisations; or goods and services produced by the person themselves for their own consumption. The total value of consumption goods and services purchased or received as income in kind, excluding social transfers in kind is referred to as *consumption expenditure*.

If the goods and services included in consumption expenditure were produced by the person themselves or were received from elsewhere as income in kind, the notional market value of the goods and services is included as consumption expenditure. However, not all goods and services produced for own use or obtained as income in kind are consumption goods and services. Some may be used as intermediate inputs to the person's productive activities, and some may be capital goods.

Consumption expenditure can be negative. One way in which this can occur is if someone sells *consumption* goods that had previously been obtained by them. More importantly, some gambling winnings and benefits from accident insurance are treated as negative consumption expenditure, as discussed below.

In addition to consumption expenditure, current expenditure includes current transfers paid and interest paid on consumer credit. It can be difficult to determine the boundaries between consumption expenditure, acquisition of capital items, current transfers paid, capital transfers paid, saving, etc. Some of the issues are discussed in more detail in this chapter

Acquisition of capital items

Consumption expenditure includes only the acquisition of consumption items, i.e. items that are expected to be used up immediately or in a relatively short time. Acquisition of an item that is expected to provide a service to its owner over a relatively long period is regarded as the acquisition of a capital item, or asset, and is not included in current expenditure. It is sometimes known as investment expenditure or capital expenditure. Assets include non-financial assets such as dwellings, cars and other consumer durables (electrical goods, clothing), and financial assets such as shares. If they are acquired as

income in kind, they are a component of saving and an addition to wealth. If they are acquired as a capital transfer received, they are an addition to wealth but are not a component of saving. If an asset is purchased, the wealth used to fund the purchase may be from assets held at the beginning of the period under consideration, or from saving undertaken during the period. Alternatively, the purchase may be made by taking out a loan, i.e. by incurring a financial liability that constitutes negative wealth. Regardless of the funding source for the purchase, the net worth of the owner has not changed, but there has been a change in the asset classes comprising that wealth.

Current and capital transfers paid

Economic resources received or owned by a person may be disbursed in ways that do not directly increase the person's own economic well-being. These include, for example, provision of economic resources to family members or other people, and the payment of direct taxes.

If the payments can be expected to be regular and on-going or are intended to support the current consumption of the recipient, they are referred to as *current transfers paid* and are included in current expenditure and as a deduction in deriving disposable income.[4]

If the payments are large and irregular in nature, or associated with a capital transfer received (such as an inheritance tax), they are called *capital transfers paid*. Capital transfers paid refer to the disposal of assets when the receiving party makes no payment to the provider of the asset. As explained in the next subsection, some payments that might be considered as transfers are treated in the ICW Framework as consumption expenditure because they are offset by receipts that are treated as negative consumption expenditure.

Negative consumption expenditure

When making outlays for accident insurance premiums (other than for dwellings, consumer durables or business assets) or for gambling, the payers do not know whether they will receive any return. If they do receive a return, the return will not directly reflect the size of the original payment that was made. In effect, the payers are putting money into a pool of funds that is redistributed between the payers on the basis of the occurrence of prescribed accidental events (in the case of accident insurance) or chance and perhaps other factors (in the case of gambling).

Viewed in this way, the outlays and receipts might be regarded respectively as transfers paid and transfers received. However, not all the money is paid into a pool of funds for redistribution, because the insurance companies and gambling promoters retain some money to finance their operations and pay relevant taxes. This is a service charge that conceptually should be regarded as consumption expenditure by the insured or the gambler. The approach taken in the ICW Framework is to treat the outlays as positive consumption expenditure and the *minor* receipts as *negative consumption expenditure* to reflect the reality that householders face in making such payments and in receiving claims settlements. Irregular and one-time lump-sum receipts from large winnings (lottery prizes, gambling winnings) are recorded as capital transfers and excluded from both the definition of income and from negative consumption.

There are several advantages to the approach adopted in the ICW Framework for treating these smaller flows as consumption/negative consumption. First, as described previously, disposable income is the result of subtracting current transfers paid from total

income. Therefore an increase in current transfers paid lowers disposable income. If payments for accident insurance premiums or gambling expenditure are treated as consumption expenditure and not transfers paid, they are regarded as being paid from disposable income. Second, survey participants sometimes know the net amount they pay for goods or services only after making a claim for accident insurance. While it is desirable to collect both gross and out-of-pocket expenses relating to expenditure following an accident covered by insurance, aggregate expenditure data will not be affected if only net expenses are recorded. In this case it would not have been possible to derive the net expenditure on insurance. In other cases, such as claiming for the value of the lost content of a freezer due to power failure, capturing the proceeds of the claim as negative expenditure, and the subsequent purchase of replacement food as current consumption expenditure, allows consumption expenditure to be meaningful in its own right as an aggregate for a household, and by expenditure class in well-being analysis. Also, for some gambling activities there are frequent small winnings that the gambler often also spends on the same activity. In this case, the net expenditure on gambling is likely to be a better reflection of the expenditure choice made by the gambler, and the gross flows are unlikely to be measureable at the micro level.

While treating windfall gains from accident insurance benefits or small gambling winnings as negative consumption expenditure instead of as current transfers received, the framework records a large windfall gain as a capital transfer. Issues of differentiating between small gambling winnings and large windfall gains are considered in a separate section of this chapter, as part of a wider discussion on differentiating between current and capital transactions. While the SNA treats all lottery and gambling winnings as current transfers, such a treatment at the household level would be highly misleading, distorting saving measures.

It is important to note that accident insurance and gambling are unlikely to result in a redistribution of economic resources *between* groups that are of analytic interest, since those who receive benefits are likely to be more or less a random subset of those who make these expenditures.

Negative consumption expenditure also includes the sales of any consumption goods that have been acquired, have not been used, and are then sold or transferred to another household, such as a non-profit institution. However, the second-hand sale of a consumer durable is not considered as negative consumption expenditure, but as the disposal of one form of wealth (the asset) in return for another form (cash).

Insurance

The treatment of the payment of insurance premiums and the receipt of insurance benefits poses a number of specific problems. These are discussed in the following paragraphs, with the treatments adopted in the ICW Framework summarised in Table 3.2 at the end of this subsection. As emphasised in the following paragraphs, premium payments and benefit receipts should be treated symmetrically where appropriate.

Payments of premiums for most *life insurance policies* and contributions to *private pension schemes* are not regarded as current expenditure but as a form of saving, because the contributor or the contributor's nominees are guaranteed to receive a benefit from the policy, and the value of that benefit normally reflects the cumulative payments that have been made to the financial institution operating the scheme.[5] The payment of a premium

or other contribution to a life insurance or private pension scheme is in effect the purchase of a financial asset. The purchase of an annuity is an analogous transaction. Since the entitlements held in these funds are assets, expenditure financed by payments received from these assets should be viewed as dissaving. However, if payments from such sources are received on a regular basis, they are commonly regarded as income (and indeed, are established to smooth life-time incomes and consumption), and the ICW Framework adopts that approach. To compensate for the lack of symmetry in the treatment of payments and receipts associated with these schemes, a fully articulated set of income, consumption and wealth statistics requires a specific adjustment to the wealth estimates.

Term insurance provides a benefit if an insured person dies, or dies under certain specified conditions such as before reaching a given age, but provides few if any other benefits. It is therefore primarily a pooling of risk similar to accident insurance, and not a saving and investment vehicle in the same way as life insurance. As in the case of accident insurance, the payment of term insurance premiums is regarded as consumption expenditure. However, since the benefits received from term insurance are usually large and irregular, the benefits are regarded as capital transfers received rather than negative consumption expenditure.

Premiums paid to *insure dwellings and their contents* are regarded as costs incurred in the household production of services for own consumption from the ownership of dwellings and consumer durables. They are therefore netted from the gross value of the services provided when deriving the income generated from providing those services. Correspondingly, any benefits received from the policies offset costs incurred in providing the services. The benefits compensate for a destruction of capital that would be recorded as a negative "other change in capital" (see below), and are regarded as a capital transfer received offsetting the capital loss in the stock of wealth.

Payments for *social insurance* are payments into mandatory or employment-related schemes that provide benefits in the case of unemployment, illness or old age. They are included as a component of current transfers paid. Correspondingly, most benefits received are included in current transfers received, and are part of income. However, large and irregular payments (such as lump-sum retirement benefits and lump-sum payments received as compensation for work-related injuries) are capital transfers received.

Other voluntary insurance schemes protecting against unemployment or illness and other insurance protecting against such things as disruptions to travel are referred to as *accident insurance*. Premiums might be regarded as current transfers because they are primarily contributions to a pool of funds that are redistributed to those policy holders who experience the circumstances that trigger a benefit being paid. The receipt of benefits would then be included with transfers received. However, as explained in the previous subsection describing negative consumption expenditure, premiums paid for accident insurance are regarded as consumption expenditure with benefits received treated as negative consumption expenditure.

Interest payments

Interest payments are a form of current expenditure that is separate from both consumption expenditure and transfers paid. If the interest payments relate to loans used to purchase income-generating assets, the payments are netted off the income generated by those assets. In the case of assets such as unincorporated businesses, owner-occupied

Table 3.2. **Treatment of payments to and from insurance schemes**

Scheme	Payments to scheme	Receipts from scheme
Life insurance schemes, annuities, private pension schemes	Regarded as saving and therefore not directly recorded in the ICW Framework.	Income, for regular receipts. Capital transfers received, for lump-sum receipts.
Term insurance	Consumption expenditure.	Capital transfers received.
House and contents insurance	Input cost to be deducted when deriving value of income from production of services for own consumption from the ownership of dwellings and consumer durables.	Capital transfers received.
Social insurance	Current transfers paid.	Mostly included in current transfers received Lump-sum benefits are capital transfers received.
Accident insurance	Consumption expenditure.	Negative consumption expenditure.

homes and consumer durables, the value of interest payments (along with other current costs) is subtracted from the value of the business revenue or in-kind services provided by the asset in order to derive a net value of income or "profit". It is the net value that is included in income receipts.

Loans may also be used for purposes other than purchasing income-producing assets. Generally, these loans are known as consumer credit, although they may be used in ways not normally regarded as consumer purchases. They include *inter alia* education loans and loans for financing transfers to other households. Interest payments on all these loans are included in current expenditure.

Expenditure aggregates

Non-consumption current expenditure is the aggregate formed by adding current transfers paid and interest on consumer credit. *Total current expenditure* is derived by adding consumption expenditure and non-consumption expenditure. Note that in the same way that social transfers in kind (STIK) are often omitted from estimates of income because of measurement difficulties, they are correspondingly often omitted from consumption estimates. Total current expenditure does not include STIK, since STIK is excluded from consumption expenditure. Consumption expenditure plus STIK is referred to as *actual final consumption*.

Saving

Saving is the net difference between total current expenditure and total income (excluding STIK) over the period under analysis. The same value can be derived by subtracting actual final consumption and interest on consumer credit from adjusted disposable income, or by subtracting consumption expenditure and interest on consumer credit from disposable income.

Saving may be positive or negative. If positive, there has been a net addition to wealth. If negative, there has been a net subtraction from wealth.

Wealth

Wealth, or *net worth*, is the net value of economic resources held at a point in time, with the value of liabilities being subtracted from the value of assets.

An *asset* can be viewed as a store of value that provides a benefit or series of benefits accruing to the owner by holding or using the entity over a period of time. *Non-financial*

assets include dwellings, land and other property, artwork and other valuables. *Financial assets* include cash, bank deposits, shares, equity in family trusts, equity in unincorporated enterprises, pension fund entitlements and the like. Pension fund entitlements include entitlements in both employment-based social insurance pension schemes and private pension schemes. Liabilities are always financial and include credit card debt, mortgages and other loans.

A person's assets and liabilities include those relating to any unincorporated business owned by the person. Such businesses are those where the owner and the business are the same legal entity. The owner is personally liable for any business debts that are incurred, and the business can be engaged in virtually any kind of productive activity. Unincorporated enterprises are usually best valued on the basis of how much they could be sold for. Since their operations may utilise non-financial and financial assets in an integrated way that cannot readily be separated and valued independently, the ICW Framework values unincorporated enterprises on a net equity basis, and treats the net equity as a financial asset equivalent to shares in an incorporated enterprise.

The composition of the stock of wealth may change through investment transactions that take place when one asset is exchanged for another of equal value. The exchange may be a purchase or a sale for cash, or it may be an exchange for some other type of asset. Most exchanges will result in a change in the mix of asset classes constituting the stock of wealth.

Changes in wealth

The stock of wealth between the beginning and the end of a period may change for a number of reasons.

- First, positive saving occurs when current expenditure is less than income. The difference is a net addition to wealth. Alternatively, current expenditure may be greater than income. Then there is negative saving, or dissaving, and wealth has been run down to finance the extra expenditure.
- Second, there may be capital transfers received, adding to wealth, or capital transfers paid, subtracting from wealth.
- Third, there can be volume changes not associated with saving/dissaving or capital transfers. These *other volume changes* occur when an asset with economic value materialises or disappears without transactions taking place. Economic value can materialise, for example, when something previously considered as of negligible value becomes recognised as having value, such as a mineral deposit being discovered, or a known mineral deposit becoming economically viable because of changed technology. Conversely, an artwork may lose value because it is discovered to be a fake. More commonly, the economic value of existing assets is destroyed by events such as natural disasters, war, civil disturbance or accidents. The growth of natural forests may contribute to other volume changes, but the growth of cultivated trees is considered a production process and is not included here.
- Finally, there are *holding gains or losses*. The values of assets change continuously as prices change over time. The price changes reflect both changes in the general price level (overall inflation rate) and changes in the prices of individual asset types. For assets whose value is denominated in the currency of other countries, exchange rate changes contribute to price changes. A holding gain occurs in a period if the market price of an

asset increases, whereas a holding loss reflects a market price fall. Some types of asset may pay no direct returns, but are structured in a way designed to increase the value of the asset so that the investment returns can be realised through holding gains. Holding gains and losses are included in changes in a person's wealth regardless of whether the assets concerned are sold in the period or not. Issues affecting holding gains and losses are further discussed below.

Adjustment to pension, annuity and life insurance entitlements

The changes in wealth represented by changes in pension, annuity and life insurance entitlements are not fully accounted for by the sources described above, and therefore a special adjustment needs to be made when reconciling income, consumption and wealth concepts and measures. The adjustment captures a number of separate impacts flowing from the concepts of income, consumption and wealth adopted in the ICW Framework.

- Contributions to employment-related social insurance pension schemes are treated as current transfers paid. Therefore, they are subtracted from income when deriving disposable income, and are not reflected in the derived measure of saving or in any other source of increase in wealth.
- Regular withdrawals from pension schemes, annuities and life insurance funds are treated as income. Therefore they are not regarded as negative saving reflecting a decrease in wealth.
- The managers of pension, annuities and life insurance schemes normally charge scheme participants a fee for managing the schemes, and the fee is conceptually consumption expenditure. But households are not necessarily aware of this implicit fee, because scheme managers levy it by withholding investment income earned from participants' entitlements or withdrawing it directly from the entitlements. Therefore the fee is not included in household expenditure in the ICW Framework.
- Funds held in pension, annuity and life insurance schemes change in value because of investment income earned and retained in the fund, because of other volume changes relating to the funds' investments, and because of holding gains and losses relating to the funds' investment. Because households do not perceive these flows directly, they are not included in the ICW Framework.
- There is a separate form of holding gains and losses relevant to entitlements in defined-benefit pension schemes, annuities and some life insurance schemes. The value of these entitlements is determined by the contributions or payments into the schemes but also by demographic factors such as the actuarially determined life expectancies of the participant and any other beneficiaries. Therefore the value of the entitlement changes over time simply because the beneficiaries are aging.

In light of these factors, it is necessary to have an *adjustment to pension, annuity and life insurance entitlements* to reconcile the income, consumption and change in wealth concepts. The adjustment accounts for all changes in the value of entitlements not included elsewhere in the ICW Framework, and is equal to:

- the change in the value of pension, annuity and life insurance entitlements between the beginning and end of the period, *less*
- contributions into private pension schemes and payments of life insurance premiums, *less*

- purchase of annuities that are not paid for by lump-sum payments that have been rolled over from pension or life insurance schemes, *plus*
- lump-sum withdrawals from pension, annuity and life insurance schemes that are not treated as income and are not rolled over into new annuities.

The funds invested by non-life insurance companies also earn income, which might be conceived of as the income of the policy holders. This income is held by the insurance companies as additional premium payments. However, ignoring these implicit transactions does not create an imbalance in the ICW Framework in the same way as for life insurance. Holders of non-life insurance are not regarded as holding an asset that is included as wealth, and therefore there is no need to reconcile changes in wealth with the income and expenditure measures defined in the ICW Framework.

Income in kind and its relationship to consumption and wealth

Conceptually, it is not essential to separate income in kind from cash income. However, whenever it is likely to be significant for some households, it is good practice to separate income in-kind for a number of reasons:

- First, it highlights that income is included in income.
- Second, the measurement of income in kind is more difficult than the measurement of cash income, and it is likely to require special methodologies or instructions to respondents in household surveys.
- Third, differentiating between the two income components may be important for analytic purposes, especially where subsistence agriculture is significant.
- Fourth, it facilitates the estimation of consumption, as consumption of goods and services needs to include those consumption goods and services received in kind.

Income in kind from employment, including self-employment, and from the ownership of property can take any form. It may include goods and services for consumption, assets, or goods and services that are used as intermediate inputs to the own-account production activities of the household.

In contrast, income from household production of services for own consumption and income in kind included in transfer income can comprise only goods and services for consumption. Transfers of assets to households are capital transfers.

The gross value of any consumption goods and services received as in-kind income is by definition part of household current expenditure. If the household passes any of those consumption goods and services to other households or to non-profit organisations, they are also part of current transfers in kind paid to other households or to non-profit organisations.

The gross value of any assets received as in-kind income is included in income but not in current expenditure. It therefore contributes to saving and is an addition to wealth.

If income in kind includes goods and services used as intermediate inputs for own account production of the household, a corresponding value needs to be added to the value of other inputs and the total deducted when deriving the net value of income for that own account production.

In the ICW Framework, several elements relate only to income in kind because of the potential importance or distinct characteristics of those elements. Some other elements include both income in kind and cash income.

Table 3.3 lists the main income elements that include income in kind and summarises the various types of receipts that are relevant. If there is income in kind received in any other income elements, the same principles apply.

Distinguishing between current and capital transactions

In considering both the economic resources received and the payments made by households, a distinction is drawn between current and capital transactions.

On the receipts side, income is defined as those receipts that are received on a regular and recurring basis, and are therefore available to support consumption and other ongoing obligations. Receipts that are large and irregular cannot be expected to be available on an ongoing basis, and therefore it is expected that, in part at least, they will be saved and used to support consumption and other current expenditure in future periods. Such receipts are termed capital transfers received.

Similarly, consumption expenditure is the acquisition of goods and services that are used up instantly or in a relatively short period of time, and is regarded as a component of current expenditure. Goods that are not likely to be used up in a short period of time are capital goods. They are assets that are expected to provide services to their owners over a period of time. Current transfers paid and interests paid on consumer credit are the other components of current expenditure, as they are likely to be made regularly. On the other hand, capital transfers paid are large payments that are not likely to be paid regularly.

Table 3.3. **Summary of main income elements that include income in kind**[1]

Code	Element	Income elements which include income in kind:			
		Consumption goods and services	Assets	Goods and services for intermediate usage	Cash receipts
I1.1.5	Shares offered as part of employee remuneration	No	Financial asset	No	No
I1.1.9	Free or subsidised goods and services from employers	Yes	Yes[2]	Unlikely	No
I1.2.1	Profit/loss from unincorporated enterprise	Yes	Yes	No	Yes
I1.2.2	Goods and services produced for barter, less cost of inputs	Yes	Yes	Yes	No
I1.2.3	Goods produced for own use, less cost of inputs	Yes	Yes	No	No
I2.1.3	Income from shares and other equity, net of expenses	Yes	Yes	Yes	Yes
I2.1.7	Income from other financial assets, net of expenses	Yes	Yes	Yes	Yes
I2.2	Rent from real estate other than owner-occupied dwellings, net of expenses	Yes	Yes	Yes	Yes
I2.3	Royalties and other income from other non-financial assets, net of expenses	Yes	Yes	Yes	Yes
I3.1	Net value of housing services provided by owner-occupied dwellings	Yes	No	No	No
I3.2	Value of unpaid domestic services	Yes	No	No	No
I3.3	Net value of services from household durables	Yes	No	No	No
I4.4.2	Current transfers in kind received from other households	Yes	No	No	No
I5.1	Social transfers in kind from government	Yes	No	No	No
I5.2	Social transfers in kind from non-profit organisations	Yes	No	No	No

1. The income elements shown in this table are taken from Annex A.
2. This includes the benefit of loans at below-market interest rates. Such a benefit is best described as a financial asset, since it is neither a good nor a service but a reduction in a financial obligation.

While the need to differentiate between current and capital transactions is clear, the boundary between them is difficult to define. First, terms such as "regular" and "recurring" are imprecise and lie on a continuous spectrum, somewhere between the extremes of "at least once a day" and "only once in a lifetime". Second, the classification of transactions can be viewed differently in different contexts. For example, wages and salaries are normally received on a regular and ongoing basis. But some individuals may only be employed once for a very short period; for these individuals, wages and salaries are not a regular and ongoing receipt. Similarly, what might be considered large for one household may not be thought large for another household that has more economic resources available. Third, the definitions used above do not explain how small but irregular transactions should be treated.

Receipts for provision of labour or use of property

There is inevitably therefore some arbitrariness in distinguishing between current and capital transactions. The following paragraphs provide some additional guidelines to help implement the underlying concepts in specific circumstances. Relevant factors vary between types of transaction.

As discussed earlier in this chapter, if a transaction is payment for labour provided by a household member or for use of household property in the current period, the transaction is always regarded as a current transaction and is classified as income. This is the case even if the transaction is not regular for an individual recipient, for example, i.e. they worked only for a short period of time. It is also the case if the transaction is in kind, and the in-kind payment is in the form of capital goods. The key aspect of these transactions is that the provision of labour or the use of property is inherently a current activity, and the reward for that activity is regarded as a current receipt.

Sometimes payments are received for labour that had been provided in previous periods. If the amounts are relatively small, such as payments for recreation leave accrued in previous periods, they are included in wages and salaries as income from employment. However, lump-sum retirement payments are likely to have been earned during employment that occurred in previous periods, and they are significant in size. Therefore they are regarded as capital transfers.

Receipt of social benefits

Most social benefits are treated as current transactions and therefore income. The main exceptions are if a capital item is provided in kind (e.g. a consumer durable such as a wheelchair), or if a large lump-sum payment is made. There are two situations, in particular, where large lump-sum payments may be made; both are employment-related:

- First, termination and redundancy payments, which are primarily designed to compensate employees for losing their current employment by providing income replacement for a period of time after wage and salary payments cease. The size of these payments is often determined on the basis of employees' length of service. Some employees may receive lump-sum payments greater than the wages and salaries they would have received if they had been employed for the remainder of the current accounting period. In that case, at least the excess part of the lump-sum payment should be regarded as a capital transfer. In practice, it may be necessary to use a simple approximation, for example, treat any amount greater than the equivalent of three or six months wages and salaries as a capital transfer.

- Second, disability support payments paid to injured workers by employers or under a disability insurance scheme, and primarily designed to compensate employees for lost income, for medical expenses and sometimes for the pain and suffering resulting from the injuries sustained in the course of their employment. Compensation may be in lump-sum form to cover impacts of the injury in periods prior to the current accounting period and in periods after the current period. Any amount in excess of income lost and medical expenses incurred in the current period should be regarded as a capital transfer. Again, in practice, it may be necessary to use a simple approximation, e.g. to treat any amount greater than the equivalent of three or six months wages and salaries as a capital transfer regardless of medical expenses that may or may not have been incurred in the current year.

Transfers between households

If one household transfers resources to another with the primary intention of supporting the consumption of the receiving household, the transaction is regarded as a current transfer paid by the donating household and as transfer income by the recipient household, regardless of whether or not the transaction is made on a regular basis. As for social benefits, irregular transfers may be made if the recipient household does not have a regular source of income for a short period of time because of unemployment or similar reasons. Alternatively, irregular transfers may be made if the recipient household has a short-term need for additional consumption, e.g. because of the birth of a child, illness, ceremonial obligations when a family member gets married or dies.

On the other hand, if the resources received by the household are in the form of a non-cash asset (e.g. a consumer durable or financial asset) or are intended to support the purchase of an asset, a capital transfer has been received. For example, one household may help another household to purchase a vehicle or other consumer durable, or contribute to the purchase of a dwelling.

Gifts of cash from one household to another can be particularly difficult to classify, because they may not be intended for any specified purpose. If gifts of approximately the same magnitude have been or are expected to be received regularly, they qualify as current transfers paid by the donating household and as transfer income for the recipient household. But if gifts for unspecified purposes are atypical, their classification needs to be determined according to the relative size of the gift.

From the perspective of the donating household, the transfer should be regarded as a capital transfer if it is large enough to be considered a rundown in the wealth of the donor rather than being paid out of the donor's income. From the perspective of the recipient household, the gift should be regarded as a capital transfer if the household is likely to save a significant proportion of it. The determination of "large enough" is arbitrary, but 5 or 10% of annual household income might be used as a threshold for this purpose. Importantly, a transaction treated as a current transfer paid with respect to a donating household may be treated as a capital transfer with respect to the recipient household. Such asymmetry is not possible in macro data, but it is acceptable for micro data, because micro-data analysis is primarily interested in transactions from the perspective of individual households; hence, there is no requirement that transactions "balance" when aggregated across households.

Lottery and other gambling winnings

Minor lottery prizes and other winnings from gambling are regarded as negative consumption expenditure. However, large winnings are regarded as windfall gains and are treated as capital transfers received. The boundary between minor receipt and windfall gain is arbitrary. One approach, if gross expenditure and gross receipts are both available, would be to determine the boundary in terms of the total gross expenditure on gambling. For example, a windfall gain might be defined as any amount of winnings greater than 5 or 10 times the expenditure on gambling. Alternatively, the boundary might be determined on the basis of household income, with 5 or 10% of household income used as a threshold.

Other transfers paid by households

Similar considerations apply to classifying other transfers paid by households as current transfers or capital transfers.

Income tax relates to current receipts and is always regarded as a current transfer paid, as are regular wealth taxes such as land tax. In contrast, inheritance taxes relate to capital transfers received and are regarded as being paid from those capital transfers, i.e. as capital transfers paid. Taxes on holding gains, often known as capital gains tax, are often levied as complementary to income taxes, since holding gains are an addition to economic resources similar to income. However, the taxes are normally levied only when the holding gains are realised, i.e. when the asset is sold or disposed of. Therefore the tax normally relates to holding gains that have accumulated over a number of years, rather than just the current year, and in micro data it is appropriate to consider the tax as a capital transfer.[6] Social insurance contributions are always regarded as current transfers paid.

Transfers may also be made to non-profit organisations. If transfers of approximately the same size are made regularly, then they are regarded as current transfers paid. If they are larger than any transfers regularly made, they should be regarded as capital transfers if they are significant in terms of the donating household's income. As for transfers to other households, an arbitrary threshold is required, such as 5 or 10% of household income. When evaluating whether transfers to non-profit organisations are current transfers or capital transfers, they should be considered in aggregate. For example, a household may make significant contributions to charities every year. If the aggregate amount is approximately the same every year, they should be regarded as current even if different charities are supported each year.

Statistical units

Individuals can receive income, consume goods and services, and own wealth. If they do any of these things in partnership with anyone else, it is conceptually conceivable to share the amounts between the individuals concerned. For simplicity, when developing basic concepts, the discussion in previous sections of this chapter was mostly presented in terms of the income, consumption and wealth of persons. However, collecting a full set of income, consumption and wealth data for each individual in a data collection is both difficult and often meaningless.

Take, for example, the situation of families with young children. The children usually do not have significant, if any, monetary income or wealth, but they do consume, usually the goods and services provided by their parents. Therefore from an individual perspective the economic resources they receive are almost exclusively transfers in kind, with their

parents paying in-kind current transfers of an equal value. Measuring the value of such in-kind transfers received and paid is difficult. However, if the income, consumption and wealth information of the family are consolidated and considered on a net basis, the intra-family transactions that take place do not need to be measured. The transfers received by some members of the family are offset by transfers paid by other members of the family, and so disposable income, consumption and wealth are the same whether summed across the individual members of the family or whether calculated directly at the family level.

Similar situations can arise with adults. Couples will usually pool at least part of their income to make provision for day-to-day living expenses, especially if one is employed and the other is not. Home-owners may provide free or subsidised accommodation to adult children or aged relatives. In these cases, significant current transfers are taking place, and it is difficult to collect data about the value of those transfers.

Unrelated adults sharing a dwelling may pool resources to pay for food and other household items. In this case, there may not be any significant current transfers taking place, but because some of their consumption is arranged jointly (notably accommodation, usually the largest component of consumption), it is difficult to collect data directly about the consumption of each individual. In addition, there are usually economies of scale when people share a dwelling, and they therefore receive an economic benefit from the sharing. This aspect is discussed further in the consideration of equivalence scales later in this chapter and in Chapter 8.

There may be significant transfers in kind between people living in separate dwelling units. For example, people may live rent-free or at below-market rent in a dwelling owned by a family member or by another individual who does not live in the dwelling. Again, it is likely to be difficult to collect data on the value of such transfers, although not as much as in the case of measuring many intra-household transfers.

As illustrated above, there is considerable practical advantage in collecting and analysing micro-statistics on income and consumption with respect to statistical units that comprise groupings of individuals between whom there are significant current transfers, especially if those transfers are in kind.

Households

The household has been chosen as the primary unit to be used for analysing income, consumption and wealth micro data.[7] A *household* is either an individual person or a group of persons who live together under the same housing arrangement and who combine to provide themselves with food and possibly other essentials of living. All persons living in a country belong to one, and only one, household. A person's place of usual residence is the basis for determining household membership. However, all members of a household must be residents of the same country. The following paragraphs elaborate on these aspects of the definition of a household.

There are three categories of household: private households, institutional households and other households. In most countries most people live in private households, but some live in institutional or other households. Micro-data collection and analysis is usually confined to private households or private households not residing in collective living quarters. A *private household* is:

- *a one-person household residing in a housing unit*, i.e. a person who lives alone in a separate housing unit or who occupies, as a lodger, a separate room (or rooms) of a housing unit

but does not join with other occupants of the housing unit to form part of a multi-person household; or

- *a multi-person household residing in a housing unit*, i.e. a group of two or more persons who combine to occupy the whole or part of a housing unit and to provide themselves with food and possibly other essentials for living. Members of the group may or may not pool their income or wealth and they may or may not be related to each other; or
- a one-person or multi-person *household residing in collective living quarters* other than an institutional household. These private households live in hotels, boarding or lodging houses, camps, or employee quarters at institutions.

This definition of a private household is based on the housekeeping concept. It does not assume that the number of private households is equal to the number of housing units. Within this concept, "boarders" are distinguished from "lodgers". Boarders take meals with the household, are generally allowed to use the household facilities, and are considered to be members of the household in which they live. Lodgers have hired part of the housing unit for their exclusive use and are considered to belong to a different household.

Domestic staff living in the same dwelling as their employers may be boarders or lodgers. If employers and staff share food and meals, the members of staff are boarders. In this case neither in-kind income nor any cash income paid by the employers to staff is included as household income, because the payments are transactions internal to the household. If employers and staff do not share food and meals, the members of staff are lodgers and constitute a separate household or households. The accommodation and any other goods and services provided by the employers to the staff for free are then treated as income in kind.

An *institutional household* comprises persons whose need for shelter and subsistence are being provided by an institution. An institution is a separate and independent set of premises comprising all or part of a permanent building or set of buildings that are designed for long-term inhabitation and provision of services to a group of persons. These persons are subject to a common authority or regime or are bound by a common objective or personal interest. Institutions usually have common facilities shared by the occupants. The great majority of institutional households fall under the following categories: a residence for students; a hospital, convalescent home, establishment for the disabled, psychiatric institution, old people's home or nursing home; an assisted-living facility or welfare institution, including for the homeless; a military barrack; a correctional and penal institution; a religious institution; or a workers' dormitory. Employees of an institution who live alone or with their family at the institution should be treated as members of private households.

An *"other household"* refers to a person who does not live in a private or institutional household, specifically the homeless with no usual place of residence.

Household membership is determined by a person's place of usual residence. *Place of usual residence* is the geographic place within a country at which a person spends most of his or her daily night-rest. In some cases it may be difficult to determine this place, e.g. persons who work away from home and return at weekends, students who are away from home during school term, persons who are currently inmates of an institution, and persons – including children – regularly living in more than one residence during the year. The approach to be taken with these cases is described in Box 3.1.

All members of a household must have the same *country of residence*. As explained in Box 3.2, the country of residence is usually but not always the same as the country in which the place of usual residence is located. If they are different, micro-survey data collection and analysis in a country may exclude households that have a different country of residence. Examples are tertiary students studying abroad and people seeking medical treatment abroad. Both these groups may have a usual residence in a host country but continue to be residents of their home country. Also, some people are highly mobile and their place of usual residence may change frequently; if they move between two or more countries, their country of residence is the country in which they spend most of their time.

Box 3.1. **Place of usual residence**

Place of usual residence is the geographic place within a country at which a person spends most of his or her daily night-rest. In some special cases where it may be difficult to determine this place, the treatment is as follows.

- For persons who work away from home and return at weekends, the usual residence is the family home.
- For school students who are away from home during school term, the usual residence is the family home.
- For inmates of institutions such as hospitals, nursing homes, prisons, etc., who have spent or are likely to spend 12 months or more in the relevant institution, their usual residence is the institution.
- For persons – including children – regularly living in more than one residence during the year, their usual residence is the one where they spend the majority of the year.
- For tertiary students who are away from home while at college or university, the usual residence is their term-time address, except in specified circumstances (detailed below) where the family home is regarded as that place. The term-time address of tertiary students living away from home while studying at college or university may be a housing unit (such as a rented house or apartment that is shared with others), an institution (such as a college hall of residence that accommodates large numbers of students), or some other type of collective living quarters (such as a boarding or lodging house). However, if the student is living away from home but in the same country and receives sufficient financial support from parents to maintain himself or herself without other income (e.g. the student does not take on a job to provide income support while studying) and/or the student returns to the family home for long periods (e.g. longer than would be considered a family reunion), then the family home is regarded as the place of usual residence.

Housing arrangement

A *housing arrangement* is a classification of the type of housing at a person's place of usual residence. This differs slightly from the household category classification and is useful for some analysis. The whole population can be classified into three types of housing arrangement: occupants of housing units; occupants of collective living quarters; and homeless people with no place of usual residence.

A housing unit is a separate and independent place of abode intended for habitation by a single household or one not intended for habitation but used as a usual residence by a

Box 3.2. **Country of residence**

The country of residence of a household is the economic territory of a country in which its members maintain or intend to maintain a dwelling or dwellings that are treated and used by them as their principal residence. If there is uncertainty about which dwelling is the principal residence, it is identified from the length of time spent there. Being present for one year or more in a territory or intending to do so is generally sufficient to qualify as having a principal residence there. For most households, their country of residence is the same as the country in which their place of usual residence is located, although this is not always so.

All members of the same household have the same country of residence as the household itself, even though they may cross borders to work or spend periods of time abroad. If they work and reside abroad so long that they acquire a centre of economic interest abroad, they cease to be members of their original household. Likewise, if a person lives with others in their principal dwelling but maintains his or her own principal dwelling in a foreign country, that person is a resident of the foreign country and is not regarded as a member of the same household as the others, even though income and expenses may be shared or assets jointly held.

Additional guidance is provided for a number of specific cases: students who go abroad for full-time study continue to be residents of the territory in which they were resident prior to studying abroad; patients who go abroad for the purpose of medical treatment maintain their predominant centre of interest in the territory in which they were resident prior to the treatment; crews of ships, aircraft and similar equipment that operate outside a territory or across several territories are treated as being resident in the territory of their home base; national diplomats, military personnel, etc., employed abroad in government enclaves and their households are considered to be residents of the territory of the employing government; cross-border workers have their residence in the territory where their principal dwelling is located; refugees have their residence in the economy where they stay or intend to stay for a year or more; and highly mobile individuals having no principal dwelling or two or more principal dwellings in different economies have their residence determined on the basis of the territory in which the predominant amount of time is spent in the year. Examples where a household's country of residence may differ from the country of location of its place of usual residence include the following:

- *Tertiary Students Studying Abroad* continue to be residents of their home country. However, their place of usual residence is their term-time address in the foreign country where they are studying, unless their specific circumstances satisfy the conditions for an exception. That is, if the student has sufficient financial support from parents to maintain himself or herself without other income and/or the student returns to the family home for long periods, then the family home is regarded as the place of usual residence. From the perspective of the home country, when the student's place of usual residence is the term-time address abroad, then the student constitutes or is part of a resident household unit of the home country that is physically located in a foreign country. If the student is sharing their term-time accommodation with non-residents of the home country, the student needs to be separated from those non-residents when delineating a resident household unit. For both private and institutional households, this implies that two or more households need to be identified at the same foreign address: one consisting of home country residents and one or more others consisting of non-residents.

Box 3.2. **Country of residence** *(cont.)*

- *Persons Undergoing Medical Treatment Abroad* continue to be residents of their home country, but their place of usual residence may be an institution in a foreign country (rather than their home in the home country) if they spend 12 months or more in the relevant institution. Again, two or more institutional households may need to be delineated at the one address to ensure that resident households can be separated from non-resident households.
- *Diplomats, Military Personnel and Similar Staff Serving Abroad,* as well as their households, are considered to be residents of the territory of the employing government. In addition, the physical enclaves in which they work and sometimes live are considered part of the territory of the employing government, not the host country. This reflects the fact that such enclaves, which are clearly demarcated land areas located within the geographical boundaries of the host country, are outside the legal jurisdiction of the host country. If such households live outside the territorial enclaves, their country of residence will differ from the country of location of their usual residence, whereas if they live inside the enclaves both these countries will be the same.

household. These units cover: *i)* conventional dwellings; and *ii)* other types of housing units such as mobile, semi-permanent and improvised dwellings.

Collective living quarters comprise premises designed for habitation by large groups of individuals or several households and used as the usual residence of at least one person. These premises cover: *i)* hotels and boarding or lodging houses; *ii)* institutions; and *iii)* camps (e.g. military camps, refugee camps and camps for housing workers).

Assumptions underlying the use of an aggregated statistical unit

While the use of an aggregated statistical unit avoids some difficult problems with data collection and valuation, it implies that all the people in a household have the same level of economic well-being. The validity of this assumption is likely to be high if the household comprises only a family with small children, but much lower if it is a group of unrelated people.

Also, the assumption that all people in a household have equal access to the economic resources of the household is likely to be less valid for wealth than for income, since the owners of wealth usually accumulate it during the middle stages of their lifecycle, in anticipation of running it down in the later stages, or bequeathing it. The composition of households changes over time. In most cases, if members of a household leave and become part of another household, they will not directly take a proportionate share of the first household's wealth with them, even though they may have the same contingent asset (based on wills defining bequests or through legal rights established in the country concerned) that they had when residing under the same roof as the legal owner of the assets. When adult children leave their parents' home, they are likely to receive some ongoing benefit from their parents' wealth through gifts, cheap loans and eventually inheritance, but the extent of the benefit will vary widely. When unrelated household members leave a household, it is unlikely that there will be any further sharing of the benefits of wealth between the departing household members and those remaining.

Family economic units

Statistics on the distribution of income, consumption and wealth compiled using the household as the statistical unit may be supplemented by statistics compiled using smaller statistical units that are defined more narrowly. The primary reason for doing so is to create units that have a higher likelihood of equally sharing the economic resources between members of the unit.

For example, "family economic units" (sometimes known as "income units") can be defined, with the units being: *i)* couples without children; *ii)* couples with dependent children; *iii)* single parents with dependent children; and *iv)* individuals. The assumption that all members of these units have the same level of economic well-being is stronger than for the household, since the definition of the family economic unit is narrower. If a household contains more than one family economic unit, then measures of income, consumption and transfers for each family economic unit need to include all transfers received from and paid to other family economic units within the household. Similarly, measures of wealth are needed separately for each family economic unit within the household.

The definition of family economic units or similar sub-household units is often determined on the basis of institutional and legal arrangements within the country where the units are being used. For example, they may be defined using the same rules that govern the administration of social assistance payments, especially in the definition of "couple" and "dependent children". Such units are of particular importance when analysing social "safety nets" in the country concerned.

Individual person data

While a full set of income, consumption and wealth data is to be collected with respect to households, it is useful to collect selected data items, including components of income and wealth, with respect to individuals within the household.

In some analysis, characteristics (e.g. age) are adopted from a selected reference person as a proxy of the household. Regarding household income, the longest period of time for which anyone in the household had control of the housing arrangements or the highest income are usually considered the best options to serve as a reference person. To identify a member of the household as having the highest income, it is necessary to have a concept of personal income. A definition of personal income is also useful for other reasons, e.g. to calculate the contribution of the individual household members to total household income.

Most importantly, wealth data should be collected with respect to individuals as well as households. The wealth of a household is of relevance to analysing the capacity of the household to consume in the current time period. However, when considering wealth in terms of potential consumption in the future and long-term economic well-being, the current composition of the household will normally be less relevant as the composition of the household is likely to change. As noted above, when the composition of a household changes, it is unlikely that the wealth of the household is shared equally between remaining and departing members. This is certainly the case if the members are unrelated or not closely related. It will probably happen to some extent when children become adults and leave the family home, although they are still likely to benefit from parental wealth in the future, first through assistance from parents and then from inheritances. If a couple divorce or otherwise separate, the extent of sharing will depend on country customs and law.

For some analysis, it is necessary to categorise the household according to the characteristics of multiple individuals in the household, rather than just a reference person. For example, there may be interest in identifying households according to the number of children not yet of school age. For gender studies, the number of women and men in a household is of relevance.

Person-weighted estimates

As discussed above, it is recommended that the household is the most appropriate statistical unit for analysing some aspects of income, consumption and wealth. However, users of micro data are often more interested in analysing the number of people, broken down by household characteristics, rather than the number of households as such. Therefore, it is recommended that micro data output report both the number of households with the characteristics of interest, and the number of people who live in those households. The latter are sometimes known as "person-weighted" statistics. It is recommended that distributional summary statistics such as quantile ratios and Gini coefficients are always person-weighted. Similarly, data relating to family economic units or any other statistical units that combine individuals should also be person-weighted.

Equivalence scales

When income is used as a measure of economic well-being to compare units, the choice of income measure is critical. Gross income is one measure used for a variety of purposes, but it fails to establish clear relativities because not all gross income is available to support consumption. Disposable income is a more appropriate measure, since it excludes income that brings no direct benefits to the household.

However, income relativities should also reflect some measure of the needs to be met from that income. The needs of a household grow with each additional member, and therefore a larger household normally requires more economic resources than a smaller household if the two are to enjoy the same standard of living. Looking at income alone and ignoring the role of wealth, one way of adjusting for this difference in household size might be to divide the income of the household by the number of its members, so that all income is presented on a per-capita basis. Such a simple adjustment assumes that there are no economies of scale derived from living together. However, it is unlikely that a household with three members needs three times as much housing space, electricity, etc., as does a lone-person household.

The needs of households may differ for other reasons also. It may be considered that children have fewer needs than adults, or that people in the labour force have greater needs than those not in the labour force because of the cost of travel to work and of suitable clothing.

Various calibrations, or equivalence scales, have been devised to make adjustments to the actual incomes of households in a way that recognises the economies that flow from sharing resources and the differences in the needs of individuals. The scales differ in their detail and complexity, but all recognise that the extra level of resources required by larger groups of people living together is not directly proportional to the number of people in the group. Many scales also assume that children have fewer material needs than adults.

When household income is adjusted according to an equivalence scale, the equivalised income can be viewed as an indicator of the economic resources available to a

standardised household, assuming equal levels of wealth. When using a lone-person household as the reference point, its equivalised income is equal to the actual income recorded. For a household comprising more than one person, the equivalised income is an indicator of the household income that would be needed by a lone-person household to enjoy the same economic well-being as the household in question.

Alternatively, equivalised household income can be viewed as an indicator of the economic resources available to each individual in a household. This view underpins the calculation of income distribution measures using person-weighted estimates, i.e. estimates based on the number of people rather than on the number of households.

There are many different ways in which equivalence scales have been derived. The simplest merely reflect the number of people in the dwelling. Others are more complex. Chapter 8 provides more detail.

Equivalence scales and statistical units

Equivalence scales are applied primarily because of the economies of scale available when people share housing and other consumption. Normally, the greatest economies of scale are achieved through sharing housing. The basic unit of housing is the dwelling, rather than the household or other statistical unit such as the family economic unit. Therefore it is most appropriate that the equivalence scale reflects the number of people who live in the dwelling, even if the dwelling contains more than one household.

Equivalence scales and measures of wealth

The existing equivalence scales have income and consumption as their focus. In principle, the same concept of economies of scale could be applied to wealth when the focus is on the potential of household wealth to support the current consumption of the current household. However, household composition changes over time, and an individual's wealth is typically accumulated during their working life and then used to support consumption during retirement. Moreover, the ownership and availability of wealth may be specific to particular individuals within a household. Therefore equivalence scales are of less relevance when analysing the long-term economic well-being of the individuals of a household, especially if the household comprises multiple generations or contains unrelated persons.

Reference period

The choice of the time period to be considered when analysing income, consumption and wealth has an impact on the detailed definition of the various flows and the practicalities of collecting the required data.

Income is broadly defined as receipts of economic resources that are regular and on-going. Such receipts should be available to a household in most time periods because they normally support the on-going consumption of the household. If the reference period used for analysis is too short, income may be available only in a relatively small number of periods, and there is likely to be an imbalance between income and consumption, with significant saving in periods in which income is received, and significant dissaving in periods in which income is not received. Data from just one of these periods are unlikely to provide a good representation of the overall economic well-being of the household concerned.

The preferred reference period for implementing the ICW Framework is one year, since some types of income are received only once a year or may fluctuate substantially between seasons. Agricultural production often has an annual cycle, and many jobs provide higher incomes in some seasons of the year than in others. Some income, such as dividends from shares owned by the household, may be received only once or twice a year. Households that operate their own businesses may only calculate their profit, i.e. the income accruing to the household, once a year.

Similarly, some current expenditure may be seasonal in nature or occur only once a year. Power bills are likely to fluctuate with the seasons, at least in colder climates. Land taxes, insurance premiums and similar payments may only be made once a year.

Use of other reference periods

The use of a full year as the reference period is most appropriate for the full implementation of the ICW Framework and for compiling statistics on income, consumption and wealth that are consistent with each other. Nevertheless, there are some drawbacks.

Over time, new households are created, and existing households change their size and composition, or cease to exist altogether. Changes in household size and composition may lead to significant changes in the economic well-being of the household, e.g. as an employed person joins or leaves a household. Even without changes in household composition, the economic well-being of a household can change markedly during the year, e.g. because a member obtained or lost a job.

More meaningful and timely indicators for some purposes may be derived if income and expenditure data are collected with respect to the most recent period that might be considered regular and recurrent for the item concerned. For employee income, this could be the last wage or salary payment they received, perhaps with some supplementary information about overtime or any other unusual characteristics of that payment. For income from social assistance and social insurance, it would similarly focus on the most recent payment. For income from agricultural production and business activity, it is still likely to be annual income, i.e. the reference period would remain one year. The various elements refer to different time periods, but they all need to be expressed in terms of a common periodicity, such as income per week or income per year. They can then be added together to give an estimate of aggregate income, which is referred to as "current period income".

Estimates of current period income may be collected as a supplement to full-year estimates but cannot replace them, especially when comparisons with consumption and wealth data are required. In particular, estimates of the saving of an individual household should not be made using current expenditure estimates for a short current period that is significantly affected by seasonality or irregular influences, nor by using current income estimates that are similarly affected. Saving is a residual value derived by subtracting current expenditure from income and is sensitive to any short-term differences between the two. Estimates of saving derived from annual data will be less volatile but may be subject to high recall error, especially for current expenditure measures.

On the other hand, when deriving estimates on the basis of annual data, it may be necessary to exclude those households that did not exist in their current form, or in close

to their current form, for the whole year, since meaningful annual data may not be available for them. Households that no longer exist will always be excluded.

Valuation issues

Cash versus accrual accounting

In analysing the well-being of households, it is desirable to examine the underlying economic flows and stocks relevant to the households, since these better reflect the likely basis of households' economic decision-making. This implies that measures on an accrual basis are preferred to measures on a cash basis, i.e. transactions are to be measured with respect to the moment when economic value is created, transformed, exchanged, transferred or extinguished rather than when the associated cash flows occur.

In the context of micro data and for practical purposes, it can be assumed that cash measures approximate accrual measures for many elements in the ICW Framework. However, there are some elements where this is not the case. The following paragraphs discuss two specific elements: holding gains and losses, and income tax. The same principles can be applied to other elements, as appropriate.

The difference between a cash- and an accrual-basis measurement is likely to be greatest for holding gains and losses. If a cash basis were adopted, holding gains and losses would be measured only when realised, i.e. when the relevant assets were sold or otherwise disposed of. However, if the underlying value of assets is changing over time, this should be reflected in measures of household wealth, especially for assets that may be owned for long periods of time.

For some sources of income, income tax may be paid a significant time after the associated income was earned, and the transactions could be recorded in different time periods. A significant difference can therefore arise between income tax measured on an accrual- and on a cash-basis, since income tax actually paid can vary between years because of annual variations in income, changes in taxation deductions, disputes with tax authorities and so on. While households are unlikely to be able to report income tax on an accrual basis, it is possible to model the income tax liability on reported income, thereby reducing any possible mismatch between income received and current transfers paid and the consequent distortion to disposable income.

Establishing market prices

Under accrual accounting, the valuation of all flows and stocks included in income, consumption and wealth micro data should reflect the market prices relevant at the time the flow took place or the stock was measured. However, it is sometimes difficult to define which "market" is relevant. This subsection highlights some of the areas of particular difficulty.

A market may be dominated by barter transactions, with few, if any, transactions involving cash. In this case the market does not have typical prices established in cash terms. Prices that could be used for imputation may be available only from markets some distance away and may not be relevant due to factors such as significant transport costs that preclude goods moving between markets.

Also, there can be a number of difficulties with valuing transactions that are internal to a household. By definition, the prices underlying these valuations must be imputed, since the household both provides and consumes the goods and services produced. There

are a number of issues to be considered in making such imputations. These are discussed briefly below.

In some economies, there is significant subsistence production and other production of goods for own use. While the quantity of goods produced is likely to be known, there may be difficulties in establishing appropriate prices for these goods as there are for bartered goods.

The value of housing services that owner-occupiers of dwellings provide to themselves is the most common of these transactions included in income and consumption micro data. In some regions, there may not be a significant rental market and therefore no established market prices to use as a basis of imputation. Even where there is a significant rental market, there can be uncertainty about the imputation because the "average" rented dwelling is be of a different quality than the "average" owner-occupied dwelling of the same size and age, since owner-occupiers are more likely to adapt the dwelling to their tastes and needs.

There are even greater difficulties in imputing values to the services provided by consumer durables, since a significant rental market for them is unlikely to exist, and there is likely to be a significant difference between the quality of the "average" rented item, if it exists at all, and the "average" item owned by a household. An alternative approach is to value these services on the basis of the cost of providing the services. The costs of relevance will normally be depreciation, repair costs, and a return to capital invested, which would have to be modelled.

The valuation of unpaid domestic services presents a particular conceptual challenge in establishing both the price and the quantity of the services. While it may be possible to establish the wage rate that would have to be paid to someone to cook meals, clean house, care for children, etc., it is not clear that this is the most appropriate price to use – e.g. a very small proportion of such services are provided through the commercial market, household members do not necessarily value their own time at such prices, etc. It is also not clear what quantity of the services the price should be applied to; the services are often provided concurrently, and services such as cooking, gardening and child care may be carried out in part as a recreational or other pleasurable activity, etc.

Establishing market prices for some assets also raises some valuation issues. For an unincorporated enterprise owned by a household, it may be difficult to establish how much would be obtained if the business were sold because there have been no recent sales of directly comparable businesses. In the stock market, there may be no relevant price if sales of the shares have been suspended for some reason and they could be expected to trade at a significantly different price when trading resumes. Dwellings may have unique features that make it difficult to identify "directly comparable" sales on which to base a valuation. In addition, there is an issue in identifying the market of interest with respect to the perspectives of sellers or buyers. The problem is illustrated by the difference in price that the owner of a business or dwelling would need to be offered to persuade them to sell when previously they had not considered selling, and the price that the same owner would accept if placed in the situation of being forced to make a "fire sale".

For other assets, in particular financial assets such as shares, recent market prices may be known. But because such markets can experience extreme volatility, it is not clear that it is always useful to show resultant large holding gains or losses as changes in wealth, since they may be sensitive to the timing of the valuations and quite short-lived.

Care should be taken when establishing values that are based on future flows. Consider, for example, a large lottery prize comprising a stream of payments over more than one year. The lottery prize is a capital transfer received when the lottery prize is won. However, the prize includes an asset that is a financial obligation from the lottery promoter to provide a payment stream in the future. The value of that financial obligation should be derived as the nominal value of the future payments discounted to a present value using an appropriate discount rate.

Valuation based on discounted future value

Some assets such as entitlements in defined-benefit schemes, annuities and life insurance are not determined entirely by the value of funds currently held in the scheme but also by factors such as the salary of the participant and the life expectancy of the participant and any other beneficiaries. As the entitlements cannot be traded in the market, it is not possible to establish a market price for them either. However, they do represent future receipts, in the form of an income stream and/or lump sums to be received under specified conditions in the future. They are therefore valued on the basis of the expected future receipts adjusted by an appropriate discount rate to obtain a present value. The expected future receipts need to be derived on the basis of the rules governing the payment of entitlements, such as salary level and actuarially determined life expectancies. In essence, models need to be developed that reflect the benefits which would be obtained if the beneficiaries died in the coming year, in the following year, in the year after that, and so on, multiplied by the actuarial probability that the beneficiary will die in each of those years.

Managing price differences over time and across geography

The prices that underlie the measures of income, consumption and wealth change continually and can vary between places. There are variations in the overall price level, and there are variations in the prices of items relative to each other. The variations have a number of implications.

First, the change over time in the price of an asset directly changes the value of wealth, without any income, consumption or other transactions taking place. Therefore the item "holding gains and losses" is explicitly included as a flow in the ICW Framework.

Second, changes in general price levels over time (inflation) will impact on some micro-data analysis comparing one period with another. Consideration needs to be given to whether the CPI or some other deflator is the most appropriate to use to adjust for inflation. If comparisons are being made between different subpopulations over time (e.g. comparing retirees from the rest of the population), it may be appropriate to use deflators specifically constructed for those subpopulations if they tend to consume different goods and services.

Third, comparisons between different regions may need to take account of different price levels in those regions. If the regions under consideration are different countries, it is also necessary to account for differences between currencies. Purchasing power parities (PPPs) should be used to standardise data when making comparisons between countries. If the comparisons are within a country, it may be necessary to use spatial price indexes, although very few countries have developed indexes for this purpose.

Micro and macro statistics

The ICW Framework has been developed to provide concepts and definitions for the compilation of statistics on the income, consumption and wealth of individual households and their members. Such data can be used to compare the economic well-being of different groups within the population of interest, including distributional measures, and to understand household level economic behaviours. These are referred to as micro statistics.

In contrast, macro statistics on household income, consumption and wealth relate to aggregate data for the household sector as a whole and to understand average household economic behaviours. They are compiled as part of a broader set of statistics that shows relationships between all sectors in the economy. The System of National Accounts (SNA) is the main international framework used to guide the compilation of macro statistics for the household sector.

In principle, the micro and macro frameworks have the same underlying concepts of income, consumption and wealth. In practice, however, there are differences, for a variety of reasons. Because the micro framework focuses exclusively on the household sector, it views transactions from a household perspective. In contrast, the SNA has a broader perspective, and sometimes transactions can be viewed in different ways by different sectors. For example, the payment of an accident insurance benefit is viewed as a current transfer from the perspective of the insurance company, which is the treatment adopted in the SNA. However, from an individual household's perspective, the receipt of such benefit is not regular. Therefore the ICW Framework treats such claims paid to households as negative expenditures.

Some transactions recognised in the SNA as important for some sectors are not obvious to households, and are neither important for household sector analysis nor relevant to household-level economic behaviour. Therefore they do not need to be included in a micro framework. The SNA's concept of financial intermediation services indirectly measured (FISIM) is an example. Financial institutions normally finance their operations, at least in part, by paying lower interest rates for deposits made with them than the rates charged for loans made by them. The SNA treats as a service charge the difference between each of these rates and a notional "true" interest rate lying somewhere in between. By imputing the notional "true" rate, it is possible to indirectly estimate the embedded service charges made, on average, by financial institutions that cannot be known to householders. FISIM is an important form of income to financial institutions and therefore needs to be derived for macro accounts that include the financial sector. However, from a household's perspective, the existence of such service charges is not relevant, since they will make their decisions on the basis of the interest rates paid and levied. In addition, most of the interest paid or received by households is related to earning income (through investment in dwellings, consumer durables or other assets), and all the costs of earning this income are netted off the gross flows, regardless of notional splits of the flows into pure interest and related banking services. It is therefore unnecessary to include FISIM paid by households in a micro-data framework.

Both micro and macro frameworks are influenced by the practicalities of collecting data relevant to the concepts to be measured. However, the different uses of micro and macro statistics may influence the way those practicalities are considered. The data sources likely to be available to compile micro and macro data are also likely to have an impact on the frameworks, especially considering the requirement for macro data to be

compiled at least annually as part of a country's national accounts. For example, according to the concepts underlying both the micro and macro frameworks, consumer durables should be considered as a form of wealth. Nevertheless, because of limited data availability in most countries, SNA 2008 treats the purchase of consumer durables by households as consumption expenditure. The ICW Framework for micro data includes consumer durables as assets yielding services to their owning households, in analogy to the treatment of owner-occupied households. The difference in treatment reflects the particular importance of consumer durables in the wealth of poorer households and the focus of micro data on providing distributional information. It also reflects the likelihood of wealth micro data being collected directly from household surveys that can provide the required information. Similarly, this framework includes the value of unpaid domestic services as an element of household income. Time-use data can be collected in household surveys to provide a basis for estimating this variable.

The populations covered by micro and macro data are likely to vary due to their different focuses. National accounting statistics cover the total economy, and so the income, consumption and wealth of all residents need to be included in the relevant aggregates. In contrast, the micro data are focused on obtaining distributional measures, and to explain economic behaviour at the household level. People living in institutional households may be omitted from the micro data because of the difficulty in obtaining relevant data and also, because they may not be the focus of the policy development that is to be informed by the micro data. Also, people living in households that did not exist for the whole reference year may be excluded, because it is difficult to obtain meaningful annual data for such households. Differences between the ICW Framework and the SNA are outlined in Annex B of this publication.

Bringing micro and macro data together

While there are a number of conceptual and practical reasons for the differences between micro and macro data on the household sector, it can be useful to bring the two data streams together. Indeed, if the two data streams appear to be inconsistent for no obvious reason, it is likely to be of concern to users of both data streams.

To the extent that the differences are conceptual, the two data streams can in principle be reconciled and the conceptual differences quantified. In practice, differences are also likely to reflect the use of different data sources, unless the micro data have been used to compile the macro aggregates. Confrontation of the two data sources can point to data differences between the sources and to possible ways to improve them.

Even if the aggregates in the data sets are not fully reconciled, the distributional information contained in micro data can be applied to macro data to give richer data sets. The development of social accounting matrixes are an example of such an extension.

As a more general development in bringing together micro and macro information, and in parallel to the development of the ICW Framework, the OECD established an Expert Group to Measure Disparities in a National Accounts Framework. The Expert Group had terms of reference to consider how existing micro data could be used to produce measures of disparities between groups of households that are consistent with SNA concepts and averages for the household sector. This was to include: *i)* a stocktaking of available information on household income, consumption and wealth, i.e. a description and comparison of micro and macro sources; and *ii)* proposals for new indicators on income,

consumption and wealth disparities that are consistent with national accounts aggregates, thereby enabling a breakdown of the National Accounts household sector totals by groups within the sector.

Existing international frameworks and standards

The ICW Framework has been developed to provide an integrated guide for the compilation of household income, consumption and wealth statistics. It is the first international framework to comprehensively cover all three dimensions of economic well-being. Previous international frameworks in the area have focused on data on income and, to a lesser extent, on consumption. The most recent of these is the *Canberra Group Handbook* (UNECE, 2011). That edition updated the first edition, which had been published in 2001, and was consistent with the resolution on standards for household income and expenditure statistics adopted by the International Conference of Labour Statisticians (ICLS) in December 2003.

This ICW Framework does not replace the 2011 *Canberra Group Handbook* but provides a more complete picture of the relationship of income statistics to consumption and wealth statistics. The ICW Framework adds clarity for treating as current transfers any receipts or payments that may not be made regularly but are intended to support current consumption. In parallel with the development of the ICW Framework, *Guidelines for micro statistics on household wealth* has been prepared as a separate publication.

There has been a long tradition of international standards for macro data. The most recent is the 2008 System of National Accounts (SNA). The development of concepts and practices for micro data has been assisted by the work previously done for macro data, but as explained in the previous section, there are reasons for them to differ.

A number of international classifications have been developed that are relevant to household income, consumption and wealth data. They provide standard ways of classifying households, persons (e.g. educational attainment, labour force status), commodities, industries, etc. The use of standard classifications facilitates the comparability of data sets within countries and between countries.

Summary

The key highlights from this chapter can be summarised as follows:

- The concepts adopted and presented in this chapter have been chosen as the most suitable foundation for compiling micro statistics on household income, consumption and wealth that are comprehensive and that can be integrated with each other. They provide a sound basis for examining each of the various dimensions of economic well-being and the relationships between those dimensions.
- Everything else being equal, people with higher levels of consumption can be regarded as having a higher level of current economic well-being than those with lower levels of consumption. However, for a fuller understanding of economic well-being, it is necessary to consider the income and wealth that enable consumption to take place now and in the future.
- Economic resources received over a period of time are regarded as either income or capital transfers received. In general terms, income comprises those receipts that can be expected on a regular basis. On the other hand, capital transfers are not received on a regular basis, they tend to be large, and they are often described as windfall gains.

- Economic resources can be used or disbursed by purchasing consumption goods and services, by using consumption goods and services obtained as income in kind, by undertaking non-consumption expenditure such as the payment of taxes or other current transfers, by paying interest on consumer credit, or by paying capital transfers.
- Wealth is the stock of economic resources held by a person at any point of time. Wealth comprises non-financial assets such as dwellings and financial assets such as cash and stocks (shares) in corporations. Financial assets may contain negative elements in the form of loans taken out and other liabilities; therefore wealth is sometimes known as net worth.
- Saving is the excess of income over current expenditure and adds to wealth, while dissaving is the decrease in wealth resulting when current expenditure exceeds income. Other flows contributing to changes in the stock of wealth over time include capital transfers received or paid, other volume changes, and holding gains and losses.
- The household is the primary unit to be used for analysing micro data on income, consumption and wealth, reflecting the significant sharing of resources that occurs in most households. However, smaller units such as the family economic unit or the individual may be appropriate for some forms of analysis.
- It is recommended that micro data output report both the number of households with characteristics of interest and the number of people who live in those households. The latter are sometimes known as person-weighted statistics. It is recommended that distributional summary statistics such as quantile ratios and Gini coefficients are always person-weighted.
- To provide the same standard of living for household members, larger households normally require more resources than smaller households, but larger households also usually experience greater economies of scale in providing for the needs of their members. Equivalence scales provide a way of adjusting household income to a standardised basis. They may also be used for consumption estimates and for wealth estimates when focusing on the potential of household wealth to support the current consumption of the current household.
- The preferred reference period for implementing the ICW Framework is one year, since there are significant types of income that are received only once a year or that may fluctuate substantially between seasons.

Notes

1. In this statement it is assumed that there are no differences in terms of security of employment, expectations about future income flows, or expectations of future wealth changes such as the receipt of an inheritance, and so on.
2. Social assistance, social insurance, other insurance and related concepts are described in detail in Annex C.
3. A housing loan is a loan taken out by household members primarily for the purpose of purchasing, building or renovating an owner-occupied dwelling. It is often in the form of a mortgage on the dwelling, but may be a mortgage on another property, or another form of loan. Conversely, housing loans exclude mortgages taken out on the dwelling if the primary purpose of the mortgage is to finance investment in some other asset or to finance consumption expenditure.
4. Note that the ICW Framework clarifies that payments intended to support the current consumption of recipients should be treated as current transfers paid.

5. Private pensions are schemes that are not regarded as social insurance, i.e. pension schemes which are not mandated by government and are not employment-related. Social assistance, social insurance, other insurance and related concepts are described in detail in Annex C.
6. Conversely, in the SNA, capital gains taxes are treated as current transfers, even though holding gains and losses are not included in income.
7. The definitions of "household", "household categories", "housing arrangements" and "place of usual residence" are based on the UNECE/CES population census standard. The definition of "country of residence of household" is based on the SNA (which in turn follows the *IMF Balance of Payments Manual*, 6th Edition), since this standard presents the internationally agreed basis for distinguishing residents from non-residents of a country.

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Chapter 4

Household income

In the context of the ICW Framework, household income is a flow that enables consumption and contributes to changes in household wealth or net worth. As an important element in the measurement of economic well-being, standards and guidelines have been provided to assist countries in the collection, compilation and dissemination of household income statistics. The most recent of these, the 2011 Canberra Group Handbook, Second Edition, *has been incorporated into the ICW Framework, and forms the basis for this chapter.*

Policy context and uses

Micro-level data on income at the household level supply information about the distribution of income across members of a society. Economic analysts and policy makers require information on income distributions for many reasons. One is to understand the relationship between patterns of income distribution and the way in which societies are organised. Differences in institutions and policies affect income distributions, and their effects are better understood through comparison with earlier years, and with other countries. Monitoring changes in sources of income and income distribution for particular subpopulations is important for assessing the economic well-being of individuals and of society as a whole.

Measuring household income is necessary to assess the effect of both universal and targeted actions (such as welfare, taxation and other fiscal policies) on different socio-economic groups. It is important to understand the implications of fiscal and monetary policies for the economic well-being of particular groups within the population, and how they might increase or reduce inequality in the distribution of resources. The tax and transfer system is a primary mechanism by which economic resources are redistributed. It is important to understand the factors that might cause an increase in the number of low-income earners, such as rising unemployment or population ageing, or how this might be affected by different policies.

Additionally, there is an interest in how different patterns of income distribution influence household well-being and people's ability to acquire the goods and services to satisfy their needs and wants, including through studies of poverty and social exclusion and research on consumer behaviour. In order to design effective programs, policy makers must know the characteristics and circumstances of low-income households, of those considered to be at risk of poverty, and of those in greatest need of financial support. Comparing income distributions with earlier years, or with other countries, informs policy designs to ensure that people have sufficient incomes in their working lives and in retirement to maintain an adequate standard of living. One important goal of public policy is to prevent the economic hardship that may lead to a range of social problems, such as poor health and education outcomes, increased crime rates and lower rates of community participation, or dependence on assistance from government and charitable organisations. Of particular policy interest and concern is the impact on children in affected families and the geographic distribution of hardship.

Most data on income distributions refer to only one point in time. These data measure a cross-section of the population and give a picture of the distribution of income in one period. Assessing how incomes change at the household level requires more complex data collection that follows the same individuals or households for longer periods of time. The collection of longitudinal data from household surveys is not as common as cross-sectional data, due to the extra cost and complexity and issues with data quality. A central goal of longitudinal data is the measurement of change at the individual level. To understand the

processes involved in life histories, data need to be collected at key transition points from the same individuals over an extended period. For example, poor educational attainment in children may be attributed in part to low parental aspiration. 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 can give insight into to the nature of some of the "cause and effect" relationships involved.

Producers of income distribution statistics therefore have to make choices about what data need to be collected, what types of statistics to estimate, and how to summarise information on income distributions. Guidance on the collection, analysis and dissemination of income data are described in several sources. Household income statistics should be internationally comparable and consistent with related economic and social statistics.

International standards at the micro and macro levels

Household income measurement has two main traditions: the macro approach, having its roots in national accounts and in particular the accounting-based standards laid out in the UN System of National Accounts (SNA) and the micro approach, having its roots in microeconomics and particularly the study of poverty and inequality and their effect on different socio-economic groups within society. SNA data are sectoral aggregates compiled from many sources and presented within the broader national accounting framework. The data show how the household sector relates to the corporate and government sectors and to the rest of the world.

The conceptual definition of income at the household level presented in the *Canberra Group Handbook* is generally consistent, with the definition of income used in the System of National Accounts (SNA).[1] However, despite the conceptual similarities, the different purposes of the statistics to be compiled result in some different treatments. Some income items that are treated differently are income from self-employment, income from the rental of dwellings, royalties and rental income from non-residential property (factories, shops, etc.), and the production of services by household members for their own final consumption (other than the services provided by owner-occupied dwellings), which have traditionally been excluded from measured production in the SNA.

National accounts provide information about the overall performance of the whole economy and aggregate outcomes for households. However, they do not inform our understanding of the distribution of these resources across households or between subgroups of the population. In addition the per-capita measures in the national accounts do not take account of the way in which household needs vary on the basis of household composition or the age of household members. Understanding the distributional dimensions of economic well-being requires the measurement of concepts at the household level.

Income concepts and definitions

The conceptual definition of household income for micro statistics adopted in the ICW Framework is as follows: Household income consists of all receipts, whether monetary or in-kind (goods and services), that are received by the household or by individual members of the household at annual or more frequent intervals, but excludes windfall gains and other such irregular and typically one-time receipts. Household income receipts are

available for current consumption and do not reduce the net worth of the household through a reduction of its cash, the disposal of its other financial or non-financial assets or an increase in its liabilities. Household income covers: *i)* income from employment (both paid and self-employment); *ii)* property income; *iii)* income from the production of household services for own consumption; *iv)* current transfers received (other than social transfers in kind); and *v)* social transfers in kind.

The conceptual definition determines what, in principle, should be included in a comprehensive measure of household income. The classification of income components presented below is a summary of the detailed ICW Framework presented in Annex A. The elements listed in Table 4.1 are described in the sections that follow. Relevant background material for many elements was provided in Chapter 3.

Income from employment

Income from employment comprises receipts for participation in economic activities in a strictly employment-related capacity. It consists of payments, in cash or in kind, received by individuals, for themselves or in respect of their family members, as a result of their current or former involvement in paid jobs or self-employment. Income from employment consists of:

- *Employee income* received in cash (monetary) or in kind (as goods and services). Employee income includes direct wages and salaries for time worked and work done, commission and piece-work payments, tips and gratuities, directors' fees, shares offered as part of employee remuneration, profit-sharing bonuses and other forms of profit-related pay, remuneration from an employer for time not worked such as annual leave, holidays or other paid leave (but not pay while absent on sickness, disability or maternity leave if paid by the employer rather than by a social assistance or social insurance scheme), free or subsidised goods and services from an employer, severance and termination pay (except lump-sum retirement payments, which are treated as capital transfers), and employers' social insurance contributions.
- *Income from self-employment,* i.e. income received by individuals over a given reference period as a result of their involvement in self-employment jobs. Net income from self-employment includes the profit or loss that accrues to owners of, or partners in, unincorporated enterprises who work in these enterprises. It also includes the estimated value of goods produced for barter as well as of the goods produced for own consumption, less expenses. The basis for the measurement of income from self-employment in household income statistics is the concept of "net" income, i.e. the value of gross output less operating costs and after adjustment for depreciation of assets used in production.

Property income

Property income is the flow of receipts that arise from the ownership of assets (return for use of assets) that are provided to others for their use. They include returns from financial assets (e.g. interest earned on deposits, dividends from share holdings), receipts from investment in unincorporated enterprises in which the investor does not work (sometimes known as "sleeping" or "silent" partners), and annuities and other regular payments from life insurance funds and private pension funds that are excluded from social insurance. Property income also includes rents and other payments received for the use of non-financial assets, both unproduced assets (i.e. natural resources), such as land, and produced assets, such as houses, other buildings, plant, equipments, and patented or

Table 4.1. **Income components**

CODE	ELEMENT
I1	**Income from employment**
I1.1	Employee income
I1.1.1	Cash wages and salaries
I1.1.2	Cash commission and piece-work payments
I1.1.3	Cash tips and gratuities
I1.1.4	Directors' fees
I1.1.5	Shares offered as part of employee remuneration
I1.1.6	Profit-sharing bonuses and other forms of profit-related pay
I1.1.7	Other cash bonuses
I1.1.8	Free or subsidised goods and services from employers
I1.1.9	Severance and termination pay
I1.1.10	Employers' social insurance contributions
I1.2	Income from self-employment
I1.2.1	Profit/loss from own unincorporated enterprise
I1.2.2	Goods and services produced for barter, less cost of inputs
I1.2.3	Goods produced for own use, less cost of inputs
I2	**Property income**
I2.1	Income from financial assets, net of expenses
I2.2	Rent from real estate other than owner-occupied dwellings, net of expenses
I2.3	Royalties and other income from other non-financial assets, net of expenses
I3	**Income from household production of services for own consumption**
I3.1	Net value of housing services provided by owner-occupied dwellings
I3.2	Value of unpaid domestic services
I3.3	Net value of services from household consumer durables
I4	**Current transfers received, excluding STIK**
I4.1	Pensions and other cash benefits from social security
I4.2	Pensions and other benefits from employment-related social insurance
I4.3	Social assistance benefits in cash from government
I4.4	Current transfers received from other households
I4.5	Current transfers in cash received from non-profit organisations
I4.6	Other current transfers received, excluding social transfers in kind
	Income from production *(sum of I1 and I3)*
	Primary income *(sum of I1, I2 and I3)*
IT	***Total income*** *(sum of I1 to I4)*
E2	**Current transfers paid**
E2.1	Direct taxes (net of refunds)
E2.2	Compulsory fees and fines
E2.3	Employee and employers' social insurance contributions
E2.4	Current transfers paid to other households
E2.5	Current transfers paid to non-profit organisations
E2.6	Other current transfers paid
ID	***Disposable income*** *(IT less E2)*
I5	**Social transfers in kind (STIK)**
IAD	***Adjusted disposable income*** *(ID plus I5)*

copyright material. All property income should be recorded net of any expenses incurred in earning it.

Income from the household production of services for own consumption

Income from the household production of services for own consumption includes services produced within the household for the household's own consumption rather than for the market. These include services from owner-occupied dwellings and from consumer

durables owned as well as own-produced domestic services. They are valued net of the expenses that go into their production. The production of services by household members for their own final consumption, other than the services provided by owner-occupied dwellings, has traditionally been excluded from measured production in the SNA.

Imputed rent is the net estimated value of housing services provided by owner-occupied dwellings. Imputed rent is included in income on a net basis, i.e. the imputed value of the services received less the value of the housing costs incurred by the household in their role as a landlord. Estimates of imputed rent should be presented separately so that data are available to support different types of analysis. Where statistics on household income and household expenditure are to be analysed jointly, rent imputations should be produced in a consistent manner. In the SNA, net rental income from owner-occupied housing (imputed value of housing services less operating costs) is a component of gross operating surplus in the household income account.

Unpaid domestic services, or home production, include the estimated value of own-produced domestic services such as cooking, housekeeping, minor repairs and child care. Only the value of the labour is included here.

Income from services of household consumer durables, such as cars, washing machines and refrigerators, refers to the imputed value of the flow of services provided by these items, less expenses incurred in providing them.

Current transfers received

Transfers are receipts for which the recipient does not give anything to the donor in direct return. Transfers can consist of cash or goods or services. Transfers may be made between households, between households and the government, between households and corporations, or between households and charities, both within or outside the country.

Current transfers received directly affect the level of disposable income and the consumption of goods and services. They consist of all transfers that are not transfers of capital but also exclude social transfers in kind made by governments and charities. Capital transfers tend to be large, irregular and infrequent receipts such as inheritances or lump-sum retirement payments. Current transfers tend to be small and are often made frequently and regularly. In concept, all current transfers received in cash and as goods or services are regarded as income. Current transfers include the following items:

- Social security pensions, insurance benefits and allowances generated from general government-sponsored social insurance schemes (compulsory/legal schemes) such as pensions (including overseas pensions), unemployment and sickness benefits.[2] Only cash benefits are included, since in-kind benefits are part of social transfers in kind (STIK).
- Pensions and other insurance benefits from employer-sponsored social insurance schemes (both funded and unfunded).
- Social assistance benefits in cash from governments (universal or means-tested) that provide the same benefits as social security schemes, but which are not provided for under such schemes.
- Current transfers from other households in the form of family support payments (such as alimony, child and parental support), regular receipts from inheritances and trust funds, regular gifts, financial support or transfers in kind of goods or services

(e.g. housing or child care services). The category also includes any other cash payments or provision of goods and services intended to support the current consumption of the recipient.

- Current cash transfers from non-profit institutions (e.g. charities, trade unions and religious bodies) in the form of gifts and financial support, such as scholarships, union strike pay, union sickness benefits and relief payments. Regular payments and any other payments intended to support the consumption of the recipient are also included here.
- Other current transfers received include current transfers from corporate entities (unless they qualify as negative consumption expenditure) and from inheritances and trust funds.

Income from production

This concept is the sum of income from employment (I1) and income from household production of services for own consumption (I3).

Primary income

Primary income adds property income (I2) to income from production.

Total income

Total income is defined as the sum of current transfers received (I4) and primary income.

Current transfers paid

This category includes payments such as direct taxes, fees or fines paid, employer and employee contributions to social insurance schemes, current transfers to non-profit organisations, and current transfers to other households, such as child support or alimony payments. These payments are current expenditures by the household that do not directly support the current consumption of the household.

Disposable income

Disposable income refers to total income (IT) minus current transfers paid (E2).

Social transfers in kind

Social transfers in kind (STIK) are defined as goods and services provided by government and non-profit institutions that benefit individuals but are provided free or at subsidised prices, e.g. food, housing, education and health care.

Adjusted disposable income

This is the sum of disposable income (ID) plus social transfers in kind (I5).

Exclusions from income

Household income excludes several types of receipts. These include receipts that are large and not received on a regular ongoing basis, and changes in the value of assets over time.

- *Windfall gains and other such irregular and one-time receipts* include large lottery prizes, large gambling winnings, non-life insurance claims, inheritances, lump-sum retirement

benefits, life insurance claims (except annuities), windfall gains and legal/injury compensation (except those in lieu of foregone earnings). Transactions that represent a rearrangement of household assets are also excluded, including the sale of assets (exchange of a non-cash asset for a cash asset), the taking of a loan (receipt of extra cash in exchange for a new liability), or the receipt of funds lent to others (receipt of extra cash in exchange for a reduction in a financial asset). Withdrawals from savings are also excluded from income. For analytical and other purposes, data may be collected on receipts that are excluded from the concept of income to provide a broader understanding of the economic circumstances of households, especially in the broader conceptual framework described here.

- *Capital transfers received* include the acquisition of assets without payment by the receiver. These transfers differ from current transfers received in terms of the pattern of receipt. Rather than being small amounts usually received on a regular basis, as in the case of current transfers, these are large, one-time receipts. These distinctions are based on the probable response by households' consumption to such receipts, the assumption being that households will not consider the entire capital transfer as available for current consumption. In practice, it may be difficult to classify transfers received properly as either current or capital transfers.
- *Holding gains or losses* refer to changes in the value of financial and non-financial assets and liabilities over a reference period due to changing asset prices. A holding gain, the result of an increase in the value of assets or a reduction in the value of liabilities, increases the net worth of the owner while a holding loss has the opposite effect. All holding gains and losses are excluded from income, whether they are realised (if the owner sells the asset) or unrealised. Instead they are included in the wealth element, Other flows contributing to changes in net worth.

Specific issues and treatments in the ICW Framework

Some of the components of income listed above overlap with concepts of consumption or wealth. Within a framework that includes all three elements, it is important to understand the relationships between these components. As described in Chapter 3, households receive economic resources as income. These resources are added to the stock of wealth to be spent for consumption or saved for future periods. While Chapter 3 provided general principles for categorisation, it noted that it is sometimes necessary to define the boundaries between income, consumption and wealth more precisely. Often these boundaries will vary depending on the specific research question being investigated. This section discusses some income components that overlap with concepts of wealth (interest payments) or of consumption (inter-household transfers, home production for own consumption, and social transfers in kind).

Interest payments as expenses

Income from various sources, including self-employment, property and household production of services for own consumption, is defined as net income, i.e. gross income less expenses. Expenses include any interest payments made on loans taken to finance the purchase, operation or renovation of the income-producing assets involved. Such loans include loans taken out to purchase or renovate an owner-occupied dwelling, to purchase or operate an unincorporated business, to purchase shares or other financial assets, or to purchase consumer durables. Interest payments on loans taken to finance consumption,

Box 4.1. **A more detailed classification of income components: The Dutch experience**

The classification of income components used in Dutch income statistics aims to show how income is formed (primary income) and how it is redistributed (secondary income). Published versions of the whole classification contain almost 60 income components, excluding subtotals. Some aspects of this detailed classification are presented below.

Classification of current transfers

The system of redistribution of income has been pictured in much detail. At the first level (Scheme 1), a distinction is made between transfers received from income insurance (5), tax-financed general social assistance (at free disposal, 6), cash transfers that are tied to specific consumption items such as rent (housing benefits) or study costs(7), and other current transfers (8).

The main subdivision of income insurance is by function rather than by scheme. The following functions have been distinguished: insurance against loss of income due to unemployment (5.1 and 11.1), sickness (5.2 and 11.2), disability (5.3 and 11.3) and retirement and surviving relatives (5.4 and 11.4).

At a more detailed level, both benefits and premiums are subdivided by scheme. So, for instance, pension premiums are subdivided into contributions paid by employees and by employers (11.4.1), private insurance (11.4.2) and national insurance (11.4.3). In practice, application of the full classification scheme will show empty rows: in most countries insurance against loss of income through unemployment, for instance, is possible through social insurance only.

A detailed classification of the redistribution through income insurance offers three advantages. First, the difference between benefits received and premiums paid can be analysed on a detailed level. Second, a picture of the role of social, private and national insurance can be shown as well as how this mix changes over time. Finally, cross-country comparisons can be made with respect to how countries differ in their system of redistribution of income, how they finance their pensions, and so on.

Contributions to health insurance

In Scheme 1, contributions to health insurance are classified separately from contributions to income insurance, because of their different character. Health insurance pays out compensation for medical expenses, whereas income insurance provides for a (regular) income flow. However, contributions to health cost insurance (social and national schemes) are treated as an income transaction, as they are obligatory and redistribute income (premiums are income-related). In the Netherlands, up to 2005 lower incomes fell under social health insurance, while higher incomes had to enter into a private health insurance. For the sake of comparability of both income and spending between populations groups (e.g. by level of income), contributions to *private* health insurance are treated as a current transfer paid and not as a spending item. In fact, a private premium *corresponding to the coverage of social insurance* against health costs has been imputed as an income transfer paid, whereas the difference with the actual premium paid by households is recorded as a spending on health services. Treating contributions to private health cost insurance as an income transaction avoids the need to use consumer price indices (and equivalence scales) tailored to different population groups. Scheme 2 shows another advantage: the major reform of health insurance introduced in the Netherlands in 2006 had only limited effect on total contributions, as these also cover premia for private insurance.

Box 4.1. **A more detailed classification of income components: The Dutch experience** *(cont.)*

Coherent classification of wealth and income from wealth

The Dutch classification of income from wealth is analogous to the breakdown of the stock of wealth (Scheme 3). A coherent classification facilitates the assessment of the plausibility of wealth values with the corresponding income flow from this stock. So, for instance, the number of households holding shares and receiving dividends should be more or less equal, and the average yield of shares should be plausible.

Scheme 1. Composition of disposable income , 2011 (provisional)

		million euro	*%*
1	Income from employment	305 623	72,7
2	Income from self-employment	23 652	5,6
3	Income from wealth	-9 532	-2,3
4	**Primary income (1 + 2 + 3)**	319 743	76,1
5	Income insurance benefit	83 858	19,9
5.1	*concerning unemployment*	5 504	1,3
5.2	*concerning sickness*	1 539	0,4
5.3	*concerning disability*	9 935	2,4
5.4	*concerning retirement/ survivors*	66 880	15,9
6	Social assistance benefit	13 580	3,2
7	Consumption tied transfers (cash)	2 449	0,6
8	Current transfers received, n.e.c.	540	0,1
9	**Gross income (4 + 5 + 6 + 7[1] + 8)**	420 406	100,0
10	Current transfers paid, n.e.c.	694	0,2
11	Income insurance premium	80 858	19,2
11.1	*concerning unemployment*	8 491	2,0
11.2	*concerning sickness*	1 348	0,3
11.3	*concerning disability*	11 738	2,8
11.4	*concerning retirement/ survivors*	59 280	14,1
12	Health insurance premium	47 797	11,4
13	Tax on income and wealth	43 345	10,3
14	**Disposable income (9-10-11-12-13)**	247 712	58,9

1. Including transfer income, source unknown (235 million euro).

Source: Statistics Netherlands.

Scheme 2. Composition of health insurance premiums, selected years

		2001	2005	2006	2011[1]
		million euro			
12.	**Health insurance premium**	27 917	35 912	37 305	47 797
12.1	Social insurance	10 658	13 343	23 402	31 789
12.1.1	paid by employees and benefit claimants	2 911	2 905	13 588	18 730
12.1.2.	paid by employers and benefit agency	6 370	7 129	.	.
12.1.3	paid by self-employed persons	192	422	355	363
12.1.4	paid by households (nominal fee)	1 185	2 887	9 459	12 695
12.2	Private insurance	5 712	7 496	.	.
12.3	National insurance	11 547	15 073	13 903	16 008

1. Provisional figures.

Source: Statistics Netherlands.

Box 4.1. **A more detailed classification of income components: The Dutch experience** *(cont.)*

Scheme 3: Coherence between the wealth and income from wealth [1]

		billion euros			billion euros
1.	**NET WEALTH (1.1 - 1.2)**	1 196	3.	**INCOME FROM WEALTH (3.1 -3.2)**	-9 532
1.1	**PROPERTY**	1 953	3.1	**INCOME FROM PROPERTY**	24 722
1.1.1	Financial assets	568	3.1.1	Income from financial assets	12 635
1.1.1.1	*Bank accounts, saving accounts*	*291*	*3.1.1.1*	*Interest received from bank accounts*	*6 454*
1.1.1.2	*Bonds*	*28*	*3.1.1.2*	*Income from bonds*	*1 000*
1.1.1.3	*Shares*	*249*	*3.1.1.3*	*Dividends*	*5 181*
1.1.2	Real estate	1 327	3.1.2	Income from real estate	11 871
1.1.2.1	*Owner-occupiers: value of the home*	*1 157*	*3.1.2.1*	*Imputed rent [2)]*	*11 026*
1.1.2.2	*Real estate, other*	*171*	*3.1.2.2*	*Income from real estate, other*	*845*
1.1.3	Moveable property	32	3.1.3	Income from moveable property	216
1.1.4	Entrepreneurial property [3)]	26			
1.2	**DEBTS**	756	3.2	**INTEREST PAID**	34 254
1.2.1	Mortgage loan	652	3.2.1	Interest paid on mortgage loans	32 274
1.2.2	Debts, other	104	3.2.2	Interest paid, other	1 980

1. Provisional results for respectively 1-1-2011 and 2011.
2. Imputed revenues of owner-occupied dwellings are treated here in the same way as e.g. revenues from other real estate.
3. The revenues of entrepreneurial property are included in the (mixed) income from self-employement.

Source: Statistics Netherlands.

education loans and the like are included not as expenses to be deducted in deriving income, but in the expenditure item of interest on consumer credit.

It is important to note that it is the *purpose* of a loan that determines how interest payments on the loan are allocated, not the *collateral* or *security* used. For example, a mortgage on a principal residence may primarily be used to fund the purchase of the dwelling, in which case interest payments on the mortgage are an expense to be deducted when deriving net imputed rent for the dwelling. But if the mortgage is primarily used to fund the purchase of an unincorporated business, the interest payments are an expense to be deducted when deriving self-employment income. If the mortgage was used primarily to fund consumption, such as the cost of a major holiday or of education, the interest payments are not deducted as an expense for any income item, but are included as interest on consumer credit. Conversely, if a loan is used to help purchase the principal dwelling but that loan has some other asset as collateral, or even has no collateral at all, interest payments on the loan are an expense to be deducted when deriving net imputed rent for the dwelling.

Income from life insurance, annuities and private pension funds

Receipts from certain types of life insurance, annuities and private pension funds are more or less regular and ongoing and are an important source of finance for the day-to-day living expenses of the recipients and are treated as income in the international standards. Those receipts therefore have the characteristics of income from the perspective of the recipients. However, they often represent the run-down of an asset held by the recipient with the financial institution making the payment. This conflict is resolved in the ICW Framework by treating the receipt as income and then having an adjustment to the value of wealth that records the decrease in wealth due to the dissaving that has actually taken place. By including such receipts as income, any analysis of income in isolation from

consumption or wealth data is likely to provide a more representative indication of the standard of living of the recipients of such payments.

Inter-household transfers

Inter-household transfers include current transfers between private households during the income reference period, in the form of family support payments (such as alimony, child and parental support), regular gifts, and other financial support or transfer in kind of goods likely to support the current consumption of the recipient. Inter-household transfers are:

- Given without an expectation of repayment, similar to any current transfer.
- Given with the aim of supporting current consumption; this is related to the classification of a specific economic flow between households as income received (when money, goods or services are used immediately or in the short-term) or as an increment of wealth (when saved or comprising a capital item such as a consumer durable).
- Often made regularly, i.e. anticipated or relied upon by the recipient household.

It is convenient that data collection on inter-household transfers distinguishes between regular and large irregular economic flows and their use by the household recipient. Regular inter-household transfers include regular alimonies, child and parental support payments, either voluntary or compulsory. Inter-household transfers can be donated either by family members or by any other person not living in the recipient household. They also include transfers by a household donor residing out of the country (remittances) when used for immediate or short-run consumption.

While regular inter-household transfers are included as income, such transfers in kind are also considered as consumption by the recipient household. As an example, food received as a transfer from another household should be included in a measure of food consumed by that household.

Home production for own consumption

Home production for own consumption refers to the goods or services that are produced within the household for the household's own consumption, rather than for the market or for barter. It includes both the household production of goods for own consumption, whose estimated value less expenses is included in the self-employment income, and the household production of services for own consumption. Home production for own consumption is an example of a non-monetary component that is included both on the income side, increasing the level of household resources, and on the consumption expenditure side, contributing to household well-being.[3]

Household production of goods for own consumption includes the production of self-consumed food products, such as dairy products, poultry, vegetables, fruits, beverages, other natural products like wood, as well as handicraft products such as the products of beadwork, needlework or weaving. Also included are withdrawals from stocks of goods purchased by the household's unincorporated enterprises such as food, magazines or cigarettes. The relevance of these non-remunerative activities for income estimation purposes depends on their estimated value, which corresponds to the market value of the goods produced less any expenses incurred in their production (or purchase of goods that are not transformed), which can be significant for specific products and groups of households.

The household production of services for own consumption includes the value of housing services provided by owner-occupied dwellings net of expenses, the value of services provided by household consumer durables net of expenses, and unpaid domestic services. The ownership of a dwelling implies an acquisition that, in accordance with the SNA, is classified as capital formation, while the dwelling produces an accommodation service consumed over time, whose price is estimated by the imputation of a rental. In this case, the value to impute shall be the equivalent market rent that would be paid for a dwelling similar to the one occupied, less any minor repair or refurbishment expenditure that the owner-occupied household undertakes, less the interest expenses of any loans taken to finance the purchase of the dwelling or any capital expenditure on it. The running costs of utilities like electricity, water or heating are not regarded as expenses in the production of housing services but as consumption expenditure. Major repairs are treated as capital formation and excluded.

This procedure aims at harmonising the evaluation of housing consumption expenditure and of the well-being gained by the owner-occupiers and tenants. Imputed rents are an example of a non-monetary component included both on the income side, increasing the level of household resources, and on the consumption expenditure side, contributing to the household's well-being.[4]

There are several methods for estimating gross imputed rent: *i)* the regression/stratification method based on actual rents; *ii)* the user cost method, based on the estimation of the cost incurred for homeownership by foregoing the opportunity to invest in financial assets from which real income flows are created in the form of income from interest and dividends; *iii)* the self-assessment method; and *iv)* the administrative assessment method, generally for fiscal purposes such as establishing property tax liabilities. If relevant data are available, the regression/stratification method is likely to provide estimates that allow the most relevant comparisons of economic well-being between home owners and non-home owners, while ensuring coherence with SNA estimates.[5]

Both unpaid domestic services and household consumer durable services are excluded from the SNA production boundary, and also from the scope of the data collections by the EU Statistics on Income and Living Conditions (SILC) and the Household Budget Survey (HBS). Unpaid domestic services include the estimated value of own-produced domestic services such as housekeeping, the preparation and serving of meals, the care of children and of sick, infirm or old people, the transportation of household members or their goods, and the cleaning, servicing and minor repair of household durable goods. The importance of these services was emphasised by the Stiglitz-Sen-Fitoussi Commission and included in the list of recommendations for broadening the income measures to include non-market activities. Household consumer durables services refer to the imputed value of services provided by household-owned cars, washing machines, refrigerators, clothes, etc.

Social transfers in kind

Social transfers in kind (STIK) are non-monetary transfers that a person receives usually from the government and sometimes from a non-profit organisation as goods or services, such as food vouchers, or as reductions in the price of these goods and services, such as in the case of payments for education and health care service. Sometimes the purpose of these transfers is to supply social welfare to disadvantaged populations in the

country; in other cases, they are available to the whole population as part of a country's universal provision of medical or education services.

These goods and services are provided to individuals and are different from collective or public services that government provides to all citizens, such as security and law and order. Box 4.2 describes the UK experience in this field.

Social transfers in kind are very important to welfare analysis in measuring poverty and the economic well-being of households and individuals. The ambition in income statistics is to value these transfers at the micro level (households or individuals), to measure them on a regular basis and to include them as a component of total household income. In addition, such transfers would also be counted as consumption for the receiving household.

Box 4.2. **Valuing social trends in kind in the United Kingdom**

The Office for National Statistics in the UK produces estimates of the value of various Social Transfers in Kind (STIK) as part of its *Effects of Taxes and Benefits on Households* publication, which is based on data from the Living Costs & Food (LCF) survey, a survey measuring both household income and expenditure. Social transfers in kind currently incorporated in this analysis include state health and education spending, housing subsidies and public transport subsidies. It does not include other items of government expenditure, such as capital expenditure and expenditure on defence and on the maintenance of law and order, for which there is no clear conceptual basis for allocation.

The methodology used for estimating these STIK varies according to the data that is available. For example, estimates of the benefit from education are derived by making use of published statistics on the cost per pupil/student in various types of education establishments (e.g. nurseries, primary and secondary schools, universities) and the number of people in the household recorded on the LCF as receiving each kind of state education. Estimates of the value of travel subsidies received by households are calculated based on recorded expenditure on bus and rail travel for each household.

The LCF does not contain data on individuals' use of health services, so a different approach is needed to estimate the value of these social transfers in kind. The current method uses data on the average cost of providing the various types of health care: hospital inpatient/outpatient care, general practitioner consultations, pharmaceutical services, and so on. Each individual in the LCF is allocated a benefit from the National Health Service according to the estimated average use made of these various types of health service by people of the same age and gender, and according to the total cost of providing those services. The benefit from maternity services is assigned separately to those households containing children under the age of 12 months. No allowance is made for the use of private health care services

Data collection

Most income distribution statistics rely on data collected in household surveys, although administrative sources such as personal income registers and tax and/or social benefit records are used in some countries.

Income surveys

Income data are usually collected through sample surveys, either from specially designed household income surveys or from multi-topic surveys where income data are collected alongside data on, for example, household consumption or labour-force

participation. Household surveys generally collect information from the usual residents of private dwellings. The design of the sample and the selection of sample households should be made following appropriate sampling techniques in order to obtain results that are as precise as possible, within the resources that are available. The sampling method used should also permit the calculation of sampling errors.

Income data should be collected directly from each relevant household member and separately for each income component. Although proxy interviewing may sometimes be necessary to obtain income data for absent household members, the quality of such data is lower than in the case of data collected from individual members of the household.

Household surveys are constrained by the information that respondents are able to provide with reasonable accuracy during the course of an interview. This means that people must have knowledge of the income they are being asked to report and must be able to recall the information with a reasonable degree of accuracy, which may influence the accounting period used as well as the questions asked. The questions also must appear relevant to the respondent.

Income data from registers

For countries where suitable administrative data exists, and where there is a legal basis to use them for statistical purposes, income data from registers may be used to substitute for survey data. Nearly a third of all countries participating in the European Union's Statistics on Income and Living Conditions (EU-SILC) collect at least some of their income data from registers. Outside Europe, Canada also collects some income data from registers.

Register-based statistics may provide total or near-total population coverage and can be used to produce more detailed statistics for small areas or population groups. They can also produce statistics for longitudinal analyses. Register data result in lower respondent burden and are generally a less costly means of producing statistics, with fewer resources needed to collect, impute or edit the collected data.

Compared to income data collected in surveys, register data are not subject to sampling and non-response errors. They may, however, suffer from under-coverage or missing data, e.g. due to tax evasion or low compliance. They may also be limited by the definitions and administrative practice of the authorities responsible for the register, which may change over time.

The most common way of using income data from registers is by combining them with survey data. Some income components are obtained from the registers, while other income components are collected through an interview. The use of register data alongside survey data may improve the quality of income estimates, which are often under-reported in household surveys, and also reduce interview times and respondent burden. However, compilers of income data should be aware of some of the shortcomings of such data. In some countries register data on income may be incomplete and may be available only for people who file their taxes, which may exclude a significant proportion of the population. In addition, tax data will not include income earned from informal work or private income support from other households, which in some countries may be substantial.

Key statistical and measurement issues

As noted, most income statistics are based on household surveys, though administrative sources are used in some countries. Each source has its advantages and drawbacks that should be considered, depending on the purpose and application. Since income is a flow variable, it should be measured over a specified reference period of time. Choices may also be made about the unit for which income information is collected and analysed as well as how the income is to be compared across units of different sizes, in different places, and across time in order to make relevant and meaningful comparisons.

Reference periods

It is necessary to decide the length of the accounting period to which the collected data refer. The international standards state that household income statistics should relate to a full year to take into account seasonal variations in incomes.

Measurement units

It is important to differentiate between the data collection unit and the data analysis unit. For data collection, the choice of unit will depend on the design of the survey (or the nature of the system through which administrative data are available). Most surveys collect information on the income streams of all members in the household.

Equivalence scales

The needs of a household rise with each additional member but, due to economies of scale in consumption, not in a proportional way. Various calibrations, or equivalence scales, have been devised to make adjustments to the actual incomes of households in a way that recognises differences in the needs of individuals and the economies that flow from sharing resources. They also typically recognise that children have fewer needs than adults. Atkinson et al. (1995) review a variety of equivalence scales. Chapter 8 discusses the use of equivalence scales in more detail.

Measurement errors

Income statistics are subject to two types of error: non-sampling and sampling error. Non-sampling error occurs in any data collection, whether the estimates are derived from a sample or from a complete collection such as a register or a census. Sources of non-sampling error include non-response, constraints on the recording process limit that does not allow for real values, errors in reporting by respondents or in the recording of answers, and errors in coding and processing the data. Household survey estimates are based on a sample of possible observations and are subject to sampling variability. The sampling error is a measure of the variability that occurs by chance because a sample, rather than the entire population, is surveyed.

Population weighting

When income data are collected using a survey, weighting is the process used to adjust results from the sample to infer information for the total population. To do this, a "weight" is allocated to each sample unit, e.g. a person or a household. The weight is a value that indicates how many population units are represented by the sample unit. The first step in calculating weights for each unit is to assign an initial weight, which is the inverse of the probability of being selected in the survey. For example, if the probability of a household

being selected in the survey was 1 in 600, then the household would have an initial weight of 600 (that is, it represents 600 households).

Household income weights can be multiplied by the number of people in each unit to derive "person weights". By applying these "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 equivalised 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, e.g. younger children, such an assumption is hard to avoid in practice. One implication from the use of person weights is that the sum of equivalised income across all persons will differ from the total unadjusted income measured in the survey.

Adjusting for price differences

Household income data are often compared for different types of households, or for different geographic areas, at a particular time period, or for the same group of households in different time periods. For comparisons over time, income data should be adjusted for price changes to obtain data that are comparable in real terms, i.e. in terms of purchasing power. Similarly, when comparing incomes across geographical areas or for different types of households in the same time period, adjustment for differences in price levels should be made in order to allow comparisons of real income levels in terms of purchasing power. If no adjustment for price differences is made, the validity of comparing income distribution results is undermined. The need to adjust for price differences increases with the magnitude of those differences. Hence, when comparing income data in periods of high inflation or over longer periods of time, the need to adjust for price changes increases. Similarly, when there are large price variations between regions, the need to adjust for differences in price levels becomes more important. Chapter 6 of the Canberra Handbook discusses adjustments for price differences in detail.

Summary measures of income level

A range of summary measures can be used for analysing income data. Summary measures of income level include counts, means and medians. The *Canberra Handbook* describes many of the measures such as frequency distributions, quantile measures, Lorenz curves and Gini coefficients.

Analysts are often interested in income data for particular population subgroups. When presenting income distribution statistics, it is often useful to categorise households according to characteristics such as household size and composition and features like age and gender, marital status, number of dependent children, dependency ratio (i.e. the ratio of those outside the working age to those within), number of income earners and main source of income. Other groups vary by housing status (e.g. home owners, renters on the market or of subsidised housing), and physical location (e.g. urban and non-urban areas, region).

Other analyses focus on comparing income distributions over time. Economists and social policy analysts are increasingly focusing on long-run trends in income distribution.

The availability of 20 to 40 years or more of estimates in many nations is making it possible for analysts to study the determinants and consequences of long periods of distributional change, for example the relationship between income inequality and GDP growth. The future will bring more uses of such data, and the policy discussions of national governments and international bodies may be heavily influenced by such trends and analyses. For this debate to be well-informed, high standards must be set for the compilation of time-series data on income distributions.

The longer the time frame, the more likely is the occurrence of non-random differences. Data producers need to review and make improvements to their collection concepts and survey methods over time, and it is not always possible to fully quantify the impact of some of the changes made. However, it is important that data producers and users are 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.

It is much more complicated when comparing time series data across countries because, in principle, there is a double (spatial and temporal) consistency constraint. Double international harmonisation across countries and over time is the ideal solution. However, it is difficult to achieve complete harmonisation across nations in practice, even when it is a clear objective from the outset.

Dissemination and analysis

Results from the analysis of income distribution data should be made available in different formats and tailored for different audiences. A key issue for the dissemination of income statistics is to prioritise robustness statements and to highlight issues that users need to be aware of. Because income statistics are complex, they are not self-explanatory. Hence, it is important to provide direct guidance for their correct interpretation. Comprehensive and easily accessible metadata should always be disseminated. A detailed methodological report should be prepared that includes full details of the procedures used as well as the lessons learned and conclusions.

As much as possible, without breaching the confidentiality of the information collected, public use files (anonymised micro data sets) should be made available. They should always be accompanied by clear and comprehensive documentation on all aspects of data collection and derivations. In particular, if top coding (restricting the maximum value disseminated for a variable) is used to protect the confidentiality of information, the details should be documented and the values should be identified, e.g. by flag variables indicating the percentage of imputed information.

Concise and clear definitions of the income concepts and measures used should be provided in reports. These may include a glossary of terms, illustrative calculations for model households – particularly for press releases or for releases aimed at a broader audience – and, for income-based poverty statistics, a clear definition of the criteria for determining whether someone is at risk of poverty. Ideally, algorithms should be made available as metadata.

There should be basic information about data sources – whether data are taken from a census, administrative data, a sample survey, or a combination of sources. If the data are from a combination of sources, a description of how the data from the multiple sources are used to produce the estimates being disseminated should be provided. If comparative data

are presented, it is important to acknowledge whether they were obtained by means of input-harmonised surveys (such as the ECHP), output-harmonised statistics (such as EU-SILC), *ex post* harmonised data (such as in the LIS), or on the basis of standard tabulations (such as the detailed data questionnaires used by the OECD).

A clear description of the reasons why the survey was conducted should also be provided. For administrative data, this would be a description of the reason why the administrative data are collected and how these data are used for statistical purposes. A general description of the content areas or modules, including links to questionnaire, file layout, data dictionary, statistical units, reference period(s), who is included and excluded in the survey population, sample size and design should also be provided.

When disseminating income data, users should be informed of the quality of the data being presented, including information about sampling errors. As a minimum, the relative standard error, i.e. the standard error expressed as a percentage of the estimate for which it is calculated, should be provided for the key variables being disseminated. While it is recommended that estimates for which the relative standard error exceeds a certain limit should not be published, the thresholds for suppression should be based on the professional's judgment of the "fitness for use" of the estimates. If there is information available on the type of response errors that may have occurred in a survey, this should be provided in the documentation accompanying the dissemination of the results.

In surveys, non-response errors occur because some sample units do not respond to the survey. Response rates should be provided to users, including any information available on the units who did not respond (e.g. if specific geographic areas or age groups had higher non-response rates) and, in the case of time-series data, whether the non-response pattern is different now than in the past. For a correct interpretation of response rates, it is useful to provide information on whether substitutions were allowed. For each income aggregate, the number of incomplete units and the percentage of the income amount that was imputed should be specified.

Income statistics can be particularly affected by the presence or absence of extreme values. An explanation of any procedures applied to the data to account for extreme values should be included in the documentation. At a minimum, users should be informed that the results may include extreme values and that some estimates may be influenced by the presence or absence of these extremes.

When time-series data are being disseminated, it is important to inform users of any changes to the data that may have affected the data for the time period covered. For example, if the data source is tax records, it is important to provide users with information about any changes in the tax systems that might affect the data. In the case of a survey, if there were changes to the way in which the data were collected over the period or in survey concepts, these changes should be described in the documentation accompanying the release of the data. Ideally, data in a time series will be adjusted to ensure the data are comparable over time, but often it is not possible to quantify the precise effect of these changes.

Summary

The key highlights from this chapter can be summarised as follows:

- In the context of the ICW Framework, household income is a flow variable that enables consumption and contributes to changes in household wealth or net worth.
- Household income measurement has two main traditions: the macro approach, which has its roots in national accounts, and the micro approach, which has its roots in microeconomics, the study of poverty and inequality and their effect on different socio-economic groups within society.
- Micro-level data on income at the household level supply information about the distribution of income across members of a society. There are many reasons that economic analysts and policy makers require information on income distributions, including evaluating the effect of policies on the well-being of particular groups within the population.
- The conceptual definition of household income for micro statistics adopted in the ICW Framework is that it consists of all receipts, whether monetary or in kind (goods and services), that are received by the household or by individual members of the household at annual or more frequent intervals.
- The classification of income components used here is that applied in the *Canberra Group Handbook*, Second Edition, in both structure and level of detail.
- Some components of income overlap with concepts of consumption or wealth. Within a framework that includes all three elements, it is important to understand the relationships between these components.
- Most income distribution statistics rely on data collected in household surveys, although administrative sources are used in some countries. Examples are personal income registers and tax and/or social benefit records.
- Since income is a flow variable, it should be measured over a specified reference period of time. Choices may also be made about the unit for which income information is collected and analysed as well as how the income is to be made comparable across units of different sizes, in different places, and across time in order to make relevant and meaningful comparisons.
- A range of summary measures can be used for analysing income data. Summary measures of income level include counts, means and medians. Measures of income dispersion that describe the income distribution include frequency distributions, quantile measures, Lorenz curves and Gini coefficients.
- A key issue for the dissemination of income statistics is to prioritise robustness statements and to highlight issues that users need to be aware of. Because income statistics are complex, they are not self-explanatory, so direct guidance for their correct interpretation should be provided.

Notes

1. The SNA defines disposable household income, in concept, 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 expenditures by reducing its cash, by disposing of other financial or non-financial assets or by increasing its liabilities" (SNA 2008, 8.25).

2. See Annex C for a more detailed explanation of social assistance, social insurance, pensions and similar concepts.
3. In the SNA, from the expenditure perspective, goods and services retained by the household for own final consumption are part of final consumption expenditure. From the production perspective, the SNA production boundary excludes all household production of services for own final use except services from owner-occupied dwellings. Household production of goods for own consumption is part of the self-employment income component and, as such, part of mixed income.
4. In the SNA, income from imputed rent (imputed value of housing services less operating costs) is a component of gross operating surplus in the household income account.
5. 95/309/EC, Euratom: Commission Decision of 18 July 1995.

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Chapter 5

Household consumption

This chapter focuses on consumption as the basis of meeting needs. It presents the concepts and definitions associated with consumption, as well as ways to use the information and the methods for the collection, analysis and dissemination of data on consumption at the micro level.

Introduction

The consumption of goods and services is a primary component of economic well-being and, as such, a primary indicator of living standards.[1] Wealth and income are available to support consumption, today and in the future (through the saving that income generates). Income, consumption and wealth are three dimensions of the broader concept of economic well-being, and it is important to understand the relationships between them.

Everything else being equal, a person with a higher level of consumption is regarded as having a higher level of economic well-being than someone with a lower level of consumption. Consumption needs can be met through the spending of income, through the running down of wealth, and through borrowing.

Production, in the market and at home, supports consumption. As noted by Adam Smith (1937): "Consumption is the sole end and purpose of all production and the welfare of the producer ought to be attended to, only so far as it may be necessary for promoting that of the consumer." Since Smith wrote in the 18th century, there has been much focus on consumption and how to value and measure it. Studies in the economics literature have linked food consumption with food expenditures and home production (e.g. Aguiar and Hurst, 2005). Some researchers have estimated consumption using expenditure data and information on durables (e.g. Meyer and Sullivan, 2011), while others have focused on non-durable expenditures as a measure of consumption (e.g. Attanasio et al., 2012). In other cases, total household expenditures are used as a measure of consumption (e.g. Lise and Seitz, 2011). There have also been studies valuing the flow of services from owner-occupied housing from household survey data and national accounts (e.g. Garner and Short, 2009).

The ICW Framework incorporates the concept of consumption expenditure as a valuation of the consumption of all goods and services, both those produced within households and those purchased in the market. The concept of consumption in the ICW Framework is developed in parallel with the concepts of income and wealth so as to allow integration of the three types of measures, enabling a comprehensive and in-depth analysis of the various dimensions of economic well-being.

Use of data on household expenditure

Data on expenditures at the micro level (households, families) have been collected since the late 19th and early 20th centuries, and have been used to bring light to various aspects of the economic situation of populations in countries around the world. This section describes some of the most common uses of micro data on household expenditures.

Consumer price index

To compare income or consumption expenditure over time, it is necessary to be able to account for relative changes in the prices of the goods and services that households purchase to meet their needs. The consumer price index (CPI) is a measure of inflation: it measures changes in the price of a basket of goods and services, selected as representative

of consumer spending, purchased by households. The CPI has been used for adjusting wages, pensions and social benefits and, in many countries, it plays an important role in the implementation of monetary policy and in the setting of interest rates by central banks. In some countries, the CPI is assumed to approximate the cost of living.

Micro data on consumer expenditures are used to construct the CPI through the identification of consumer goods and services that are to be included in the basket, and through the calculation of the shares of individual categories of goods and services in total expenditures. These shares are used to create weights for the calculation of the index.

Welfare analysis

The prosperity of individuals and society, one of the key targets of the socio-economic policies pursued by government, is measured using a number of indicators. The potential levels of material living standards are often measured in terms of income and wealth, while actual levels are measured in terms of consumption or spending during a particular time period. In most countries, consumer spending is generally more stable than income over time. This suggests that the structure of consumer spending and its changes over time may better reflect the economic well-being of households, social groups and whole societies.

The analysis of economic resources should take into account the economic environment of individuals and households: there are groups who, for some periods of time, spend more on consumption than their income, while there are others who save significant amounts of their income. Thus, expenditures, income and wealth should be considered together in welfare analysis. It is important that data are defined consistently and collected comparably. Expenditures and income, in particular, have been used together when identifying groups at risk of poverty, when producing inequality measures, and when examining changes in the living standards of particular groups.

National accounts

Data on expenditures can be used to control and compile SNA data for the household sector. However, not all countries use aggregates from household expenditure micro data for their national accounts. When they are used, these data can complement production and sales data to produce a more complete picture of the household sector.

As micro data and macro data on household expenditure have been developed for different purposes, there are often a number of differences in the resulting estimates of expenditure. These differences can be due to scope or to definitional and methodological differences. The main scope and definitional differences between micro and macro data on consumption are addressed in Annex B.

Expenditure statistics are used for creating, implementing, monitoring and analysing the effects of economic and social policy, including, for example:

- The planning of fiscal changes.
- The analysis of the results of government activities in the support of certain groups.
- The evaluation of programs to reduce disparities between regions and groups.

Expenditure statistics also provide a rich source of data for analyses of the consumption of and demand for different categories of products and services and for different social groups.

Other uses

There are many other types of work that make use of household expenditure statistics, usually in combination with data on income. These relate to, among other things, analysis of the labour market, consumer behaviour, the financial situation of households, the underground economy, lifestyle (health), public services (education, health) and others.

Information about the structure of expenditures, in combination with demographic and labour market information, and on the way these change over time, can improve our knowledge about the conditions and standards or levels of living of the population.

Concepts and definitions

The material needs and wants of individuals and households can be satisfied by the consumption of goods and services, and the consumption of goods and services is integral to participation in society. To calculate the total value of this consumption, it is necessary to sum its various components, including the value of consumer spending of private households (adjusted as necessary to allow for goods purchased in one period to be consumed in a later period), the value of the consumption of goods and services produced at home, the value of the consumption of goods and services received by households without payment from government and from non-profit organisations, and the value of the consumption of people living in institutions or with no usual place of residence (e.g. homeless people), who are generally excluded from the scope of collection of consumption data.

Consumption expenditure is the value of consumption goods and services used or paid for by a household to directly meet its needs. These goods and service are obtained:

- through the purchase of goods and services in the market;
- as in-kind income from employers, from self-employment (through the barter of goods and services produced by the household), or from property or other investments (e.g. portion of crop provided by share-farming tenant);
- from the household's own production of goods and services; or
- as transfers in kind from other households or from businesses.

Actual final consumption is the sum of consumption expenditure and the value of social transfers in kind provided by government and non-profit institutions. This is the total value of all goods and services used by the household to meet the needs of its members.

Households also incur expenses not directly aimed at meeting these needs, such as current transfers to government, social organisations or other households. These are non-consumption current expenditure. Households also need to pay interest on any consumer credit that they have.

Total current expenditure is the sum of consumption expenditure, non-consumption current expenditure and interest paid on consumer credit. If total current expenditure in a period is less than total income received in the period, there has been saving and a net addition to wealth. If total current expenditure is more than total income, there has been dissaving and a net subtraction from wealth.

The point in time when expenditures are registered may influence that total amount that is recorded. There are three possible approaches to the date of registration of household expenditure: acquisition, use and payment. Often these three events occur

simultaneously, especially in the case of services. With the *acquisition* approach, goods and services are included when they are acquired or taken possession of, regardless of whether they have been paid for or, in the case of goods, regardless of whether they have been used. With the *use* approach, goods and services are included when they are used, regardless of when they were acquired or paid for. With the *payment* approach, they are included when they are paid for.

As explained in Chapter 3, the ICW Framework adopts an accrual accounting approach, which equates to the *acquisition* approach. In principle, consumption expenditure would more closely equate to *consumption* if a *use* approach were followed. However, in practice, there is likely to be little difference between these approaches for most consumption goods and services. It is assumed that a household acquires goods that it produces for its own use (such as grain or other agricultural production) at the time that those goods are used. Notionally, at this time the goods pass from the household in its role as a producer to the household in its role as a consumer.

The assumption that there is little difference between acquisition and use is valid only for consumption goods and services. Consumption goods and services include those goods that are used up in a relatively short period of time, often known as *non-durables*, and all services. The assumption does not hold for dwellings or for goods that can be used repeatedly over a length of time, often known as *consumer durables*. Consumer durables include motor vehicles, electrical appliances, furniture, clothing, and the like that would normally be expected to be usable for more than a year.

When a household purchases a dwelling or consumer durables, it does not normally consume them immediately. Rather, the household can be viewed as a producing entity that invests in those items as capital expenditure and provides a flow of services to itself as a consuming entity. In the ICW Framework, that flow of services is included as consumption expenditure, rather than the initial purchase of the capital items. Two such service flows are included in the detailed framework: *i)* the value of housing services provided by owner-occupied housing and *ii)* the value of services from household consumer durables. They are discussed in more detail in Chapter 3, as is the income the household generates for itself through this provision of services.

Chapter 3 also describes a third service flow that households provide to themselves and which is included in consumption expenditure, i.e. the value of unpaid domestic services. It is possible to estimate the quantity of this work on the basis of time-use surveys, but different approaches can be taken in deciding how to value that time.

The SNA also includes the flow of services provided by owner-occupied housing as a component of the consumption expenditure of households. However, it treats the purchase of consumer durables as consumption expenditure, rather than the flow of services from them. It does not include the value of unpaid domestic services at all.

Consumer price indices are intended to reflect the prices that households pay for purchases made in the market. They therefore also reflect the purchase price of consumer durables but do not incorporate the value of unpaid domestic services. The treatment of dwelling purchases varies between countries.

A household survey collecting household expenditure and consumption data may be required to support several different uses, including the integrated analysis of household income, consumption and wealth, the compilation of the national accounts, and the

derivation of weights for the consumer price index. The different uses are likely to have slightly different data requirements, which have to be accommodated by the survey.

Special treatment of certain categories of expenditure

Special treatment is required for the collection and estimation of certain expenditures. Some of these treatments are described below.

Consumption goods and services received by households as *in-kind income* are included in consumption expenditure. These include goods and services produced by the household for its own use, as well as consumption goods and services provided to members of the household as employee income or supplied for household consumption by enterprises owned by the household or supplied as payment for the use of property (such as the proportion of a crop from a tenant share farmer). They also include in-kind transfers from other households or businesses. However, in-kind transfers from government and non-profit organisations are included only in social transfers in kind, as discussed in Chapter 3. Any consumer durables and other non-consumption items provided in kind to households as a return for labour or for the use of the household's property are included in income but not in consumption expenditure.

In principle, in-kind receipts by households should be valued at the prices that would be paid if they were acquired in the market. However, there are not always relevant markets that can be referenced, especially for the services provided by consumer durables, unpaid domestic services and social transfers in kind. Chapters 3 and 4 provide further discussion on these issues.

Since consumption goods and services are normally consumed at or soon after acquisition, and since they cannot normally be reused, there is essentially no second-hand market for them. However, some can be resold in their original state or transferred in kind to other households or other entities as gifts. *Re-sales and transfers of consumption goods and services* should be treated as negative consumption expenditure, valued at the original purchase price or at the re-sale price if it differs. For transfers, the same value should also be included in current transfers paid.

Sales and transfers of consumer durables, of either new or second-hand items, do not need to be considered when deriving consumption expenditure within the ICW Framework, since these transactions are regarded as the disposal of capital items. Chapter 3 discussed the boundary between current and capital items.

The *use of goods not owned by households* mainly concerns an employee's use of an employer's property for private purposes. In principle, such use should be regarded as income in kind and included in consumption expenditure. There may be problems in valuation, however. Households often cannot estimate the actual benefit from such use, because the products used are combined with certain restrictions (e.g. prohibition of the use of a company car on weekends) or the use is regarded as an obligation, rather than a benefit.

One way of approximating the value of services provided by goods not owned by the household is to use rates from the tax authorities. In the Danish household budget survey, for example, rates for cars, dwellings, boats, computers and mobile phones are used to estimate the value of the household's benefit from these goods. These data are available in administrative records, so it is not necessary to burden the household with questions about them. If the rates are available only at the macro level, they can be combined with an

interview question about any of these goods made available to household members by employers.

In the case of *goods rented and/or leased*, the repayment of instalments on a contract (such as for a car lease) would be considered as a consumer or household expenditure, as long as the contract is not a hire purchase or similar form of lease in which the household gains ownership of the good at the end of the lease. In the latter case, the contract may in effect be a purchase agreement combined with a loan agreement, and the value of the flow of services from the good should be included as consumption expenditure, as discussed above.

Financial service fees such as commissions for banking services and credit card fees that are charged directly to households should be included in consumer expenditures. However, the value of these services can be difficult to collect, as respondents may not know what they are if the fees are built into a bundle of services offered by the financial institutions. They are often not included in consumer price indices. Indirect fees such as the FISIM (financial intermediation services indirectly measured) included in the SNA are excluded from household expenditure micro data, as they are not relevant to a household perspective.

Interest paid on loans is excluded from current expenditure if the loans are primarily for business, for the purchase or renovation of owner-occupied dwellings, or for the purchase or renovation of consumer durables. Interest paid on these loans is treated as a cost of business, a cost of providing owner-occupied dwelling services, or a cost of providing services from consumer durables, respectively, and deducted to derive a net value of the corresponding flows.

Interest paid on consumer loans is included as non-consumption current expenditure in the ICW Framework. Consumer loans include those used primarily to finance the purchase of consumption items, education loans, loans used to finance transfers, and loans to other households (which may occur, for example, when the first household can obtain a better interest rate than the second household).

The treatment of *insurance premiums* depends on the type of insurance. The characteristics of the various forms of insurance, and the consequent treatment in the ICW Framework, are discussed in detail in Chapter 3 and Annex C. Insurance is treated in four separate ways.

Contributions to social insurance schemes, such as mandatory pension schemes or health insurance schemes, are included in current transfers paid, and are therefore included in total current expenditure but not in consumption expenditure.

Premiums paid for life insurance and contributions to private pension schemes are regarded as saving and therefore excluded from current expenditure aggregates.[2]

Premiums paid for accident insurance, covering assets such as owner-occupied dwellings, consumer durables and businesses, are considered as input costs to be deducted when deriving the net income generated by those assets; therefore, their premiums are not included in consumption expenditure.

Premiums paid for term insurance, private health insurance, travel insurance and similar accident insurance are included in consumption expenditure. Benefits received from term insurance are normally regarded as a capital transfer received, but benefits from health

insurance and other accident insurance are normally treated as negative consumption expenditure offsetting the payment of the premiums.

Gambling is usually considered an entertainment expenditure by consumers. Some gambling expenditure is offset by winnings paid back to the gambler, although the size of the benefit to be received is not known at the time when the expenditure is made. In aggregate, a proportion of the bets are retained by the gambling operators (as their profit and operating cost), which in concept constitutes the value of the service provided to the gamblers. Since the value of the service provided to individual gamblers cannot be identified, all gambling expenditure is treated as consumption expenditure, and gambling winnings as negative expenditure, unless the payment is large, in which case it is regarded as a capital transfer received, as discussed in Chapter 3.

The cost of *repairs and upkeep of dwellings* by both owner-occupiers and tenants is regarded as consumption expenditure if it is for items normally expected to be paid for by tenants of rented dwellings. In contrast, any expenditure by owner-occupiers on items that are normally expected to be paid for by landlords is regarded as an input cost to providing the dwelling services or capital expenditure. In either case, it is excluded from consumption expenditure.

Donations and gifts to other households, non-profit organisations and other entities are regarded as current transfers unless they are large and irregular, in which case they are capital transfers.

Fees for licenses and rights contributed to public institutions that are associated with certain services or products (such as for a TV subscription, for issuing a document or for the right to possess a boat) are classified as consumer expenditure. The SNA treats some of them (in accordance with the convention used for tax statistics) as non-consumer expenditures.

Direct taxes paid by households are not included in consumption expenditure, because they are obligatory and because it is difficult to identify specific services received in exchange for the payments made. These fall into the category of non-consumption current expenditure as part of current transfers paid.

Fines and similar penalties are included with direct taxes in current transfers paid and excluded from consumption expenditure.

Expenses related to private enterprises incurred by a member of the household, and which are a result of business activity, are not considered as household expenditures. Such expenses are considered either as the purchase of an asset, using already existing wealth or incurring a debt, or as intermediate costs that are subtracted when deriving net business income as a part of household income.

All *expenditure incurred with the intention of investment* (e.g. works of art, jewellery, payments on deposits, the purchase of shares) is excluded from household consumption expenditure and is treated as the acquisition of assets using existing reserves of wealth or by incurring a debt (negative wealth). If assets such as art and jewellery are purchased primarily to derive pleasure, they are included as consumer durables, and consumption expenditure should include the value of the services flowing from them. As these assets are unlikely to depreciate physically, the value of the flow of services would essentially comprise a notional return to the capital value of the items.

Components and expenditure classifications

Expenditure classifications are created in order to group variables for analytical purposes. Classifications should be comprehensive (i.e. include all possible variables) and mutually exclusive (i.e. a variable should be assigned to only one category).

The most commonly used expenditure classification in most (but not all) countries is the Classification of Individual Consumption by Purpose (COICOP) developed by the United Nations (Table 5.1). For this system, expenditures are grouped according to the purpose for which they are intended. The system consists of 12 main groups of goods and services, each of which is divided into more specific categories. The COICOP is an integral part of the System of National Accounts (1993 SNA), but has also been used by countries for household budget surveys, consumer price indexes and international comparisons of consumer expenditure.[3]

The main problem when using the COICOP is how to classify products that are used for different purposes (e.g. a bicycle can be classified as either transport or recreation) and expenditures that combine different categories of services (e.g. a tourist trip combines transportation, catering and hotel services). It is therefore important to establish clear rules before this classification is used.[4]

Key issues related to measurement

Statistical Unit

In the ICW Framework, the household has been chosen as the primary unit to be used for analysing micro data on income, consumption and wealth. A *household* is either an individual person or a group of persons who live together under the same housing arrangement and who combine to provide themselves with food and possibly other essentials of living. More detail on the choice and use of statistical units is given in Chapter 3.

Household reference person

In most household budget surveys, one individual is identified as the reference person in order to classify the household with regard to a set of socio-demographic characteristics, for example, social groupings. It is with respect to this person that the relationship of other household members is determined. Information about the household reference person is collected at the stage of data collection. Various criteria are used to identify the reference person. This person could be the household member with the highest income, the oldest person in the household, the one who holds the lease or owns the property, the one who makes the spending decisions, or the first member mentioned by the respondent to the interview when asked to: "*Start with the name of the person or one of the persons who owns or rents the home*", as in the US Consumer Expenditure Survey.

Reference period

The period to which expenditures are related in statistical output is called the reference period. The reference period is most often a year and specified as either a calendar year or some other period of twelve consecutive months. A full year is preferred to a shorter reference period in order to ensure that seasonal variations in expenditure (e.g. power bills) and expenditures made only once a year (e.g. motor vehicle registration fee) are properly captured.

Table 5.1. **Classification of individual consumption according to purpose**

01 – Food and non-alcoholic beverages	01.1 Food 01.2 Non-alcoholic beverages
02 – Alcoholic beverages, tobacco and narcotics	02.1 Alcoholic beverages 02.2 Tobacco 02.3 Narcotics
03 – Clothing and footwear	03.1 Clothing 03.2 Footwear
04 – Housing, water, electricity, gas and other fuels	04.1 Actual rentals for housing 04.2 Imputed rentals for housing 04.3 Maintenance and repair of the dwelling 04.4 Water supply and miscellaneous services relating to the dwelling 04.5 Electricity, gas and other fuels
05 – Furnishings, household equipment and routine household maintenance	05.1 Furniture and furnishings, carpets and other floor coverings 05.2 Household textiles 05.3 Household appliances 05.4 Glassware, tableware and household utensils 05.5 Tools and equipment for house and garden 05.6 Goods and services for routine household maintenance
06 – Health	06.1 Medical products, appliances and equipment 06.2 Outpatient services 06.3 Hospital services
07 – Transport	07.1 Purchase of vehicles 07.2 Operation of personal transport equipment 07.3 Transport services
08 – Communication	08.1 Postal services 08.2 Telephone and telefax equipment 08.3 Telephone and telefax services
09 – Recreation and culture	09.1 Audio-visual, photographic and information processing equipment 09.2 Other major durables for recreation and culture 09.3 Other recreational items and equipment, gardens and pets 09.4 Recreational and cultural services 09.5 Newspapers, books and stationery 09.6 Package holidays
10 – Education	10.1 Pre-primary and primary education 10.2 Secondary education 10.3 Post-secondary non-tertiary education 10.4 Tertiary education 10.5 Education not definable by level
11 – Restaurants and hotels	11.1 Catering services 11.2 Accommodation services
12 – Miscellaneous goods and services	12.1 Personal care 12.2 Prostitution 12.3 Personal effects *n.e.c.* 12.4 Social protection 12.5 Insurance 12.6 Financial services *n.e.c.* 12.7 Other services *n.e.c.*
13 – Individual consumption expenditure of non-profit institutions serving households	13.1 Housing 13.2 Health 13.3 Recreation and culture 13.4 Education 13.5 Social protection 13.6 Other services
14 – Individual consumption expenditure of general government	14.1 Housing 14.2 Health 14.3 Recreation and culture 14.4 Education 14.5 Social protection

Data collection

Data on household expenditures are normally collected through household surveys. These can be dedicated expenditure surveys, but also combined expenditure and income surveys.

Methods of data collection

Data are collected retrospectively or on an on-going basis. Data collected retrospectively are collected by an interviewer or via a questionnaire completed by the respondent. When conducted by an interviewer, data are collected through face-to-face interviews or by telephone. Retrospective collection means that data are collected for an earlier time period. Data collected on an ongoing basis are collected through the use of a diary completed by the household. Diaries are provided by the interviewer and the respondent's role is to record all purchases during the reporting period.

An electronic variant of diaries can also be used. In this case, the household is given a login and password to an electronic diary (usually available via Internet), which is similar to the paper version. It is also possible to give the household the choice between using the paper or electronic versions, as the Danish household budget survey has done for the last several years. To encourage the take-up of the electronic version, a small gift is given to households who opt for it. The introduction of electronic diaries in Denmark has been very successful for both households and data collectors. Households found it more convenient to register purchases electronically, and the statistical agency found that handling the data from the electronic diaries required fewer resources, with no loss to data quality.

The reporting period to which the expenditures refer during the data collection may be shorter than the reference period used for statistical output, and could refer to any period of time, e.g. a day, week, month, quarter or year. The shorter the time period, the better the data for more frequently purchased goods and services; conversely, the longer the time period, the better the data for less frequently purchased goods and services. If the reporting period is shorter than the reference period, data collection should take place regularly during the reference period so that in aggregate the reporting periods are representative of the entire reference period.

Advantages and disadvantages of retrospective and ongoing methods

Both methods imply the risk of errors: omission of certain expenses (especially for small expenses when using retrospective methods) or the inclusion of expenditures outside the reference period (when there is telescoping of expenditures and no bounding interview).

Both retrospective interviews and diaries are big burdens for households. Retrospective interviews can be very time-consuming when many expenditure items are being reported, for large households or for households with complex structures. Diaries can place a large burden on respondents too, as reporting periods can vary from several days to several months, although usually the recording period is daily for one to two weeks.

Respondent

Ideally, the person who replies to the questionnaire should be the person responsible for household expenses. This may be the reference person or someone else. In some instances, even within the same data collection period, there may be several respondents

depending on the categories of expenditure considered. In order to reduce the burden on respondents, it is possible to use other methods, such as collecting receipts or accounts, or to use electronic devices for scanning product codes when shopping. At this moment these methods are most often used as complements to the fundamental methods.[5]

Items to be collected

In the case of expenditure surveys, it is necessary to collect the most detailed information, which can then be aggregated to a higher level. Data are also collected to enable the categorisation of the household undertaking the expenditure. Additional data often collected in expenditure surveys include: *i)* quantitative food consumption; *ii)* income (including social transfers in cash and in kind); *iii)* characteristics of household members (demographic characteristics, social and professional situation, etc.); *iv)* the characteristics of the dwelling in which the household lives; and *v)* the liabilities and assets of the households.

Expenditures while travelling abroad pose a specific challenge. For welfare analysis, these should be included in household expenditures but excluded when determining the weights used in the consumer price index. Therefore, they should be recorded separately. This is also true for expenditures made on out-of-town trips, which need to be separated for the production of consumer price indexes for specific geographic areas. Expenditures on consumer durables are required for determining weights in the consumer price index, but they are not included in current household expenditure as defined in the ICW Framework.

Survey design and sample

There are four basic models of household expenditure survey:

- Single-sample in a cross-sectional design. The main advantage of this method is that it is easy to conduct. The disadvantages include seasonal variations (depending on the period of collecting data, some expenses may not appear); the fact that long reference periods can be a source of inaccuracies and errors in the case of retrospective studies; and the problem that expenses incurred during the recording period can lower or raise estimated annual expenditures in the case of diaries.
- Sub-samples in a series of cross-sectional design (e.g. quarterly intervals over the year). The advantages of this method are that it is easy to carry out, that it allows estimation of the annual expenditure, and seasonality has less impact on the calculation of expenses for the entire population or sub-groups of households. The disadvantages include the inability to correctly estimate the annual expenditure for a particular household.
- Single sample in a panel design (e.g. each quarter). The advantages of this method are that annual and seasonal expenses can be estimated, that it allows conducting seasonal variation analysis and that it moulds a more precise estimate of annual expenditure by comparing the same expenses in subsequent periods. The disadvantages are the risk of cancellation in subsequent periods, that it is expensive, and that it needs to take into account changes in household composition.
- Sub-samples in a panel design (e.g. repeated every second quarter). This has all the advantages of the previous method and a lower risk of withdrawal from the study; however, it is the most difficult to implement.

The type and size of the sample for an expenditure survey should be representative, both for the whole population and for selected groups of households. A random stratified sample is typically used. The draw may be single- or multi-staged. Over-representation of certain groups of households can be used (e.g. people living in rural areas, ethnic groups).

Non-response

The complexity of expenditure surveys can lead to high levels of non-response and refusals to participate in the data collection. In some cases, this can lead to a lack of representativeness. Therefore, at the stage of data collection, information about households that refuse to participate should be recorded in order to describe their characteristics and evaluate the impact of non-response on representativeness. Households refusing to participate in the study may be replaced by another, either drawn from a reserve sample or based on another method.

Frequency

Due to the complex nature and high costs of household expenditure surveys, they are often performed less frequently than other socio-economic studies. Both the 2003 ILO Resolution and Eurostat recommend that data collection be conducted at a minimum every 5 years. In many countries, expenditure surveys are carried out more frequently or as a continuous survey.

Higher frequency (annual or quarterly collections are the preferred options) is important for the preparation of weights for the consumer price index. The assumption is that the CPI basket of goods changes every year. In addition, the European Statistical System recommends the use of consumption surveys (based on household budget surveys) to support the System of National Accounts.

Analysis and dissemination

Under-estimation of some expenses

Certain groups of expenditures are typically underestimated in surveys because of under-reporting by respondents. The expenditures usually most under-reported are those for illegal goods and services (e.g. illegal drugs and prostitution) or for socially unacceptable goods or services (e.g. alcohol, gambling). In order to analyse the under-reporting of these categories, household expenditures are compared to those from other sources (e.g. national accounts and trade statistics). It is recommended to publish the results of such comparisons, including information about the reasons for possible over- and under-reporting.

Expenditure covered by the tax/transfer system

When comparing the economic well-being of people living in different periods, socio-economic groups or countries, it is necessary to account for the fact that there are differences in the extent to which they receive goods and services directly from government. This is particularly true of education and health. Low levels of expenditures by one group of households for these goods and services do not necessarily imply a low standard of living compared to another group that spends more. Goods and services provided by government and non-profit institutions directly to households are called social transfers in kind (STIK). Because of difficulties in defining which services should be included in STIK, and because of difficulties in determining how to distribute their value

between recipients, this category of receipts is often omitted from micro estimates of expenditure, but it is included in the definition of actual final consumption.

Sampling error

Sampling error is the difference between a survey estimate and the true population value. The most common measure of the sampling error is the standard error of the estimate, which provides information about the variability associated with the estimate. Standard errors should be calculated, using a formula appropriate to the sample design and weighting structure of the survey, and published. For periods of less than a year, for example monthly, the variability of expenditure consists of the variability of household expenditures per month, and the variability of household expenditures between months.

Dealing with non-response

There are two types of non-response: unit non-response and item non-response. In both cases, imputation is needed to account for all household expenditures for a country's population. When a household does not respond to the survey, care must be taken to determine whether the household is missing at random or not. If missing at random, simple re-weighting is the solution. Otherwise, auxiliary information will need to be used to adjust the weights to account for its non-random character. The same is true for item non-response. There are many methods for dealing with missing data. The most flexible methods are regression-based. Imputed data should always be recognised in the data set using a flag or other method.

There are several general imputation approaches, based on stochastic or deterministic techniques, using the same or other data sets. The *Canberra Group Handbook* (para. 3.3.5) recommends the use of imputation to reduce bias and increase the comparability of data sets over time, and it provides some examples. The general methods are also mentioned in the ILO resolution (para. 97), with additional focus on not having an undue number of missing values that need to be imputed.

Confrontation of current expenditure and income

Some countries compare aggregate current expenditure and income estimates as a control mechanism. However, when doing this, one must take into account timing differences, any conceptual and implementation inconsistencies in the treatment of current income and expenditure, and the fact that current expenditure may also be financed from wealth. Therefore, a mismatch between current income and expenditure cannot automatically be assumed to constitute an error. Analyses of current expenditure and income, separately from savings and debt, may lead to erroneous conclusions.

Equivalence scales

Expenditures are dependent upon the size and characteristics of household members (e.g. age, gender, marital status) and of the housing unit itself (e.g. apartment, free-standing dwelling). Thus, any analysis should take into account the needs of the household, most often the differences in the needs of adults versus children, as well as economies of scale of goods and services purchased for the use and/or consumption of household members. The most commonly used units of analysis are: *i)* expenditure per capita in the household; and *ii)* expenditure per consumption unit, as defined through the

use of an equivalence scale. As discussed in Chapter 8, several equivalence scales can be used, and no particular equivalence scale is universally preferred.

Presentation of output

Expenditures are typically presented in the form of tables containing information on:

- The number and/or percentage of persons or households incurring the expenditure.
- The average (i.e. mean or median) expenditure for a given category of goods or services.
- The structure of expenditure (i.e. the share of each category in total expenditures).

Some countries also analyse the dynamics of expenditures, i.e. the change in current expenditures compared to those from a previous period in both nominal and real terms, and the dispersion in expenditures (e.g. Gini coefficient). Tables may include distributions of variables divided into: *i)* income groups (e.g. deciles, quarters, quintiles), preferably using equivalised income; *ii)* main source of income (e.g. wages and salaries, pensions); *iii)* household characteristics (e.g. household size, marital status, number of children); *iv)* possession of important durable goods; *v)* characteristics of household members (e.g. gender, age, education, professional status); *vi)* geographic location of residence (e.g. city size, region); *vii)* type of housing ownership (e.g. with a mortgage, without a mortgage, renting); and *viii)* size of dwelling.

It is common to present population-weighted data in terms of expenditures either per capita or per equivalent unit. Also important for expenditure analyses is information about the proportion of households with zero expenditure for the good or service considered.

The main report should contain basic tables and measures (e.g. means, medians, aggregates), as well as methodological notes providing information about the sample, the estimation error, methods of research, non-sampling errors and non-response.

Dissemination

The survey results should be shared as widely as possible, with presentations in various forms including paper publications (e.g. tabular, analytical reports, brochures, leaflets, articles), conferences, the mass media, electronic publications (available on electronic media, the Internet), and data sets for public use.

Dissemination should also include micro-level data sets for public use that do not have any specific identifiers that would make it possible for individual respondents to be identified through cross-classification of the data items in the set. It is necessary to develop and publish rules on the provision of such data, including data transfer costs. Many countries provide researchers working in non-commercial institutions with micro data on household expenditures for free, or at very low costs.

It is important to prepare an internal working document that contains all the methodological details of the procedures, concepts, methods, and classifications used in the survey. If major changes in methodology occur, a short version of these changes should be available to external users.

Another purpose of data analysis and dissemination is to promote surveys, not only expenditure surveys, but all government-sponsored surveys. This can be done through the publication of results that highlight the most important goal of the data collection effort and present the results in a way that is attractive to mass audiences. This kind of

promotion is of great importance for statistical agencies and institutes, particularly in the light of the growing number of unit and item non-responses.

Summary

The key highlights from this chapter can be summarised as follows:

- Consumption is people's use of goods and services to meet their material wants and needs for food, shelter, social activity and so on.
- Everything else being equal, a person with a higher level of consumption is regarded as having a higher level of economic well-being than someone with a lower level of consumption.
- Consumption expenditure is the value of the consumption goods and services acquired, and can be undertaken by utilising income, available wealth and borrowing.
- Information on consumption and consumption expenditure can be used in the analysis of household economic well-being to derive weights for the consumer price index, to compile national accounts and for other purposes.
- Consumption expenditure includes the purchase of consumption goods and services in the market, the acquisition of consumption goods and services in the form of in-kind income from employment, the services produced by the household for own consumption, and the in-kind transfers received from other households and from businesses.
- In-kind transfers of consumption goods and services received from government and non-profit organisations comprise social transfers in kind; these are added to consumption expenditure to obtain actual final consumption.
- Total current expenditure of households includes consumption expenditure, current transfers paid and interest on consumer credit.
- In the ICW Framework, expenditures on consumption goods do not include that incurred for purchasing consumer durables. Rather, a household is considered as acquiring a flow of services from these consumer durables. However, consumer durables are considered as consumption goods in other uses, such as the establishment of CPI weights and the compilation of the national accounts.
- The re-sale or transfer of consumption goods and services to other entities is regarded as negative consumption expenditure, as are benefits received from accident insurance and small winnings from gambling.
- Donations and gifts to other households, non-profit organisations and other entities are regarded as current transfers paid, unless they are large and irregular, in which case they are considered as capital transfers.
- The household is the primary unit for analysing consumption data. Consumption expenditure aggregates can be adjusted by equivalence scales to reflect variations in household size and composition.
- In aggregate, consumption data should reflect a full year's consumption in order to reflect seasonal differences. However, for practical purposes, full year data may not be collected from each respondent.

Notes

1. See Slesnick (2000) for a discussion with regard to the United States.
2. In the ICW Framework, life insurance refers to life insurance policies that provide a payment at the maturity date of the policy. They represent a saving and investment component in the policy. Term insurance, which expires with no residual value, is treated as a form of accident insurance. See Annex C for a more detailed explanation.
3. The most commonly used classifications are: *i)* the Classification of Individual Consumption According to Purpose (COICOP), *Statistical Papers*, Series M, No. 84; United Nations, New York, 1999; and *ii)* the COICOP/HBS – Household Budget Surveys in the EU, Methodology and Recommendations for Harmonisation – 2003, European Commission, Luxembourg, 2003. Other organisations use a more detailed (e.g. EUROSTAT) or different (United States) classification, which, however, at the highest level (least detailed) can be compared with the COICOP.
4. The COICOP reflects SNA practice and includes expenditure on consumer durables, rather than the flow of services from household consumer durables, and there is no item for unpaid domestic services. However there is an item for the imputed rent of owner-occupied dwellings.
5. Several countries use a combination of retrospective and diary methods.

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Chapter 6

Household wealth

This chapter reflects the Wealth Guidelines *that were prepared in parallel with the development of this Framework. The* Wealth Guidelines *were developed to address the common conceptual, definitional and practical problems that countries face in producing such statistics, as well as to improve the comparability of the country data currently available. They were also developed to facilitate the integration of micro statistics on household wealth with those relating to other dimensions of economic well-being, such as income and consumption.*

Introduction

This chapter first discusses the information needs related to wealth statistics and, based on these needs, the requirements for micro statistics on household wealth to provide measures of the level, composition and distribution of wealth at the level of individual households. It also discusses the need for wealth statistics to be as consistent as possible with other micro statistics on household income and consumption as well as with the macro statistics in the System of National Accounts. The first section describes the current status of international standards for household wealth statistics at both the micro and macro level, followed by an outline of the key concepts and definitions for household wealth, or net worth, and the definition and composition of the assets and liabilities that make up household wealth. The chapter then discusses a range of conceptual and practical issues that need to be kept in mind in order to produce useful micro-data on the stock of wealth and on the flows contributing to its changes. Finally, the chapter discusses the data sources and methods for producing household wealth statistics, as well as the best ways to disseminate and analyse these statistics.

Uses of wealth data

Income and wealth are the economic resources that households use to support their consumption. Wealth may be used to support current consumption or retained to support future consumption. Wealth usually also generates current income, in the form either of services provided to the household, as is the case for owner-occupied dwellings and consumer durables, or of a return on the capital invested in financial assets, property for rent, unincorporated enterprises and the like.

Studies of economic well-being have tended to focus on income. In part at least, this is because income data are easier to collect, because there is some correlation between household income and wealth, and because for most households income is the main economic resource used to support consumption. Household income surveys tend to treat the run-down of wealth in the form of annuities or regular withdrawals from pension funds as income. That convention is also adopted in this Framework.

There has been growing demand for micro-data on wealth in addition to data on income. Wealth data at the micro level are needed for research and analysis in many different fields, and they can support the design and evaluation of a wide range of economic and social policies. Micro data on wealth holdings are crucial for purposes such as:

- analysing household economic behaviour, including the way in which different types of households respond to financial shocks and other economic developments, and the transmission mechanisms that are involved;
- assessing the living standards, consumption possibilities and overall economic well-being of particular groups within society;

- assessing the sustainability of household spending patterns and the concentration of financial risks in specific sectors of the population; and
- analysing the impact of particular policies and institutional arrangements on household asset accumulation and indebtedness, including the barriers and incentives they create.

The joint distribution of household income and wealth gives a better understanding of the economic well-being of households, and of the policies required to assist those most at risk of economic hardship. A low-income household with above-average wealth is not necessarily worse off than a medium-income household with no wealth, or vice versa. On the other hand, low-income households that also have low levels of wealth may be of particular interest to governments seeking to target policies and programs more directly towards households in need. Micro-level wealth data are essential for such research.

Wealth can affect personal consumption in various ways. For example, households whose wealth increases due to higher asset prices may spend more because they have more resources available, and because their liquidity or collateral constraints are relaxed. Households may also use credit to insulate their spending from financial shocks, although for some of them the higher costs of debt service may leave fewer funds available to smooth their consumption and put them at risk of financial hardship. As household heterogeneity can play an important role in how average consumption responds to wealth changes, knowledge of the characteristics of individual households is crucial to assess the structural relationships between average wealth and average consumption.

Wealth inequality is of interest because in many countries a relatively small number of households hold a large proportion of total wealth, and because wealth inequality is greater than income inequality. It is therefore important to understand the economic behaviour of those at or near the top of the wealth distribution when analysing the dynamics of aggregate wealth. There may also be widespread interest in how the concentration of wealth, including of particular types of wealth, is changing over time, as well as in the factors driving these changes and the role of bequests and saving in heightening wealth inequalities.

It can also be important to understand how particular types of assets or liabilities are distributed. In some countries, for example, a relatively small proportion of households hold high levels of debt. In these conditions, even small changes in asset prices can lead to the value of the outstanding debt exceeding that of the underlying assets (e.g. houses). This can trigger a vicious cycle of deleveraging and further declines in asset prices, which can have a major impact on market outcomes and place those households at risk of economic hardship. As changing real estate prices may have a major impact on household asset levels and indebtedness, researchers are concerned with understanding the relationship between these variables. Micro data are essential for this research in order to reveal the detailed composition of assets and liabilities across individual households. This can also support investigation into mismatches between assets and liabilities and help to assess the risks that too much debt might pose for the households concerned and for the wider economy.

More generally, financial innovation can have a substantial effect on the level and structure of household assets and liabilities, and on the financial risks to which households are exposed. As a consequence, there is interest in monitoring changes in household portfolio behaviour in order to assess the impact of financial market developments and the possible adverse effects on some households. Similarly, liquidity,

the cost of debt and other constraints can substantially affect the borrowing of some households. Analysis of the wealth and other financial circumstances of households at the individual level can provide insights into the nature and effect of such constraints, and into their association with financial hardship and the inability to smooth income shocks.

In order to assess the adequacy of saving for retirement and the possible risk to that saving from asset meltdowns or other financial shocks, it is important to know the level and composition of the assets of households whose main income earner is at or close to retirement. This may be of particular interest in countries where there are government incentives to take up certain types of assets as part of a strategy to encourage saving for retirement. To assess the effectiveness of these policies, it is important to know who is using these financial products, and whether the incentives to use them are leading to higher saving or just to a shift away from other products in asset portfolios.

Micro data on household wealth have the potential to provide distributional indicators for use in disaggregating wealth measures in national accounts. The macro measures are typically compiled from sources that do not provide information at the level of individual households. However, micro-wealth statistics can provide such information – which is essential for producing distributional indicators – as they are typically compiled from survey data reported by individual households.

In the light of the information needs discussed above, the broad objective of micro statistics on household wealth is to provide measures of the level, composition and distribution of wealth at the level of individual households. Micro statistics on household wealth need to be accurate, comprehensive and regularly updated. They should include information both on the value of the different types of assets and liabilities in household portfolios and on the characteristics of the households holding them. These characteristics allow households to be grouped in ways that are analytically useful, such as by their size, composition and geographical location, by attributes of a particular household member, or by the level of their wealth or income.

Micro-level wealth measures need to be as consistent as possible with the macro-level measures to facilitate the use of both sets of statistics in combination. This may have further benefits in view of the potential of the micro data to improve the national accounts, or vice versa. For example, in some instances macro and micro statistics might be compared after adjusting for conceptual or coverage differences, and it might be feasible to use the micro data to improve the compilation of the macro estimates. Micro-level wealth measures also need to be consistent with micro-level income and consumption measures in order to facilitate in-depth study of the various dimensions of household economic well-being.

International wealth standards

The main current international wealth standard is the 2008 System of National Accounts (SNA). This provides a framework for macro-economic data that integrates wealth data with other economic aggregates. The ICW Framework shares many concepts and treatments with the SNA but, as discussed elsewhere, there are differences reflecting the different uses of macro and micro data and the different practical issues facing the compilers of macro and micro data.

Since there has not been an international standard for micro-data on household wealth, the OECD has developed *Wealth Guidelines* in parallel with this Framework. As

reflected in this Framework, there are many aspects of wealth statistics that have a relationship with income and consumption statistics, and therefore the international standards for those statistics have some applicability to wealth statistics. The most relevant reference is the *Canberra Group Handbook on Household Income Statistics, Second Edition, 2011*

Concepts and definitions

The concept of "wealth" generally refers to economic resources in the form of assets and liabilities. The SNA refers to the wealth of an economy's inhabitants as being the levels of an economy's assets and liabilities at particular points of time (SNA, para 1.2). Wider concepts of wealth are also important for some types of analysis. These may look beyond assets and liabilities, as commonly understood, to other types of resources that people may possess. For example, the conventional economic view of wealth may be extended by taking into account human capital (such as people's knowledge and skills), social capital (such as people's social networks and support mechanisms) or cultural capital (such as people's cultural and spiritual beliefs).[1] However, concepts relating to these different types of capital are difficult to integrate with the concepts dealing with economic resources. Also, their many dimensions are hard to measure comprehensively, particularly at the individual level, and attaching monetary values to them is especially problematic.

For micro statistics on household wealth, confining the concept of wealth to assets and liabilities in a narrow economic sense – i.e. comprising those items that have an economic value and are subject to ownership rights – is the most useful and practical approach for most purposes. This concept of wealth is a net measure equalling assets less liabilities. For an individual household, the net measure may be positive or negative depending on that household's specific circumstances. Because it is a net measure, wealth is often referred to as "net worth".

The definition of *wealth*, or *net worth*, for micro statistics on household wealth is the value of all the assets owned by a household less the value of all its liabilities at a particular point in time. Practical issues may sometimes arise with the "point in time" condition. This condition and its implications are discussed in more detail below.

Assets and liabilities

An *asset* is a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time. Assets may be financial in nature or not. In micro-data, financial and non-financial assets are usually shown separately.

A *liability* is established when one unit (the debtor) is obliged, under specific circumstances, to provide a payment or series of payments to another unit (the creditor). All liabilities are financial in nature, and for all financial assets held by a household there is a corresponding liability held by another party.

To be recognised as an asset or liability, a financial claim or obligation must be unconditional once the contract or custom establishing it is agreed by both parties. This requirement for micro statistics on household wealth is the same as that for macro statistics based on the central SNA framework. This implies that contingent assets and contingent liabilities are excluded from the asset and liability measures in both sets of statistics.

Contingent assets and contingent liabilities arise from past events where one party is obliged to provide a payment or series of payments to another party if and only if certain specified conditions prevail in the future. As there is no certainty about how the future will unfold in relation to these conditions, contingent assets and contingent liabilities can be viewed as potential assets and liabilities, whose existence will be confirmed only by the occurrence or non-occurrence of future events. For example, an undrawn line of credit associated with an overdraft facility on a bank account is a contingent liability of the account holder, as the holder incurs a liability only if and when the overdraft is drawn. Similarly, a claim for compensation or damages being pursued through legal processes where the outcome is uncertain is a contingent asset of the claimant, as only if and when payment against the claim is certain does the claimant acquire an asset. Uncertainty about the value of an asset or liability does not make them contingent if it is certain that an asset or liability of some value does exist. For example, the entitlement to receipts from an annuity for the remainder of one's life, no matter how long one lives, is not considered as a contingent asset.[2]

A household's assets and liabilities include those relating to any unincorporated enterprise within the household. Such businesses are those owned wholly or partly by a member (or members) of the household where the owner and the enterprise are the same legal entity. The owner is personally liable for any business debts that are incurred, and the enterprise can be engaged in virtually any kind of productive activity, including subsistence production.

Common types of financial assets held by households are currency and deposits, bonds and other types of debt securities, listed and unlisted shares, equity in family trusts, equity in unincorporated enterprises, investment fund shares and units, and pension scheme entitlements. Common types of liabilities are loans and credit card debt. Examples of non-financial assets held by households are their homes, land, other property and valuables. Each of the different types of assets and liabilities held by households are discussed in detail later in this chapter. Unincorporated enterprises are usually best valued on the basis of how much they could be sold for. Since their operations may utilise non-financial and financial assets in an integrated way that cannot readily be separated and valued independently, this Framework values unincorporated enterprises on a net equity basis and treats the net equity as a financial asset.

Treatment of consumer durables

An important conceptual issue affecting the coverage of household non-financial assets is the treatment of consumer durables. Their treatment can significantly affect the magnitude and distribution of household wealth. It also has implications for the integration of statistics on household wealth, income and consumption, and for the consistency of macro and micro measures.

A "consumer durable" is defined in the SNA as a good that may be used for purposes of consumption repeatedly or continuously over a period of a year or more. Examples of household consumer durables are cars and other vehicles, kitchen and laundry appliances, computer and entertainment equipment, and clothing and other personal items. The central SNA framework explicitly excludes consumer durables acquired by households from its concept of assets. This exclusion occurs because the services they provide to households are not treated as being within the SNA's production boundary.

However, the ownership of consumer durables and the related services provided by those assets differ significantly between households. Therefore this Framework for micro-data treats consumer durables as non-financial assets, the services provided by those assets as household consumption, and the services net of depreciation and maintenance costs as income. This treatment has an impact on distribution measures of wealth, consumption and income. It also impacts on saving because income is higher than it otherwise would be (due to services from consumer durables being included in income), while consumption is more evenly spread over time rather than being higher in the period when a consumer durable is purchased and lower in the remaining period of the asset's life.

Treating consumer durables as assets also ensures greater symmetry with liabilities data, since households often take out loans to purchase more expensive durables such as motor vehicles.

Changes in wealth

The value of wealth is the net value of assets and liabilities at a point in time, and is therefore a stock concept. Changes in the value of a household's wealth between two points in time reflect a number of flows. The flows may have involved transactions, as in the case when the household saved or dissaved, or a capital transfer from another party or a capital transfer to another party. Other relevant flows do not involve transactions, but other changes in the volume of wealth (due to, for example, the economic appearance and disappearance of assets, the reclassification of assets and liabilities, and exceptional, unanticipated external events) and holding gains or losses.

The composition of wealth may also change over time, as the household changes the mix of its assets and liabilities. For example, the household may finance the purchase of an asset by disposing of another asset, or it may take out a loan and thereby incur a liability at the same time as acquiring the asset.

For purposes of micro statistics on household wealth, there may be interest in any or all of these flow variables, as they can assist in explaining changes in wealth levels between two points in time. The potential value of this information is reflected in country practices. Most countries that collect data on household wealth at the micro level also gather, at the same time, data on some of the flows that contribute to changes in the level and composition of wealth. Examples are: capital transfers in the form of large gifts and inheritances; purchases and sales of household assets (e.g. the main residence, or securities); capital gains or losses realised on these sales; nominal holding gains and losses; and a rough indicator of saving, involving comparison of expenses for the last 12 months with income over the same period. The concepts underlying the flows contributing to changes in wealth are described in the following subsections.

Saving

Saving is a residual concept that involves subtracting total expenditure from total income. An alternative but equivalent formulation is disposable income less consumption expenditure less interest paid on consumer credit. Saving may be positive or negative: if positive, there has been a net addition to wealth; if negative, there has been a net subtraction from wealth, often called dissaving.

Capital transfers

A transfer is a transaction where one party provides a good, service or asset to another party without receiving from the latter any good, service or asset in return as a direct counterpart. Transfers of non-financial assets and financial assets other than cash (i.e. transfers of ownership of assets without any form of direct payment in return) are capital transfers. Cash transfers may be current transfers or capital transfers.

Transfers that are large and irregular cannot be expected to be available on an ongoing basis; therefore it is expected that, in part at least, they will be saved and used to support consumption and other expenditure in future periods. Such receipts are termed capital transfers received. On the other hand, capital transfers paid are large payments by households that are not likely to be paid regularly.

In general, capital transfers tend to be large, infrequent and irregular, whereas current transfers tend to be small, frequent and regular. Examples of capital transfers relevant to households are: large donations and gifts; inheritances, bequests and legacies; inheritance taxes, death duties and other capital taxes; debt forgiveness; lump-sum retirement payments; and large insurance settlements. Examples of current transfers are personal remittances between households, income taxes, social insurance contributions and benefits, and social assistance benefits.

While the need to differentiate between current and capital transactions is clear, the boundary between them is difficult to define. Terms such as “regular” and “recurring” are imprecise and lie on a continuous spectrum. Also, a transfer that may be considered as large in a household with few economic resources may not be considered large in a household that has considerably more resources and may be involved in transfers of that magnitude on a regular basis. These issues are discussed in more detail in Chapter 7.

Because this Framework focuses on transactions from a household perspective, it departs from the SNA in some respects. As discussed in Chapter 7, the Framework allows for the possibility that a transfer that might be considered as current by one household may be considered as a capital transfer by another household. This is not possible in the SNA, because the SNA is an integrated and complete set of accounts for the economy in which transactions need to be treated in the same way by both parties involved in each of the transactions. The Framework also departs from the SNA in the treatment of receipts of accident insurance payouts. In the SNA, virtually all such receipts are regarded as current transfers received, while in this Framework they are regarded as either negative consumption expenditure or as capital transfers received, depending on their magnitude.

Transactions in non-financial assets

A transaction in a non-financial asset refers to the acquisition or disposal of either a produced asset or a non-produced asset that is not a financial claim. Produced assets cover: new and existing fixed assets, inventories and valuables. Non-produced assets that are not financial claims cover: natural resources; contracts, leases and licences; purchased goodwill and marketing assets. The transactions in these assets should be valued at the actual prices agreed upon by the parties involved in the transaction and should be recorded at the time ownership changes (i.e. when claims or obligations arise, are transformed or are cancelled). The transaction values should include any costs of ownership transfer (SNA paras 2.55, 2.59, 3.122, 10.22-10.199).

Examples of transactions in non-financial assets relevant to households are purchases and sales of homes and other dwellings; of consumer durables, land, gold, fine jewellery or recognised works of art regarded as alternative forms of investment; and of vehicles and equipment used in unincorporated enterprises belonging to households.

Transactions in financial assets and liabilities

A transaction in a financial asset or liability refers to the creation, transformation or cancellation of a financial claim or obligation. These transactions often occur as counterparts of non-financial transactions but also as transactions involving only financial instruments. The transactions should be valued at the actual price agreed upon by the parties involved in the transaction, and should be recorded at the time ownership changes (i.e. when claims or obligations arise, are transformed or are cancelled). The transaction values should exclude any commissions, fees and taxes (SNA paras 2.29, 2.55, 2.59, 3.122).

Examples of transactions in financial assets and liabilities relevant to households are: purchases and sales of debt securities; purchases and sales of shares; deposits in and withdrawals from financial accounts; drawdown and repayment of loans; incurrence and repayment of credit card debt; and contributions to and withdrawals from pension fund accounts. Where relevant, transactions should be classified using the groupings recommended for financial assets and liabilities described later in this section.

Holding gains and losses

Holding gains and losses refer to the nominal gains and losses that accrue continuously to the holders of assets and liabilities as a result of changes in their prices over a period of time. These price changes reflect movements in the relative prices of assets as well as movements in the general price level. They affect the value, but not the volume, of both non-financial and financial assets and their counterpart liabilities. They include both realised and unrealised gains and losses over the period.[3]

A holding gain occurs when an asset increases in value or a liability decreases in value; a holding loss occurs when an asset decreases in value or a liability increases in value. The value of holding gains or losses is calculated for each asset or liability over a period between two specified points in time: the beginning of the reference period or when the asset or liability is acquired or incurred during the period; and the end of the reference period or when the asset or liability is sold or extinguished during the period. The prices to be used in the calculation are those at which the asset or liability may be sold on the market.

Examples of holding gains and losses relevant to households are: changes in the prices of the land and dwellings they own; changes in the prices of valuables they own; changes in the prices of equities they hold; and changes in the prices of debt securities they hold.

Flows not arising from transactions or price changes

Other flows, not arising from transactions or price changes, affect the value of both non-financial and financial assets and their counterpart liabilities by changing their volume, either physically or quantitatively. As already noted, these flows record the economic appearance and disappearance of assets, the reclassification of assets and liabilities, and exceptional unanticipated external events. They are usually labelled, "Other changes in the volume of wealth" (SNA paras 2.109, 2.114, 12.3-12.72, 17.40-17.42).

Examples of these flows relevant to households are: the destruction of dwellings and equipment by natural disasters (e.g. major earthquakes, volcanic eruptions, tsunamis, exceptionally severe hurricanes, forest fires, etc.); the destruction of assets by wars, riots and major technological accidents; the initial recognition of existing goods as valuables (when previously considered to be of negligible value); uncompensated seizures of assets by governments; and write-offs of claims by creditors due to bankruptcy or liquidation.

Special adjustment

The changes in wealth represented by changes in pension, annuity and life insurance entitlements are not fully accounted for by the sources described above, and therefore a special adjustment needs to be made when reconciling income, consumption and wealth concepts and measures. As explained in Chapter 3, these discrepancies arise for several reasons: because some income withdrawals from pension, annuity and life insurance entitlements are treated as income rather than dissaving; because some income earned and retained in the funds is not recorded as household income; because withdrawals from the funds by fund managers as compensation for their services are not recorded as consumption expenditure; and because entitlements are subject to other volume changes and holding gains and losses.

Wealth components and classifications

For many analytic purposes, as well as for a consistent derivation of "net worth", it is necessary to identify and define the individual components of household wealth in some detail. Information about the composition of wealth is particularly important for understanding household participation in the asset market, household portfolio diversification and influences on household portfolio behaviour. Experience from the Luxembourg Wealth Study highlights the need for internationally agreed definitions of the various components identified in the micro-level data, particularly those relating to housing wealth, unincorporated enterprises and pension wealth. The wealth classification used in this ICW Framework, which is drawn on the companion *Wealth Guidelines* (OECD, 2013) is described in Table 6.1.

The following paragraphs define the coverage of each component in broad terms. It is recognised that many countries collect household wealth data in finer detail than shown in the table above; many also use different terminology for describing their components and different or additional classification schemes for organising the data in statistical presentations. These country-specific approaches reflect differences in country circumstances and analytical needs. They may also help to ensure complete coverage of assets and liabilities, particularly as new financial instruments are introduced or taken up by households at differing rates across countries.

Non-financial assets

A *non-financial asset* is defined as either a produced asset or a non-produced asset that is not a financial claim. Produced assets refer to outputs from production processes and cover: new and existing fixed assets, including consumer durables, inventories and valuables. Fixed assets are assets that are used repeatedly or continuously in production processes for more than one year (e.g. dwellings, other buildings and structures, machinery

Table 6.1. **Components of assets and liabilities**

W1	**Non-financial assets**
W1.1	Owner-occupied dwellings
W1.1.1	*Principal residence*
W1.1.2	*Other owner-occupied dwellings*
W1.2	Other real estate
W1.3	Consumer durables
W1.3.1	*Vehicles*
W1.3.2	*Other consumer durables*
W1.4	Valuables
W1.5	Intellectual property and other non-financial assets
W2	**Financial assets**
W2.1	Currency and deposits
W2.2	Bonds and other debt securities
W2.3	Equity in own unincorporated enterprises
W2.4	Shares and other equity
W2.4.1	*Shares in corporations*
W2.4.2	*Other equity*
W2.5	Mutual funds and other investment funds
W2.6	Life insurance funds
W2.7	Pension funds
W2.7.1	*Social insurance pension funds*
W2.7.2	*Private pension funds*
W2.8	Other financial assets
W3	**Liabilities**
W3.1	Owner-occupied residence loans
W3.1.1	*Principal residence loans*
W3.1.2	*Other owner-occupied residence loans*
W3.2	Other real estate loans
W3.3	Other investment loans
W3.3.1	*Financial asset loans*
W3.3.2	*Valuables loans*
W3.3.3	*Intellectual property and other non-financial asset loans*
W3.4	Consumer durable loans
W3.4.1	*Vehicle loans*
W3.4.2	*Other consumer durable loans*
W3.5	Consumer credit loans and other liabilities
W3.5.1	*Education loans*
W3.5.2	*Other loans and liabilities*
WT	**Total wealth (net worth)**

and equipment, cultivated biological resources, and intellectual property products). Inventories are assets consisting of goods and services that came into existence in the current or an earlier period and are held for sale, use in production or other use. Valuables are goods of considerable value not used primarily for purposes of production or consumption but held as stores of value over time. Non-produced assets that are not financial claims cover natural resources (e.g. land); contracts, leases and licences; and goodwill and marketing assets.

The standard components of non-financial assets cover:

- *Principal residence*: The main dwelling or other type of housing unit occupied by the household and owned by one or more of its members. The residence may or may not

have a mortgage or loan secured against it. The land on which the residence is located should be included.

- *Other owner-occupied residences*: Other dwellings or other types of housing unit owned by one or more of the household members and occupied by household members on a regular basis. They include, for example, a city dwelling occupied by some household members during the working week, but exclude holiday dwellings used on an occasional basis. The residences may or may not have mortgages or loans secured against them. The land on which the residences are located should be included.
- *Other real estate*: Other residential and non-residential buildings and land owned by household members other than own unincorporated enterprise assets. The real estate may be rented or leased to other parties, or it may be used exclusively by the household.
- *Vehicles*: The cars, motor cycles, boats, aircraft, etc., owned by household members other than own unincorporated enterprise vehicles.
- *Other consumer durables*: Contents of the household's principal residence and other housing units, where these contents are owned by the household, other than own unincorporated enterprise assets. Examples are kitchen and laundry appliances, furniture, computer and entertainment equipment, clothing and other personal items, excluding valuables.
- *Valuables*: Goods whose primary role is as stores of value. Examples are: precious stones and metals, fine jewellery, works of art, antiques, and stamp and coin collections.
- *Intellectual property and other non-financial assets*: Miscellaneous non-financial assets that are not own unincorporated enterprise assets. These include intellectual property products (e.g. literary or artistic originals, or computer software) and contracts, leases and licences that meet the conditions for treatment as assets (e.g. marketable operating leases allowing a tenant to sub-let a building, or tradable licences and permits to undertake specific activities).

Financial assets

A *financial asset* refers to a financial claim, which is the payment or series of payments due to the creditor by the debtor under the terms of a liability. Shares and other equity are treated as financial assets even though the financial claim their holders have on the issuing institutional unit is not a fixed or pre-determined monetary amount.[4] In this Framework, financial assets managed as an integral part of the operations of own unincorporated enterprises are not presented with the other financial assets of the household, since net equity in own unincorporated enterprise is treated as a separate component of financial assets.

The standard components of financial assets cover:

- *Currency and deposits*: Currency and claims that are represented by evidence of deposit. Examples are notes and coins of fixed nominal values issued by the central bank or government, transaction accounts, saving accounts, fixed-term deposits, and non-negotiable certificates of deposit. Also included are special saving accounts, such as those relating to saving plans under which income taxes on funds deposited in the account can be deferred until money is withdrawn.
- *Bonds and other debt securities*: Negotiable instruments serving as evidence of debt. Examples are government saving bonds, corporate bonds, commercial paper, state or municipal non-saving bonds, foreign bonds and other non-saving bonds, debentures,

mortgage-backed securities, negotiable certificates of deposit, treasury bills and similar instruments normally traded in financial markets.

- *Equity in own unincorporated enterprises*: Household members' share of the value of the non-financial assets plus financial assets less liabilities of unincorporated enterprises that those members both own (or partly own) and work in. Unincorporated enterprises are usually best valued on the basis of how much they could be sold for. Since their operations may utilise non-financial and financial assets and liabilities, integrated in ways that cannot readily be separated and valued independently, this Framework values unincorporated enterprises on a net equity basis, and treats the net equity as a financial asset equivalent to shares in an incorporated enterprise. Examples of assets relevant to this component are industrial land and buildings, livestock, inventories, machinery and equipment of various types including company vehicles, intellectual property, cash and deposits of the business, and shares and other investments managed as an integral part of the business. The liabilities of an unincorporated business include business loans and accounts with business suppliers still to be paid.
- *Shares in corporations*: Instruments and records acknowledging claims on the residual value of a corporation after the claims of all creditors have been met. Examples are publicly traded shares that are listed on an exchange and unlisted shares (i.e. private equity securities).
- *Other equity*: Instruments and records acknowledging claims on the residual value of a business after the claims of all creditors have been met. Examples are household members' equity in partnerships in which the household members do not work (these investors are sometimes known as "sleeping" or "silent" partners), and equity in family trusts. Household members' equity in own unincorporated businesses (i.e. unincorporated businesses that the members own or partly own and in which they also work), mutual funds and other investment funds are excluded.
- *Mutual funds and other investment funds*: Collective investment undertakings through which investors pool funds for investment in financial or non-financial assets. Examples are mutual funds, hedge funds, unit trusts, income trusts and other managed investment funds.
- *Life insurance funds*: Claims of policy holders on enterprises offering life insurance or providing annuities, except those annuities purchased from lump sums rolled over from pension schemes. These claims include life insurance entitlements where the insurer guarantees to pay the policy holder an agreed minimum sum or an annuity at a given date or earlier if the policy holder dies beforehand. Both with-profit and without-profit policies are included. Term insurance providing benefits in the case of death (e.g. from an accident) but in no other circumstances is regarded as non-life insurance and is therefore excluded. The treatment of different types of insurance is discussed further in Chapter 7.
- *Pension funds*: Claims of members and account holders on pension schemes. These claims include entitlements in both employment-related social insurance pension schemes and private pension schemes. These claims also include annuities purchased with lump sums rolled over from pension funds, regardless of the institution with which the annuity is held. Pension schemes are sometimes known as retirement plans or superannuation schemes. Pension schemes may be defined-benefit schemes (where the formula for defining a member's pension is agreed in advance) or defined-contribution

schemes (where the amount of the pension depends on the performance of the assets acquired with the member's contributions). The schemes may be compulsory or voluntary. Examples are current balances of accounts with public, occupational and industry schemes, and personal pension accounts with financial institutions (e.g. superannuation or retirement saving accounts that meet conditions specified under superannuation or tax laws, tax-deferred retirement accounts, and self-managed superannuation funds). Excluded are entitlements in government social security pension schemes.

- *Other financial assets*: Miscellaneous financial assets, including loans made to other households, option contracts, other types of financial derivatives, and other accounts receivable.

Liabilities

A *liability* is established when one unit (the debtor) is obliged, under specific circumstances, to provide a payment or series of payments to another unit (the creditor). Most of the standard liability components for micro statistics on household wealth refer to loans of various types. Loan liabilities are defined as obligations that are created when a creditor lends funds directly to a debtor, and the creditor's claims are evidenced by documents that are not negotiable. Loan liabilities include overdrafts, instalment loans and hire-purchase credit but exclude accounts payable that are not delinquent. However, in this Framework the liabilities of own unincorporated enterprises are not presented with the other liabilities of the household, since net equity in own unincorporated enterprises is treated as a financial asset.

The classification of loans by type is intended to reflect the main purpose for which the loan was taken out, not the form of security used to obtain the loan. Consider, for example, a loan secured against a residence but used to purchase a motor vehicle. It should be classified as a vehicle loan if it is a new loan primarily taken out to purchase that vehicle. But for practical purposes, it should be classified as a residence loan if it is only an extension of a mortgage already taken out to finance the purchase of the residence. It is necessary to classify loans according to their purpose if the interest paid on the loans is to be allocated appropriately as an input cost to the productive activity to which the asset is put, or as an expenditure item as interest on consumer credit.

The standard components of liabilities cover:

- *Principal residence loans* and *other owner-occupied residence loans*: Loans for the purpose of constructing, purchasing or improving the household's owner-occupied residences. Examples are home mortgage loans, home equity lines of credit for home improvement, money borrowed for a deposit on a home purchase, and bridging finance taken out until such time as a home loan is obtained.
- *Other real estate loans*: Loans for the purpose of constructing, purchasing or improving other dwellings, buildings and land (other than own unincorporated enterprise properties). Examples are loans to purchase holiday homes and rental properties for investment purposes.
- *Financial asset loans:* Loans used to purchase shares and other financial assets, excluding loans used to finance purchases or the operations of own unincorporated enterprises. Loans used for own unincorporated enterprises are deducted when deriving the value of equity in those enterprises.

- *Valuables loans*: Loans used to purchase art works, jewellery and other valuables primarily as stores of value.
- *Intellectual property and other non-financial asset loans*: Loans used to purchase intellectual property and other non-financial assets not included elsewhere (excluding loans for own unincorporated enterprises).
- *Vehicle loans*: Loans for the purchase of cars, motorcycles, boats, aircraft, etc. (excluding business loans).
- *Other consumer durable loans*: Loans for the purchase of other consumer durables such as furniture, electrical appliances, clothes, etc. (excluding business loans).
- *Education loans*: Loans to cover study expenses (excluding business loans).
- *Other loans and liabilities*: All other loans and liabilities not included above (excluding loans and liabilities of own unincorporated enterprises). Includes amounts outstanding on credit cards, bank account overdrafts and other lines of credit, if not included above. In practice, it is difficult to decompose credit card debt, bank overdrafts and similar types of ongoing loan facilities into separate categories. In that case, they should be allocated to the major purpose for which they are normally used. This category also includes other loans taken to: purchase consumption items, e.g. food or holidays; purchase valuables, including if purchased primarily as an investment; pay tax obligations; pay a capital transfer to another household, e.g. to help a relative purchase a dwelling; and make a loan to another household, e.g. because the first household has better security or access to a lower interest rate than the other household (the first household would also have a financial asset equal to the value of the loan to the other household).

For some analysis, e.g. when considering the exposure of a household to different forms of risk and associated household behaviour, it is also of interest to know the form of security or collateral used to obtain the loan. Therefore, it is desirable to collect both the purposes for which a household obtained loans and the form of security used. The form of security may be the principal dwelling, other owner-occupied dwellings, other real estate, business assets, vehicles, valuables or other security. Some liabilities are unsecured, and it may be useful to disaggregate those into liabilities outstanding on credit cards, overdraft amount, etc.

As described above, the liabilities of own unincorporated enterprises are not included in the standard liability components in this Framework, because net equity in own unincorporated enterprise is treated as a financial asset. However, users of micro statistics are likely to be interested in the value of those liabilities for some forms of analysis, and it would be useful, where possible, to collect the information on them as a supplementary data item.

Statistical and measurement issues

A range of conceptual and practical issues need to be kept in mind in order to produce useful micro data on the stock of wealth and the flows contributing to changes in that stock.

Valuation

The main criterion is that the valuation of stocks and flows should be consistent. However, a variety of valuation bases exist for describing the assets and liabilities of households in monetary terms. These tend to reflect the different types of assets and liabilities that are held, the different institutional arrangements under which they are held, and the changes in prices that occur over time. Each valuation basis serves a specific purpose and may be used to produce some types of statistics.

For macro-level wealth statistics, the SNA recommends that all assets and liabilities be valued at their current value on the market, or at the closest equivalent to this, on the date to which the statistics relate (SNA paras 2.58-2.60, 3.16, 13.16-13.17). This basis of valuation is fundamental to the integrated nature of the SNA, as it ensures consistency between flow and stock measures. It also reflects the basis on which decisions are made concerning the acquisition and disposal of assets, since such decisions are generally taken in the light of the prices at which the assets may be bought or sold on markets. This means that the values of the assets and liabilities held by households at any moment in time vary whenever any transactions take place, price changes occur, or other changes in volume arise.

The SNA also provides guidance on methods for approximating the current value of assets and liabilities when observable market prices are not available (SNA 3.118-3.139, 3.155-3.158, 13.18-13.84). These methods include: derivation of values from prices established in related markets; estimation of fair values that approximate market prices; calculation of written-down replacement cost; and estimation of the discounted present value of expected future returns. The SNA also discusses the use of nominal values, face values and insured values in estimating current values for particular types of assets and liabilities.

In the case of micro-level wealth statistics, the current valuation of household assets and liabilities is also the preferred measurement basis for most analytical purposes, for similar reasons to those given for macro statistics. However, ambiguities can arise when applying this broad concept to specific types of wealth. In particular, it may be difficult to assign a point estimate of value to those assets that do not face a regular market test or are rarely traded. Also, there can be considerable subjectivity in determining the best approximation of current values. For example, where there are multiple approaches to trading, there may be a number of different valuation bases, any one of which might be considered appropriate in some circumstances.

In practice, most of the different kinds of wealth held by households are likely to raise some valuation issues, and certain kinds of wealth can be expected to present more challenges than others. One of the most important assets for many households, their home, exemplifies the challenges. It may be difficult to value the dwelling in an objective way unless it is actually sold. Except when the dwelling is part of a newly built housing development with clearly distinguishable variations on a basic theme, any special features may generate considerable uncertainty about its value even under a given trading regime. But the valuation of a dwelling usually depends critically on the trading regime, and this implies that a range of potential prices may need to be considered. If a “quick sale” price is used, this may be lower than what might be obtained by filtering through a number of potential buyers over a longer period of time. The length of time an owner is willing to filter through potential buyers to optimise the sale price may also generate a range of values. A “self-evaluation” or “reservation” price – interpreted as the price that would cause an owner not currently intending to move to be willing to sell – might also be considered. A self-evaluation price of this kind might be particularly useful in explaining the consumption behaviour and/or financial decisions of an individual household, as well as in analysing its propensity to consume by drawing on wealth. However, it might not provide a good approximation of the current price of the asset for use in compiling statistical measures.

Other valuation bases include the original acquisition price. This price may provide useful insights for some wealth components, particularly when used in conjunction with current price valuation and analysed at the level of individual households. However, if this basis of valuation is used to produce wealth aggregates relating to all households, the aggregates may have little meaning for many types of analysis, since they would be based on a range of prices stretching back from the current period to possibly the distant past, and very similar assets could be valued at very different prices. In addition, changes in the level of assets over time could easily be misinterpreted, and there would be inconsistencies between stock and flow measures.

In principle, for micro statistics on household wealth, all of a household's asset and liabilities should be valued at their current value on the market, or at the closest equivalent to this, on the date to which the statistics relate. This valuation basis is applicable to all types of assets and liabilities and allows a consistent, coherent and comparable set of aggregate measures to be produced. As this is identical to the valuation basis recommended in the SNA, it also facilitates consistency between macro and micro-level wealth statistics, and between stock and flow measures.

While this "current value" principle underpins existing micro statistics on household wealth in many countries, putting the principle into practice in data collection is not straightforward. Those assets that are typically large contributors to household wealth (e.g. the household home) and non-marketable or non-traded assets (e.g. pension entitlements) often need detailed attention when developing collection methodologies to determine how current price valuation can be best approximated. The availability of information within households, together with respondent burden, also affects the options that can be considered. The current price valuation of each component of household wealth is examined from a practical perspective in *Wealth Guidelines*, along with methods for approximating this basis of valuation. Guidelines are also provided to promote best practice and international comparability.

Timing of recording

In principle, for micro statistics on household wealth, all of a household's assets and liabilities should be recorded at the same point in time, and this point in time should be the same for all households.

A uniform time of recording is essential to ensure the internal consistency and coherence of the statistics. For example, the integrity of aggregates produced by summing or differencing the assets and liabilities of individual households depends on all the components being measured at exactly the same date. To the extent that there are departures from this date, the asset and liability totals may be very difficult to interpret, and the meaning of derivations such as net worth or changes in levels over time may be somewhat blurred.[5]

In practice, difficulties are likely to be encountered in applying this principle to data collection. For example, even though data may be sought in respect of a specific point in time, a household may only have data available for different dates, and it may not be feasible to adjust the data. In addition, although a few countries specify "end of the previous year" as the time of recording for their data collections on household wealth, most countries specify "time of interview". As data collection typically extends over a period of time, such as several months, "time of interview" generally implies the use of

different dates by different households. Again, adjusting the data to a common date may not be feasible. These measurement issues and possible adjustment methods (e.g. the use of indices, such as those relating to the stock market) are considered further in the *Wealth Guidelines*.

A related matter is the reference date for micro-level wealth statistics. In accordance with both the stock concept of wealth and the time of recording principle, the reference date should ideally be a specific point in time rather than a period of time. In practice, constraints on data collection may lead to operational arrangements whereby reference dates span a period of time. For example, in some countries the statistics refer to stock levels over a period of time (e.g. a year) rather than at a point in time (e.g. end of a year). It may be appropriate in such cases to describe the resulting statistics as showing average stock levels over the period if the underlying records are considered to be representative of the entire period. Where such practices are adopted, their analytical implications may need special consideration, as there will be additional elements to take into account for some types of analysis (e.g. understanding changes in wealth over time, joint analysis of micro and macro wealth statistics, and combining micro statistics on wealth, income and consumption).

Consolidation and netting

An individual in a household may have a financial claim on another household member, in which case the second member has a liability to the first. Such claims and liabilities should be netted out and not included in the assets and liabilities of the household when producing household statistics. This is comparable to the standard of not including payments from one household member to another in the income and payments of the household. However, data on the intra-household claims and liabilities should be collected if it is planned to produce statistics on units smaller than the household, such as the family economic unit or individuals.

A household may have both assets and liabilities relating to a particular type of financial instrument. For example, it may have loan claims as well as loan obligations. Some of its assets and liabilities may also be directly linked. For example, it may own a dwelling on which there is a mortgage. While they could be offset against each other, with only the net position included in the aggregates, it is preferable that in both cases the asset and its corresponding liability are included in the asset and liability aggregates. This enables a better analysis of the asset and liability mix of the household, and the study of the potential impact on households of policy changes or other factors.

The main area where implementation issues may arise concerns unincorporated businesses belonging to households. Where the business is treated as part of the household, it may be difficult to obtain separate data on all the assets and liabilities of the business. An estimate of the value of the business (i.e. its assets less liabilities) may be all that can be collected in some circumstances. This issue is discussed further in the *Wealth Guidelines*.

Saving as a residual

A particular issue arises with one of the major flow variables: household saving. As noted earlier in this chapter, saving is a derived variable that is not independently measurable in either macro or micro statistics. In principle, it is derived by subtracting final consumption expenditure from disposable income, where each of these variables is measured

independently. From a practical standpoint, even where a survey aims to collect details of a household's income, consumption and wealth on a fully integrated basis, it is very unlikely that complete and consistent data would actually be available for each and every household. While the difference between income and expenditure can be calculated in such cases, it will be difficult to interpret, as it will reflect, in addition to saving or dissaving, errors and omissions in both measures as well as timing differences between them.

Data collection, dissemination and analysis

Data sources and methods for producing household wealth statistics

Micro data on household wealth are typically obtained from one or more of these sources:

- Multipurpose household surveys, in which a wealth module is embedded.
- Integrated surveys on household wealth and income, or household wealth, income and consumption.
- Surveys of financial institutions.
- Administrative records.
- Specialised private databases covering items such as works of art, historical dwellings and luxury vehicles.

Depending on country circumstances (including, but not limited to, budgets available to data collecting agencies, co-operation agreements between different institutions, privacy laws, the contents of public records, cultural factors influencing the propensity to participate in sample surveys, characteristics of the market for private databases), the optimal source for compiling statistics on household wealth may vary. All approaches involve challenges to data quality, including differences in concepts and definitions, with the nature of the challenge varying with the source or method.

Household surveys are becoming the prevalent source of micro-level data on household wealth. These surveys often collect a core set of demographic and socio-economic information along with data on the topic or topics of particular interest, such as wealth. This core information can be used to classify households into groups, and then to show the distribution of total wealth or other aspects of wealth across these groups. In the case of multipurpose surveys, the simultaneous collection of data on various facets of economic activity allows, in principle, for the production of relatively complex statistics (e.g. debt/income ratio, sources of wealth accumulation by income class, etc.) without the added variability or errors that comes from most data-merging techniques. When surveys include a panel component, wealth dynamics can also be studied at the micro level using appropriate models.

The main challenge to data quality in cross-sectional surveys comes from the response process. Data can be biased by non-response and misreporting. Minimising reporting problems and their effects is a key part of a survey strategy. For any type of statistical survey, there is a trade-off between the perceived response burden and the amount of data collected. This can affect the extent to which a collection can obtain data on the many variables of interest for household wealth statistics.

Trade-offs also exist in terms of the precision of different sets of estimates. For example, a survey geared towards measuring the aggregate holdings of complex financial assets needs to be focused on the (typically small) group of households investing in such

instruments. In most countries, these households are also the wealthiest ones, and wealth tends to be inversely proportional to a household's propensity to participate in surveys. Under a fixed budget, resources are diverted from interviewing more ordinary households to interviewing wealthy ones. Precision in measuring rarely held assets may therefore translate into higher variability of estimates for other ones that are widely held but not particularly common in the wealthiest segment of the population,

Administrative records provide detailed data on any asset or liability that must be registered, either for fiscal purposes or for other reasons. In most countries, dwellings and vehicles are subject to registration procedures, as are other wealth items sometimes, including saving held in foreign currency or in specific financial instruments. Administrative records might also exist for debts exceeding a certain threshold, especially in countries where credit risk is evaluated by government agencies.

These types of records provide two significant advantages over competing sources. First, they normally cover the whole population of an administrative unit (e.g. country, State/Province/Region, etc.); secondly, especially in the case of tax data, a great deal of effort and money is spent in ensuring their accuracy.

The use of administrative data is, however, often severely restricted in order to protect the privacy of households. Depending on the country, laws might mandate that they are used only for a specific purpose, such as calculating taxes, or that they are not released in any non-aggregate form to any institution, public or private, outside the producing agency. Even in the minority of countries where some administrative records are publicly searchable, auxiliary information is often scarce, limiting the possibilities of analysis using such sources alone.

Quality issues might affect administrative records too. Compared to surveys, where data quality generally varies across the sample, this kind of data are more likely to be affected by systematic error; for example, the value of dwellings might be registered based on a census carried out in the distant past, and then not updated to keep market dynamics into account. Conceptual differences may also be important. For example, in some instances, the value of real estate assessed for tax purposes is based on a formula that has only a rough connection with one of the many market prices that might apply. Where administrative data are maintained for fiscal purposes, there may also be an incentive for households to act in ways that cause the value recorded to be minimised.

Private data sets exist covering a variety of wealth items, but are generally limited to segments of the population, e.g. customers of a specific credit institution, owners of a certain brand of car, residents of a certain area. While several data sets, e.g. from different banks, might be combined to obtain a fuller picture, this generates additional costs that are often incompatible with the budget constraints faced by institutional data producers.

Combinations of different sources can occur for several purposes. Conceptually, two types of combinations between different sources can be defined: direct, i.e. carried out on individual data records (e.g. linking of survey-based information with tax information at the household level); and indirect, i.e. based on the incorporation of data from a source as background information for another one (e.g. use of housing prices from a private database in the process of survey design, use of correlations observed on a database in order to construct imputation models for a different one).

Combining sources through record matching

Where direct combination at the micro level is concerned, two kinds of techniques are available: exact matching and statistical matching. Exact matching consists in linking data referring to the same household from different archives. It requires individual households to be identifiable. Statistical matching consists in linking data on similar households from different archives. It requires definition of criteria for assessing similarities between households, based on variables present in all the archives involved.

Exact matching tends to be difficult to carry out, because privacy laws often prevent different data producers from exchanging identifying data about individual households. Sometimes, the producers themselves are prevented from acquiring such data, or from storing them beyond their immediate needs. The most favourable conditions for exact matching arise whenever the archives to be matched belong to the same institution, e.g. a National Statistical Office.

Statistical matching does not hinge on the direct use of personal data; as a consequence, it is generally not subjected to strong legal restrictions, provided that the information contained in the matched data set does not facilitate the identification of the respondents. Compared to exact matching, its main disadvantage lies in the uncertain nature of the process. Statistical matching reflects only micro-level relationships used in the matching algorithm, which can contain errors and/or omissions based on incorrect models or scarcity of information in any of the databases. If survey data are used in a matching exercise, survey error enters the process, increasing this margin.

Where wealth data are concerned, most matching experiments aimed at expanding the breadth of available information have been carried out by linking wealth data sets with other sets that focus on consumption, income, employment and financial literacy. Socio-demographic characteristics or transformations thereof are generally used as pivot variables. Some experiments aimed at improving data quality have been conducted by matching survey data sets affected by non-response on some wealth items and/or for some categories (e.g. the very rich) with private data sets or administrative records containing information requested of, but not provided by, respondents in the survey.

Collection unit and data to be collected

It is important to distinguish between data collection units and data analysis units. The data collection unit is the physical entity within the population about which information is collected (e.g. a person or a household). The data analysis unit is the unit about which statistics are produced. It may be the same as the collection unit, or it may be derivable from the data obtained in respect of the collection unit.

The collection units that can be used for micro-level wealth data generally depend on the design of the statistical survey or the nature of the administrative system through which the data are available. In the case of household wealth surveys, countries use two main types of collection unit: the household (defined in different ways) and the individual person. Other units within the household, such as the family, are also used for collection purposes, but this is less common.

Many countries use both the household and the individual person as collection units. This usually means that some details are collected for the household as a whole from one of its members, while other details are collected from each of the members concerned. For example, information on wealth that is often shared may be collected for the whole

household, while information on wealth that is typically held in a single name may be collected directly from each member. The practical issues associated with different types of collection unit are discussed in more detail in the *Wealth Guidelines*.

In general, wealth data collected at the level of individual persons provide greater flexibility for analysis than data collected at the household level. For example, where wealth data are collected at the person level, it may be analysed by person or aggregated for analyses of households, family economic units, or other units within a household. However, if it is collected at the household level, it may be analysed for units below this level only to the extent that it can be derived from the information collected. Collection at the person level also opens up the possibility of obtaining data on individual ownership shares for assets and liabilities held jointly by household members: such data can provide insights into how wealth is distributed within the household.

From the perspective of accuracy, it is more difficult to generalise. In many cases wealth data obtained directly from the persons concerned are more likely to be complete and based on relevant records than combined data for all household members reported by a single household spokesperson based on that person's knowledge of everyone's finances. In other cases, however, the situation may be less straightforward: for example, members may have differing views about ownership and other aspects of jointly held assets, or one member may specialise in managing finances with other members knowing very little about assets they nominally own.

As well as wealth information, most household wealth surveys collect a range of other information about the household and its members. Examples are household size and composition, income, employment, and characteristics or behaviours of individual household members (such as educational attainment or payment habits). While some information of this kind may be readily obtained for the household as a whole through a single person, other information may need to be collected from each person concerned in order to obtain accurate details. Often, information about the composition of a household and the basic characteristics of its members is collected through a single spokesperson, and more detailed information relating to individual members is collected directly from each of them.

For purposes of integrating micro statistics on wealth with those on income and consumption, there may be advantages in adopting a unified approach to collection units. This is particularly relevant for countries that use a single household survey to cover wealth and one or both of these other topics, each in some depth.

In general, the choice of the collection unit for obtaining information through household wealth surveys needs to take into account the nature of the information being sought, the likely impact on data quality and the survey design. The household unit, the individual person unit, or possibly other or multiple units may be appropriate, depending on a country's particular circumstances.

Analysis unit

The main unit of analysis for micro statistics on household wealth is generally the household. But, as for income and consumption, for some countries and certain types of analysis, other types of unit within the household may also be important, such as the individual person or the family economic unit.

While wealth is held by individual persons, wealth analysis usually focuses on households, since individual wealth, like other economic resources, may be shared with others living in the same household. For example, it is not unusual for some assets and liabilities (such as the household home and any associated mortgage) to be jointly held by partners in a couple relationship. Other assets, such as the bank deposits of the main income earner, may be drawn down as needed to finance the consumption expenditure of a dependent person living in the same household. Even where there is no joint ownership of wealth and no intra-household transfers of wealth, the economies of scale that arise from the sharing of dwellings may benefit members by allowing higher levels of wealth accumulation than would otherwise be the case.

A full appraisal of the way in which wealth is shared within a household would require detailed information on how both wealth and other economic resources are distributed and used within the household, including the various types of transfers that take place between household members. Such detail is very difficult to obtain, and generally countries do not attempt to collect it. However, as already noted, where information is collected at the individual person level it may be possible to obtain some information on individual shares of assets and liabilities held jointly by household members.

For many types of analysis of household wealth, the unit of analysis is a type of decision-making unit. In the case of the household unit, this assumption seems reasonable for the most common and simple household structures, such as nuclear families and single individuals. But for more complex household structures, usually relating to a relatively small proportion of the population, the assumption may be more questionable, as decision-making arrangements within such households can be quite heterogeneous. Since complex households tend to be more common in some countries than in others, this may affect wealth comparisons across countries. Grouping households by size and composition (including family type) can assist in addressing these issues.

Use of equivalence scales

When analysing the distribution of income or consumption across individuals, the normal practice is to equivalise the relevant economic aggregate. Household income is used rather than individual income, because income is usually shared at least to some extent within households, and because there are economies of scale from sharing some resources, especially housing. To capture the impact of these economies of scale, the household income estimates are equivalised, as discussed in Chapter 3. Data that describe household characteristics such as equivalised income but are enumerated for individuals are called person-weighted data.

If wealth is considered from the perspective of an economic resource that can support the current consumption of a household, it is appropriate to equivalise household wealth in the same way as household income is, and to use person-weighted data in analysing the distribution of wealth.

However, if wealth is considered from the perspective of an economic resource that may be used to support consumption in the future, that consumption may not be undertaken by the household in its current form, as individuals may have entered or departed from the household. If they came from or went to other households, rather than being births or deaths within the household, there may have been some shift of wealth between the households concerned. Wealth is owned by individuals, and the wealth owned

by an individual moving into or out of a household may be significantly different from the average wealth of the other people in the household. As a typical example, the wealth of households with working-age adults who have children is likely to be used to support the consumption of the parents when they retire after the children have left the household. The children are not likely to take much of the household wealth with them.

It follows that using person-weighted estimates of equivalised wealth may be of some analytic use, but it gives less insight than the estimates of equivalised income or current consumption. As a result, the analysis of wealth distribution typically focuses on statistics that are classified by the life-cycle stage of the household. Similarly, measures such as Gini coefficients that provide a single statistic summary of wealth distribution across the whole population are of somewhat limited use.

Summary

The key highlights from this chapter can be summarised as follows:

- Micro statistics on household wealth refer to the level, composition and distribution of wealth held by households at a particular time, as well as to changes over time.
- The ICW Framework for micro statistics on household wealth is closely related to that for macro statistics contained in the 2008 edition of the *System of National Accounts* (SNA). Nevertheless, there are some differences, reflecting the different purposes and analytic focus of the statistics to which they refer.
- The level of wealth refers to the value of the stock of assets held after deduction of liabilities outstanding. Because the level of wealth is net value, it is sometimes referred to as net worth.
- Assets can be non-financial (e.g. dwellings and other real estate, valuables, vehicles and other consumer durables) or financial (e.g. currency and bank deposits, equity in businesses and entitlements in pension funds). Liabilities are all financial in nature and include loans used for housing, loans used to finance the purchase of shares, education loans and credit card debt. Assets and liabilities should be valued at current market prices.
- Various flows contribute to changes in the stock of wealth over time. *Saving* is the excess of income over current expenditure and adds to wealth, while dissaving is the decrease in wealth resulting from current expenditure exceeding income. *Capital transfers* refer to the acquisition or disposal of assets when the receiving party neither makes a payment nor incurs a liability to the provider of the asset; such transfers tend to be large and irregular, e.g. large donations and gifts, large gambling winnings, inheritances and lump-sum retirement payments. *Other volume changes* refer to changes such as the destruction of assets (e.g. by accident, storm or war) or recognition that something such as a work of art not previously considered valuable now has value. *Holding gains or losses* are the changes in asset and liability values that reflect changes in the relevant market prices over time.
- The main unit of analysis for micro statistics on household wealth is generally the household. For certain types of analysis, other types of unit within the household may also be important, such as the individual person, the family or the primary economic unit.
- If wealth is considered from the perspective of an economic resource that can support the current consumption of a household, it is appropriate to equivalise it in the same

way as household income is equivalised, and to use corresponding person-weighted data in analysing the distribution of wealth. However, if wealth is considered from the perspective of an economic resource that may be used to support consumption in the future, that consumption may not be undertaken by the household in its current form. The use of person-weighted equivalised estimates gives less insight than in the case of income, and it is more important to examine household data classified by life cycle.

Notes

1. Experimental measures of the monetary value of human capital, based on the life-time income approach, are presented in Liu (2011).
2. It should be noted that financial derivatives – such as option contracts and forward contracts – are treated as actual assets and liabilities, not contingent ones. This treatment follows that in the SNA (paras 11.23, 11.111-11.125). Such financial instruments provide a means through which specific financial risks linked to underlying items can be traded or offset in financial markets in their own right.
3. Holding gains are sometimes described as "capital gains", but the term "holding gain" is preferred in the SNA because it emphasises that they accrue purely as a result of holding assets or liabilities over time without transforming them in any way (SNA 2.109, 3.105-3.106, 3.153-3.154, 12.73-12.93).
4. Conversely, equity is treated as a liability of the issuing unit.
5. The principle outlined here for micro statistics is consistent with the time of recording rules for macro statistics based on the SNA (SNA paras 2.54-2.57, 3.16, 3.150-3.160). The SNA requires stocks and flows to be recorded consistently with respect to timing. It specifies that stocks of assets and liabilities are to be recorded at the same moment, typically the beginning or end of an accounting period. Flows are to be recorded at the moment of accrual within the accounting period (i.e. the moment economic value is created, transformed, exchanged, transferred or extinguished). The SNA notes that an exact timing of individual flows within the accounting period is crucial for distinguishing between changes in net worth due to transactions and changes due to holding gains and losses.

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Chapter 7

Integrated statistics

This chapter provides practical guidelines on the collection of integrated data on household income, consumption and wealth. The guidelines are intended to: Improve the harmonisation of these statistics, by reducing the impact of design and measurement effects on international comparability. Assist those countries considering the establishment of household surveys that concurrently collect information on income, consumption and wealth. Identify data requirements that are needed to improve the quality of data-matching in the fields of household income, consumption and wealth.

Introduction

Most countries obtain household economic data using information collected from households via a sample survey. The main advantage of survey data is that direct control can be exercised over the data content, since it is possible to ask questions on precisely those items on which information is sought. The first part of this chapter covers practical guidelines for the collection of integrated statistics in household surveys, including coincident measurement through the linking of administrative sources to information reported by respondents in household surveys. A number of examples of country practices are provided. The chapter then discusses *ex post* integration through data-matching techniques, making recommendations for data collection and design to improve the accuracy and consistency of integrated data sets compiled through data-matching.

Income surveys

Traditionally, micro analyses of economic well-being have generally used income data, reflecting the relative ease with which households can report their incomes and the relative frequency with which data on income is available from both survey and non-survey sources. For most households, income is the most important economic resource for meeting everyday living expenses. For these reasons, income is always collected as a primary topic in any study of household economic well-being.

However, income collected alone has some significant limitations. It can be quite volatile for people who are making transitions between jobs or into retirement, changing their hours of work, moving into or out of study, increasing or reducing time spent caring for children, or taking extended breaks from work. At these times, households may draw on other resources to fund their consumption expenditure, such as by using savings or incurring debt.

The 2011 *Canberra Group Handbook on Household Income Statistics* provides best practice guidelines on household income measurement. The *Handbook* examines the key measurement issues from the perspective of producing reliable and relevant statistics on household income distribution. General issues such as measurement units, reference periods, population-weighting and benchmarking are covered. Practical guidance is provided on the collection or estimation of those income components that have known measurement or quality concerns, such as employee income in kind; income from self-employment (including net estimated value of goods and services produced for barter, as well as goods produced for own consumption); property income; income from household production of services for own consumption (including net value of housing services, unpaid domestic services and services from household consumer durables); inter-household transfers; and social transfers in kind.

The *Handbook* also provides information on the methodologies used and the components included in household income data sets compiled from a wide variety of countries in 2010. Chapter 3 of this publication discusses many of these areas and extends the discussion where necessary to ensure that the different components of household economic resources fit into an integrated framework for income, consumption and wealth statistics.

Income and expenditure surveys

After stand-alone income surveys, the next most common practice by statistical agencies is the integrated collection of household income and expenditure data. In some countries, the integrated collection of household income and expenditure has been occurring for many years, e.g. Israel (Box 7.1).

Household expenditure surveys are widely used to analyse the expenditure patterns of households across the population and to compare levels of expenditure between various population groups. These analyses support the development, implementation and evaluation of social and economic policies, particularly for potentially disadvantaged groups such as pensioners, one-parent families and the unemployed. Household expenditure data are also often used in determining the basket of goods and services that is used to compile consumer price indexes, as well as for determining the relative importance of each expenditure class in calculating the index.

The coincident measurement of household income and expenditure allows comparisons of expenditure levels and patterns of expenditure at different points in the income distribution, e.g. by income quintile. It also allows comparisons of groups by their main source of household income, such as government pensions and allowances or wages and salaries.

In addition, when income and expenditure information are collected together, they can be used to impute indirect government benefits and production taxes for the purpose of studying the effects of government policies on household income for sub-groups of the population. In these studies, information on the composition of households and the characteristics of their members are used to identify recipients of social transfers in kind from government, while expenditure data are used to calculate the incidence of production taxes paid.

While integrated income and expenditure surveys can inform on the income and expenditure characteristics of households at different points of the respective distributions, it should be noted that in almost all cases there will be timing differences between the different components of income and expenditure collected. Therefore, income and expenditure estimates for individual households or for groups of households will not balance, and the difference between household income and expenditures cannot be considered a measure of saving.

Box 7.1. **Integrated income and expenditure data in Israel**

In Israel, integrated information on household income and expenditure has been collected since the early 1950s in the Household Expenditure Survey. The survey was conducted every 5 years up until 1997, when the survey frequency was increased to annually. More recently, a decision was made to invest more heavily in the Household Expenditure Survey, with a significant increase in sample size from 6 000 households to 10 000 households. The survey data are used extensively to:

- derive weights for the consumption basket of the consumer price index;
- calculate the poverty line and measure the standard of living and well-being of the population; and
- estimate household final consumption expenditures in the national accounts.

Income, expenditure and wealth surveys

When wealth data are collected in conjunction with income data, they provide more comprehensive information about household economic well-being. In addition to the total net worth of households, the composition of assets and liabilities can also provide valuable insight for policy makers and analysts.

The coincident collection of housing data is a critical element in all income, expenditure and wealth surveys.

- For *income,* data on housing characteristics and costs are required to calculate estimates of net imputed rent as a measure of income accruing from the owner-occupied housing services that the household provides to itself, as well as the value of subsidised rentals (a component of social transfers in kind). Rental property income also provides a source of income for many households. When estimating income attributed to real estate, it is necessary to deduct the costs associated with real estate ownership, such as interest on mortgages and other loans used to finance the ownership, land taxes and so on.
- For *expenditure*, gross imputed rent is a major item for owner-occupier households, while rent is a major item for most non-owners.
- For *wealth*, home ownership is often the most significant asset of households, and the mortgage often represents their largest liability, particularly in the period just after the purchase of property.

Collecting information on household income, consumption and wealth simultaneously is a challenge. However, it has been successfully undertaken by some statistical agencies. The benefits are far-reaching, in terms of better understanding the relationships between income, wealth and expenditure for individual households and groups of households, and for enabling analysis that provides a more complete picture of the economic well-being of households (Box 7.2).

Box 7.2. **Approach to collecting integrated income, expenditure and wealth data in Australia**

Australia has collected information on household income, expenditure and wealth since 2003-04 in integrated surveys, the ABS Survey of Income and Housing (SIH) and the ABS Household Expenditure Survey (HES). The HES is conducted every six years while the SIH is conducted every two years. When the HES is run, it is integrated with the SIH, which includes a comprehensive wealth module.

A fiscal incidence study is also undertaken using output from the HES. The study allocates to households social transfers in kind (STIK) and taxes on production to provide a more complete picture of the total impact of government taxation and expenditure on households. Government expenditure designated as part of STIK is allocated to individual households either by using reported HES data on cash reimbursements received or by using models and more general household characteristics, e.g. government school education expenditure is allocated to households with school-age children. Key elements of the SIH and HES are highlighted below.

Sample design. The SIH and HES samples are designed to produce reliable estimates for broad aggregates for Australia and its key regions. To maximise the efficiency of the design, the HES is conducted for a subsample of SIH households. In the HES sample, all topics are collected, *i.e.* income, housing, wealth, expenditure and financial stress. In the SIH sample, income, housing, and wealth data are collected. The collection of expenditure data from a subsample of households results in reduced respondent burden and survey costs. More detail is provided in Box 7.3.

Weighting. To ensure that the survey results are representative of the population as a whole, and to maximise the consistency of output from the SIH and HES samples, weights are calibrated against person and household benchmarks. Households in the HES have both an "HES weight" and an "SIH weight", i.e. households in the HES can contribute to both the HES and the SIH aggregates. In addition to the benchmarks used in the SIH (e.g. population and age structures), HES data are benchmarked to a number of estimates produced from the SIH, including income by main household source and by region, and tenure by region.

Data collection. By aligning common data items and ensuring that all the items required for the SIH are also collected in the HES, it is possible to include the HES sample as part of the SIH sample. Data are collected using computer-assisted personal interviews (CAPI). For each household, one household questionnaire is completed, as well as personal questionnaires for each person aged 15 and over. The household questionnaire is used to collect information on: household demographics; dwelling characteristics; some household assets and liabilities, e.g. owner-occupied housing and rental properties; expenditure on household bills, e.g. rents, rates, loans; infrequent or irregular expenditures, e.g. repair and maintenance of dwellings, vehicles and travel. The personal questionnaire is used to collect information on income (by type), current and annual; and on personal assets, integrated with income questions, e.g. dividends from shares are collected together with the value of shares and any loans taken to purchase shares. The expenditure diary (for HES selections only) is completed by each person aged 15 and over for two weeks from the date of interview to capture regular, recurrent consumption expenditure; shopping dockets can be attached to the diary as a record of expenditures. To improve HES reporting, households are visited a minimum of four times: *i)* the initial contact when information on the number and characteristics of people usually resident in the dwelling is obtained and the first week's expenditure diaries are distributed; *ii)* a Diary Assistance Visit is arranged for two to four days after households receive their diaries to check that the diaries are being maintained correctly and to provide respondents with any

Box 7.2. **Approach to collecting integrated income, expenditure and wealth data in Australia** *(cont.)*

assistance they may need; *iii)* a Diary Exchange Visit when the week 1 diaries are collected and checked and the week 2 diaries are provided; *iv)* a last visit, when the week 2 diaries are checked and collected and any remaining interviews are completed.

Response and refusal rates. The SIH achieves response rates that are very similar to those of other ABS household surveys, while the HES response rate is slightly lower. For the SIH, the response rate is over 85%, and the refusal rate about 3%. For the HES, the response rate is over 75% and the refusal rate about 7%. About half of the non-response relates to dwellings deemed by interviewers as occupied, but where no household member could be contacted (a rate similar to that observed for other ABS surveys). The other half relates to households affected by death/illness, or where a significant person did not respond to key questions.

Reducing the impact of non-response. Where possible, imputation is used for households where there is partial non-response but sufficient information was supplied to be retained in the sample. In these cases, imputation for partial non-response or missing items is used by imputing the missing data with a value reported by another person with similar characteristics (referred to as the "donor"). Donor records are selected by finding fully responding persons with matching information on various characteristics (such as administrative area where people live, gender, age, labour force status and income) as the person with missing information. The imputed information is an appropriate proxy for the information that is missing and the item is flagged to indicate that it contains imputed information.

Practical issues

This section draws on the available practical guidance for income, expenditure and wealth surveys as well as the experience of countries where this information is available. It covers: *i)* frequency; *ii)* data collection; *iii)* questionnaire design; *iv)* maximising response rates; and *v)* utilising administrative data sources.

Frequency

In many countries, household income data are collected either annually or every two years. As income and wealth are best collected in an integrated survey, the same frequency is recommended for wealth, although some or all the wealth components can be omitted for some years.

The ICLS *Resolution on household income and expenditure statistics* (2003) recommends that a major sample survey of household expenditures be undertaken, preferably at intervals not exceeding five years. However, under conditions of rapid changes in socio-economic and political situations, in lifestyles and in the availability of different types of goods and services, the surveys should be undertaken more frequently. For reweighting the consumer price index, smaller-scale surveys or other sources can be used to estimate changes in important aggregates during the interval between two large-scale surveys.

Data collection

Different methods of collection may be used for different components to obtain results of optimum quality. The most common household surveys are undertaken by personal interview, i.e. either a face-to-face interview or a telephone interview. Face-to-face interviews may produce data of higher quality due to generally higher response rates

and the ability of respondents to easily refer to relevant statements or documents concerning the income questions, e.g. their pay slip or tax return.

Ideally, income and wealth data should be collected by a face-to-face personal interview directly from each relevant household member and separately for each type of income and each class of assets and liabilities, at a level that is as detailed as possible. However, some wealth items, such as the value of property and other durables, and the loans on these items, may be better collected at the household level from a person knowledgeable about these matters.

Similarly, information on large, infrequent or irregular purchases, especially of durable goods, and on regular expenditures such as rent and utility bills should be collected by personal interview at the household level from a person knowledgeable about the household's expenditures. However, a diary collection method is preferable for those expenditure items that are frequently purchased such as food, personal care products and household supplies. Therefore a combination of a personal interview with a household spokesperson along with expenditure diaries for each adult member of the household is considered best practice for household expenditure data.

Emerging methods that may facilitate data collection include the use of the Internet, outlet receipts and electronic equipment (hand-held computers or mobile telephones) for real-time recording of expenditures.

Questionnaire design

Most countries use computer-assisted interviewing techniques for conducting their household surveys. This allows more complex questionnaire design and sequencing to be undertaken, as well as edits to be developed that can highlight inconsistencies or data reporting errors that can be checked during the interview.

Questionnaires for collecting expenditure, income and wealth data are ideally organised into:

- *A household-level questionnaire*, collecting information on the characteristics of the household such as size and composition, dwelling characteristics, certain assets and liabilities, expenditure common to all household members (e.g. utility bills and housing costs) and irregular or infrequent expenditures (e.g. the purchase of household appliances or overseas holidays);
- *An individual-level questionnaire*, collecting information from each usual resident, aged 15 and over, on income, certain assets and liabilities, and personal characteristics; and
- *A personal diary* in which usual residents aged 15 and over record their expenditures over a defined period.

When income, wealth and expenditure are collected together, it is preferable to design the questionnaire in an integrated manner rather than to have separate "income", "wealth" and "expenditure" modules. Box 7.3 provides an example using bank accounts to show how income and wealth questions can be integrated to improve data quality and to reduce respondent burden.

Box 7.3. **Survey questions used to collect information on income and assets in the Australian Survey on Income and Housing**

The questions below illustrate how bank account assets and interest from bank accounts might be collected together rather than in separate "income" and "wealth" modules.

- Do you currently have any bank accounts?
- (If yes) Including only your share of any joint accounts, what is your current balance? [value of assets]
- Including only your share, how much interest do you expect to receive from your bank accounts this year? **[income]**

Sample design

The design of the sample and the selection of sample households should be made in accordance with appropriate sampling techniques in order to obtain results that are as accurate as possible with the resources available, taking into account circumstances such as the availability of suitable sampling frames. As far as possible, the sampling method employed should permit the calculation of sampling errors. Thorough research should be carried out to find and clearly identify the most suitable sampling frame and to determine the number of stages, the optimum stratification and other salient features of the sample to be used, as well as the best procedures for selecting the sample units.

The sample size should be determined on the basis of both the accuracy required, i.e. the magnitude of the acceptable level of the sampling error for key estimates, and the resources available. In choosing a sample design, the objective is to ensure good representation in terms of the size and composition of households and income/expenditure/wealth classes. In most cases, it should be sufficient to ensure the adequate representation of households of different sizes and compositions, of demographic and socio-economic groups, as well as of urban and rural areas and, where relevant, of different climatic zones within the country.

In some instances it may also be important to have adequate representation of particular groups of interest, especially when these are small in size, e.g. recent migrant households and high-wealth households. This may be achieved either by increasing the overall sample size or by oversampling particular populations. Box 7.4 provides an example from Australia where both strategies were employed in the ABS integrated surveys of household income, expenditure and wealth.

Box 7.4. **Adjusting sample designs in the Australian integrated income, expenditure and wealth surveys**

When the Australian Bureau of Statistics Household Expenditure Survey (HES), described in Box 7.2, is conducted, it is integrated with the Survey of Income and Housing (SIH) and run on a subsample of the SIH. For the 2009-10 surveys, the sample sizes were increased for two purposes:

- First, the SIH sample was increased by 4 200 households, located outside capital cities, to better support performance indicator reporting, especially in regard to housing affordability and home ownership measures.

Box 7.4. **Adjusting sample designs in the Australian integrated income, expenditure and wealth surveys** *(cont.)*

- Second, the HES (and consequently the SIH) included an additional 3 000 metropolitan households whose main source of income was from government pensions and allowances. A two-stage sample selection process was used to identify relevant households. First, interviewers approached randomly selected households from a separate sample and asked the main source of household income. Second, only those households that reported their main source of income as government pensions and/or allowances were included in the extra HES sample. The expansion of the sample was made to improve the quality of the Pensioner and Beneficiary Living Cost Index (PBLCI), which measures changes in the cost of living for pension and other government beneficiary households. The sample increase was targeted at improving the PBLCI to make it more representative of the spending patterns of pensioners and other beneficiaries, and to support analysis of the specific products that pensioners and other beneficiaries buy so as to assess whether an expanded range of products needed to be priced when constructing the PBLCI.

Maximising response rates

Response rates and respondent burden need to be considered in designing the approach to data collection. As low response rates may affect the representativeness of the survey, it is recommended that countries make every effort to ensure good response rates. A well-designed instrument and professional approach to collection can make a significant difference to response rates.

Some surveys have made use of incentives in the form of payment of a token amount or gifts, e.g. calculators or note pads. Some countries allow the use of substitution to replace non-responding households, but doing this indiscriminately could negate the probability sampling. In other institutional environments, such surveys can be mandated in legislation.

Other techniques to maximise response rates include:

- conducting face-to-face computer-assisted interviews and using highly trained interviewers;
- using interviewers who can speak other languages;
- following-up respondents closely if there is no initial contact;
- using an introductory letter and brochure prior to contact to explain the importance of the survey results and what they will be used for;
- providing a card in advance of the interview that lists the documents, records and statements that will make completing the survey easier and quicker;[1] and
- training interviewers to encourage respondents to obtain information from household and personal documents where applicable, e.g. utility bills, dividend statements.

Utilising administrative data sources

In some cases, administrative data sources may be available to supplement reported data in household surveys (see the examples for Canada in Box 7.5, and Denmark in Box 7.6). Administrative data sources are also important for validating the reported data

Box 7.5. **Statistics Canada's Survey of Financial Security**

Statistics Canada provides thorough coverage of Canadian families' income and expenditures through annual household financial surveys. However, the measurement of a family's wealth is less frequent, with data collected occasionally by the Survey of Financial Security (SFS), which combines most aspects of wealth (income, assets and debts) into one survey. Although the information on assets and debts is collected directly from a personal interview, income data are obtained through a subsequent record linkage to administrative data. Statistics Canada has conducted the Survey of Financial Security in 1999, 2005 and 2012. The 2012 SFS is built to a large extent upon the two previous versions of the survey in order to allow comparisons of levels and trends over the years. However, a few significant improvements have been made to this latest iteration.

As in previous years, a dual-frame approach is used to oversample high-income earners, since they typically have a higher non-response rate than those in the other income brackets. Rather than selecting the oversample from high-income postal code areas, it is now being selected from administrative tax records – Canada Revenue Agency's Individual Tax File. This method allows a more efficient sample design since the "hit rate" of genuine high-income households is better, and the tax data's auxiliary variables are correlated with the survey variables of interest. The disadvantage is that the most recent tax data file is available only for 2009. In the 1999 SFS, the sample size was about 24 000 households. For the 2005 iteration, due to budget constraints, the sample was reduced to 9 000 households. Because of the difficulty in releasing reliable provincial estimates with that smaller sample size, the 2012 survey now covers 20 000 households.

In order to reduce the response burden, two changes were incorporated. The first was to reduce the length of the previous SFS questionnaire interviews from an average of about 75 minutes to 50 minutes. To reach this goal, content that had poor response was removed, content which had contributed little analytic value was taken out, and additional sponsored content from survey stakeholders was not solicited. The second change was to enable household surveys collecting detailed income data to use "informed replacement", i.e. the respondent is informed that their income data from tax records will be used as a replacement for answering a series of income questions, in accordance with Statistics Canada's Directive on Record Linkage and Directive on Informing Survey Respondents. If the respondent does not refuse this replacement, a match to the Canada Revenue Agency Tax File is made to retrieve their personal income data. For the surveys that have used informed replacement since 2012, the refusal rate has been under 2%.

Before carrying out the match, the tax data are processed at Statistics Canada over a 4 to 5 month period to obtain a comprehensive file, including annual adjustments to account for province-specific tax legislation and changes in national tax policy. Further, because the source tax files have limited information on the number and characteristics of non-filing individuals, this information must be derived. A system module creates families by linking together filing family members and it estimates non-filing members.

The receipt of the source tax data and its processing to create the final Tax File is not always optimum in regards to the timing of the survey processing. However, once the final Tax File is produced, the probabilistic match to the survey data can then begin as the survey provides the linkage variables needed to retrieve a tax record identifier. This unique identifier is then used in the match to the final Tax File. A donor imputation module exists for those cases where no match is found or where a respondent refused the tax replacement. Imputation is an iterative process due to the various causes of the missing

Box 7.5. **Statistics Canada's Survey of Financial Security** *(cont.)*

data (e.g.. identifier found but no match on the final Tax File, missing data can/cannot be calculated from other sources). From the matched or imputed personal tax information, family-level and household-level incomes are then derived. As for the tax file processing system, annual updates need to be incorporated into the income processing system to account for year-to-year tax policy changes. Through the above process, the series of 27 questions on income from all sources from the previous SFS questionnaires has been eliminated. The tax data replacement contributes over 30 income variables instead.

As in the past, information is collected for the economic family unit as a whole, with some specific information from each family member aged 15 and older. The 2012 SFS will be collected using a computer-assisted personal interview rather than the paper-based personal interview conducted for previous SFS surveys.

Box 7.6. **Integrating administrative and household survey data in Statistics Denmark**

Since 1994, Statistics Denmark has conducted an extended Household Budget Survey (HBS) including the comprehensive and coincident measurement of the following main topics:

- Household economic resources, including household consumption; household income; stock of durables; pension schemes; direct taxes; taxes on imports and production; use of health, education and child care services; and government social transfers in kind.
- Other demographic information to support analysis of the data, including household size and composition; household income; housing conditions; level of education; and geography.

To reduce the respondent burden, questions regarding topics for which Statistics Denmark already has usable data are not collected during the survey interview. Rather, administrative registers, the HBS and other sources are linked at the micro level to produce an integrated and comprehensive income and consumption data set.

Denmark has a number of administrative registers that cover the total population, one of which is the income register. Linking techniques are used to match these data with survey data. The straightforward way to do this is to use the personal identification number (PIN code) that all persons in Denmark are given at birth or when they immigrate. However, linking information on dwellings and households to the survey using the PIN code is not possible. Here addresses are the link, and administrative registers are used. The Central Population Register (CPR) keeps information on both addresses and PIN codes and can be used to link the Central Register of Buildings and Dwellings (BBR), the HBS and other administrative registers.

The single most important administrative record used is the income register, since input from this covers many of the income components as well as consumption components. However, not all income, expenditure and taxes are covered in the income register, in which case the information is collected directly from respondents through the HBS. This is the case of income from the hidden economy; self-employment income; income from goods produced for own consumption; income from financial assets; net imputed rent from owner-occupied housing; current transfers from relatives; social insurance payments; inheritances; receipts from capital pensions; payment of insurance premiums and out-of-pocket costs; payment of fines; current transfers paid, e.g. gifts and charity; fees to non-profit institutions; and consumption.

Box 7.6. **Integrating administrative and household survey data in Statistics Denmark** *(cont.)*

The integrated income and expenditure data are used to compile estimates of net savings, which is considered by Statistics Denmark to be a first step towards producing estimates for wealth. Another small step has also been taken since the "net savings" are broken down into a number of subgroups based on questions in the HBS on payment for pensions schemes and "ATP" (own and employer's contribution); payment for private life insurances, etc., and on the value of extensions to and rebuilding of the dwelling. Deduction of these saving components from "net savings" makes it possible to compile the residual "other kinds of savings".

The Danish HBS routinely compiles estimates of social transfers in kind, for child care, education and health, by using information collected in the HBS with rates of government expenditure from public finance statistics. For example, the HBS collects information on the number of months a child has been in day care and on the household's own out-of-pocket expenses for this service. From public finance statistics, it is possible to deduct the total cost for this use. Integrating these data makes it possible to compile the indirect transfer concerning child care for a household. Similar methods are used for education and health services. When health services are compiled, data from the national health register are used instead of the HBS questionnaire, since the quantity of health services used by individuals is available at the micro level. These imputations are significant, since STIK increase household disposable income by nearly 20%. Again, this compilation is possible since the PIN code can be used to link data from the HBS with administrative registers, in this case health data.

The integrated HBS is also used to compile indirect taxes in respect of VAT, excise duty, stamp duties and real property tax. Since household consumption is collected in the HBS at a very detailed level (1 200 COICOP codes), and since VAT and excise tax rates are known for all goods, it is straightforward to compile the tax revenue for all goods and services. Taxes on dwellings are compiled separately, primarily because users pay special attention to this tax.

against external information. Examples of administrative or external data sources include: personal tax data; government payments for pensions and other benefits; other statistical survey outputs providing measures of employee income, bank deposits and loans, etc.; house sales and housing costs data; national accounts; and population censuses.

Whenever possible, estimates of income, expenditure and wealth should be compared with the corresponding national accounts for the household sector. This type of comparison is useful both for understanding the strengths and weaknesses of both data sets, leading to opportunities to improve alignment and quality, as well as for informing users about the conceptual and methodological differences between the different data sets to support integrated micro and macro analyses.

Data matching to achieve *ex post* integration

Given the complexity of obtaining information on income, consumption and wealth simultaneously, often statistics on each dimension are collected through separate surveys. In these cases, *ex post* integration techniques can enable the compilation of statistics on the three dimensions of economic well-being for specific households or sub-groups, as well as information on their joint distribution.

An important distinction is between situations in which the same individuals or households are found in each of the data sets, and those situations where this is not the case.

In the first case, individual or household records from two or more data sets are brought together, i.e. "linked", in a way that joins separate data records belonging to the same person or household (also referred to as record linkage). Records may be linked by a common identification number or address, if available, or by probabilistic record-linking techniques. Statistical linking has particular opportunities for creating longitudinal data sets.

In the second case, statistical matching techniques are used to create data sets with joint information on variables and units collected in different sources. *Statistical matching* (also known as data fusion, data merging or synthetic matching) usually refers to model-based techniques that generate a synthetic micro data file from two or more different samples that have a set of variables in common (Rässler, 2002). While record linkage deals with identical statistical units (e.g. households, individuals), statistical matching deals with "similar" units.

The potential benefits of this approach are the complementary use and enhanced analytical potential of existing data sources by producing estimates on the joint distribution of variables not collected together. However, several methodological limitations need to be taken into account for evaluating the quality of the results obtained from matched data sets.

Methodological overview

This section aims to provide a general methodological framework on statistical matching with an emphasis on quality assessment. It also considers conditions that can foster statistical matching, and can be translated into recommendations for a more efficient *ex ante* data collection system. The section concludes by describing some country experiences in implementing data-matching techniques to income, consumption and wealth records.

Matching procedures can be regarded as an imputation problem of the target variables from a donor to a recipient survey. In Table 7.1, information on Y and Z is collected through two different samples drawn from the same population; conversely, information on the X variables is collected in both samples, and the individual values of this variable are correlated with both Y and Z. The relationship between these common variables with the specific variables observed in only one of the data sets, the *donor data set,* can be used to impute to the units of the other data set, the *recipient data set,* the variables not directly observed. Thus a synthetic data set is constructed with complete information on (X, Y, Z) for all units in the recipient data set.

Table 7.1. **Integration of data from two data sets**

Sample A (donor)	*Sample B (recipient)*	*Synthetic data set*
X, Y	**X, Z**	***X, Ŷ, Z***

Traditional techniques, focused on the creation of synthetic data sets, were criticised on the grounds that they rely on implicit assumptions. In particular, measures of association between Y and Z, conditional on X, are assumed to be 0. This "conditional independence assumption" (CIA) has strong implications for the quality and usability of estimates obtained through matching (Kadane, 1978; Rodgers, 1984).

When this condition holds, matching algorithms will produce complete data sets that reflect the true joint distribution of variables that were collected in multiple sources. It will give the same results as a perfect linkage procedure. Unfortunately, the CIA assumption rarely holds in practice, and it cannot be tested from the data sets. When conditional independence does not hold, and no additional information is available, the model will have *identification* problems and will lead to a situation of uncertainty. In this case, artificial data sets are used for inferences in an incorrect way, as they do not take into account prior assumptions used for the estimation. New techniques and approaches in the field of statistical matching take these limitations into account. A more comprehensive definition of statistical matching refers to the identification of any structure that describes relationships among the variables not jointly observed in the data sets, such as joint distributions, marginal distributions or correlation matrices (D'Orazio et al., 2006).

Statistical matching: A stepwise approach

The first step in a data-matching framework is the harmonisation and integration of multiple sources. D'Orazio et al. (2006) specify the following eight types of reconciliation actions: harmonisation on the definition of units; harmonisation of reference period; completion of population; harmonisation of variables; harmonisation of classifications; adjustment for measurement errors (accuracy); adjustment for missing data; and derivation of variables.

Second, the validity of a matching exercise depends, to a great extent, on the power of the common variables to behave as good predictors for the variables to be estimated jointly. Optimally, the common variables should contain all the associations shared by **Y** and **Z**. Multivariate analysis and modelling techniques need to be implemented for the selection of common variables.

Finally, matching techniques and related quality assessment can be undertaken. If it can be assumed that the joint distribution of variables belongs to a family of known probability distributions (i.e. normal multivariate, multinomial), then parametric techniques, including the maximum likelihood principle, will usually play a fundamental role. If no underlying family of distributions can be specified, non-parametric techniques (hot deck) or mixed matching techniques will have to be used. (For a concise presentation of the techniques that are more frequently employed, see D'Orazio et al., 2006.)

Quality assessment in matching

Rässler (2002) proposes a multilevel framework for the evaluation of quality in a statistical matching procedure, based on four levels of validity for a matching procedure:

- First, the true but unknown values of the **Z** variable of the recipient units are reproduced.
- Second, after statistical matching, the true joint distribution of all variables is reflected in the statistical matching file.
- Third, the correlation structure and higher moments of the variables are preserved after statistical matching.
- Fourth, after statistical matching, at least the marginal and joint distributions of variables in the donor sample are preserved in the statistical matching file.

The first level of quality will not usually be attained unless the common variables determine the variables to be imputed through an exact functional relationship. The second and third levels can be checked either through simulation studies or through the

use of auxiliary information. Moreover, the sensitivity of estimates to different assumptions can be tested through uncertainty analysis techniques. In practice, by using standard methods, marginal and joint distributions in the matched/real data sets are derived. This is a minimum requirement of a valid statistical matching procedure, and can be assessed by similarity tests and indexes for distributions. However, this does not validate the estimates regarding the joint distributions of the variables that are not collected together.

For example, suppose that the purpose of the exercise is to have joint information on income (from source A) and consumption (from source B) based on a set of common variables. The statistical matching procedure imputes consumption in set A, and the new synthetic data set should preserve the marginal and joint distributions from the donor file B. However, this is a necessary but not sufficient condition for the quality of the matched set. The joint distribution of variables not collected together cannot be assessed through standard methods applied to observed data sets. Two approaches are proposed by current studies on statistical matching to take into account these limitations.

The first one focuses on uncertainty analysis techniques that assess the sensitivity of estimated results to different assumptions (Rubin, 1980; Rässler, 2002; D'Orazio et al., 2006). In this case, the focus is on the macro objectives (e.g. estimation of specific contingency tables) rather than on the creation of micro data sets. When the conditional independence assumption is not satisfied, the model remains unidentified. This implies that there is a range of values compatible with the information in the data sets that defines the "uncertainty space" (D Orazio et al., 2006; Rässler 2002; Rässler and Kiesl, 2009). The greater the explanatory power of the common variables, the lower the level of uncertainty when creating the common data set.[2]

The second approach explores the possibility of relaxing the conditional independence assumption by using auxiliary information. This usually comes in one of the following types:

- Auxiliary parametric information, obtained from proxy variables; proxy variables can increase the explanatory power of the common variables and decrease the degree of uncertainty, and can eliminate it completely in some cases. For example, D'Orazio et al. (2006) use information on net monthly income by deciles to improve the results for the estimation of the joint distribution of income and consumption variables.
- A complete data set (C) containing the variables **X**, **Y** and **Z** or only the variables **Y** and **Z** (incomplete information).

To overcome the conditional independence assumption, Paass (1986) suggested the use of additional information in the form of a third data set. A great improvement in statistical matching was achieved through the development of multiple imputation procedures that include auxiliary information (Rubin, 1986; Raghunathan et al., 2001; Liu and Kovacevic, 1998; Singh et al., 1993).

In conclusion, matching applied *ex post* needs to rely upon several steps to reconcile sources before being applied. Once the pre-requisites of harmonisation are met, the reference point for quality assessment is the conditional independence assumption. Limitations inherent in statistical matching, related to the non-fulfilment of the CIA, need

to be addressed through a measure of quality of estimates based on the matched data sets, using several checks:

- Model diagnostics: Variables used for matching should accumulate as much explanatory power as possible on the variables to impute, in order to approach the fulfilment of the conditional independence assumption.
- Comparison of marginal distributions in the real/matched data sets: This can provide a first quality measure of the matching process and of the robustness of the method used for imputation.
- Uncertainty analysis: An assessment of uncertainty should also be included in any matching exercise. The insight provided by the uncertainty analysis can be useful to assess the plausibility of the conditional independence assumption, to better validate results, but will most probably characterise a phenomenon in terms of trends or interval estimates rather than providing punctual estimates.
- Use of auxiliary information: The existence of auxiliary information is essential for any matching procedure in order to address the potential non-fulfilment of the CIA. Auxiliary information can help to address the main limitations of matching techniques, namely the reliance on implicit models.
- Multiple imputation methods: These methods have several advantages, such as reliance on explicit models (not hidden assumptions), complex data structures and models, incorporation of auxiliary information and use of standard tools for data analysis.

Recommendations for data collection and design

Several papers have used methods for providing joint information from multiple independent surveys in an *ex post* integrated system. Ideally however, planning to enhance the potential for matching and imputation should be taken *ex ante*, i.e. in the development process for data collection. In addition to the direct coincident measurement of the variable of interest, a number of strategies could be used *ex ante* to improve the usability of the sources for data matching:

- Integrated survey models foster the application of matching techniques (Shoemaker, 1973; D'Orazio et al., 2006). First, specific designs (nested surveys) can address the harmonisation of concepts and variables. A common questionnaire provides basic information for all units, while modules with specific questions are answered by units in different subsamples. Integrated designs can enhance the modelling potential for incorporating "auxiliary" information, such as overlaps of samples, as an integrative part of the system. The main rationale for these strategies is to relax the reliance on implicit assumptions about the relationship between variables. Several papers showed that in a split questionnaire, design data can be successfully imputed (Rässler, 2004; Raghunathan and Grizzle, 1995). This approach requires that any combination of variables on which joint distributions are to be estimated must be jointly observed in a small subsample (to avoid estimation problems due to non-identification). This facilitates the multiple imputation of missing information, based on good explanatory models and without relying on the conditional independence assumption.
- Common variables between surveys could used to favour the imputation in relation to specific objectives. Proxy variables can be used to address the non-fulfilment of the CIA. For example, an application of statistical matching to estimate the joint distribution of income and consumption data in Italy relied on a coarse version of income as a common

variable in the imputation process. Some studies have addressed the optimal *ex ante* allocation of questions between the various components of the questionnaire, so as to allow matching and imputation (Shoemaker, 1973; Raghunathan and Grizzle, 1995).

- Consider matching jointly with other options for micro-integration (linking and use of administrative data). Statistical matching or model-based imputation is applied when no common identifiers enable linking. However, alternative integration methods can often complement each other. For example, synthetic data sets (e.g. SPSD in Canada, SIPP in the United States[3]) can rely on both linking and matching.

Country experiences

The public benefits of integrated data sets are becoming increasingly recognised in terms of improved research, supporting government policies, program management and service delivery.

In official statistics in Europe, statistical matching is mainly at an experimental stage, and many applications are undertaken in a simulation environment. The ESSnet on Data Integration[4] has pooled experts from several national statistical institutes and provided both methodological papers and case studies in various fields. This work has built on the previous experiences of national statistical offices, such as the work described in Box 7.7 for Italy.

Box 7.7. **Integrating survey data to compile a Social Accounting Matrix in Italy**

The first statistical matching experience conducted by the Italian National Institute of Statistics (ISTAT) aimed at estimating the household module of the Social Accounting Matrix (SAM). This is a matrix where households are distinguished according to a set of different typologies such as the area of residence and the primary income source. For these household typologies, the SAM organises first, the amount of outlays (based on a detailed list of different expenditure categories), and second, the amount of entries (categorised by compensation of employees, self-employment income, interest income, dividends, rents).

In Italy, the two main sources for information on household resources and outlays are the Bank of Italy Survey of Households' Income and Wealth (SHIW) and the Istat Sample Survey on Household Consumption (SSHC). The first studies household income and wealth according to the different household resource components. The second estimates household final consumption at a very detailed level, ranging from the acquiring household group to the types of products purchased.

The two surveys are independent and are organised and carried out by two different institutes. Both need to be integrated in order to put together information on household outlays from the SSHC and on household resources from the SHIW. This integration process can be carried out by using information on socio-economic characteristics observed in both samples. The statistical matching process consists of three steps: first, checking the consistency of the two surveys and, if necessary, harmonising them; second, defining a statistical framework that covers both sample surveys; and third, choosing an appropriate statistical matching method. The first two steps are described in Coli et al. (2005); the last step is described below in a simple way. Only total household entries and outlays are taken into consideration, with a few common socio-economic variables.

Box 7.7. **Integrating survey data to compile a Social Accounting Matrix in Italy** *(cont.)*

The harmonisation step

There are a number of inconsistencies between the SHIW and SSHC surveys, which need to be resolved to make the surveys comparable, and to allow integrating them through the harmonisation of the definitions of the population, the units and the variables.

The harmonisation phase consists of a "simplification" of a set of key characteristics of the surveys. This operation produces changes in the original variables, i.e. changes in the definition of the population target and in the informative power of the samples. Statistical matching output is greatly affected by these operations; a rule of thumb is to change as little as possible during the harmonisation step.

The target populations of the two surveys are Italy's households. However, the surveys use two different definitions of the household. The SSHC defines a household as a set of cohabitants, linked by marriage, familiarity, affinity and adoption. The SHIW defines a household as a set of people who completely or partially combine their revenues for their necessities. This inconsistency is difficult to resolve, because the two surveys do not contain enough information to create an SHIW household out of one or more SSHC households, or vice versa. Coli et al. (2005) consider this as a minor problem, because the two populations almost overlap, i.e. both the set of SHIW households inconsistent with the SSHC definition and the set of SSHC households inconsistent with the SHIW definition are very small. Furthermore, apart from the definition, the samples did not contain inconsistent households. Hence, both the SHIW and SSHC were assumed to be samples drawn from the same population, defined as the intersection of the two previous population definitions.

For variable harmonisation, although the SHIW and SSHC investigate two different aspects of the household economic situation, they include a large set of common variables. These variables can be clustered into three groups: socio-demographic variables, variables on household outlays and variables on household resources. The overall definition of these variables is usually inconsistent or, when the overall definition coincides, their categorisation is inconsistent (number and type of states of a variable). In this case, variable harmonisation uses different strategies; first, some variables cannot be harmonised (i.e. they are not useful for the statistical matching of the two samples); second, some new variables replace the original ones, by appropriate transformations; and third, some variables are just recoded.

The first group, the socio-demographic variables, contains the variable "head of household". This variable is very important, because one of the socio-economic groupings of households in the SAM consists of the households grouped according to characteristics of the head of the household (e.g. age, gender, education, and work status). The justification for grouping households according to the characteristics of the household head is that these characteristics are usually correlated with both the household's outlays and resources. However, one survey defines the household head as the person registered on the public archives, while the other defines it as the person responsible for the household budget. The two surveys do not contain enough information to harmonise such definitions. Hence, the head of the household and his/her characteristics were disregarded during the matching of the two samples. Once the two samples are matched, the characteristics of the head of the household of the SSHC were maintained and used for the analyses. This operation hides the notion of conditional independence between the head of the household characteristics and the variables of the SHIW that are not common with the SSHC.

Box 7.7. **Integrating survey data to compile a Social Accounting Matrix in Italy** *(cont.)*

Many of the variables in the second group, the household outlay variables, describe household characteristics, in particular the socio-economic characteristics of different household members. These characteristics are better used if defined at the household level rather than at the individual level. For instance, additional variables such as the number of household members meeting different criteria (age 64 or over, employed, graduate, female) have been introduced. These variables were considered during the matching process. The head of the household characteristics, previously disregarded in the matching phase, is independent of income and expenditures, given the socio-economic characteristics of all the components.

For the last group of variables, on household resources, the two surveys contain many variables based on different categorisations. The harmonisation step consists of defining a common categorisation given by the largest categories they have in common.

Modelling the social accounting matrix

The statistical formalisation of the construction of the SAM is explained by Coli et al. (2005). The main objective is to construct a table representing the totals for different consumption categories (e.g. food consumption, durable goods) and different sources of income for many household types. Since the two surveys are carried out with two different objectives, the variables representing consumption in the SHIW and income in the SSHC present coarse categorisations. Furthermore, while consumption in the SHIW is not very reliable, income as observed in the SSHC can be considered as a shifted distribution of the actual income, affected by under-representation. For this reason, the idea was to consider income as observed in the SSHC as a good source of information in order to preserve as much as possible the relationship between consumption and income as observed in the SSHC. The idea was that income as observed in the SHIW and expenditures as observed in the SSHC are independent, given a set of common social characteristics and a coarsened version of income, where only the order between income observations (rather than its value) was maintained. This coarsened version of income was obtained by categorising the two distributions in categories ordered from the poorest to the richest household, containing an equivalent number of households in the two surveys.

Imputation method

The final step was the creation of the matched data set using imputation techniques. The data set with all the variables jointly present was created by imputing the SHIW missing variables (completely non-observed) using values taken from the SSHC data set. In other words, the SHIW is the recipient file and the SSHC is the donor file. The imputation was done through the distance hot-deck stratified method, which means that the missing values were imputed with the conditional mean (conditional to the parameters used in the computation of the distance). Strata were defined using the coarsened income classes and a socio-economic variable. Inside these imputation classes, donors are chosen according to distance variables among the other common variables X. The choice of the SHIW as recipient file and of the SSHC as donor file is due to the fact that the SSHC contains many more observations than does the SHIW data set. This choice is justified by the good behaviour of non-parametric estimates in terms of asymptotic properties.

Source: Coli et al. (2005); D'Orazio et al. (2002); and Rässler (2002).

Box 7.8. **The use of income and wealth data from administrative sources in the Netherlands**

Netherlands Statistics has collected income data from administrative sources since 1977. Most data stem from the tax authorities. The data collection was restricted to a sample of persons and their household members. In this way, income statistics have been compiled on a cross-sectional base for 1977, 1981 and 1985. From 1989 onwards the sample changed into a yearly panel survey; every year, a sample of the newborn and immigrants is added to this longitudinal panel. Wealth data from administrative sources were added from 1993 onwards to this same panel, so that income and wealth statistics could be integrated easily.

Since 2001, income and wealth data have been available yearly for the whole population. The complete data set will soon be used to compile regional income statistics. Statistics on the national level will continue to be based on the panel sample for the time being: more detail and the necessary imputations are easier to handle in a smaller sample.

Since complete income (and wealth) data are available, questions about income have been dropped in questionnaires and replaced (with informed consent) by data from administrative sources. Although the sample of the Budget Survey is much smaller and does not coincide with the longitudinal sample of the Income statistics, the use of administrative data has improved the quality of the integration of both statistics. As before, results from the income statistics have been used as a benchmark in the weighting process of the Budget Survey, but now the connecting data stem from the same (administrative) source.

Statistics on the real income of population sub-groups receive substantial attention in the Netherlands. These statistics show the "dynamic" income change that people experience due to changes in prices and in the tax burden, but also due to events such as job promotion, retirement, and changes in household composition. A longitudinal panel makes it possible to calculate these income changes on an individual level. In general, the mean (or preferably median) of individual income changes differs from the change in average income.

The concept adopted in this statistic is standardised disposable household income adjusted for price changes as measured by the consumer price index.

In Australia, recognising the potential significance of the uses of integrated data sets and the likelihood that the use of data-matching techniques for statistical purposes will increase in the future, the government released a set of principles aimed at facilitating data matching for statistical and research purposes within a safe and effective environment (Australian Government, 2010). The seven key principles are:

- *Strategic resource*. Administrative data represents a public asset, and existing and new data sets should be utilised to maximise statistical and research use.
- *Custodian's accountability*. Agencies responsible for source data used in statistical data integration remain individually accountable for their security and confidentiality.
- *Integrator's accountability*. Accredited authorities are responsible for managing the data integration project from start to finish, in line with the agreements made with data custodians and the requirements specified as part of the approval process.
- *Public benefit*. Statistical integration should occur only where it provides significant overall benefit to the public, i.e. where the public good outweighs the privacy imposition and risks to confidentiality.

Box 7.9. **Experience of the United Kingdom with statistical matching**

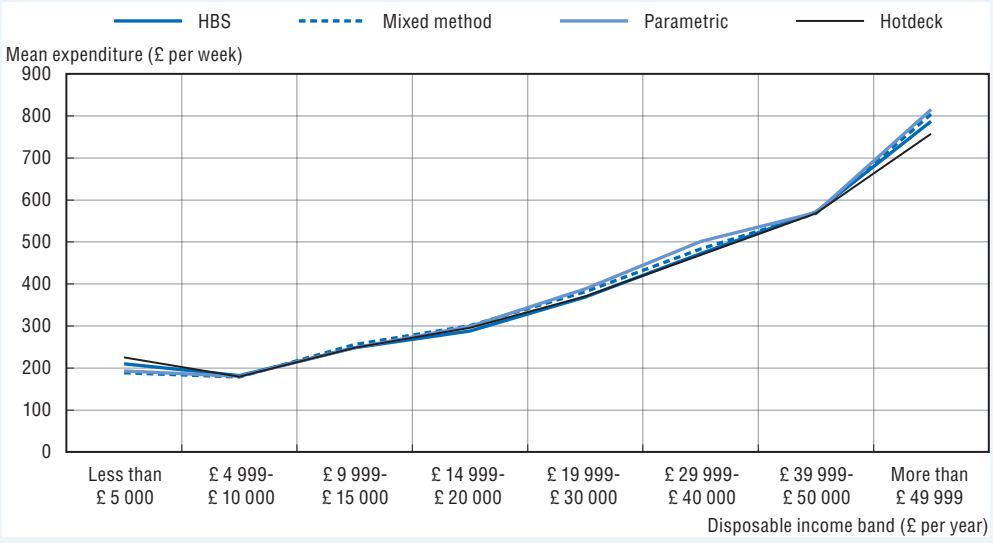
As part of the EU-funded 2nd Network for the Analysis of EU-SILC (NetSILC2), the UK Office for National Statistics (ONS) is leading a project that aims to statistically match individual records from the EU Statistics on Income and Living Conditions (EU-SILC) survey with those from the Household Budget Survey (HBS) in order to compare income, expenditure and material deprivation across a range of EU countries. The approach taken to statistical matching draws on D'Orazio et al. (2006) and is consistent with the conclusions of the ESSNet on Data Integration.

Three different approaches to statistical matching were employed: hotdeck (non-parametric), parametric and mixed methods. Testing the validity of these matching procedures involved comparing the distributions of the matched variables against observed expenditures observed in the HBS. This was done in four ways:

- Comparing mean expenditure by expenditure decile, to analyse the consistency of the distribution of overall expenditure for each method.
- Using estimates (based on the Hellinger Distance) of the similarity of the joint distributions of the matching variables with expenditure (observed and imputed).
- Comparing the consistency of mean expenditure by variables used in the statistical matching for observed and imputed expenditure.
- Comparing the relationship between expenditure and variables in both data sets but not included in the model.

The figure below compares the distribution of actual expenditure in the United Kingdom (the line labelled HBS) with the distributions derived from the three matching methods across the income distribution. All three methods replicate the actual distribution. At the low end of the income distribution, average expenditure for households in the bottom income group are higher than in the second group, a pattern that is replicated by the matched data. Overall, the mixed methods approach appeared to be slightly more effective than the others in replicating the distribution of expenditure.

Figure 7.1. **Mean household expenditure by household disposable income band based on HBS and matching methods, United Kingdom 2005**



Box 7.9. **Experience of the United Kingdom with statistical matching** *(cont.)*

In order to test the plausibility of the Conditional Independence Assumption, Fréchet bounds were calculated for the contingency table between material deprivation and expenditure. Fréchet bounds are tools for uncertainty analysis that can be used to estimate the range of plausible values that a parameter can hold.

The experience gained from this statistical matching based on data sets that were not designed to be used in this way has highlighted the challenges associated with *ex post* matching. In particular, the range of matching variables that was available was limited due to a lack of harmonisation in the concepts and categories used in the two sources, which resulted in differences in the distributions of these variables. This experience will inform the future development of EU-SILC and other surveys in order to facilitate statistical matching.

- *Statistical and research purposes.* Statistical integration must be used for statistical and research purposes, other than regulatory purposes, compliance monitoring or service delivery, to minimise the risk of privacy breaches.
- *Preserving privacy and confidentiality.* Policies and procedures used in data integration must minimise any potential impact on privacy and confidentiality. For example, personal identifiers should be removed from data sets as soon as they are no longer required to meet the statistical integration phase of the project.
- *Transparency.* Statistical data integration should be conducted in an open and accountable way to ensure that the public is aware of how government data are being used for statistical and research purposes.

Box 7.10. **Statistical matching in Finland**

Statistics Finland conducted a household wealth survey four times between 1988 and 2004. Unlike the previous three wealth surveys, the survey for 2009 was carried out using the so-called register method without separate data collection by interviews. This method draws on sample material from Statistics Finland's income and living conditions survey, which covered 27 009 persons and 10 989 households, and numerous types of register data and estimation methods. Using existing statistics considerably reduces the resources needed for forming and editing income and background variables.

The annual income and living conditions survey gathers data on household and individual income, as well as on other factors affecting subsistence and living conditions. The majority of demographic and income variables were obtained directly from the database of that survey. The sampling design and the weighting methods of the survey on income and living conditions are also suitable for the wealth survey (probability sample stratified to over-sample high-income households). All the personal data from various registers can be linked to the income distribution statistics sample using personal identity codes.

The main balance sheet variables used in the previous national wealth survey and in the wealth concept of the Eurosystem Household Finance and Consumption Survey (HFCS) could be obtained from registers, either directly or by means of estimation. In addition, price indices and other pricing models were used to appraise several variables. However, the register method cannot elicit all data to the same extent as the previous national wealth survey, or all the wealth data required by the HFCS.

Box 7.10. **Statistical matching in Finland** *(cont.)*

The detailed methodology used for the construction of balance sheet and income variables is as follows:

Real assets

The value of the ***main residence*** was estimated by using the data describing buildings and dwellings in the Population Information System and the data in the Tax Administration's housing company stock register. Housing wealth values were estimated using transaction sale prices. The main residence was identified as the one reported in the survey, and its valuation was based on two methods. For blocks of flats, the purchase prices were linked from asset transfer tax data and deflated to the 2009 value. For other dwelling types, average market prices by strata from dwelling price statistics were multiplied by self-reported floor areas. For both types of valuation, a matching dwelling and its attributes were identified from the register sources for record linkage or to create the strata, controlling for differences e.g. in floor area.

The values of ***other properties*** (residential investment properties, secondary or holiday homes) were estimated using data describing buildings and dwellings in Statistics Finland's population statistics data reserve not including the main residence. In addition, data in the housing company stock register were also used. In the Finnish wealth statistics, the sub-classes of other properties cover dwellings for own use, or rented or leased to others (investment real estate).

The values of ***cars, vans and motorcycles*** were estimated using data in the Vehicle Register maintained by the Finnish Transport Safety Agency and the MAHTI price system maintained by the National Board of Customs. Based on the manufacturer's ID and registration of the vehicle, the Vehicle Register data were linked to the price register data maintained by the Customs. The vehicle price data were formed from asking prices calculated by the Customs for taxation purposes. Only cases where the person was the first owner of a vehicle were taken into consideration.

For non-taxable vehicle categories, mopeds, motor tricycles and quadricycles, snowmobiles and trailers are included in Other vehicles. The ownership data for these vehicles are based on the same register as the data on cars, vans and motorcycles. The values of ***boats*** were formed based on price data obtained from the Boat Register administrated by the Local Register Office of Vaasa and websites advertising boats for sale. Buses, trucks, tractors and forestry machines were excluded from the wealth concept of this survey.

The values of both ***forest and farm land*** were estimated based on the forest property register administrated by Statistics Finland using the average comparison value of the land by municipality. Only land areas owned by natural persons were taken into account in the forest property register. Consequently, property such as forest land owned by an estate was excluded from the survey.

The values of unlisted shares are included in ***self-employment business wealth***, as no distinction between self-employment and non-self-employment businesses can be made. The values of unlisted shares were estimated on the basis of dividend data obtained from individual taxation material. This method permits only the estimation of the business wealth of those persons who received dividends from unlisted companies in the tax year 2009. The value of the share was obtained by dividing the company's net worth (assets less liabilities) by the number of shares.

Box 7.10. **Statistical matching in Finland** *(cont.)*

Financial assets

At the micro level, no data on household ***deposits*** or any other reliable sources from which the data could be derived (e.g. interest received) are available in registers, so interviews offer the only possibility of gathering data on these. The most recent data collected by interviews were gathered in the Wealth Survey of 2004, so using this was the only way to estimate deposits. The samples of the 2004 Wealth Survey and the income distribution statistics of 2009 cannot be record linked, because they contain completely separate sets of individuals. Thus, deposits for the 2009 survey were estimated using statistical matching, with the 2004 sample serving as the donor and the 2009 sample as the recipient.

Information on the ownership of ***listed shares and bonds*** are based on register data on book-entry securities obtained from the Tax Administration, from which the number of individual shares owned by households can be identified and linked to the survey data. The values of listed shares were based on book-entry securities data and OMX price data.

Data on investments in ***mutual funds*** were obtained from the payroll and pensions register. Individual ***pension plans*** entitlements were estimated based on the individual tax register using the perpetual inventory method. Individual pension plan contributions (investments) and, respectively, pension payments received from 1990 onwards, are available in the tax register. The values of individual pension plans were derived cumulatively from these flow data, as well as from an annual estimate of the derived yield earned by net investment to date (accumulated contributions less payments received).

Liabilities and income

In Finland, variables on income, liabilities and debt payments can be collected from various registers. The income concept of the HFCS is marginally less detailed than in the EU-SILC, but the two statistics largely include the same concepts.

For ***liabilities***, the HFCS distinguishes between collateralised (secured, mortgages) and non-collateralised debt. In the Finnish wealth statistics, measurement is based on the purpose of the loan, as available in the tax registers: housing loans, education loans, and other loans. The mapping between loans and collaterals is not one-to-one, as loans may have many types of collateral, including the household's real and financial assets, personal collateral from other households (e.g. parents) or the state (e.g. educational loans, mortgages for own home).

Debt flows are related to interest repayments, with those on business and investment loans deducted from self-employment income and actual rents. Interest repayments on household main residence mortgages are deducted only if imputed rents are included in income (i.e. only in the national income concept). Interest repayments on consumption loans are not deducted but considered as consumption.

Most ***income*** variables were collected directly from registers, with the exception of regular private transfers, which are mostly collected in the EU-SILC. The main register sources are: the tax register and various registers from the Social Insurance Institution in Finland; the register for the earnings-related pension scheme of the Finnish Centre for Pensions; and the social assistance registers of the National Institute for Health and Welfare.

Source: Törmälehto, Kannas and Säylä (2012).

Summary

The key highlights from this chapter can be summarised as follows:

- In the past, income has been the most frequently used indicator of households' economic well-being, since income data are relatively easy to collect and because income is the most important economic resource for meeting everyday living expenses. Income should, therefore, always be collected as a primary topic in any study of household economic well-being.
- It is important to analyse income alongside other dimensions of economic well-being. Many countries undertake integrated collections of income and expenditure data, and some have been doing so for many years. Collecting information on household income, consumption and wealth simultaneously is challenging, but it has been successfully undertaken by some statistical agencies.
- Wealth data are best collected in an integrated survey with income. Many countries collect income data either annually or every two years, and the same frequency is therefore recommended for the collection of wealth data. Expenditure data should be collected at least once every five years.
- Integrated data on income, consumption and wealth are best collected by interview, with some items collected at the individual level and others (e.g. rent) at the household level. However, personal diaries are recommended for the collection of expenditure items that are frequently purchased such as food, personal care products and household supplies.
- Interviews are usually conducted with the aid of computer-assisted interviewing tools. When income, wealth and expenditure are collected together, it is preferable to design the questionnaire in an integrated manner rather than having separate modules.
- Thorough research should be carried out to find and identify the most suitable sampling frame for surveys of income, consumption and wealth. It is necessary to determine the number of stages, the optimum stratification and other salient features of the sample to be used, as well as the best procedures for selection of the sample units. It may be necessary to take specific steps to ensure adequate representation of particular groups of interest, especially when these are small in size.
- A number of steps can be taken to maximise response while also considering response burden.
- Administrative data sources may be available to supplement data reported in household surveys. It may also be possible to bring together data from two or more household surveys. Data from multiple sources are combined by data matching. If the different sources contain information about the same individuals or households, the records can be linked by using common identifiers, if available, or by probabilistic record-linking techniques. If the different sources contain information about mostly or entirely different individuals or households, records can still be matched by using statistical matching techniques.
- Statistical matching assumes that the individuals or households in the source files are representative of the same or very similar populations. It also depends on a number of other assumptions that need to be borne in mind when using the technique, and it is important to undertake relevant quality assessments.

Notes

1. The following is a list of the types of documents that are useful to refer to during income, expenditure and wealth surveys: payslip or payment summary from employer; statement from pension fund; statements on government pension, benefit or allowance; statements from accounts held at banks and other financial institutions; credit card statements; statements showing returns on investments such as share holdings, bonds, debentures and trusts; business tax returns for own businesses; personal income tax return; student loan liability statement; statements on loan accounts; receipts for household durables purchased in the relevant reporting period; invoices for land, water, sewerage and general rates; electricity and/or gas accounts; invoices for telephone accounts (including mobile phones); internet service provider and pay TV accounts; contents and/or building insurance statement; child support/alimony payment information; child care receipts/bills/statements; vehicle registration and insurance payments for the last 12 months; school fees/receipts for the last 12 months; private health insurance payment information, receipt for personal insurance payments (e.g. accident, sickness, life insurance) and statement of entitlements in life insurance funds; and medical or health bills for the relevant reporting period.
2. One approach explored by the ESSnet on Data Integration is to build a measure of the degree of uncertainty in the problem by using Fréchet bounds. When dealing with categorical variables, Fréchet classes are used to estimate the plausible values for the distribution of the random variables (Y, Z/X) compatible with the available information. Another way to estimate the sensitivity of results to different assumptions about the correlation structure is to use multiple imputed data sets, produced according to different values for the conditional association (Rässler and Kiesl, 2009). This process is repeated with different initial values, in order to fix bounds for the unconditional parameter. An advantage of multiple imputation is that it provides point and interval estimates under a fairly general set of conditions (Rubin, 1987). Confidence intervals are computed based on both between and within imputations: the variance between imputations reflects variability due to modelling assumptions, the variance within imputations reflects sample variability. Hence, more than one random draw should be made under each model to reflect sample variability.
3. *www.census.gov/sipp/synth_data.html*.
4. *www.essnet-portal.eu/di/data-integration*.

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Chapter 8

Framework for integrated analysis

This chapter first shows the importance of considering life cycles when analysing data on income, consumption and wealth. It then provides an overview of selected tools that can be used for the integrated analysis of household income, consumption and wealth measures, as well as the use of equivalence scales in each dimension. The chapter then presents examples of the joint analysis of income and wealth data, and of income and consumption data, and then discusses some of the tools that could be used for the multi-dimensional analysis of all dimensions of economic well-being.

Introduction

The analysis of household economic well-being can be enhanced significantly if the three dimensions of income, consumption and wealth are studied together. Previous chapters have provided a coherent and consistent framework for collecting and compiling the statistics required for such studies.

Life cycle perspectives

Consumption possibilities and requirements vary along the life cycle of individuals. Levels of income vary over a person's life cycle due to two main factors. People's labour force participation and earning capacity generally increases with age, peaking at middle age, and declining rapidly in older ages leading to retirement. For women, the earnings progression until middle age is generally lower than for men, on average, as younger women are more likely to work part-time or to take breaks from employment due to family reasons. The number of income earners in a household often varies over different life cycle stages. Couples with children will generally have lower incomes than couples without children, reflecting the lower number of employed persons in these households and the larger average number of persons in these households over which incomes are shared.

The distribution of wealth over the life cycle reflects a common pattern of wealth being accumulated throughout the working life and then being used during retirement. The distribution of wealth may also reflect cohort effects, with older cohorts in some institutional environments having lower opportunities for capital accumulation in earlier decades, for example, because women had, on average, lower participation rates in the paid workforce at that time and therefore lower balances in retirement saving schemes.

While levels of consumption also vary across the life cycle, individuals will tend to some extent to smooth their consumption over their lifetimes. Younger people may borrow from the future to support higher expenditure needs associated with making major purchases such as buying a home or starting a family. In the middle years, household consumption needs may level off, and higher incomes may be used to pay off borrowings and to save for retirement. Upon retirement, income levels and consumption needs may decline and households may dissave to support their consumption.

These life cycle effects on the level and distribution of household income, consumption and wealth need to be considered in any analysis of economic well-being. Life cycle effects will have implications for point-in-time comparisons and for longitudinal analyses. Cohort analysis over time may also reflect changes in the institutional environment, demographic factors and a range of other socio-economic characteristics and circumstances.

Equivalence scales

Distributional analyses of economic well-being rely on being able to account for differences in household size and composition when comparing those who are relatively well-off with those who are less well-off. The needs of a household grow with each additional member but, due to economies of scale in consumption, not in a proportional way. For example, a household comprising three people would normally need to consume more than a lone-person household if the two households are to enjoy the same standard of living. However, a household with three members is unlikely to need three times the housing space, electricity, etc., that a single-person household requires.

One way of adjusting for this difference in household size might be simply to divide income, consumption and wealth measures for the household by the number of its members, so that all the measures are presented on a per-capita basis. However, this assumes that all individuals have the same resource needs, and that there are no economies of scale derived from living together.

Various calibrations, or equivalence scales, have been devised to adjust the incomes of households in a way that recognises differences in the needs of individuals and the economies that flow from sharing resources. Equivalence scales have been developed primarily to adjust income estimates, because income is the most commonly used indicator of economic well-being. The next subsection discusses the use of equivalence scales in the context of income estimates, with later subsections extending the discussion to consumption, wealth and multi-dimensional measures.

Equivalence scales for income estimates

Equivalence scales differ in their details and complexity, but commonly recognise that the extra resources required by larger groups of people living together are not directly proportional to the number of people in the group. They also typically presume that children have fewer needs than adults.[1]

When household income is adjusted according to an equivalence scale, the equivalised income can be viewed as an indicator of the economic resources available to a standardised household. When using a lone-person household as the reference point, its equivalised income is equal to the actual income recorded. For a household comprising more than one person, equivalised income is an indicator of the household income that would be needed by a lone-person household to enjoy the same economic well-being as the household in question.

Alternatively, equivalised household income can be viewed as an indicator of the standardised economic resources available to each individual in a household, where the standardisation reflects the economies of scale relevant to the household. The latter view underpins the calculation of income distribution measures based on the number of people, rather than the number of households.

Choice of equivalence scale

While there has been considerable research by statistical and other agencies to estimate appropriate values for equivalence scales, no single standard has emerged. In theory, many factors might be taken into account when devising equivalence scales. For example, people in the labour force are likely to face transport and other costs that affect their standard of living. It might also be desirable to reflect the different needs of children

at different ages, and the different costs faced by people living in different areas. On the other hand, the tastes and preferences of people vary widely, resulting in different expenditure patterns between households with similar income levels and composition.

Furthermore, it is likely that equivalence scales that appropriately adjust the incomes of low-income households are not as appropriate for high-income households, and vice versa. This is because the proportion of income spent on housing tends to fall as incomes rise, and cheaper per-capita housing is a major source of the economies of scale that flow from living together.

Similarly, it is likely that the equivalence scales that best correct disposable income are not as appropriate for different definitions of income. This is because the economies of scale achieved by households comprising more than one person can be considered as a proportion of the actual final consumption of the household. That proportion is the most relevant to adjusted disposable income but is less appropriate to other income concepts. For example, market income and total income are linked to consumption in a more indirect way than is adjusted disposable income.

Choosing a specific equivalence scale is hence fraught with difficulties. In many countries, for example, the elderly live in households that are relatively smaller, while children live in larger households. As a result, using an equivalence scale that assumes overly large economies of scale in consumption would understate child poverty and overstate poverty among the elderly.

It is difficult to define, estimate and use equivalence scales that take all relevant factors into account. As a result, analysts tend to use simple equivalence scales which are chosen subjectively, but which are consistent with the quantitative research that has been undertaken. A major advantage of simpler scales is that they are more transparent to users, making it easier to evaluate the assumptions being made for the equivalising process.

By using equivalence scales, each household type in the population is assigned a value in proportion to its needs. The factors most commonly taken into account to assign these values are the size of the household and the age of its members (whether they are adults or children). A wide range of equivalence scales exist, many of which are reviewed in Buhmann et al. (1998). Among OECD countries, the following scales have been used most commonly.

- *OECD equivalence scale.* This assigns a value of 1 to the first household member, of 0.7 to each additional adult and of 0.5 to each child. This scale (also called the "Oxford scale") was mentioned by the OECD (1982) for possible use in countries that have not established their own equivalence scale. This scale is sometimes called the "old OECD scale".
- *OECD-modified scale.* After having used the "old OECD scale" in the 80s and the earlier 90s, in the late 90s Eurostat adopted the so-called "OECD-modified equivalence scale". This scale, first proposed by Haagenars et al. (1994), assigns a value of 1 to the household head, of 0.5 to each additional adult member, and of 0.3 to each child.
- *Square root scale.* Recent OECD publications (e.g. OECD, 2009) that compare income inequality and poverty across countries use a scale which divides household income by the square root of household size. This implies that, for instance, the needs of a household of four persons are twice as great as those of a single-person household. There is no differentiation between adults and children.

Table 8.1 illustrates how needs are assumed to change as household size increases, for the three equivalence scales described above, and for the two "extreme" cases of no sharing of resources within a household (per capita income) and full sharing (household income). In general, no specific equivalence scale is recommended by the ICW Framework for general use.

Table 8.1. **Comparison of three commonly used equivalence scales**

Household size	*Equivalence scale*				
	Per-capita income (no sharing)	OECD equivalence scale	OECD-modified scale	Square root scale	Household income (full sharing)
1 adult	1.0	1.0	1.0	1.0	1.0
2 adults	2.0	1.7	1.5	1.4	1.0
2 adults, 1 child	3.0	2.2	1.8	1.7	1.0
2 adults, 2 children	4.0	2.7	2.1	2.0	1.0
2 adults, 3 children	5.0	3.2	2.4	2.2	1.0
5 adults	5.0	3.8	3.0	2.2	1.0

Units on which to base equivalence scales

Equivalence scales are normally derived on the basis of the number of people in a household. However, the greatest economies of scale that are achieved by a group of people living together result from sharing a dwelling. Therefore, if a dwelling contains more than one household, it is better to derive the equivalence factor on the basis of the number of people in the dwelling, and then applying that factor to the income of each household living in the dwelling. This may have a significant impact on summary measures of income distribution if there are many households that share dwellings.

If analysis is undertaken using statistical units smaller than a household, such as a family economic unit, it is essential that any equivalisation of income data undertaken uses at least the number of people in the household, if not the dwelling.

Derivation of equivalised household income

Equivalised household income, whether total, disposable or adjusted disposable income, is derived by calculating an equivalence factor according to the chosen equivalence scale, and then dividing income by the factor. Equivalised household income is an indicator of the economic resources available to each member of a household. It can therefore be used for comparing the situation of individuals as well as of households.

When income before equivalisation is negative, such as when the losses incurred in a household's unincorporated business or in other investments are greater than any positive income from any other sources, a common practice for empirical application is to set the negative values of equivalised income to zero.

Means and medians can be applied to both total household income and equivalised disposable household income to allow users to see the differences between data as collected and data as standardised to facilitate income distribution analysis. Table 8.2 illustrates the differences in income measures calculated from Australian 2007-08 data at different stages in the progression from total, or gross, household income to person-weighted equivalised disposable household income. The first column shows measures

calculated from gross household income, the second column shows estimates of income taxes paid on gross income, while the third column gives the resultant disposable household income.

While individuals with higher incomes would be expected to pay higher income tax than individuals with lower incomes, Table 8.1 shows that, in Australia, this relationship is not as strong for households. A household with a relatively high income may comprise only one individual with high income or it may include a number of individuals with relatively low income. Because of higher income taxes, the disposable income of the first household will be lower than that of the second, and will result in a re-ranking of households when considering percentiles. Therefore, a household may fall into a different percentile in an analysis of disposable income compared to an analysis of gross income.

Table 8.2 also shows that differences between disposable income and gross income increase as income levels increase. At the upper boundary of the tenth percentile (P10), the income tax to be paid by households with the lowest gross income is negligible. In contrast, the difference between the P90 value for gross household income and the P90 value for disposable household income at that same point is USD 655 per week.

Table 8.2. **Changes in income when moving from gross income to person-weighted equivalised disposable income, Australia, 2007-08**

		Gross household income per week	Income tax per week	Disposable household income per week	Equivalised disposable household income per week[1]	
					Household weighted	Person weighted
Percentile boundaries and percentile ratios						
P10	AUD	324	na	325	286	317
P20	AUD	540	na	539	365	410
P50	AUD	1 285	na	1 128	674	692
P80	AUD	2 390	na	1 962	1 091	1 079
P90	AUD	3 192	na	2 537	1 381	1 360
P90/P10	ratio	9.86	na	7.81	4.83	4.30
P80/P20	ratio	4.42	na	3.64	2.99	2.63
Means						
All households	AUD	1 649	284	1 366	803	811
One family households						
Couple family with dependent children	AUD	2 296	427	1 868	831	810
One parent family with dependent children	AUD	1 021	97	923	535	520
Couple only	AUD	1 626	285	1 341	896	896
Other one family households	AUD	2 157	336	1 820	902	916
Multiple family households	AUD	2 523	380	2 144	755	751
Non-family households						
Lone person	AUD	806	134	672	673	673
Group households	AUD	2 053	371	1 682	997	993

1. Equivalised using the OECD-modified scale.
Source: ABS Survey of Income and Housing (ABS, 2009).

In Table 8.2, disposable income relates to the household as a whole, and the percentiles and means are calculated with respect to the numbers of households concerned; these are referred to as household-weighted estimates. Equivalised disposable household income can also be household-weighted (fourth column in Table 8.2), but since it can be viewed as a measure of the economic resources available to each individual in a household, income measures for equivalised estimates are generally based on numbers of people rather than numbers of households (fifth column). This is referred to as person-weighting, and ensures that people in large households are given as much weight in the distribution as people in small households.

While the ranking underlying the formation of percentiles is the same for the household-weighted and person-weighted estimates, the boundaries between the percentiles differ, because household-weighted percentile boundaries create subgroups with equal numbers of households, while person-weighted percentile boundaries create subgroups with equal numbers of persons. The extent to which the boundaries differ reflects the extent to which the average household size differs between percentiles. For example, the person-weighted estimate of P10 (USD 317) is higher than the household-weighted estimate of P10 (USD 286). This implies that households with the lowest rankings of equivalised disposable household income tend to have a lower-than-average number of persons. In other words, the 10% of people with the lowest income comprise more than 10% of households.

For one-person households, the two measures of equivalised disposable income are the same (USD 673) and are just a little higher than disposable income (USD 672). Equivalised disposable income for lone-person households is approximately the same as disposable income, because the equivalising factor for such households is 1.0.[2]

For all other household compositions, equivalised disposable income is lower than disposable income, since income is adjusted to reflect household size and composition. Mean equivalised disposable income for couple households is the same for both the household-weighted and the person-weighted measures, since there are only two persons in such households. For most other multi-person households, person-weighted mean income is lower than the household-weighted mean. This implies that, within each type, larger households tend to have lower equivalised disposable household income, at least for the equivalence scale selected here.

Equivalence scales for consumption estimates

Equivalence scales have been developed to adjust household income to reflect the economies of scale achieved in consumption by households comprising more than one person, and empirical studies designed to derive appropriate equivalence scales have generally examined consumption data. Therefore equivalence scales used for income measures are equally applicable and relevant for consumption measures.

All the issues discussed above with respect to the derivation of equivalence scales for income are also relevant when applied to consumption measures; equivalence scales appropriate for poorer households may not be as appropriate for richer households; equivalence scales appropriate to one geographic region may not be as appropriate for another; equivalence scales appropriate for actual final consumption may not be as appropriate for consumption expenditure; and so on.

Equivalence scales for wealth estimates

Wealth is a stock of assets that is available to support consumption in the future, especially during retirement. When comparing households' wealth as an indicator of economic well-being in terms of potential future consumption, consideration needs to be given to which household members are likely to benefit from that wealth. Of particular interest are households containing children. The children are likely to leave the household before the wealth of the household is used to support household consumption during retirement. Therefore, for this type of analysis, it does not seem relevant to equivalise wealth on the basis of the economies of scale in current consumption experienced with the current household structure. Rather, analysis of wealth should focus on examining data classified by life cycle group. Such a focus is consistent with the expectation that wealth is often built up during a person's working life and then run down during retirement.

A different perspective can be taken when considering wealth as an economic resource that may be used to support current consumption. This is particularly important when analysing the situation of households at risk of economic hardship. Some households have very low income but are not at risk of economic hardship because they can draw on their wealth to support current consumption. In analysis of this kind, it is appropriate to equivalise wealth with the same equivalence scales used to standardise household income and consumption.

Multi-dimensional analysis of economic well-being

Multi-dimensional measures are necessary to get a comprehensive understanding of the economic well-being of individuals and households, as the notion of economic well-being (or material living standards) encompasses a number of dimensions (Stiglitz et al., 2009). A full appraisal of material living standards, as a pivotal element of the broader concept of human well-being, also requires a multi-dimensional approach. Indeed, and despite the fact that the material living standards of individuals are a joint function of income, consumption and wealth, income alone has been most often used in practice. This is clearly limiting, since it is quite possible for the income of a given individual to be small but for their wealth to be large (or vice versa). From a poverty perspective, headcounts of the income-poor could lead to the inclusion of many "false positives", e.g. people with income under the poverty threshold but with moderate or high wealth holdings, such as business owners whose current income may not be representative of their economic resources. Moreover, if a household has the expectation of higher income or of a significant windfall gain in the future, it may have higher current consumption than a household that has no such expectations. So while income and wealth determine the consumption possibilities of an individual household, low levels of income and wealth may not always imply a low level of consumption.

These examples, which illustrate the less-than-perfect correlation between the three dimensions of material living standards at the level of each person, point toward the need to develop multi-dimensional analysis to get a better understanding of material living conditions at the micro-level. This section presents different approaches to describing the joint distribution of household income, consumption and wealth.

Cross tabulations

While examining the distribution of household income, consumption and wealth separately offers a useful first approach, looking at the dependence between these three variables is the core of multivariate analysis. Cross tabulations can be used to describe the joint distribution of two or more variables, where continuous variables are categorised (e.g. quintiles of household income, household consumption and household wealth). Displaying a distribution of cases by their values on two or more variables is known as contingency tables. Whereas a frequency distribution provides the distribution of one variable, with one cell per category, each cell of a contingency table shows the number of households that provided a specific combination of responses (e.g. the number of households that fell into both the lowest quintile of income and the lowest quintile of wealth, or those that fell into the lowest quintile of income but into the fourth-highest quintile of wealth).

Table 8.3 provides an illustration of such cross tabulations, drawn from an Australian survey comprising household income and wealth data. Given that the main purpose of such analyses is to identify those most at risk of economic hardship, households in this analysis have been equivalised to standardise for differences in household size and composition, i.e. equivalised, and then weighted by person-weights so that the numbers of people are identified, rather than the number of households. The table shows that in 2009-10, only about one in three people in the lowest quintile of equivalised disposable household income were also in the lowest quintile of equivalised net worth, with nearly one half of them being in the third net worth quintile or higher.

Table 8.3. **Example of income and wealth cross tabulations for Australia, 2009-10**

Persons, net worth quintiles by equivalised disposable income quintiles

	Household net worth quintile					All persons
	Lowest	Second	Third	Fourth	Highest	
Disposable household income quintile	Number of persons ('000)					
Lowest	1 525.5	741.4	919.7	662.3	470.3	4 319.2
Second	1 070.9	896.0	926.5	823.5	603.1	4 320.0
Third	676.2	923.0	998.6	1 015.4	704.1	4 317.3
Fourth	473.8	932.0	828.4	1 076.7	1 005.2	4 316.1
Highest	229.1	734.9	571.8	874.8	1 906.3	4 316.9
All persons	3 975.5	4 227.3	4 245.0	4 452.6	4 689.0	21 589.4
	Proportion of persons (%)					
Lowest	35.3	17.2	21.3	15.3	10.9	100.0
Second	24.8	20.7	21.4	19.1	14.0	100.0
Third	15.7	21.4	23.1	23.5	16.3	100.0
Fourth	11.0	21.6	19.2	24.9	23.3	100.0
Highest	5.3	17.0	13.2	20.3	44.2	100.0
All persons	18.4	19.6	19.7	20.6	21.7	100.0

Source: ABS Survey of Income and Housing (ABS, 2009-10).

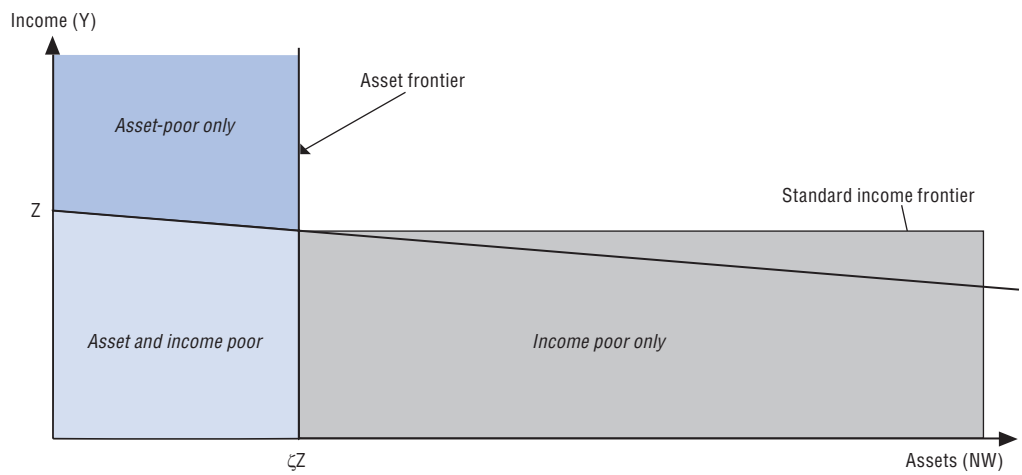
Income and wealth: Combining stock and flow variables

Household income and consumption are flows observed over a period of time, while net worth is a stock variable observed at a point in time. This difference makes their integration difficult. Despite this difficulty, income and wealth are the most important determinants of the economic opportunities of each household, i.e. the goods and services

over which they have command, while consumption expenditure translates into the realisation of this consumption opportunity. From this perspective, if income and wealth could be made commensurable and integrated into a single scalar value for each household, it would then be possible to derive distributional measures based on the distribution of this new variable.

One way to achieve such integration relies on the concept of asset-based poverty, where asset poverty is defined as an individual having wealth-holdings insufficient to meet their basic needs over a specified amount of time. Figure 8.1 illustrates this concept and its relationship to income poverty. In this figure, Y represents an individual's income and NW represents an individual's net worth. In this space, Z represents the income poverty line, while the asset poverty line (ζZ) corresponds to the income poverty line multiplied by a fraction ζ equal to the length of the reference period (in this case three months, which is equal to one-quarter of the income poverty line). An individual is counted as asset-poor if $NW < \zeta Z$; whilst income poverty occurs if $Y < Z$.

Figure 8.1. **Asset and income-based poverty measures**



Source: Brandolini et al., 2010.

Taking wealth into consideration allows distinguishing, among the income-poor, those who have sufficient wealth to keep them at the poverty line for a period of at least $\zeta \times 12$ months (the "income-poor only") from those who lack this buffer (the "asset and income poor", shown by the grey area). Both groups experience low income, but the latter are clearly worse-off than the former. A third group comprises the "asset-poor only", i.e. people who currently have sufficient income to achieve the minimally acceptable standard of living but do not have enough assets to protect them from a sudden drop of their income.

This approach can be extended when wealth at a point in time is smoothed over time, usually over a person's life expectancy (expressed in years). In this case, net worth is converted into an annuity as suggested by Weisbrod and Hansen (1968). In this perspective, a "wealth-enlarged income concept" I_t^* in period *t* can be defined as:

$$I_t^* = I_t + W_t A_n$$

In this formulation, I_t^* is defined as the sum of the current income of each unit I_t and the lifetime annuity of their current net worth $W_t A_n$, where $A_n = \frac{r}{1-(1+r)^{-n}}$ is the value of an annuity available over n years for an interest rate of r. For a given interest rate, the greater the net worth of a person and the shorter their life expectancy, the greater the annuity will be, and therefore the difference between the person's current income and their wealth-enlarged income. This suggests that the distribution of economic opportunities will differ significantly depending on whether income or wealth-enlarged income is used.

The wealth-enlarged income concept provides a consistent way of combining wealth and income into a single continuous variable on the basis of which univariate analysis techniques can be subsequently applied. Table 8.4 shows how this combination can enrich the analysis of economic hardship in comparison to an income-based approach. Indeed, for countries present in the Luxembourg Wealth Study, headcount poverty measures based on wealth-enlarged income are significantly lower than those based on income alone.

Table 8.4. **Poverty rates of the income-poor and the wealth-enlarged income poor for selected countries of the Luxembourg Wealth Study**

Country	National lines			US-PSID line		
	Income and net worth poor	Income poor	Difference	Income and net worth poor	Income poor	Difference
			Net Worth			
Annuity interest rate: 2%						
Finland (1998)	8.4	10.6	–2.2	30.8	39.8	–9.0
Getmany (2002)	11.3	12.9	–1.6	25.8	30.6	–4.8
Italy (2002)	9.2	12.5	–3.3	29.8	42.3	–12.5
US-PSID (2001)	14.5	17.4	–2.9	14.5	17.4	–2.9
US-SCF (2001)	16.6	19.5	–2.9	23.7	27.5	–3.8
Annuity interest rate: 10%						
Finland (1998)	8.4	10.6	–2.2	28.5	39.8	–11.3
Germany (2002)	11.2	12.9	–1.7	24.9	30.6	–5.7
Italy (2002)	8.9	12.5	–3.6	27.8	42.3	–14.5
US-PSID (2001)	14.5	17.4	–2.9	14.5	17.4	–2.9
US-SCF (2001)	15.9	19.5	–3.6	22.9	27.5	–4.6
			Total financial assets			
Atmuity interest rate: 2%						
Finland (1998)	10.2	10.6	–0.4	39.6	39.8	–0.2
Germany (2002)	13.4	12.9	0.5	30.5	30.6	–0.1
Italy (2002)	12.3	12.5	–0.2	40.5	42.3	–1.8
US-PSID (2001)	16.3	17.4	–1.1	16.3	17.4	–1.1
US-SCF (2001)	19.0	19.5	–0.5	26.6	27.5	–0.9
Annuity interest rate: 10%						
Finland (1998)	10.0	10.6	–0.6	38.6	39.8	–1.2
Germany (2002)	13.1	12.9	0.2	29.6	30.6	–1.0
Italy (2002)	12.1	12.5	–0.4	39.7	42.3	–2.6
US-PSID (2001)	16.3	17.4	–1.1	16.3	17.4	–1.1
US-SCF (2001)	18.5	19.5	–1.0	26.2	27.5	–1.3

Source: Brandolini et al., 2010.

The poverty headcounts based on wealth-enlarged income depend on a variety of choices and assumptions made in deriving a measure of wealth-enlarged income, all of which impact on the final outcome.

- *Base income*. The income elements to be used as base income need to be established. Base income is the income that would be available in the absence of any wealth, and to which annuitised wealth is then added. Ideally, base income would normally equal adjusted disposable income minus property income. Adjusted disposable income is the starting value, because it is normally the best income-proxy of material well-being. Property income, such as interest, dividends and rent, is excluded to avoid double-counting when the value of that property is annuitised and added to the base income. However, while desirable, it would not normally be possible to exclude that part of self-employment income that is attributable to a return on capital invested in an own unincorporated business, since that component cannot be separated from the return to employment component, and the latter should be included in base income.
- *Assets to be annuitised*. Concerning the specification of net worth to be annuitised (*Wt* in the formula above), some researchers include only the elements that can be converted to cash and spent on current consumption without the sale of the assets concerned impacting negatively on consumption (Wolff, Zacharias and Caner, 2005). They therefore exclude the value of owner-occupied housing and consumer durables because those assets provide services consumed by the household. If the dwelling were sold, housing would have to be rented in the market, and the same applies for the services provided by consumer durables. Benefits from defined-benefit private pension schemes are also excluded by some analysts because they cannot be sold. If some assets are omitted from *Wt*, the income derived from them, such as the imputed rent from owner-occupied housing, should in turn be included in it. Alternatively, it might be considered that the sale of assets is only notional, and that a more appropriate result for some purposes is to include all assets in the value to be annuitised.
- *Interest rate to be applied*. A single interest rate such as a historic long-term discounted bond rate can be used when annuitising a household's net worth (*r* in the formula above). The rate could be expressed in real terms, thereby adjusting for the influence of inflation on the bond rate, and net of the income tax that would be levied on the annuitised income stream. Alternatively, different rates could be used for different asset types to reflect the differences in wealth composition. Should the latter approach be considered, then the rate of return for owner-occupied housing could be based on imputed rents. However, care would need to be taken that real holding gains and losses are properly reflected in the rates of return used. Imputed rents do not reflect holding gains and losses.
- *Length of annuity*. The length of the annuity is normally specified as the life expectancy of the household reference person or, if relevant, the spouse of the household reference person, if younger.
- *Inter-generational wealth transfers*. The formula given above assumes that no wealth transfer occurs between generations, i.e. none of the wealth of the household remains at the end of the period. This does not imply that no wealth transfer between generations will occur in reality, as the measure proposed is a notional concept developed to better indicate economic resources currently available to a household. For some analyses, the

formula could be amended to assume that some wealth does remain at the end of the annuity period.

- *Changing household composition*. The above formula does not take account of the changing composition of households over time and that a greater amount of wealth will be needed to support a constant standard of living when there are more persons in the household. This issue can be addressed by using a more complex formula that introduces mortality rates and an equivalence scale and makes assumptions about when children will leave the family home.
- *Equivalisation*. Wealth-enlarged income is a measure designed to give an indication of consumption using current income and a share of current wealth in a way that would be sustainable for the life expectancies of the household reference person and, where relevant, their spouse. It is therefore appropriate to use the same equivalence scale on this measure as is used for income before the wealth adjustment.

Income and consumption: An analysis of redistribution

The availability of coherent and consistent income and consumption data can also support more integrated analyses of the redistribution that occurs as part of government tax and transfer systems. Government programs can have a direct impact on the economic well-being of households; social benefits provide resources to households, while taxation removes resources from them. It is therefore of interest to analyse the redistributive impact of the various elements of the governmental tax-transfer system, including production taxes that impact on the costs of the goods and services purchased by households.

The starting point of such an analysis is to estimate net private income, the disposable income households would have had available without the payment of social benefits from the government and without paying current transfers to the government. In terms of the ICW Framework elements presented in Annex A, this is equal to:

- disposable income (element ID) less,
- pensions and other cash benefits from social security (I4.1) less,
- social assistance benefits in cash from government (I4.3) plus,
- direct taxes, net of refunds (E2.1) plus,
- compulsory fees and fines (E2.2) plus,
- employee and employers' social contributions to social security schemes (the social security component of E2.3).

The redistributive impact of cash benefits can be analysed by examining the distribution across households of the cash benefits received from social security and social assistance and comparing this with the distribution across households of net private income. The redistributive impact of social transfers in kind (STIK) received from government can be analysed in a similar way.[3]

While social benefits add to the income received by households, direct taxes and similar direct transfers to government subtract from the income available to households to spend or save. Those transfers also have a redistributive impact, and the distribution of direct taxes, compulsory fees and fines, and employee and employers' social contributions to social security schemes can be compared to the distribution of net private income in the same way as in the case of cash benefits and STIK received from government.

Note that there should be consistency in the definition of social security schemes with regard to: *i)* pensions and other cash benefits from social security; *ii)* employee and employer social contributions to social security schemes that are part of current transfers paid; and *iii)* employer social contributions to social security schemes that are part of income from employment, and therefore of net private income. The net impact of receiving cash benefits from government and paying current transfers to government can be examined by comparing net private income and disposable income. The additional impact of receiving STIK can be examined by including adjusted disposable income in the comparison.

This analysis can be extended to examine the redistributive effect of indirect taxes, or taxes on production (including imports). The analysis needs to use concepts and measures not included in the ICW Framework. Taxes on production are usually levied on the producers and suppliers of goods and services, and therefore the payment of the taxes is not normally a household transaction.[4] Rather, the prices paid by households for goods and services reflect the taxes on production that are paid by others. However, since taxes on production are often seen as a regressive form of taxation, it is of interest to estimate what proportion of a household's consumption expenditure reflects taxes on production that have been paid in conjunction with the production of those goods and services.

The distribution of taxes on production ultimately paid by households can be analysed by the type of tax, such as value-added tax, taxes on alcohol and tobacco, import duties, regular taxes on capital, and so on. Such analysis is of interest because taxes on production can be levied for other reasons than raising revenues, including disincentives to consume imports or products such as tobacco. In evaluating whether the taxes are contributing to their primary objectives, any redistributive impact of the individual taxes should be considered.

Estimates of the value of the taxes on production ultimately borne by households can be subtracted from adjusted disposable income to give final income. Comparing final income with adjusted disposable income gives an indication of the redistributive impact of taxes on production. Comparing final income with net private income gives an indication of the net redistributive impact of all government benefits and taxes combined. Both of these comparisons require the joint analysis of income and consumption.

Although compilations of indirect taxes are difficult, there are several ways to accomplish this task. Statistics Denmark has developed a method where the taxes on production are compiled in an integrated framework with the Household Budget Survey (HBS). Estimates are produced yearly and combine micro consumption data from the HBS with the tax legislation used in the compilation of the Danish net price index.

Statistics Denmark has produced comparable estimates of the indirect taxes paid by private households for the period 1994 to 2009 as an integrated part of the HBS compilation. Figure 8.2 shows the impact of indirect taxes and social transfers in kind (STIK) on household disposable income. The figure highlights that the positive effect of STIK on adjusted disposable income is fully offset by that of indirect taxes over the period considered.

Figure 8.3 shows a decomposition of the indirect taxes by type and by household income bracket. Value-added tax has the highest impact, followed by excise duties, while stamp duties have only a marginal effect. Households with the highest incomes pay the

Figure 8.2. **Household adjusted disposable income, Denmark in 1994-2009**

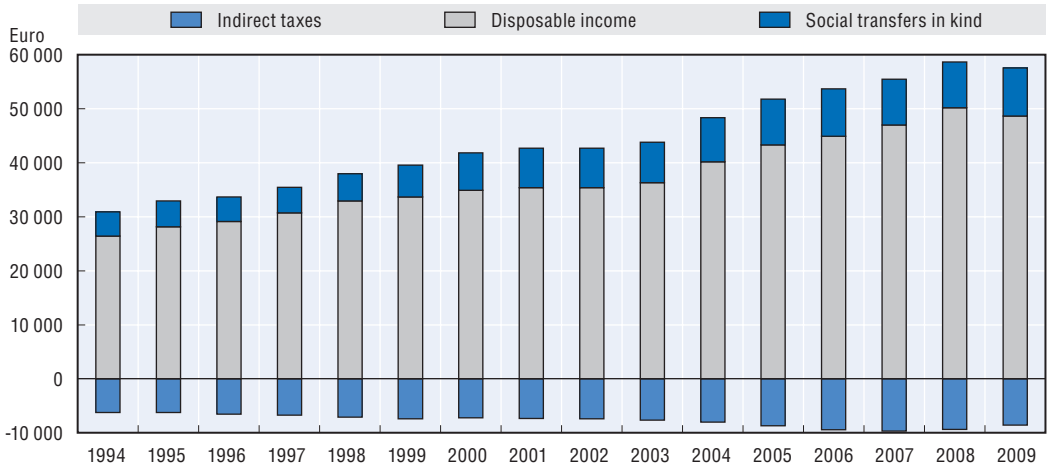
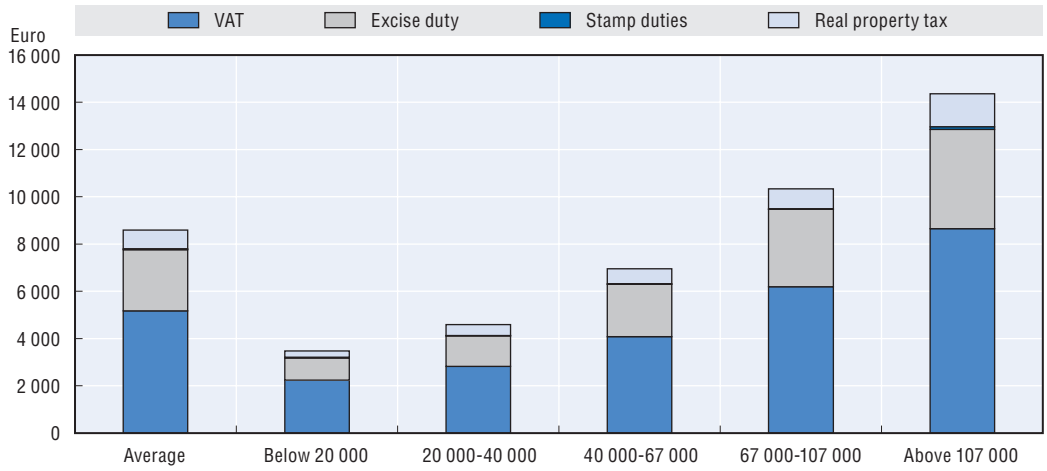


Figure 8.3. **Decomposition of indirect taxes by type and level of household income, Denmark in 2009**



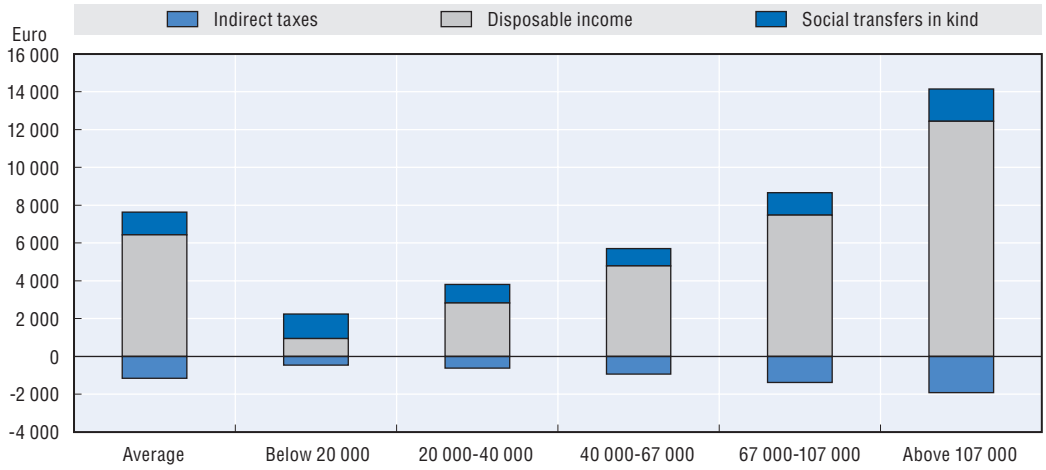
highest amount of indirect taxes, due to the high positive correlation between income and consumption.

Finally, Figure 8.4 shows the impact of indirect taxes and social transfers in kind (STIK) on disposable income, across different income ranges. While the effect of indirect taxes seems to be broadly proportional to the level of income, the impact of STIK is much flatter. The total effect on final income (disposable income plus STIK, less indirect taxes) compared to disposable income is clear: final income rises for the lowest income groups, while it declines marginally for the highest income groups.

Composite multi-dimensional measures

The techniques presented below are based on multivariate generalisations of the procedures used to construct summary measures of the level and dispersion of a single economic measure (UNECE, 2011). As multi-dimensional measurement is a new field of statistics, some of the conventional tools used to summarise distributions such as Lorenz

Figure 8.4. **Impact of indirect taxes and STIK on household disposable income broken down by household total income, Denmark in 2009**



curves or Gini coefficients are not yet fully defined and developed in this area. Three measures are discussed below:

- *Multi-dimensional counting*, characterising the position of each household in the joint distribution of income, consumption and wealth by the definition of appropriate thresholds.
- *Multi-dimensional measure of central tendency*, mapping the characteristics of the distribution of the three variables into a single index conveying information on the average achievements of each unit.
- *Multi-dimensional measure combining central tendency* (i.e. mean achievements) *and dispersion* (i.e. inequality) in a single summary statistic.

The three multi-dimensional measures lead to single summary statistics of the economic well-being of each person. They will be illustrated by considering income, consumption and wealth simultaneously in order to depict the general measurement framework under consideration. At the outset, it should be stressed that micro data on household income, consumption and wealth do not serve the same objective. Income measures people's command over current resources, wealth is a measure of command over future resources, while consumption expenditure is an achievement in itself. In this sense, the three variables do not affect individual well-being in the same way. It follows that consideration solely of household income and wealth may be considered as providing a full characterisation of the consumption possibilities of each household, based on the economic resources currently available. But, alternatively, one could also argue that the consumption expenditure of each unit should be measured jointly with its income and wealth in order to get information on how consumption possibilities are converted into the goods and services actually consumed, and what is the true material well-being of the household considered. Apparent inconsistencies between the available resources and the goods and services consumed may reflect factors not measured, such as expectations about resources to become available in the future, or they may reflect errors or timing differences in some of the data being used. The matrix-based measures can be used to analyse the data from various perspectives: while the implicit assumption made when constructing summary measures in the three-dimensional space is that household

income, consumption and wealth are weighted equally, one could also easily "exclude" consumption expenditure by assigning it a weight of zero and then reducing the analysis to income and wealth only. The multi-dimensional measures presented in this section have the same properties and characteristics in both cases.

Multi-dimensional counting

In one-dimensional analysis, counting is usually accomplished by the use of thresholds (as for example in poverty analysis), with individuals or households being identified as those whose achievements fall above or below the threshold. In a multi-dimensional setting, counting is a more complex exercise, as several parameters need to be specified before computation:

- First, a vector of thresholds $z = (z_I, z_c, z_w)$, where each variable denotes the threshold used for income, consumption and wealth, and which are used to determine the position of each unit with respect to each dimension.
- Second, a vector of weights $w = (w_I, w_c, w_w)$, used to indicate the relative importance of income, consumption and wealth.
- Third, counting vectors $c = (c_1, \ldots, c_n)$, whose entries indicate whether the achievements of each unit of observation are above (indicated by a value of one) or below (indicated by a value of zero) the threshold selected, for each of the dimensions considered.
- Fourth, a general threshold k (with $0 < k \leq 3$) used to determine the position of the household in the multivariate distribution. This general threshold is necessary, as an individual has to be doubly located in multivariate analysis: first inside each dimension, then across dimensions.
- Finally, an aggregation function, which will summarise the outcome of the above process over the entire population.

Multi-dimensional counting is most easily understood by examining a sequence of matrices. Let X be a matrix where each column denotes respectively the income, consumption and wealth over 5 individuals (displayed in rows):

$$X = \begin{pmatrix} 3 & 1 & 2 \\ 6 & 2 & 5 \\ \underline{7} & 3 & 10 \\ \underline{7} & \underline{5} & \underline{14} \\ \underline{10} & \underline{5} & \underline{24} \end{pmatrix}$$

First assume that one is interested in identifying all the individuals whose achievements are above certain thresholds $z = (6, 3, 10)$. In this case, achievements above those thresholds are indicated by the underlined terms in X. A counting matrix X^0 then replaces each entry in the matrix X with values of 1, for units falling above the threshold considered, and of 0, for units falling below it:

$$X^0 = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 1 & 0 & 0 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{pmatrix}$$

The aggregation step uses X^0 and the general threshold k to generate the multi-dimensional counting. For a general threshold equal to $k = 2$, individuals are considered as having adequate economic resources if at least two of their entries in terms of income, consumption and wealth are above the specific thresholds considered, which is indicated by a value of 1 in the matrix X^0. In this example, only the last two individuals fill this condition, while individual 3 has only income above the specific threshold. This achievement is then disregarded in X^0, which gives a censored counting matrix:

$$X^0(k \geq 2) = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{pmatrix}$$

Finally, the multi-dimensional counting is computed as the mean of the terms that appear in the censored deprivation matrix. In our example, the sum of the positive entries is 6, while the total number of entries is 15, resulting in a count of 2/5. This value has to be interpreted as the actual number of achievements above the dimension-specific thresholds z among individuals located above the general threshold k. This measure is the natural generalisation of univariate counting, combining counting inside each of the three dimensions as well as counting across the three dimensions, the former being a by-product of multi-dimensional analysis. In practice, multi-dimensional counting is easy to operationalise, and can provide considerable detail on the features of a multivariate distribution when computed for different threshold's specifications.

Multi-dimensional measure of central tendency

The multi-dimensional counting described in the previous section is an aggregation procedure that conveys information on the distribution of achievements across units according to specific thresholds. An alternative approach is provided by measures of central tendency, which aim to summarise information on all the entries of a multivariate distribution. Despite some weaknesses, the arithmetic mean (the sum of all achievements in the matrix divided by the number of observations) remains the most frequently used measure of central tendency in univariate analysis. Its multi-dimensional counterpart can also be easily computed.

Computing a multi-dimensional mean first requires normalising the observed values of household income, consumption and wealth in order to make their scale comparable across dimensions; through such normalisation, each dimension is ratio-scaled, with the lowest value set as 0% achievement and the highest as 100%. In this way, the comparability across the three monetary variables is guaranteed: 50% of the highest achievement in one variable is the same as 50% of the others. For each dimension, this transformation requires taking each value and subtracting from it the lowest achievement assumed or observed in the associated dimension (considered in what follows as zero), and then dividing the result by the difference between the maximum achievement assumed or observed (considered in

what follows as the maximum observed in each of the distributions) and the minimum. Considering the example previously used, the normalised matrix X^N is thus:

$$X^N = \begin{pmatrix} \frac{3-0}{10-0} & \frac{1-0}{5-0} & \frac{2-0}{24-0} \\ \frac{6-0}{10-0} & \frac{2-0}{5-0} & \frac{5-0}{24-0} \\ \frac{7-0}{10-0} & \frac{3-0}{5-0} & \frac{10-0}{24-0} \\ \frac{7-0}{10-0} & \frac{5-0}{5-0} & \frac{14-0}{24-0} \\ \frac{10-0}{10-0} & \frac{5-0}{5-0} & \frac{24-0}{24-0} \end{pmatrix} = \begin{pmatrix} 0.3 & 0.2 & 0.1 \\ 0.6 & 0.4 & 0.2 \\ 0.7 & 0.6 & 0.4 \\ 0.7 & 1 & 0.6 \\ 1 & 1 & 1 \end{pmatrix}$$

Based on this normalised matrix X^N, the multi-dimensional mean is then computed by aggregating all the terms of the normalised matrix, and then dividing the sum by the number of terms:

$$\begin{pmatrix} 0.3 & 0.2 & 0.1 \\ 0.6 & 0.4 & 0.2 \\ 0.7 & 0.6 & 0.4 \\ 0.7 & 1 & 0.6 \\ 1 & 1 & 1 \end{pmatrix} \begin{matrix} \rightarrow \\ \rightarrow \\ \rightarrow \\ \rightarrow \\ \rightarrow \end{matrix} \begin{pmatrix} 0.2 \\ 0.4 \\ 0.6 \\ 0.8 \\ 1 \end{pmatrix} \rightarrow 0.6$$

This value represents the mean achieved level over all units and over all dimensions, expressed in the normalised scale unit. In practice, multi-dimensional means are easily computed and are the only way to provide a measure of central tendency for a multivariate distribution, as other conventional measures of central tendency such as the median cannot be defined in this case.

Multi-dimensional measure combining central tendency and dispersion

Multi-dimensional measures of central tendency can be adapted in order to reflect the dispersion of achievements within each of the dimensions considered. To do so, the normalised matrix should be transformed so that each of its terms is elevated to a power inferior to one, where this coefficient is an inequality aversion parameter that expresses the degree of penalisation that is imposed on more unequal distributions:

$$\begin{pmatrix} 0.3^{\alpha} & 0.2^{\alpha} & 0.1^{\alpha} \\ 0.6^{\alpha} & 0.4^{\alpha} & 0.2^{\alpha} \\ 0.7^{\alpha} & 0.6^{\alpha} & 0.4^{\alpha} \\ 0.7^{\alpha} & 1^{\alpha} & 0.6^{\alpha} \\ 1^{\alpha} & 1^{\alpha} & 1^{\alpha} \end{pmatrix}$$

Again, the multi-dimensional mean is computed based on this matrix, but at each stage of aggregation the inverse power transformation is applied to the mean. For example, for $\alpha = -2$, this gives:

$$\begin{pmatrix} 0.3^{-2} & 0.2^{-2} & 0.1^{-2} \\ 0.6^{-2} & 0.4^{-2} & 0.2^{-2} \\ 0.7^{-2} & 0.6^{-2} & 0.4^{-2} \\ 0.7^{-2} & 1^{-2} & 0.6^{-2} \\ 1^{-2} & 1^{-2} & 1^{-2} \end{pmatrix} \begin{matrix} \rightarrow \\ \rightarrow \\ \rightarrow \\ \rightarrow \\ \rightarrow \end{matrix} \begin{pmatrix} \left[\frac{1}{3}\left(0.3^{-2}+0.2^{-2}+0.1^{-2}\right)\right]^{\frac{1}{-2}} \\ \left[\frac{1}{3}\left(0.6^{-2}+0.4^{-2}+0.2^{-2}\right)\right]^{\frac{1}{-2}} \\ \left[\frac{1}{3}\left(0.7^{-2}+0.6^{-2}+0.4^{-2}\right)\right]^{\frac{1}{-2}} \\ \left[\frac{1}{3}\left(0.7^{-2}+1^{-2}+0.6^{-2}\right)\right]^{\frac{1}{-2}} \\ \left[\frac{1}{3}\left(1^{-2}+1^{-2}+1^{-2}\right)\right]^{\frac{1}{-2}} \end{pmatrix}$$

$$\begin{matrix} \rightarrow \\ \rightarrow \\ \rightarrow \\ \rightarrow \\ \rightarrow \end{matrix} \begin{pmatrix} 0.1 \\ 0.3 \\ 0.5 \\ 0.7 \\ 1 \end{pmatrix} \rightarrow \left[\frac{1}{5}\left(0.1^{-2}+0.3^{-2}+0.5^{-2}+0.7^{-2}+1^{-2}\right)\right]^{\frac{1}{-2}} = 0.3$$

In this example, the final value obtained is half the value of the multi-dimensional mean computed in the previous section. This difference from the average achievement is the result of discounting for two forms of inequality: first, the spread of each distribution (i.e. inter-individual inequality, as in the case of univariate analysis); and, second, inequality among dimensions for each individual (which is a specific by-product of multivariate analysis).

The inclusion of wealth and consumption in addition to income in a composite indicator leads to significant differences from an income-based approach. Table 8.5 illustrates how such inclusion leads to a consistently lower level of overall achievement in material conditions for each decile of disposable income, as well as to a systematic higher penalisation for inequality in comparison to the same measure applied to income only (i.e. when consumption and wealth are assigned zero weights in the framework above). Also, the penalisation due to inequalities when moving from consideration of income alone to consideration of the joint distribution of income, consumption and wealth increases as the inequality aversion parameter rises.

The summary measures shown in Table 8.5 embody information on both mean achievement and dispersion, and they are the multi-dimensional analogue of the Atkinson measures in the univariate case. A complementary index, which makes a bridge between the multi-dimensional measure of central tendency and the inequality-sensitive measure, can be computed as 1 minus the ratio between this inequality-sensitive measure and the multi-dimensional mean described in the previous section: the value obtained (0.5 in the numerical example used here) ranges between 0 and 1: the closer this index is to one, the more income, consumption and wealth achievements are dispersed, both between and within individuals.

Table 8.5. **Multi-dimensional inequality-sensitive measures of households' material conditions per decile of disposable income, France in 1995**

Deciles of disposable income	Income alone				Income, consumption and wealth			
	Aversion parameter				Aversion parameter			
	1	0	–1	–2	1	0	–1	–2
1	0.51	0.49	0.47	0.45	0.39	0.33	0.24	0.15
2	0.69	0.69	0.69	0.69	0.46	0.38	0.28	0.21
3	0.72	0.72	0.72	0.72	0.49	0.42	0.34	0.25
4	0.73	0.73	0.73	0.73	0.52	0.46	0.39	0.32
5	0.75	0.75	0.75	0.75	0.54	0.49	0.44	0.37
6	0.76	0.76	0.76	0.76	0.57	0.53	0.48	0.42
7	0.77	0.77	0.77	0.77	0.60	0.56	0.52	0.47
8	0.79	0.79	0.79	0.79	0.63	0.60	0.56	0.52
9	0.80	0.80	0.80	0.80	0.67	0.64	0.61	0.56
10	0.84	0.84	0.84	0.84	0.76	0.73	0.70	0.66
Total	**0.74**	**0.73**	**0.72**	**0.70**	**0.56**	**0.50**	**0.41**	**0.29**

Note: The computations are based on a 1995 joint survey of income, consumption and wealth for France.
Source: Ruiz, 2011.

Several assumptions are implicit in the construction of these inequality-sensitive multi-dimensional measures. First, the choice of an inequality aversion parameter is required for discounting for the two forms of inequality: the smaller the power transformation applied, the larger the penalisation (while for a power equal to one, one gets the measure with no penalisation). While this leaves room for arbitrary choices, it is the only measure available for appraising dispersion in multi-dimensional analysis, as no obvious generalisation of Lorenz curves and Gini index can be applied to two or three dimensions simultaneously. Second, the multi-dimensional framework requires considering a specific form of inequality (among dimensions for the same individual) that has a less intuitive interpretation than standard inequalities in the univariate setting. Inherent to multi-dimensional analysis, this dispersion captures the fact that, when the dispersion of entries in a multivariate distribution is driven more by one of its sub-dimension than by others, this imbalance has to be reflected in the measure of dispersion.

The summary statistics of multi-dimensional achievements described above extend the univariate concepts of mean and variance into a multi-dimensional space. Since the mean and variance of income and consumption variables would normally be equivalised, it would also be appropriate to equivalise wealth when computing these measures. First, bringing the three dimensions together is the focus of economic well-being. Second, it would be difficult to interpret a measure that includes equivalised income and consumption but not equivalised wealth.

Summary

The key highlights from this chapter can be summarised as follows:

- Consumption possibilities and consumption requirements vary with the life cycle progression. An individual's labour force participation and earning capacity increases with age, peaking at middle age, and declining rapidly in older age leading to retirement. The distribution of wealth over the life cycle reflects the common pattern of wealth being gradually accumulated throughout the working lives of household members and then being utilised during retirement. Life cycle effects on income, consumption and wealth levels and distribution need to be considered in any analyses of economic well-being.

- Various equivalence scales have been devised to make adjustments to the actual incomes of households in a way that recognises differences in the needs of individuals and the economies that flow from sharing resources. Therefore, equivalence scales used for income measures are equally applicable and relevant for consumption measures. However, there is no accepted method for determining equivalence scales, and no specific equivalence scale is recommended by the ICW Framework for general use.
- Equivalence scales based on current household composition are not necessarily relevant when analysing wealth from the perspective of potential future consumption, since the household composition may change in the future. However, equivalence scales based on current household composition are relevant when analysing wealth from the perspective of current consumption, especially when analysing households currently at risk of economic hardship.
- Appropriate tools are needed to undertake the multi-dimensional analysis of income, consumption and wealth. Cross tabulations are a basic tool that can be used for this purpose.
- Income and wealth are both economic resources that can support consumption. However, combining them into a single indicator of economic resources is difficult, because income is a flow concept and wealth is a stock concept. One approach that can be taken is to derive estimates of wealth-enlarged income, in which the value of wealth is annuitised and added to the value of income.
- The availability of coherent and consistent income and consumption data together can support analyses of the redistribution that occurs as a result of government tax and transfer systems. This analysis becomes more comprehensive when the redistributive impact of indirect taxes (or taxes on production, including imports) is included. This aspect of the analysis needs to use concepts and measures not included elsewhere in the ICW Framework.
- Multi-dimensional measurement is a relatively new field of statistics, and popular tools such as Lorenz curves and Gini coefficients used to summarise single-dimensional distributions are not fully defined and developed in the area of multi-dimensional measurement. However, there are some single statistic summary measures of level and dispersion in multiple dimensions. These include: a count of individuals or households above or below a multi-dimensional threshold, for example, a definition of poverty; a multi-dimensional measure of central tendency analogous to the univariate mean; and a multi-dimensional measure combining central tendency and dispersion analogous to the Atkinson measures in the univariate case.

Notes

1. This subsection draws from Section 6.4 of the *2011 Canberra Group Handbook*.
2. The reason for the slight difference between them is that some households have negative disposable income and these values are set to zero for the calculation of equivalised income.
3. In principle, social transfers in kind received from non-profit organisations should be included with net private income when analysing redistribution.
4. Households are likely to pay certain types of taxes on production, but these are normally associated with the production or investment activities of the household, for example, rates paid for owned real estate.

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Chapter 9

Next steps

This chapter outlines the Expert Group's expectations for how the ICW Framework might be used by countries in developing their micro data on household economic well-being, and provides suggestions for further international co-operation and statistical framework development.

Introduction

In response to strong international support for the development of an international framework for micro-level data on household income, consumption and wealth, the Expert Group on Micro Statistics on Household Income, Consumption and Wealth has produced both this ICW Framework report and a companion report providing guidelines on micro statistics on household wealth.

Country use of the Framework

Most countries already conduct at least occasional household surveys that provide micro data on income, consumption and at least some components of wealth. Some countries also collect micro data on economic well-being from administrative sources. Countries are encouraged to adopt the concepts and definitions of the ICW Framework both to improve the usefulness of their data in analysing economic well-being and to improve the international comparability of these statistics.

However, not all aspects of the ICW Framework will be of equal significance for improved measures of economic well-being in all countries. For most countries, social transfers in kind (STIK) are likely to be very significant for the household sector as a whole and critically important in understanding the distributional issues for both income and consumption. As the scale and distributional impact of STIK vary across countries, country improvements in measurement will add to the comparability of international statistics.

Measuring micro-level wealth is also critically important, as differential portfolio preferences in different countries will impact on comparisons of income, both across countries and within any one country. For example, consumption can be supported by some forms of wealth reduction that are not considered income (e.g. the sale of an asset) or by drawing down a pension asset (which is recorded as income). Without wealth measures for the same period, the income comparisons both between household groups and across countries will be misleading. In contrast, while the framework includes the accounting for non-transaction flows in household wealth (e.g. valuation changes in assets), the measurement and reporting of such changes is likely to remain low for most micro analysis.

The promotion of the integrated micro framework among users and the ongoing identification and description of gaps in available data will assist analysts to better understand economic well-being and to better interpret relevant data, as well as to elicit feedback on user priorities for improvement.

Further international co-operation

The Expert Group recommends the establishment of an international forum to assist countries in the development of integrated micro data on household income, consumption

and wealth. The forum would share experiences and progress in implementing the micro framework, including:

- Conceptual and definitional issues that arise in adopting the framework.
- The development of models to impute values for variables for which there are no observable market transactions, such as rent attributable to the owner-occupiers of dwellings, the value of unpaid domestic services, equity in pension schemes, and so on.
- The development of survey and administrative systems to collect the required micro data.
- The development of data-matching techniques to expand the usefulness of the collected information in populating the framework dimensions.
- The development and use of equivalence scales in each dimension of economic well-being.
- The development of multi-dimensional indicators of economic well-being.

Some of the conceptual and measurement issues still to be addressed include:

- best practice in measuring and reporting household services for own consumption;
- transfers of labour services between households, either directly or through charitable organisations (similar to STIK and own-consumption services), which is likely to be significant for how economic resources are distributed (but not currently covered in the framework);
- the evolution of retirement provisions and the implications for inter-temporal and international comparisons as both the boundaries between social insurance and other forms of retirement provision change and as measurement techniques improve; and
- intra-household distributions of economic well-being.

City Group for consumption data

In due course, the forum could facilitate the review and update of the framework, leading to the establishment of international standards for the collection and dissemination of integrated micro data on household income, consumption and wealth.

Data from consumption surveys are useful for analysis of the consumption dimension of economic well-being, for weighting the consumer price index, and for compiling the national accounts. However, each of these purposes is likely to have different requirements, including in terms of scope, coverage, unit of observation and analysis, frequency and the detailed level at which data are collected. A City Group could undertake an in-depth analysis of the best ways of harnessing or enhancing existing collection activities to meet the requirements of all three major areas of demand for expenditure/consumption statistics. The City Group would review existing guidelines on collecting consumption and household expenditure data, and extend them to areas not previously covered, or not covered in sufficient depth, to better support micro information needs (for example, transfers between households).

The collection and analysis of integrated income, consumption and wealth statistics

This framework has noted areas where the failure of micro statistics and analysis to consider income, consumption and wealth coincidentally leads to inconsistency in comparisons of economic well-being over time and across countries. While Chapter 7

discussed the compilation of integrated data sets, and Chapter 8 discussed how integrated data sets might be analysed, there is still considerable developmental work to be done.

The analytic tools to be used in multi-dimensional analysis are in the early stages of development, in part reflecting the limited opportunities so far to analyse multi-dimensional data sets. Further work is required to explore and develop better ways to summarise the economic well-being of a household using more than one dimension, perhaps generating a single summary measure of inequality such as a Gini coefficient when working in multiple dimensions. Practice in and advice on extending the concept of equivalisation to consumption and wealth data are also needed.

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ANNEX A

Detailed framework and relationships between elements

As discussed in Chapter 3, income, consumption and wealth statistics comprise data on *stocks and flows*. Since the flows and stocks in the model balance by definition, the model can be viewed as an accounting framework with an income account, an expenditure account, a capital account, and balance sheets. In order for the accounts to balance, it is essential that the definitions of the various detailed components be consistent between the accounts, and that differences are clearly identified. A high degree of consistency is required when compiling and analysing integrated statistics on household income, consumption and wealth. Breakdowns of aggregates from the various dimensions should use consistent treatments and classifications so that data from one dimension can be related to data from another dimension. For example, data on income from investments should ideally use consistent and comparable breakdowns as wealth data relating to income-earning assets.

Table A.1 provides a detailed listing of the elements of the income, consumption and wealth framework presented in Chapter 3. The table is divided into four parts:

- income (*I*);
- consumption and other expenditure (*E*);
- change in net worth (*K*); and,
- wealth (*W*).

As well as describing the detailed elements, the table indicates four types of relationships between the elements.

The first type of relationship occurs where two elements are equivalent, or where part of one element is *equivalent* to (the part of) another. For example, current transfers in kind from other households is an income element (I4.4.2) exactly equal to a consumption element (E1.6). Usually there is not an exact equivalence, however. There are two main reasons, both of which can be illustrated by comparing income element I1.2.2 (Goods and services produced for barter less cost of inputs) with consumption element E1.3 (Consumption goods and services received from bartering). First, in-kind income is valued on a net basis as an income element, by subtracting the cost of inputs, but is valued on a gross basis as a consumption element. Second, some elements of in-kind income may include capital goods such as consumer durables, while the corresponding consumption elements exclude those capital goods. For a detailed discussion, see later in this Annex.

The second type of relationship identifies elements that are *complementary*, i.e. elements that are in different groups but nevertheless have a common boundary. As

discussed in earlier chapters, it can be difficult to define and operationalise such boundaries. For example, all receipts have to be categorised as a either current receipt (income) or a capital transfer received (or, in certain circumstances, a negative consumption expenditure). Small, non-regular receipts can be particularly difficult to categorise, since they do not meet the income criterion of being regular but neither do they meet the capital criterion of being large and likely to be spent over a number of periods. A key objective in managing difficult boundary issues is to ensure that all transactions are included once and only once.

The third type of relationship links the flow elements shown in the first three parts of Table A.1 to the *associated wealth element* shown in the fourth part, Wealth. For example, the table links the income item "Interest from deposits net of expenses" (I2.1.1) to the financial asset element "Cash and deposits" (W2.1). Similarly, the table links the expenditure element "Interest paid on consumer credit" (E3), to liability element "Consumer credit loans and other liabilities" (W3.5).

The fourth type of relationships is that between *elements with some other commonality.* For example, there are several elements relating to social insurance and, while they are not directly linked, the same definition of social insurance should be used for elements of payments to social insurance ("Employers' social insurance contributions", I1.1.10) and "Employee and employer's social insurance contributions" (E2.3) and receipts from social insurance ("Pensions and other benefits from employment-related social insurance", I4.2).

The level of detail presented in the table is intended to ensure that the presentation is logically complete and can be adapted to suit different contexts. However, the breakdown into component elements is likely to be more detailed than required for many users, depending on the practices and institutions relevant to their country. The detail can then be collapsed as appropriate. The table also includes comments that acknowledge that, for practical reasons, it may not always be possible to fully implement the elements of the framework as presented in this report. In such cases, it may be necessary to collapse or ignore some elements.

Table A.1. **Elements of the Framework and relationships between them**

Part 1: Income

Code	Element	Equivalent element	Complementary element	Associated wealth element	Element with other commonality	Comment
I1	**Income from employment**					
I1.1	Employee income					
I1.1.1	*Cash wages and salaries*		I4.2			Includes holiday pay. Includes pay while absent on sickness, disability or maternity leave if paid by employer and not social assistance or social insurance scheme.
I1.1.2	*Cash commission and piece-work payments*					
I1.1.3	*Cash tips and gratuities*					May be paid directly by client of employer or indirectly via employer.
I1.1.4	*Directors' fees*					
I1.1.5	*Shares offered as part of employee remuneration*				W2.4	Shares received are income in kind comprising a financial asset, W2.4. In principle, this item also includes the value of stock options at the time the option is issued, but valuation may be difficult.
I1.1.6	*Profit-sharing bonuses and other forms of profit-related pay*					
I1.1.7	*Other cash bonuses*					
I1.1.8	*Free or subsidised goods and services from employers*	E1.2 is part of I1.1.8	E1.1			The gross value of consumption goods and services received is included in E1.2 – see Subsection 7.2.2 (Income in kind) For subsidised items, only the value of the subsidy is included here, with the value of employee contributions to consumption goods and services included in E1.1.
I1.1.9	*Severance and termination pay*		KR1			Lump-sum retirement payments are included at KR1.
I1.1.10	*Employers' social insurance contributions*	Part of E2.3			I4.2	The definition of social insurance should be identical to that used at I4.2.
I1.2	Income from self-employment					
I1.2.1	*Profit/loss from own unincorporated enterprise*	Part of gross value may be included in E1.3 or E1.4	I1.2.2 I1.2.3 I2.1.3 I2.2 I2.3	W2.3		Share of unincorporated enterprise profit/loss accruing to household members who both own (or partly own) and work in the enterprise. Share of unincorporated enterprise profit/loss accruing to household members who are "sleeping" or "silent" partners in the enterprise (that is, own or partly own the enterprise but do not work in it) is included in element I2.1.3, Income from shares and other equity, net of expenses. May include property income from shares, real estate, intellectual property etc, if those assets are managed as an integral part of an unincorporated enterprise. May include goods and services received in barter transactions. The gross value of consumption goods and services received or produced is included in E1.3 or E1.4 – see Subsection 7.2.2 (Income in kind).
I1.2.2	*Goods and services produced for barter, less cost of inputs*	Part of gross value included in E1.3	I1.2.1 I2.2 I2.3	W2.3		The gross value of consumption goods and services received is included in E1.3 – see Subsection 7.2.2 (Income in kind).

Table A.1. **Elements of the Framework and relationships between them** *(cont.)*

Part 1: Income

Code	Element	Equivalent element	Complementary element	Associated wealth element	Element with other commonality	Comment
I1.2.3	*Goods produced for own use, less cost of inputs*	Part of gross value included in E1.4	I1.2.1	W2.3		Included here is the net value of goods withdrawn from the inventories of own unincorporated enterprises. The net value is the retail market value, less the price actually paid. The gross value of consumption goods produced is included in E1.4 – see Subsection 7.2.2 (Income in kind).
I2	**Property income**					
I2.1	Income from financial assets			W3.3.1		
I2.1.1	*Interest from deposits, net of expenses*			W2.1		
I2.1.2	*Income from bonds and other debt securities, net of expenses*			W2.2		
I2.1.3	*Income from shares and other equity, net of expenses*	Part of gross value may be included in E1.3	I1.2.1 I1.2.2	W2.4		Includes dividends from shares in corporate entities, returns from investment as "sleeping" or "silent" partner in unincorporated enterprises (that is, share of unincorporated enterprise profit/loss accruing to household members who own or partly own the enterprise but do not work in it), etc. Share of unincorporated enterprise profit/loss accruing to household members who both own (or partly own) the enterprise and work in it is included in I1.2.1, Profit/loss from own unincorporated enterprise. May include goods and services received in barter transactions The gross value of consumption goods and services received is included in E1.3 – see Subsection 7.2.2 (Income in kind).
I2.1.4	*Income from mutual funds and other investment funds, net of expenses*			W2.5		
I2.1.5	*Annuity and other regular payments from life insurance funds*			W2.6	KO3	Excludes annuities purchased with lump sums from pension schemes. As this element is treated as income but is actually likely to include some dissaving from asset W2.6, reconciliation with wealth stock data are made in element KO3.
I2.1.6	*Regular payments from private pension funds*		I4.2	W2.7.2	KO3	Includes annuities purchased with lump-sum payments from private pension schemes. As this element is treated as income but is actually likely to include some dissaving from asset W2.7.2, reconciliation with wealth stock data are made in element KO3.
I2.1.7	*Income from other financial assets, net of expenses*	Part of gross value may be included in E1.3		W2.8		Includes income from loans made to other households. May include goods and services received in barter transactions The gross value of consumption goods and services received is included in E1.3 – see Subsection 7.2.2 (Income in kind).

Table A.1. **Elements of the Framework and relationships between them** *(cont.)*

Part 1: Income

Code	Element	Equivalent element	Complementary element	Associated wealth element	Element with other commonality	Comment
I2.2	Rent from real estate other than owner-occupied dwellings, net of expenses	Part of gross value may be included in E1.3	I1.2.1 I1.2.2	W1.2 W3.2		May include goods and services received in barter transactions.[1] For example, a landlord may receive as rent a proportion of the agricultural output of a tenant farmer (sharefarmer). The gross value of consumption goods and services received is included in E1.3 – see Subsection 7.2.2 (Income in kind).
I2.3	Royalties and other income from other non-financial assets, net of expenses	Part of gross value may be included in E1.3	I1.2.1 I1.2.2	W1.5 W3.3.3		May include goods and services received in barter transactions.[1] The gross value of consumption goods and services received is included in E1.3 – see Subsection 7.2.2 (Income in kind).
I3	**Income from household production of services for own consumption**					
I3.1	Net value of housing services provided by owner-occupied dwellings	Gross value = E1.5.1		W1.1 W3.1		
I3.2	Value of unpaid domestic services	= E1.5.2				
I3.3	Net value of services from household consumer durables	Gross value = E1.5.3		W1.3 W3.4		
IP	**Primary income**	I1 + I2 + I3				
I4	**Current transfers received, excluding STIK**					
I4.1	Pensions and other cash benefits from social security		I5.1 KR2			In-kind benefits are STIK, recorded at I5.1.
I4.2	Pensions and other benefits from employment-related social insurance	Part of E1.7 is part of I4.2TI	I1.1.1 I2.1.6 KR3	W2.7.1	I1.1.10 E2.3 KO3	Includes payments from annuities purchased with lump-sum payments from employment-related social insurance. Includes any benefits in kind, which are also included at E1.7 The definition of social insurance should be identical to that used at I1.1.10 and E2.3. As this element is treated as income but is actually likely to include some dissaving from asset W2.7.1, reconciliation with wealth stock data are made in element KO3.
I4.3	Social assistance benefits in cash from govt.		I5.1 KR4			In-kind benefits are STIK, recorded at I5.1.
I4.3.1	*Universal social assistance benefits in cash from govt.*					
I4.3.2	*Means-tested social assistance benefits in cash from govt.*					
I4.4	Current transfers received from other households		KR6			
I4.4.1	*Current transfers in cash received from other households*				E2.4.1	The definition of inter-household transfers should be the same as used at E2.4.1.
I4.4.2	*Current transfers in kind received from other households*	E1.6			E2.4.2	Excludes value of voluntary labour received from other households. The definition of inter-household transfers should be the same as used at E2.4.2.
I4.5	Current transfers in cash received from non-profit organisations		KR7			

Table A.1. **Elements of the Framework and relationships between them** *(cont.)*

Part 1: Income

Code	Element	Equivalent element	Complementary element	Associated wealth element	Element with other commonality	Comment
I4.6	Other current transfers received, excluding STIK	Part of E1.7 is part of I4.6	KR8 E1.1.2			Includes current transfers from corporate entities that do not qualify as negative consumption expenditure. Includes current transfers from inheritances and trust funds.
IT	**Total income**	IP + I4				Total income excludes STIK.
ID	**Disposable income**	IT – E2				Total income *less* total expenditure.
I5	**Social transfers in kind (STIK)**					
I5.1	Social transfers in kind from government	E4.1	I4.1 I4.3 KR4			
I5.2	Social transfers in kind from non-profit organisations	E4.2	KR7			
IAD	**Adjusted disposable income**	ID + I5				Disposable income *plus* STIK.

Note: Element I1.2.2, Goods and services produced for barter, less cost of inputs, primarily refers to income from barter activity undertaken in economic sectors where barter activity is common and may be at least as important as cash transactions. Barter income may also be received and recorded in the accounts of an unincorporated enterprise, or it may be received as property income. For example, share farmers often provide their landlords with a proportion of their agricultural production. If barter income is included in the accounts of an unincorporated enterprise or constitutes property income, the barter income is included as part of element I1.2.1, I2.1.3, I2.1.7, I2.2 or I2.3, as appropriate.

Table A.1. **Elements of the Framework and relationships between them** *(cont.)*

Part 2: Consumption and other expenditure

Code	Element	Equivalent element	Complementary element	Associated wealth element	Element with other commonality	Comment
E1	**Consumption expenditure**					
E1.1	Direct monetary purchases in the market		I1.1.8			Includes the value of any employee contribution to subsidised consumption goods and services received from employers at I1.1.8.
E1.1.1	*Gross value of direct monetary purchases in the market*					
E1.1.2	*Less Value of negative consumption expenditure items*		I4.6 KR8			
E1.2	Free or subsidised consumption goods and services from employers (value of subsidy only for subsidised items)	Part of I1.1.8				All services received as part of I1.1.8 are included here, but goods are only included if they are not of a capital nature (e.g. exclude consumer durables).
E1.3	Consumption goods and services received from bartering	Net value included in I1.2.1, I1.2.2, I2				Goods and services received as barter income in I1.2.1, I1.2.2, I2.1.3, I2.1.7, I2.2 and I2.3 are included here if they are not of a capital nature (e.g. exclude consumer durables) or are not used as intermediate inputs to own account production.
E1.4	Consumption goods produced for own use	Net value = Part I1.2.3				Included here is the value of goods withdrawn from the inventories of own unincorporated businesses. Goods from I1.2.3 are only included if they are not of a capital nature (e.g. exclude value of building and construction work done).
E1.5	Services produced for own consumption					
E1.5.1	*Gross value of housing services provided by owner-occupied dwellings*	Net value = I3.1		W1.1		
E1.5.2	*Value of unpaid domestic services*	I3.2				
E1.5.3	*Gross value of services from household consumer durables*	Net value = I3.3		W1.3		
E1.6	Current transfers in kind received from other households	I4.4.2				Excludes value of voluntary labour received.
E1.7	Other current transfers in kind received, excluding STIK	Part of I4.2 Part of I4.6				Comprises any in kind receipts recorded as part of I4.2 and I4.6.
E2	**Current transfers paid**					
E2.1	Direct taxes, net of refunds					
E2.2	Compulsory fees and fines					
E2.3	Employee and employers' social insurance contributions	I1.1.10 is part of E2.3		W2.7.1	I4.2 KO3	Comprises employee and employers' contributions to social insurance schemes. Employers' contributions are included in income from employment at I1.1.10. Benefits from social insurance schemes are included in current transfers received at I4.2, and the definition of social insurance should be identical in the two elements Contributions to employment-related pension schemes are included in W2.7.1, Social insurance pension scheme entitlements and are also reflected in the wealth adjustment KO3.
E2.4	Current transfers paid to other households		KP3			

Table A.1. **Elements of the Framework and relationships between them** *(cont.)*

Part 2: Consumption and other expenditure

Code	Element	Equivalent element	Complementary element	Associated wealth element	Element with other commonality	Comment
E2.4.1	*Current transfers in cash paid to other households*				I4.4.1	The definition of inter-household transfers should be the same as used at I4.4.1.
E2.4.2	*Current transfers in kind paid to other households*				I4.4.2	Excludes value of voluntary labour provided to other households. The definition of inter-household transfers should be the same as used at I4.4.2.
E2.5	Current transfers paid to non-profit organisations		KP4			
E2.5.1	*Current transfers in cash paid to non-profit organisations*					
E2.5.2	*Current transfers in kind paid to non-profit organisations*					Excludes value of voluntary labour provided to non-profit organisations.
E2.6	Other current transfers paid		KP5			
E3	**Interest paid on consumer credit**			W3.5		
ENC	**Non-consumption expenditure**	E2 + E3				Current transfers paid *plus* interest paid on consumer credit.
ET	**Total expenditure**	E1 + ENC				Consumption expenditure *plus* non-consumption expenditure.
E4	**Social transfers in kind (STIK)**					
E4.1	Social transfers in kind from government	I5.1				
E4.2	Social transfers in kind from non-profit organisations	I5.2				
EAFC	**Actual final consumption**	E1 + E4				Consumption expenditure *plus* STIK.

Table A.1. **Elements of the Framework and relationships between them** *(cont.)*

Part 3: Change in net worth

Code	Element	Equivalent element	Complementary element	Associated wealth element	Element with other commonality	Comment
KS	**Saving**	IT – ET				Total income *less* total expenditure.
KR	**Capital transfers received**					
KR1	Lump-sum retirement payments and other capital transfers from employers		I1.1.9			Severance and termination pay is included at I1.1.9.
KR2	Lump-sum benefits from social security		I4.1			
KR3	Lump-sum benefits from employment-based social insurance		I4.2			
KR4	Other capital transfers received from government		I4.3 I5.1			
KR5	Lump-sum inheritances				KP1	
KR6	Capital transfers received from other households		I4.4			
KR7	Capital transfers received from non-profit organisations		I4.5 I5.2			
KR8	Other capital transfers received		I4.6 E1.1.2			Includes capital transfers from corporate entities that do not qualify as negative consumption expenditure.
KP	**Capital transfers paid**					
KP1	Taxes on inheritances				KR5	
KP2	Irregular taxes on wealth, including taxes on holding gains and losses					
KP3	Capital transfers paid to other households		E2.4			
KP4	Capital transfers paid to non-profit organisations		E2.5			
KP5	Other capital transfers paid		E2.6			
KNA	**Net accumulation of capital**	KS + KR – KP				Saving *plus* capital transfers received *less* capital transfers paid.
KO	**Other flows contributing to changes in net worth**					
KO1	Other changes in volume of wealth			W1, W2, W3		Comprises volume changes that are not recorded as part of the net accumulation of capital.
KO2	Holding gains and losses			W1, W2, W3		Comprises changes in value associated with asset price changes.
KO3	Adjustment to pension, annuity and life insurance entitlements				I2.1.5 I2.1.6 I4.2 E2.3	For an explanation see section 3.7.2 in Chapter 3.
KCW	**Change in net worth**	KNA + KO				Net accumulation of capital *plus* other flows contributing to changes in net worth.

Table A.1. **Elements of the Framework and relationships between them** *(cont.)*

Part 4: Stock of net worth

Code	Element	Equivalent element	Complementary element	Associated flow element	Element with other commonality	Comment
W1	**Non-financial assets**			KO1 KO2		Excludes non-financial assets that are wholly used in own unincorporated enterprise. Many non-financial assets are subject to other volume changes and holding gains or losses recorded at KO1 and KO2.
W1.1	Owner-occupied dwellings			I3.1 E1.5.1		
W1.1.1	*Principal residence*				W3.1.1	
W1.1.2	*Other owner-occupied dwellings*				W3.1.2	Includes secondary dwellings occupied by household, such as city dwelling occupied by some household members during working week.
W1.2	Other real estate		W2.3	I2.2	W3.2	Excludes real estate that is an integral part of own unincorporated enterprise, W2.3.
W1.3	Consumer durables		W2.3	I3.3 E1.5.3		Durables used for generating rental income are to be included as part of equity in own unincorporated enterprise, W2.3.
W1.3.1	*Vehicles*				W3.4.1	
W1.3.2	*Other consumer durables*				W3.4.2	
W1.4	Valuables				W3.3.2	
W1.5	Intellectual property and other non-financial assets		W2.3	I2.3	W3.3.3	Excludes intellectual property that is an integral part of own unincorporated enterprise, W2.3.
W2	**Financial assets**			KO1 KO2	W3.3.1	Some financial assets are subject to other volume changes and holding gains or losses recorded at KO1 and KO2.
W2.1	Currency and deposits			I2.1.1		
W2.2	Bonds and other debt securities			I2.1.2		
W2.3	Equity in own unincorporated enterprises		W1.2 W1.5 W2.4 W3.3	I1.2		Net equity of household members in unincorporated enterprises which they own (or partly own) and also work. Net equity of household members as "sleeping" partners in unincorporated enterprises is included in W2.4.2, Other equity. Negative equity should be recorded here as a negative asset.
W2.4	Shares and other equity		W2.3	I2.1.3	I1.1.5	Negative equity should be recorded here as a negative asset.
W2.4.1	*Shares in corporations*					
W2.4.2	*Other equity*					Includes, for example, equity of household members in family trusts, and in partnerships in which the members have invested but do not work (that is, they are "sleeping" or "silent" partners).
W2.5	Mutual funds and other investment funds			I2.1.4		Negative equity should be recorded here as a negative asset.
W2.6	Life insurance funds		W2.7	I2.1.5 KO3		Includes annuities not purchased with lump-sum payments rolled over from pension funds.
W2.7	Pension funds					

Table A.1. **Elements of the Framework and relationships between them** *(cont)*

Part 4: Stock of net worth

Code	Element	Equivalent element	Complementary element	Associated flow element	Element with other commonality	Comment
W2.7.1	*Social insurance pension funds*		W2.6	I4.2 KO3		Only includes employment-related social insurance pension funds, not social security pension funds. Includes annuities purchased with lump-sum payments rolled over from social insurance pension funds, regardless of the financial institution in which the annuity is held.
W2.7.2	*Private pension funds*		W2.6	I2.1.6 KO3		Includes annuities purchased with lump-sum payments rolled over from private pension funds, regardless of the financial institution in which the annuity is held.
W2.8	Other financial assets			I2.1.7	I1.1.5	Includes loans made to other households. Includes value of stock options held. Includes value of financial derivatives, including negative values.
W3	**Liabilities**		W2.3	KO1 KO2		Excludes business debts of own unincorporated enterprise. Some liabilities may be subject to other volume changes and holding gains or losses recorded at KO1 and KO2.
W3.1	Owner-occupied residence loans			I3.1		Interest paid on these loans is a cost subtracted when deriving income element I3.1.
W3.1.1	*Principal residence loans*				W1.1.1	
W3.1.2	*Other owner-occupied residence loans*				W1.1.2	
W3.2	Other real estate loans			I2.2	W1.2	Interest paid on these loans is a cost subtracted when deriving income element I2.2.
W3.3	Other investment loans					
W3.3.1	*Financial asset loans*			I2.1	W2 (excl. W2.3)	Includes loans for all financial assets except own unincorporated enterprises – these will primarily be for investment in shares and other equity (W2.4) but may include some other elements of W2 as well. Interest paid on these loans is a cost subtracted when deriving the corresponding income element I2.1.3 and other relevant property income elements in I2.1.
W3.3.2	*Valuables loans*				W1.4	
W3.3.3	*Intellectual property and other non-financial assets*			I2.3	W1.5	
W3.4	Consumer durable loans			I3.3		Interest paid on these loans is a cost subtracted when deriving income element I3.3.
W3.4.1	*Vehicle loans*				W1.3.1	

Table A.1. **Elements of the Framework and relationships between them** *(cont.)*

Part 4: Stock of net worth

Code	Element	Equivalent element	Complementary element	Associated flow element	Element with other commonality	Comment
W3.4.2	*Other consumer durable loans*				W1.3.2	
W3.5	Consumer credit loans and other liabilities			E3		Interest paid on these loans is expenditure element E3.
W3.5.1	*Education loans*					
W3.5.2	*Other loans and liabilities*					E.g. includes credit card debt not included elsewhere and loans taken to finance capital transfers to other households.
WT	**Total wealth (net worth)**	W1 + W2 – W3				Non-financial assets *plus* financial assets *less* liabilities.

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ANNEX B

Comparison of micro and macro frameworks

The main framework developed for analysis of income at the macro level is the System of National Accounts (SNA). Chapter 3 explained that the micro and macro frameworks used to compile household income, consumption and wealth statistics have the same broad underlying concepts, but that there are differences reflecting the different purposes of the two types of data and the data sources used to compile them. Table B.1 provides a detailed element by element comparison of the definitions embodied in this Framework and those of the SNA.

There may also be differences between micro and macro data sets because of differences in the population in scope of the data sets. National accounting estimates cover all people that are part of that economy. Household surveys are often restricted in scope to private households living in housing units, as described in Chapter 7.

In principle, both macro and micro data are compiled on an accrual basis. However, data collected from households are likely to be on a cash basis for most elements. For elements where there may be a significant difference between an accrual basis and a cash basis, such as income tax payments, it may be appropriate to model the element rather than rely on data reported by households. The issue is discussed in Chapter 3. The difference between micro and macro data due to the accounting basis underlying the data are likely to vary depending on country accounting practices and the extent to which steps are taken to ensure that the micro data are estimated on an accrual basis through the use of modelling.

Table B.1. **Comparison of micro and macro framework elements**

Part 1: Income

ICW Framework		SNA 2008		Comment
Code	Element	Code	Element	
I1	**Income from employment**			
I1.1	Employee income			
I1.1.1	*Cash wages and salaries*	D11	Wages and salaries	Wages and salaries paid while employee is on sick, injury or maternity leave are included in I1.1.1 in the ICW Framework and in D6222, Other social insurance non-pension benefits, in SNA.
I1.1.2	*Cash commission and piece-work payments*	D6222 (part)	Other social insurance non-pension benefits (part)	
I1.1.3	*Cash tips and gratuities*			
I1.1.4	*Directors' fees*			
I1.1.5	*Shares offered as part of employee remuneration*			
I1.1.6	*Profit-sharing bonuses and other forms of profit-related pay*			
I1.1.7	*Other cash bonuses*			
I1.1.8	*Free or subsidised goods and services from employers*			
I1.1.9	*Severance and termination pay*	D6222 (part)	Other social insurance non-pension benefits (part)	
I1.1.10	*Employers' social insurance contributions*	D121	Employers' actual social contributions	
		D122	Employers' imputed social contributions	SNA element comprises imputed amounts to reflect the insurance premium equivalent that would be required to provide cover for the social benefits provided directly by employer, such as wages and salaries and other benefits while employee is on sick, injury or maternity leave severance and termination pay pension entitlements from defined-benefit schemes not met by actual social insurance contributions paid Employees are unlikely to be able to report such contributions in household surveys, and they are *excluded* from the ICW Framework.
I1.2	Income from self-employment	B3n D422 (part)	Net mixed income (part) Withdrawals from income of quasi-corporations (part)	In SNA, these elements include income of "sleeping" or "silent" partners, which the ICW Framework includes in I2.1.3 In SNA, element B3n, Net mixed income, includes income from renting non-dwelling buildings and structures, which the ICW Framework includes in I2.2 royalties and other intellectual property income, which the ICW Framework includes in I2.3 SNA elements *exclude*interest earned as part of unincorporated business operations and interest paid on business loans – they are included separately as part of D41, Interest received or Interest paid (but associated FISIM charges are included here as input costs) rent earned from land or other natural resources as part of unincorporated business operations or rent paid on land or other natural resources used for business – they are included separately as part of D45, Rent received or Rent paid The depreciation allowances deducted when deriving business profit or loss for the ICW Framework are likely to be the allowances allowed under relevant tax and accounting rules, based on historic cost. They may not reflect the actual rate at which fixed capital is used up in the production process. Consumption of fixed capital is the corresponding item in the SNA, but it is based on current replacement cost, not historic cost, and it is based on estimates of actual rates of capital consumption.

Table B.1. **Comparison of micro and macro framework elements** *(cont.)*

Part 1: Income

ICW Framework		SNA 2008		Comment
Code	Element	Code	Element	
I2	**Property income**			SNA *does not deduct* any expenses when deriving property income elements outlined below. Any interest paid on associated investment loans are included separately as D41, Interest paid. Any other expenses (including FISIM) are included in P31, Individual consumption expenditure.
I2.1	Income from financial assets			
I2.1.1	*Interest from deposits, net of expenses*	D41 (part)	Interest received (part)	SNA element *includes* FISIM, which is *excluded* from the ICW Framework.
I2.1.2	*Income from bonds and other debt securities, net of expenses*			
I2.1.3	*Income from shares and other equity, net of expenses*	D421 B3n (part) D422 (part)	Dividends Net mixed income (part) Withdrawals from income of quasi-corporations (part)	In SNA, income from unincorporated enterprises in which household members are only "sleeping" or "silent" partners is included in B3n, Net mixed income, or D422, Withdrawals from income of quasi-corporations.
I2.1.4	*Income from mutual funds and other investment funds, net of expenses*	D443	Investment income attributable to collective investment funds shareholders	SNA element *includes* investment earnings made by the funds but not distributed as payments to shareholders, which is *excluded* from the ICW Framework.
I2.1.5	*Annuity and other regular payments from life insurance funds*	D441	Investment income attributable to insurance policy holders	Non-life insurance SNA element *includes* investment income attributable to holders of non-life insurance policies. Such income is not directly observed by households and is *excluded* from the ICW Framework. Life insurance (includes private pension funds) SNA element *includes* investment earnings received on invested life insurance funds but not immediately distributed to life insurance and pension scheme participants. In the SNA these become saving by households and additions to households' equity in the schemes. In the ICW Framework, this income is included in element K03, Adjustments to life insurance, annuity and private pension entitlements. ICW Framework element *includes* payments that are in reality a run-down of equity in the insurance scheme. In recognition of this, the payments are included as a negative contribution to the ICW Framework element K03, Adjustments to life insurance, annuity and private pension entitlements.
I2.1.6	*Regular payments from private pension funds*			
I2.1.7	*Income from other financial assets, net of expenses*	D41 (part)	Interest received (part)	
I2.2	Rent from real estate other than owner-occupied dwellings, net of expenses	D45 (part) B3n (part) B2n (part)	Rent (part) Net mixed income (part) Net operating surplus (part)	In the SNA: income from renting land is included in D45, Rent – this SNA element also include income from giving access to other natural resources such as minerals, and that income is included in element I2.3 in the ICW Framework income from renting non-dwelling buildings and structures is called rentals, not rent; it is not regarded as property income and is included in B3n, Net mixed income income from renting dwellings is included in B2n, Net operating surplus – income from owner-occupied dwellings is the only other component of B2n for the household sector, and that income is included in element I3.1 in the ICW Framework. interest paid on loans associated with the ownership of these assets is not included here as a cost (but associated FISIM charges are), but is recorded at SNA element D41, Interest paid. In the ICW Framework, depreciation deductions are based on tax and accounting rules and historic costs, whereas in SNA consumption of fixed capital is based on current values and actual rates of fixed capital usage.

Table B.1. **Comparison of micro and macro framework elements** *(cont.)*

Part 1: Income

ICW Framework		SNA 2008		Comment
Code	Element	Code	Element	
I2.3	Royalties and other income from other non-financial assets, net of expenses	D45 (part) B3n (part)	Rent (part) Net mixed income	In the SNA, income from giving access to natural resources, such as mineral royalties, is included in element D45, Rent. Other income included in this ICW Framework element, including royalties for use of intellectual property, is not regarded as property income in the SNA, and is included in SNA element B3n, Net mixed income.
		D43	Reinvested earnings on foreign direct investment	*Excluded from the ICW Framework*
		D442	Investment income payable on pension entitlements	Only relates to employment-related social insurance pension entitlements, and is *excluded from the ICW Framework*.
I3	**Income from household production of services for own consumption**			
I3.1	Net value of housing services provided by owner-occupied dwellings	B2n (part)	Net operating surplus (part)	SNA element *excludes from input costs* interest on loans taken to finance the purchase of owner-occupied dwellings (but associated FISIM charges are included here). Interest payments are included in SNA element D41, Interest paid. Note that, for the household sector, SNA element B2n, Net operating surplus, only comprises net income from dwellings (both owner-occupied and rented).
I3.2	Value of unpaid domestic services			*Excluded from SNA*
I3.3	Net value of services from household durables			*Excluded from SNA*
I4	**Current transfers received, excluding STIK**			SNA treats all social transfers as current and tends to treat any transfer as current if the disposal or acquisition of an asset (excluding cash) is not involved. The ICW Framework treats transfers of cash as capital if they are large and irregular, regardless of whether the sale or purchase of an asset is involved.
I4.1	Pensions and other cash benefits from social security	D621	Social security benefits in cash	
I4.2	Pensions and other benefits from employment-related social insurance	D622	Other social insurance benefits	SNA element *includes* wages and salaries paid by employer while employee is on sick, injury or maternity leave and severance, and termination pay. The ICW Framework includes these as part of income from employment (ICW Framework elements I1.1.1 and I1.1.9, respectively).
I4.3	Social assistance benefits in cash from govt.	D623 (part)	Social assistance benefits in cash (part)	
I4.4	Current transfers received from other households	D752	Current transfers between households	SNA *includes* winnings from lotteries and gambling , which the ICW Framework includes them as part of negative consumption expenditure (E1.1.2) or other capital transfers received (KR8).
I4.5	Current transfers in cash received from non-profit organisations	D623 (part)	Social assistance benefits in cash (part)	
I4.6	Other current transfers received, excluding STIK	D759	Other miscellaneous current transfers	
		D721	Non-life direct insurance claims	The ICW Framework does not treat non-life insurance claims as current transfers received. It includes term insurance claims as part of other capital transfers received (ICW Framework element KR8) and accident insurance claims as part of negative consumption expenditure (ICW Framework element E1.1.2) or input costs to income elements I1.2, I2.2, I3.1 andI3.3.

Table B.1. **Comparison of micro and macro framework elements** *(cont.)*

Part 1: Income

ICW Framework		SNA 2008		Comment
Code	Element	Code	Element	
I5	**Social transfers in kind (STIK)**	D63	Social transfers in kind	
		D8	Adjustment for the change in pension entitlements	The adjustment is required in the SNA because some social security and all employment-related social insurance pension entitlements are treated as financial assets. However, contributions to the schemes are treated as transfers paid, not saving, and payments of pensions are treated as income, not dissaving. Therefore this element records the net difference, less associated service charges. The adjustment is added to disposable income when saving is derived. The ICW Framework does not need this adjustment because social insurance pension entitlements are not treated as financial assets.

Note: Financial intermediation services indirectly measured (FISIM) is included in the SNA but not the ICW Framework. FISIM is the charge to borrowers and lenders imputed to have been made by financial intermediaries for managing loans and deposits. In the SNA, interest payments made by households do not include this imputed component, and are therefore smaller than the corresponding ICW Framework elements. Conversely, the SNA elements of interest income received by households have the imputed component added to them, and are therefore higher than the corresponding elements in the ICW Framework. In the SNA, FISIM imputed with respect to business loans or business income is an input cost of self-employment income; FISIM imputed with respect to mortgages on owner-occupied dwellings is an input cost of the ownership of owner-occupied dwellings; and FISIM with respect to investment loans, consumer loans and property income are all treated as consumption expenditure.

Table B.1. **Comparison of micro and macro framework elements** *(cont.)*

Part 2: Consumption and other expenditure

ICW Framework		SNA		Comment
Code	Element	Code	Element	
E1	**Consumption expenditure**	P31	Individual consumption expenditure	SNA *includes* Purchase of durables, which the ICW Framework treats as purchases of assets. Cost of the repair, maintenance and insurance of durables, which the ICW Framework treats as input costs to income element I3.3, Net value of services from household durables. (See below for the different treatment of accident insurance in the ICW Framework and SNA.) FISIM charges on loans and deposits (excluding loans and deposits of unincorporated enterprises and loans for owner-occupied and rented dwellings, since they are input costs), which are *excluded* from the ICW Framework. Implicit service charges made by financial institutions operating employment-related pension funds, mutual funds and other investment funds, and non-life insurance funds, all of which are *excluded* from the ICW Framework Implicit service charges made by financial institutions operating pension funds, life insurance funds and annuities, which contribute to element K03, Adjustments to pension, annuity and life insurance entitlements SNA *excludes*Value of unpaid domestic services Gross value of services from household durables SNA consumption expenditure on term insurance and accident insurance only includes the implicit service charges deducted by the operating financial institution from premiums, whereas the ICW Framework includes the total cash premiums paid. In the SNA, premiums include both actual cash paid by policy holders and imputed amounts equal to the investment earnings of the insurance company using policy holder funds, as included in D441, Investment income attributable to insurance policy holders. The remainder of the premium payments (that is, after deduction of service charges) are included in the SNA as current transfers paid D711, Net non-life direct insurance premiums. Similarly, benefits received are included in the SNA as current transfers received D721, Non-life direct insurance claims. In the ICW Framework benefits from term insurance are included as capital transfers received (KR8) and benefits from accident insurance are included in this as negative consumption expenditure (E1.1.2) SNA consumption expenditure on gambling only includes the service charge component imputed to have been taken by the promoter. Winnings are treated as transfers paid by households with a corresponding value of transfers received by households. In the ICW Framework, all payments on gambling are treated as consumption expenditure with winnings as either negative consumption expenditure (E1.1.2) or capital transfers received (KR8).
E2	**Current transfers paid**			
E2.1	Direct taxes, net of refunds	D5	Current taxes on income, wealth, etc.	SNA element *excludes* fines imposed by courts or quasi-judicial bodies – they are included in SNA element D759, Other miscellaneous current transfers. SNA element *includes* taxes on holding gains (capital gains taxes) – in the ICW Framework they are included in KP2, Irregular taxes on wealth, including taxes on holding gains.
E2.2	Compulsory fees and fines			
E2.3	Employee and employers' social insurance contributions	D611 D613	Employers' actual social contributions Households' actual social contributions	SNA element D611 is equal to SNA income element D121, Employers' actual social contributions.

Table B.1. **Comparison of micro and macro framework elements** *(cont.)*

Part 2: Consumption and other expenditure

ICW Framework		SNA		Comment
Code	Element	Code	Element	
		D612	Employers' imputed social contributions	Equal to SNA income element D122, Employers' imputed social contributions. These contributions are imputed when employers incur a social insurance liability but do not make contributions to a separate fund. Therefore employees are unlikely to be able to report such contributions in household surveys, and they are *excluded* from the ICW Framework.
		D6141	Households' pension contributions supplements	Equal to SNA income element D442, Investment income payable on pension entitlements, and *excluded* from the ICW Framework.
		D6142	Households' non-pension contributions supplements	Part of SNA income element D441, Investment income attributable to insurance policy holders, and *excluded* from the ICW Framework.
		D711	Net non-life direct insurance premiums	Equal to insurance premiums actually paid, plus part of SNA income element D441, Investment income attributable to insurance policy holders, less service charges payable to the insurance corporations. Premiums actually paid are included in element E1, Consumption expenditure, while the remainder of this element is *excluded* from the ICW Framework.
E2.4	Current transfers paid to other households	D752	Current transfers between households	SNA element *includes* payments for lotteries and gambling minus the service charge of operators, which the ICW Framework includes as part of consumption expenditure (E1).
E2.5	Current transfers paid to non-profit organisations	D751	Current transfers to NPISHs (non-profit institutions serving households)	SNA element *excludes* transfers to non-profit institutions not serving households – they are included in D759, Other miscellaneous current transfers. Large transfers of cash that are included in current transfers in SNA may be regarded as capital transfers in the ICW Framework.
E2.6	Other current transfers paid	D759	Other miscellaneous current transfers	SNA element *includes* Fines imposed by courts or quasi-judicial bodies, which the ICW Framework includes in element E2.2, Compulsory fees and fines Current transfers paid to non-profit institutions not serving households, which the ICW Framework includes in E2.5, Current transfers paid to non-profit organisations.
E3	**Interest paid on consumer credit**	D41 (part)	Interest paid (part)	SNA element *includes* interest paid on non-consumer credit, which the ICW Framework includes with input costs to be subtracted from the income earned from the assets associated with the loans concerned. SNA element *excludes* FISIM component of interest paid – it is included as part of P31, Individual consumption expenditure.
E4	**Social transfers in kind (STIK)**	D63	Social transfers in kind	

Table B.1. **Comparison of micro and macro framework elements** *(cont.)*

Part 3. Change in net worth

ICW Framework		SNA		Comment
Code	Element	Code	Element	
KS	**Saving**	B8n	Net saving	Differences between the SNA and the ICW Framework reflect the net differences embodied in the respective measures of income and expenditure described above. Note that SNA element D8, Adjustment to the change in pension entitlements is added to income before expenditure is subtracted to derive saving. The ICW Framework has a somewhat different adjustment to pension entitlements, which is included as element KO3 in Other flows contributing to changes in net work.
KR	**Capital transfers received**			
KR1	Lump-sum retirement payments and other capital transfers from employers	D99r	Other capital transfers receivable	SNA element *excludes* some transfers included by the ICW Framework – SNA treats all social transfers as current (SNA para. 10.202) and tends to treat any transfer as current if the disposal or acquisition of an asset (excluding cash) is not involved. The ICW Framework treats transfers of cash as capital if they are large and irregular, regardless of whether the sale or purchase of an asset is involved.
KR2	Lump-sum benefits from social security			
KR3	Lump-sum benefits from social insurance			
KR4	Other capital transfers received from government			
KR5	Lump-sum inheritances			
KR6	Capital transfers received from other households			
KR7	Capital transfers received from non-profit organisations			
KR8	Other capital transfers received			
KP	**Capital transfers paid**			
KP1	Taxes on inheritances	D91p	Capital taxes payable	SNA *excludes* taxes on holding gains (capital gains taxes) – they are included in SNA item D5, Current taxes on income and wealth.
KP2	Irregular taxes on wealth, including taxes on holding gains (capital gains taxes)			
KP3	Capital transfers paid to other households	D99p	Other capital transfers payable	SNA element *excludes* some transfers included by the ICW Framework – SNA tends to treat any transfer as current if the disposal or acquisition of an asset (excluding cash) is not involved. The ICW Framework treats transfers of cash as capital if they are large and irregular, regardless of whether the sale or purchase of an asset is involved.
KP4	Capital transfers paid to non-profit organisations			
KP5	Other capital transfers paid			
KO	**Other flows contributing to changes in net worth**			
KO1	Other changes in volume of wealth	B102	Changes in net worth due to other changes in volume of assets	Differences between the ICW Framework and SNA for this element will reflect the differences between the ICW Framework and SNA definitions of wealth, as described below.
KO2	Holding gains and losses	B103	Changes in net worth due to nominal holding gains/losses	Differences between the ICW Framework and SNA for this element will reflect the differences between the ICW Framework and SNA definitions of wealth, as described below.
KO3	Adjustment to pension, annuity and life insurance entitlements			See section 3.7.2 of Chapter 3 for an explanation of this item. The SNA has a somewhat different adjustment for changes to pension entitlements, D8, which is a component of saving (B8n).

Table B.1. **Comparison of micro and macro framework elements** *(cont.)*

Part 4: Stock of net worth

ICW Framework		SNA		Comment
Code	Element	Code	Element	
W1	**Non-financial assets**			In the ICW Framework, non-financial assets wholly used by own unincorporated enterprises are included in element W2.3, Equity in own unincorporated enterprise.
W1.1	Owner-occupied dwellings	AN11 (part)	Fixed assets (part)	
W1.2	Other real estate	AN11 (part) AN21 (part)	Fixed assets (part) Natural resources (part)	
W1.3	Consumer durables			*Excluded from SNA*
W1.4	Valuables	AN13 (part)	Valuables (part)	
W1.5	Intellectual property and other non-financial assets	AN11 (part)	Fixed assets (part)	
W2	**Financial assets**			
W2.1	Cash and deposits	AF2(part)	Currency and deposits	
W2.2	Bonds and other debt securities	AF3(part)	Debt securities	
W2.3	Equity in own unincorporated enterprises	AN(part) AF(part)	Non-financial assets (part) Financial assets/liabilities (part)	In the SNA, the assets and liabilities of unincorporated enterprises (except for quasi-corporations) are not consolidated to a net equity basis, except for quasi-corporations. Furthermore, the SNA does not distinguish between household assets that are part of an unincorporated enterprise and those that are not, except that durables such as vehicles are included in fixed assets if they are used to generate income but are excluded if they are used for domestic purposes only.
W2.4	Shares and other equity (includes "silent" partner equity in unincorporated enterprises)	AF5	Equity and investment fund shares/ units	SNA element AF5 *includes* equity in quasi-corporations, which the ICW Framework does not separate from other equity in unincorporated enterprises. In the SNA, the assets and liabilities of unincorporated enterprises (except for quasi-corporations) are not consolidated to a net equity basis, except for quasi-corporations. Furthermore, the SNA does not distinguish between household assets that are part of an unincorporated enterprise and those that are not, except that durables such as vehicles are included in fixed assets if they are used to generate income but are excluded if they are used for domestic purposes only. If there is negative equity in these items, the SNA includes the negative value with liabilities, whereas the ICW Framework includes it here as negative asset.
W2.5	Mutual funds and other investment funds	AN(part) AF(part)	Non-financial assets, financial assets and liabilities (part relating to assets and liabilities of silent partners in unincorporated enterprises)	
W2.6	Life insurance funds	AF6	Insurance, pension and standardised guarantee schemes	SNA *includes* Non-life insurance technical reserves and provisions for calls under standardised guarantee schemes, which the ICW Framework *excludes*.
W2.7	Pension funds			

Table B.1. **Comparison of micro and macro framework elements** *(cont.)*

Part 4: Stock of net worth

ICW Framework		SNA		Comment
Code	Element	Code	Element	
W2.8	Other financial assets	AF4	Loans made	If financial derivatives have a negative value, the SNA includes the value with liabilities, whereas the ICW Framework includes it here as negative asset.
		AF7	Financial derivatives and employee stock options	
		AF8	Other accounts receivable	
W3	**Liabilities**			
W3.1	Owner-occupied residence loans	AF4 AF8	Loans taken Other accounts payable	In the ICW Framework (a) business loans and other liabilities of unincorporated enterprises in which household members work are netted out when deriving element W2.3, Equity in own unincorporated enterprise, and (b) business loans to finance investment in unincorporated enterprises in which household members do not work are included in W3.3.1, Financial asset loans.
W3.2	Other real estate loans			
W3.3	Other investment loans			
W3.4	Consumer durable loans			
W3.5	Consumer credit loans and other liabilities			

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ANNEX C

An explanation of social assistance, pension schemes, insurance schemes and similar concepts

There are overlaps and interrelationships between the terms social benefits, social assistance, social security, social insurance, pension schemes, annuities, life insurance, non-life insurance, accident insurance, term insurance and the like. The terms are not necessarily self-explanatory and are not always used consistently, especially when comparisons are made between countries with different institutional structures. The concepts underlying the terms are integral to some of the basic tools used by governments to assist those experiencing or likely to experience economic disadvantage, and by households to minimise their economic risks. It is essential to understand the concepts and employ a consistent terminology to describe them when undertaking micro analysis.

This Annex explains the terms as they are used in the ICW Framework. The terminology used is basically consistent with the SNA (2008), although there are differences in the way some elements are included in this framework compared to the way they are included in the SNA framework (see Annex B for a detailed comparison). In addition, the SNA does not explicitly acknowledge the existence of the private pension schemes described below, although by their characteristics they would be captured in the SNA definition of life insurance.

Social benefits: Social assistance, social security, social insurance, social transfers in kind

Social benefits are the payments made to households as part of social assistance, social security and other social insurance, or social transfers in kind. The payments are made "when certain events occur, or certain conditions exist, that may adversely affect the welfare of the households concerned either by imposing additional demands on their resources or reducing their incomes. Social benefits may be provided in cash or in kind" (SNA 17.79). The types of events or conditions leading to beneficiaries receiving social benefits include:

- responsibility for the support of dependants, such as children, spouses, elderly relatives or invalids;
- reduction in income as a result of not being able to work because of sickness, injury or birth of a child;
- non-employment due to involuntary unemployment or retirement (voluntary or compulsory);
- death of an income earner;

- need for medical or dental treatment;
- need for housing; and
- need for education.

Social benefits can be split into *pension social benefits* and *non-pension social benefits*. Pension benefits are primarily income support in retirement, but may also be provided to younger people with long-term disabilities that prevent them from working, to dependants of income earners who die, and to people in similar situations. Unemployment benefits are normally regarded as non-pension benefits. Pensions are discussed further in a later section.

Social benefits are not necessarily always provided when such events or conditions occur, and the eligibility for benefits varies according to the circumstances of the household concerned, the type of scheme under which the benefits are being provided, etc. For in-kind benefits, the benefit sometimes covers the full cost of a good or service being provided, but sometimes the household has to meet part of the costs. Sometimes an in-kind benefit is provided as a cash refund or partial refund of expenditure already undertaken by the household. However, such benefits are still regarded as in kind because they relate to the provision of specific goods or services.

The list of events and conditions leading to the provision of social benefits given above is not exhaustive, and benefits of the types listed are not available in all countries. The schemes providing social benefits also vary considerably between countries, both in title and in structure. In this Framework, the types of schemes providing social benefits are divided into: *i)* social assistance schemes; *ii)* social insurance schemes; and *iii)* social transfers in kind. Social insurance is further divided into social security schemes and employment-related social insurance.

Social assistance comprises social benefits provided in cash to the population at large, or segments of the population, under schemes funded by general government and without direct contributions to the scheme by, or on behalf of, potential beneficiaries. Benefits may be universally available, such as a pension paid to all the population over a certain age or to all people with a specific disability, such as blindness. More commonly, beneficiaries have to meet other conditions. In particular, benefits are often "means-tested", i.e. available only to people with income and assets below specified thresholds. There are likely to be additional conditions relevant to particular benefits. For example, unemployed people may be eligible for unemployment benefits only if they can show that they are actively seeking employment.

Social insurance comprises social benefits provided to participants in insurance schemes that meet at least one of the following conditions.

- "Participation in the scheme is obligatory either by law or under the terms and conditions of employment of an employee, or group of employees."
- "The scheme is a collective one operated for the benefit of a designated group of workers, whether employed or non-employed, participation being restricted to members of that group."
- "An employer makes a contribution (actual or imputed) to the scheme on behalf of an employee, whether or not the employee also makes a contribution" (SNA 17.88).

In contrast to social assistance, premiums or payments in some social insurance schemes are contributed directly into the scheme on behalf of participants. The

contributions are known as *social contributions*. They may be made by the participants themselves or they may be made by employers on their behalf. If the social contributions are made by employers, they are considered income in kind. There are a number of ways in which employers can make social insurance contributions, depending on the legal and institutional structures of the country in which the employer is operating:

- Payments may be made to general government.
- Payments may be made to a designated external fund administered by government, or to an insurance company or similar financial institution.
- Money may be set aside in a designated fund that the employer operates to finance its social insurance obligations.
- The employer may meet its social insurance obligations out of general corporate funds. In this case, the value of the social contribution is assumed to be equal to the amount that the employer would have to pay an insurance corporation to provide cover to meet the obligations concerned. Such imputations are unlikely to be made for individual employees, and employees are not able to report their value in household surveys.

A participant in a social insurance scheme may be covered by the different schemes for different types of benefits, and those schemes may not all operate in the same way. For example, an employer may pay contributions to the general government to provide for the employee's future retirement pension and to an insurance company to cover the employee's medical expenses, and it will probably finance some income support payments out of its general corporate funds.

The payments likely to be financed internally by the employer include pay while on short-term sick leave as well as termination and redundancy payments. In the SNA, employer obligations to meet future payments for current employees are imputed when no actual contributions are made. However, such an approach is not included in the ICW Framework; there are no social contributions included to cover the funding of these social benefits, nor are the benefits included with other social insurance benefits. Instead, wages and salaries paid from general employer funds – while an employee is on sick leave, disability leave or maternity leave – are included with regular wages and salaries, and termination and redundancy payments are included as a separate element of employment from income.

Social security schemes are social insurance schemes operated by general government. They may be operated on behalf of the whole population or on behalf of specific segments of the population. Employers may make social contributions to social security schemes, but the full responsibility for paying benefits lies with general government.

Social insurance other than social security is always tied to employment, and is known as *employment-related social insurance*. Schemes set up by governments to provide pensions or other social benefits to their own employees, including defence personnel, are normally employment-related social insurance, and are not regarded as social security.

In some social insurance schemes, a participant can choose to pay social contributions above the minimum required by the scheme in order to be eligible for greater benefits, e.g. to receive a higher retirement pension.

If social benefits from general government are paid in kind, they are regarded as *social transfers in kind* (STIK) rather than social assistance or social security. Consequently, social assistance benefits and social security benefits comprise cash payments only. STIK

includes benefits provided free of charge, and benefits for which the beneficiary initially makes payment but then receives a refund. If only part of the initial cost is paid for or refunded by government, then only the amount funded by government is regarded as STIK, while the remainder is consumption expenditure of the household. STIK also includes in-kind social benefits provided by non-profit organisations.

STIK includes goods and services provided by general government and non-profit organisations that are individually consumed by households, such as education, health care and housing, but excludes services that are consumed collectively, such as roads, law and order, and general government administration.

Accident insurance

Accident insurance is a means by which policy holders share the risk of the occurrence of certain prescribed events. The premiums paid contribute to a pool of funds from which benefits are paid to those policy holders who suffer from the prescribed events.

Accident insurance may relate to events that in principle could be included in social benefits but in practice are not. For example, the social benefits available in a country may not cover the health expenses of all people, or they may not cover some medical treatments (e.g. physiotherapy) or they may pay only a certain proportion of health expenses incurred. Private health insurance may, wholly or partly, cover the difference between the health expense incurred and the amount available to the policy holder as a social benefit.[1]

Term insurance

Term insurance provides a benefit if an insured person dies, or dies under certain specified conditions such as before reaching a given age, but provides few if any other benefits. It therefore is primarily a pooling of risk similar to accident insurance.

Insurance policies that provide a benefit if a person dies but are primarily vehicles for saving and investment are called life insurance policies, and are discussed in the next section.

Pensions, life insurance and annuities

Pension benefits may be received from social assistance pension schemes, social insurance pension schemes or private pension schemes. Pension schemes operate in a variety of ways.

Social assistance pension schemes are *non-contributory*. They are funded by general government, without direct contributions to the scheme by, or on behalf of, potential beneficiaries. The pension paid from a social assistance pension scheme is determined according to criteria set by government.

Social insurance pension schemes and private pension schemes are *contributory* schemes. They require contributions to be made by scheme participants and/or their employers. The required contributions may be a fixed amount or a percentage of wages and salaries received. In some schemes, participants may have the option to make higher contributions than the required minimum in order to receive additional pension benefits when they retire. They may make the additional contributions themselves, or they may negotiate with their employer to make higher contributions, perhaps in return for reduced cash income.

Contributory schemes can be defined-benefit schemes, defined-contribution schemes, or a hybrid of the two.

In a *defined-benefit scheme*, participants receive benefits determined primarily by criteria other than the value of the participant's contributions and accumulated investment earnings. The benefits are most likely to reflect the wage or salary level at retirement, and perhaps the length of time that the participant was in the scheme. There may be a minimum value. The benefit may be paid as a lump sum (e.g. defined as a multiple of final annual salary) or as regular pension payments. If there are regular pension payments, they would normally be paid at least until the death of the participant. After the death of the participant, payments may continue to be paid to a surviving spouse and any dependent children, perhaps at a reduced rate. Social security pension schemes are usually defined-benefit schemes, which provide ongoing regular pension payments.

In a *defined-contribution scheme*, the contributions are invested by the scheme manager. At retirement or some later date, the scheme participant receives a lump sum or lump sums that reflect the contributions made, plus the investments earnings made on the accumulated contributions plus other volume changes that the investments may experience, plus holding gains and losses, less the operating fees withdrawn by the scheme manager. Defined-contribution schemes are in essence saving and investment schemes, although they may also have some insurance elements added. For example, if a scheme participant becomes disabled or dies before reaching retirement age, there may be a benefit paid in addition to the return of the accumulated contributions and their investment earnings.

Private pension schemes are defined-contribution schemes that do not qualify as social insurance because they are not mandated by government and are not employment-related. Participants contribute to them entirely at their own discretion.

In this Framework (and in the SNA), *life insurance* refers to saving and investment schemes similar in many respects to defined-contribution pension schemes.[2] Contributions are usually paid into a life insurance policy on a regular basis, at least for a period of time after the policy is taken out. The policy matures when the person whose life is insured reaches a given age. The accumulated contributions and associated investment earnings, less operating fees, are returned as a benefit. There is also an insurance component that is paid if the insured person dies before the policy matures.

Private pension schemes and life insurance schemes can be attractive as vehicles for saving and investment because they often receive favourable tax treatment compared to other forms of investment. Favourable tax treatment is also likely to be an incentive for participants to contribute more than the required minimum to social insurance pension schemes. The favourable tax treatment given to such schemes reflects government objectives to increase the funds available to scheme participants and their dependants during retirement, thereby enhancing their economic well-being and lowering the likelihood that they will require support from, for example, social assistance pension schemes.

In line with these objectives, there may be restrictions on how lump sums available from pension schemes are utilised. The lump sums may not available until the scheme participant reaches a certain age, even if they retire at a younger age. On the other hand, after a participant has reached a certain age, it may be mandatory to withdraw at least a minimum amount from the fund each year. Such withdrawals may be regarded as pension

payments. In some cases, it is mandatory to convert the lump sum, or a large part of it, into an annuity.

An *annuity* is a means of converting a lump sum into a guaranteed stream of payments over time. An annuity is normally purchased from a financial institution such as a life insurance company. In return for the receipt of the lump sum, the issuing institution makes regular payments to the purchaser for a specified period of time. Commonly, the payments end when the purchaser dies, or when the purchaser and the purchaser's spouse have both died. Thus the length of time over which payments will have to be made is unknown at the start of the annuity, with the issuing institution bearing the associated risk.

In this Framework, annuities are classified according to the source of funding used to purchase them: an annuity purchased using a lump sum rolled over from an employment-based social insurance pension is treated as a social insurance pension entitlement (and included in item I4.2); an annuity purchased using a lump sum rolled over from a private pension scheme is treated as a private pension entitlement (included in item I2.1.16); while other annuities are grouped with life insurance entitlements (included in item I2.1.5).

Treatment in the Framework

While there are close similarities between some elements of social insurance schemes and private insurance and pension schemes, there are significant differences in how they are treated within this Framework.

Employers' contributions to social insurance are regarded as part of income from employment. However, those contributions and any additional contributions made by employees are all included in current transfers paid by households. Therefore that income is not regarded as part of the disposable income of households. On the other hand, household payments for private accident insurance and term insurance are treated as consumption expenditure and are therefore current payments from disposable income. Household contributions to private pension schemes or life insurance are regarded as saving from disposable income and as an addition to wealth. The purchase of an annuity is the purchase of a financial asset, and is therefore the exchange of one form of wealth for another.

There are corresponding differences in how benefits received from the various schemes are treated. Unless they are large and irregular payments, benefits from social assistance and social insurance are included as current transfers received, and contribute to disposable income.[3] Because of definitional and measurement difficulties, social transfers in kind (STIK) are not included in disposable income but are included in adjusted disposable income. Benefits in kind from employment-related social insurance are included in consumption expenditure, while STIK is included in actual final consumption. In contrast, benefits from accident insurance are treated as negative consumption expenditure that offsets the premiums paid for the insurance. Benefits from term insurance are capital transfers received. If received on a regular basis, payments from life insurance, annuities and private pension schemes are treated as property income, since they are usually regarded as income by the recipients.

Finally, wealth statistics in this Framework record the value of a household's claims on pension funds, annuities and life insurance. As explained in Chapter 3, these pensions, annuity and life insurance entitlements need a special adjustment to reconcile them with

the income and consumption measures of the Framework. Table C.1 summarises how payments to and receipts from social assistance, social insurance, private insurance and pension schemes are treated in the Framework.

Table C.1. **Treatment of Payments in the Framework**

Scheme	Payments to scheme	Receipts from scheme
Social assistance	Social assistance is funded by general government without direct contribution by households; payments are therefore excluded from the micro framework	Social assistance benefits in cash from government (I4.3) are included in current transfers received, and therefore part of disposable income. Social transfers in kind from government (I5.1) not received from a social security scheme are part of adjusted disposable income.
Social security	The part of employee and employers' social insurance contributions (E2.3) that is paid to a social insurance scheme operated as part of general government is an element of current transfers paid, and is subtracted from total income when deriving disposable income.	Pensions and other cash benefits from social security (I4.1) are included in current transfers received, and are part of disposable income. Social transfers in kind from government (I5.1) received from a social security scheme are part of adjusted disposable income. Lump-sum benefits from social security (KR2) are included in capital transfers received.
Employment-based social insurance and annuities purchased with lump sums rolled over from employment-based social insurance	The part of employee and employers' social insurance contributions (E2.3) that is paid to a social insurance scheme not operated as part of general government is an element of current transfers paid, and is subtracted from total income when deriving disposable income.	Even though entitlements in employment-based social insurance pension schemes and annuities are conceptually treated as assets in the Framework, pensions and other cash benefits from them (I4.3) are included in current transfers received, and are part of disposable income. Lump-sum benefits from employment-based social insurance (KR3) are included in capital transfers received, unless rolled over into an annuity.
Private pension schemes and annuities purchased with lump sums rolled over from private pension schemes	Contributions to private pension schemes are treated as a form of saving. The payments are not directly recorded within this Framework.	Even though entitlements in private pension schemes and annuities are conceptually treated as assets in the Framework, regular receipts from them are treated as income from Regular payments from private pension funds (I2.1.6).
Accident insurance	Premiums paid are part of gross value of direct monetary purchases in the market (E1.1.1) in Consumption expenditure.	Benefits received are part of negative consumption expenditure items (E1.1.2), which are subtracted from Consumption expenditure.
Term insurance	Premiums paid are part of gross value of direct monetary purchases in the market (E1.1.1) in Consumption expenditure.	Benefits received are part of Other capital transfers received (KR8).
Life insurance schemes and annuities not included with pension schemes	Payments to life insurance schemes are treated as a form of saving, while the purchase of annuities is financed from existing wealth. The payments are not directly recorded within this Framework.	While entitlements in life insurance and annuities are conceptually treated as assets in the Framework, regular receipts from them are treated as income from financial assets (Annuity and other regular payments from life insurance funds, I2.1.5).

The differences in treatment outlined above may have a significant impact on comparisons made between countries, or over time. Consider, for example, two countries that have equal coverage of health costs through insurance schemes. Assume that in one country most health care is covered by social insurance, but in the other country an equivalent amount of health care is provided through private insurance. Assume also that the social contribution or insurance premium costs are the same in both countries and that

the benefits are also the same. In the first country, the social contributions to the insurance scheme will be included in current transfers paid and therefore deducted from total income when deriving disposable income. For the second country, private insurance premiums will be included in consumption expenditure paid out of disposable income. On the other hand, the benefits received will be included in current transfers received and will be part of disposable income in the first country, but netted off the premiums and treated as negative expenditure in the second country. Therefore, for a household receiving no benefits in a given period, disposable income and consumption expenditure will be higher in the second country than in the first country. The reverse will be true for a household receiving benefits that exceed the value of its social contribution or insurance premium in a given period.

Notes

1. Accident insurance also covers types of events that are not in the scope of social benefits. For example, travel insurance that provides compensation for lost luggage, delayed flights, etc., is a type of accident insurance. Vehicle insurance and home insurance are also types of accident insurance, but the purchase of vehicle insurance or home insurance is not regarded as consumption expenditure. Rather, these are costs to be deducted when deriving the net value of services from owning consumer durables and owner-occupied dwellings.
2. As noted earlier, term insurance is used in this Framework to describe schemes that primarily only provide a benefit if the insured person dies. Term insurance is similar to accident insurance, and is included in non-life insurance.
3. Large and irregular payments are capital transfers received. They include lump-sum retirement payments, and lump-sum payments received as compensation for work-related injuries.

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