OECD Guidelines for Micro Statistics on Household Wealth

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OECD Better Life Initiative

OECD Guidelines for Micro Statistics on Household 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 provides guidance on the measurement of the distribution of household wealth – together with its companion report, which proposes a framework to support the joint analysis of household income consumption and wealth at the micro level – is the result of the work of an OECD expert group, chaired by Bob McCall from the Australian Bureau of Statistics, that over the period 2011-12 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 housing to health conditions, skills and social ties, from work-life balance civic engagement and personal security to environmental quality and life satisfaction.*

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 departs 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 statistical 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 may not always imply a low level of consumption. This underscores the importance of providing guidance to both data producers and users on how to compile and analyse micro-level data on the distribution on household level, and area where no statistical standards currently exist.*

The importance of microlevel data on household wealth 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 was 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. Better information on the doistribution of household assets and liabilities 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 presenting a framework for the joint analysis of household income consumption and wealth at the micro level fill, an important gap in the existing statistical guidance at the international level. They benefitted from valuable inputs from experts who actively participated in the OECD Expert Group, comments provided by members of the OECD Committee on Statistics, and 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 progresssive 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

These *Guidelines for Micro Statistics on Household Wealth* presents, for the first time, an internationally agreed set of guidelines for producing micro statistics on household wealth. They fill an important gap in the existing international guidance on measuring the various dimensions of people's economic well-being. They address the common conceptual, definitional and practical problems that countries face in producing such statistics, and are meant to improve the comparability of the currently available country data. They are also needed to facilitate the integration of micro statistics on household wealth with those relating to the other dimensions of economic well-being, i.e. income and consumption.

The micro perspective on wealth statistics presented here complements the broad economy/production perspective on the macro statistics articulated in the System of National Accounts (SNA), and many of the concepts are the same. There are, however, some differences. These guidelines for micro data support the distributional analysis of economic well-being, and therefore include consumer durables as assets yielding services to their own households. These assets are particularly important in the analysis of the wealth of poorer households and for distributional information. On the other hand, the micro guidelines do not include some of the concepts included in the macro data that are of less relevance to a household perspective. The relationship between these Wealth Guidelines and the SNA is described in detail in this report, so that data prepared under the two frameworks can be analysed together in a meaningful way.

The Wealth Guidelines were 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 (and pleasure) of chairing. The Expert Group undertook two complementary tasks at the same time. The first was the preparation of the guidelines presented in this report; the second was the preparation of the companion report, *Framework for Statistics on the Distribution of Household Income, Consumption and Wealth* (OECD, 2013), which presents the first internationally agreed comprehensive and integrated framework for the collection, analysis and dissemination of micro statistics on the different aspects of household economic well-being. The Wealth Guidelines presented here are fully consistent with the *Framework* publication. Concurrently, the OECD Expert Group to Measure Disparities in a National Accounts Framework was also established in order 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 SNA averages 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 CSTAT for comments under the

written procedure in January 2013. Both reports reflect the comments provided by CSTAT delegates, and are published under the authority of CSTAT.

Countries are encouraged to use these Wealth Guidelines as the basis for developing micro statistics on household wealth. It is expected that these Guidelines will be revised after they have been tested by OECD countries in their own surveys, and that they could be submitted to the UN Statistical Commission for their possible endorsement as an international statistical standard.

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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This report reflects the contributions of members of the OECD Expert Group on Micro Statistics on Household Income, Consumption and Wealth. Members of the Expert Group included representatives from National Statistical Offices – Bob McColl (Chair, Australia); Alison Hale (Canada); Andre Bustamante and David Niculcar (Chile); Henrik Sejerbo Soerensen (Denmark); Yafit Alfandari (Israel); Shinji Yoshioka (Japan); Sinho Kim (Korea); Patricia Mendez and Ana Laura Pineda Manriquez (Mexico); Wim Bos (Netherlands); Caroline Brooking (New Zealand); Radoslaw Antczak (Poland); Eduarda Gois (Portugal); Andreea Cambir (Romania); Kjell Jansson and Petter Lundberg (Sweden); Lukas Schweizer (Switzerland); Mehmet Ali Karadag and Sennur Onur (Turkey); Richard Tonkin and Andrew Barnard (United Kingdom); Kathleen Short (United States) – and from other organisations – Claudia Biancotti, Giovanni D'Alessio and Giuseppe Ilardi (Bank of Italy); Carlos Sanchez Munoz (European Central Bank); Pascal Wolff (Statistical Office of the European Union, Eurostat); and Markus Jantti and Piotr Paradowski (Luxembourg Income Study).

In addition, the following analysts were invited by the Secretariat based on their expertise in the field: Eva Sierminska (CEPS/INSTEAD, Luxembourg); Thesia Garner (US Bureau of Labor Statistics); Peter Lanjouw (World Bank); Arthur Kennickell (US Board of Governors of the Federal Reserve System); and Zeynep Orhun (UNECE).

The Secretariat was provided by Bindi Kindermann (Australian Bureau of Statistics and OECD); Marco Mira d'Ercole (OECD); Nicolas Ruiz (OECD); and Barbara Dunlop and Leon Pietsch (expert consultants). Patrick Hamm assured the final editing of the report.

Expert Group members contributed to the individual chapters either as lead authors or as contributors: for Chapter 1, OECD; for Chapter 2, OECD; for Chapter 3, OECD, Luxembourg Wealth Study and European Central Bank; for Chapter 4, LWS, Canada, Bank of Italy and Sweden; for Chapter 5, Bank of Italy, Canada and Australia; for Chapter 6, Bank of Italy, Canada and Australia; for Chapter 7, CEPS\INSTEAD and European Central Bank; for Chapter 8, Canada, European Central Bank and Israel; for Chapter 9, Bank of Italy; for Annex A, European Central Bank; for Annex B, Luxembourg Wealth Study; for Annex C, OECD; and for Annex D, OECD.

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Executive summary

This publication presents, for the first time, an internationally agreed set of guidelines for producing micro statistics on household wealth. These guidelines fill an important gap in the existing international guidance on measuring the various dimensions of people's economic well-being.

There has been increasing recognition in recent years that agreed international guidance for measuring household wealth at the micro level – that is, at the level of individual households – is essential 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 currently available country data. It is also needed 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.

The composition and distribution of household wealth at the micro level are also of particular interest to policy makers. Such information helps in understanding the cross-sectional distribution of debt, the driver of homeownership for housing, the extent of liquidity constraints faced by households and other questions for which micro statistics on wealth constitute a critical input. It could also serve as a monitoring tool for Central Banks to understand how macroeconomic and financial shocks affect the structure of wealth and indebtedness, and how households with different characteristics might be affected by such shocks.

In response to the growing demand for wealth micro statistics and for integrated micro data on economic well-being more broadly, in 2010 the OECD Committee on Statistics established an Expert Group, with wide international representation. The Expert Group was asked to develop guidelines for the collection and presentation of household wealth statistics, and this report is the result of that work. In parallel, the Expert Group prepared the *Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*. These two reports complement each other.

At the macro level – i.e. at the economy-wide or institutional sector level – the System of National Accounts already provides well-established international standards for measuring household wealth as well as other aspects of household economic resources. The SNA was drawn on extensively in the development of these guidelines. However, the primary focus of the SNA is on measuring the performance of the economy at a sector level and as a whole, using an integrated system of accounts. Conversely, the primary focus of micro-level wealth statistics is on measuring the level and composition of wealth held by individual households as well as its distribution across households with different characteristics. This leads to some differences in the concepts of interest and in the data that can in practice be collected and used in compiling micro data, compared to macro

data. The report includes a comparison of the differences between these guidelines and the SNA in terms of the measurement of household wealth.

Micro statistics on household wealth refer to the level, composition and distribution of wealth held by households at a particular time. Wealth is understood in this report as ownership of economic capital and is viewed as a dimension of people's economic (or material) well-being, alongside income and consumption. There are other concepts of capital that are important to people's well-being and complement the concept of economic capital used in this report, such as human capital, social capital and collectively held assets. However, while they may have considerable economic value to the people that possess (or have access to) them, they are not material assets and liabilities over which people can exercise ownership rights. They are, therefore, outside the scope of this report.

As considered here, the level of wealth refers to the value of assets held after deduction of liabilities outstanding. Because the level of wealth is a ***net*** value, it is sometimes referred to as net worth. Assets can be either non-financial or financial. Non-financial assets include, for example, dwellings and other real estate, valuables, vehicles and other consumer durables. Financial assets include, for example, 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.

The household is generally the unit used for analysing micro data on wealth. While traditional welfare analysis focuses on the individual, people share resources within households, and most surveys gather information referring to households. 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 well suited to most analysis of economic well-being because of the sharing of some economic resources between household members and because of the economies of scale achieved when dwellings and other household facilities are shared.

For some analysis, however, it may be appropriate to use smaller units than households, such as the family, the economic unit or individuals. For data collection, it is most convenient to obtain data at the household level for some wealth items, especially those associated with housing, and to obtain other data at the individual level.

While most analysis relates to household variables, users of micro data are often more interested in analysing wealth levels and distribution in terms of the number of people living in different types of households rather than the number of households as such. 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.

Household surveys are usually the main source of micro-level data on household wealth. Household surveys often collect a core set of demographic and socio-economic information along with the topic or topics of particular interest, such as wealth. This core information can be used to classify households into groups and then show the distribution of total wealth or other aspects of wealth across these groups. Such classificatory information is generally not available from other sources.

Nevertheless, other data sources can play an important role in the collection of wealth data. The main challenge to data quality in household surveys comes from the response process. Data can be biased by non-response and misreporting, particularly for sensitive or conceptually complicated topics. For some items, households may not have ready access to the required information. More generally, there is a trade-off between the perceived response burden and the amount of data collected. Other data sources can assist in addressing these problems.

Administrative data sources and private data bases, such as those of financial institutions, may be used, with survey respondent authorisation, to obtain details about certain assets of a respondent household. More general information, such as prices from a database of recent real estate sales, may be used to estimate the approximate current value of a household's real estate, or price indices might be used to index the historical cost of an asset. The valuation of some assets, such as entitlements in a defined benefit pension fund, are conceptually complex and need to be estimated by the data collection agency using relevant information, some of which may be available from the respondent household and some of which may have to be obtained from elsewhere.

The report provides guidelines on how to conduct wealth surveys and on how to address issues likely to be faced when measuring individual asset and liability components.

Generally, two types of analysis will be produced from a wealth survey – those oriented to a general audience and the more in-depth analysis of interest to academics or policy makers. The more general analysis is often made available at the time of the initial release of the wealth data set, in order to publicise the release and provide the key highlights. In-depth analysis usually takes more time and is often conducted by more sophisticated users once the data is released by the organisation that conducted the survey. These analyses will be produced by a variety of users in various organisations and may be made available to the general public, depending on the mandate of the individual or group sponsoring the analysis.

Data tables are one way to make a variety of data available to users who may not have the skills, resources or data access required to produce their own output from the file of wealth micro-data. Often the tabulated data are produced in a publication or in an on-line database to allow users to browse the data tables and choose those statistics that are of interest to them. This is a way of providing broad access to a wide variety of data to a large number of users.

Data tables may include a number of analytic measures, such as basic means and medians, and a variety of distributional indicators, such as Gini coefficients. When looking at the overall distribution of wealth, equivalised estimates should be considered because they recognise that larger households need more resources than smaller households to achieve the same level of economic well-being. However, there is no general agreement on the most appropriate way of equivalising household wealth estimates.

A life-cycle perspective is particularly important when analysing wealth data. Young individuals at the beginning of their working careers tend to have low (or negative) levels of wealth. As people age, wealth tends to be accumulated through saving and higher income, and a stock is created that can be drawn upon during retirement. As a result, older households, near retirement, are expected to have wealth levels close to the maximum of their life-time wealth. As they enter retirement, individuals begin decumulation and use up at least some of their savings in order to supplement their income and maintain their

desired level of consumption. At some point during their life, inheritance may be passed on to them, providing a sudden large increase in their stock of wealth.

Some users will prefer to conduct their own analysis of the wealth data. The main challenge for the organisation that has produced the wealth data is making the data files available, while still ensuring the confidentiality of the individual survey respondents. Often survey organisations will need to provide researchers with various ways to access the individual records, for example by producing two versions of the same data set – i.e. a general file, suitable for wide distribution and extensively screened to ensure confidentiality, and a more detailed file which can be accessed by users only in a way that allows the results of analysis to be vetted by the data custodian to ensure that confidentiality is not breached.

As these guidelines are a new initiative, it is expected that they will be further developed and refined over time. Periodic review will also be necessary to keep them up to date with developments in wealth measurement methodology and analytical needs. Countries are encouraged to "road test" them in their own environments and gain experience with their use. This experience will be invaluable when it comes to reviewing them at a future date.

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Chapter 1

Introduction

This publication presents, for the first time, an internationally agreed set of guidelines for producing micro statistics on household wealth. These guidelines fill an important gap in the existing international guidance on measuring the various dimensions of people's economic well-being. This introductory chapter describes the purpose of the guidelines, how they were developed, and their relationship with other international standards. The chapter concludes with a broad overview of the structure and content of the document.

1.1. Purpose of the standards and guidelines

There has been increasing recognition in recent years that agreed international standards for measuring household wealth at the micro level – i.e. at the level of individual households – are essential. They are needed 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 currently available country data. They are also needed 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.

At the macro level – that is, at the economy-wide or institutional sector level – the System of National Accounts provides well-established international standards for measuring household wealth as well as other aspects of household economic resources. However, the primary focus of the SNA standards is on measuring the performance of the economy as a whole and of its various sectors through an integrated system of accounts. Conversely, the primary focus of micro-level wealth statistics is on measuring the level and composition of the wealth held by individual households and its distribution across households with different characteristics. As this difference in focus and methodology has both conceptual and practical implications, specialised guidance is needed on how to measure wealth at the micro level. This publication aims to provide such guidance.

The guidelines provided in the following chapters represent best practice in collecting, disseminating and analysing micro statistics on household wealth. Their adoption by countries should both contribute to more accurate, more complete and more internationally comparable data and lead to more informed use of the data. The guidelines are intended to help countries to improve the quality and usefulness of their existing statistics in this field and to assist those planning to develop such data in the future by providing a sound conceptual and practical base for their work. They are designed to be widely applicable, with relevance to countries that are in different stages of statistical development, with different statistical infrastructures, with different experiences in developing wealth surveys, and with different economic and social environments. While the implementation of these guidelines may lead to breaks in statistical series for those countries that already implement measures in this field, the impacts of such breaks can be minimised through methods similar to those applied in other fields.

The guidelines presented in this report are meant to be relevant to both those who produce statistics and those who use them. Such persons may be in national or international statistical agencies or other government bodies, in research organisations or in the wider community. In the case of producers, the guidelines presented here are intended to be of assistance throughout the statistical process: from data development, collection and compilation to data analysis, dissemination and quality assurance. In the case of users, these guidelines are intended to improve their understanding and interpretation of the available data, including the basis on which the data have been compiled, and the relevance and appropriateness of different measures for particular types of analysis.

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As these guidelines are a new initiative, it is expected that they will be further developed and refined over time. Periodic review will also be necessary to keep them up to date with developments in wealth measurement methodology and analytical needs. Countries are encouraged to "road test" them in their own environments and gain experience with their use. This experience will be invaluable when it comes to reviewing them at a future date.

1.2. Development of the Guidelines

1.2.1. Historical background

The development of these guidelines reflects the increasing interest over the last few decades in the different dimensions of people's economic well-being and in the inter-relationships between these dimensions. This interest has come from policy makers, researchers and other analysts and is highlighted in a range of international reports that have called for statistical action to better understand the different dimensions of people's economic well-being, including household wealth. These reports include:

- The 2001 and 2011 editions of the *Canberra Group Handbook on Household Income Statistics*. The 2001 edition argued that further research was required into the relationships between household income, expenditure and wealth (Chapter 9, pages 109-110). The 2011 edition proposed a research agenda that included the "development of international statistical standards for the collection and compilation of statistics on household wealth at the micro level"; the "development of a statistical framework that describes the relationships between household income, consumption and wealth"; and "the assessment of practical issues with the collection and analysis of income, expenditure and wealth in an integrated manner" (Chapter 9, pages 120-121).
- The 2008 report of the Conference of European Statisticians providing an "In-depth Review of Income, Living Conditions and Poverty Statistics", which concluded that "A wider initiative is needed to work towards an integrated framework of income, expenditures and wealth [...] by setting up a possible city group".
- The 2009 report of the Stiglitz-Sen-Fitoussi Commission on the Measurement of Economic Performance and Social Progress, which recommended "Consider(ing) income and consumption jointly with wealth" (Recommendation 3) and "Giv(ing) more prominence to the distribution of income, consumption and wealth" (Recommendation 4). The Commission argued that, while income and consumption are crucial for assessing living standards, in the end these can only be gauged by looking at them in conjunction with information on wealth. Further, the report argued that, while average measures of income, consumption and wealth are important statistics, they should be accompanied by indicators that reflect their distribution.
- The 2009 report to the G20 Finance Ministers and Central Bank Governors on *The Financial Crisis and Information Gaps*. This report noted that, "averages need to be complemented by distributional information" when analysing sectoral data and that "this requires linking national accounts concepts with micro-economic concepts of income and wealth and merging macro and micro data sets" (para. 56). The report further recommended that: "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 the production and dissemination of these data in a frequent and timely manner. The OECD is encouraged to continue its efforts to link national accounts data with distributional information" (Recommendation 16).

As the interest in household wealth data has grown, increasing numbers of countries have developed new collections or expanded existing collections to provide micro statistics in this area. Statistical collection initiatives have also emerged at the international level, such as the Luxembourg Wealth Study and the Eurosystem Household Finance and Consumption Survey. These developments in the demand for and availability of household wealth information are discussed further in Chapter 2.

At its June 2010 meeting, the OECD Statistics Committee (CSTAT) discussed a proposal to develop an integrated framework for statistics on household income, consumption and wealth 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 steer and direct this new work.

1.2.2. 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 in household wealth statistics from a wide range of countries and from different regions of the world. The 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 at the micro level (including the development of guidelines for the analysis and dissemination of these statistics).
- To consider the 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 first objective. The work included:

- Reviewing and comparing country methodologies for producing household wealth statistics at the micro level and for assessing data availability.
- Developing agreed definitions, classifications and other standards for household wealth statistics.
- Assessing the measurement issues associated with the different components of household assets and liabilities and developing best practice guidelines.
- Assessing the advantages and disadvantages of different sources and methods for measuring these components, including household surveys.
- Reviewing and assessing a range of analytic measures that could be used in describing the distribution of household wealth.
- Identifying the conceptual and definitional differences between the macro and micro approaches to measuring household wealth and assessing the feasibility of narrowing these differences.

This work was also closely linked to work pursued on the Group's second and third objectives. In particular, the wealth standards described in this document are identical to those summarised in the companion publication, *Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*, which was developed in parallel by the Group.

1.3. Relationship with existing international standards

Harmonisation with existing international standards was an important objective in developing the guidelines on household wealth presented in this publication. Since micro statistics on household wealth are often analysed in conjunction with other micro and macro data, consistency considerably enhances the usefulness of the statistics and facilitates statistical integration across the different dimensions of household economic resources. The main standards that are relevant here are: *i)* the 2008 System of National Accounts (SNA); *ii)* the 2011 *Canberra Group Handbook on Household Income Statistics*; *iii)* the recommendations of the 17th International Conference of Labour Statisticians (ICLS) 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.

While there is a large degree of consistency between the recommendations in this publication and those in the other standards mentioned, some differences exist. Each difference is explained and justified in the relevant chapter. Wherever possible, the significance of each difference is assessed and ways of achieving alignment with the other standards are discussed. In addition, for differences relating to the macro wealth statistical standards in the SNA, Annex C brings them together in a comprehensive list.

1.4. Structure of the report

This report contains nine chapters and five appendices. Chapter 2 provides an overview of the statistics covered by the report, while Chapter 3 brings together all their basic features – concepts, definitions and classifications – and presents recommendations. Chapters 4 to 9 then present practical considerations in implementing the standards and provide measurement guidelines. These guidelines relate to key activities in the statistical production process, including sources and methods for measuring particular forms of wealth, best practice in using household surveys or other sources to compile wealth statistics, the development of analytic measures, the dissemination of data, and data quality assurance.

A summary of the key features of each of the following chapters and annexes is presented below.

- Chapter 2 ("Overview of household wealth statistics") discusses the need for, and importance of, information on household wealth, including the types of analyses it can inform. It reviews the current availability of statistics in this field, and discusses international data collection initiatives. Issues affecting the integration of micro statistics on household wealth with other statistics are also considered.
- Chapter 3 ("Standard concepts, definitions and classifications for household wealth statistics") describes the conceptual framework and standards for micro statistics on household wealth. It presents the basic concepts and key definitions (i.e. "household", "wealth", "asset", "liability") and the general principles of recording (i.e. "valuation", "time of recording", "consolidation and netting", "coverage", "unit of measurement").

Standard wealth components and household groups are also specified and defined. Alignment with other international standards is discussed.

- Chapter 4 ("Data sources and methods for producing household wealth statistics") describes the different types of sources and methods that are used to collect and compile household wealth statistics, and indicates the main strengths and weaknesses of different approaches. The aim is to assist statistical offices in determining the best approach in their particular circumstances.
- Chapter 5 ("Measurement guidelines for standard components of household wealth") focuses on how the standard wealth components specified in Chapter 3 are best measured. For each component, the main measurement issues are considered and practical guidance is provided in the light of data collection experience by those countries that produce statistics in this field.
- Chapter 6 ("Measuring household wealth through surveys") considers in some detail how household wealth can be measured using one of the more common approaches, namely household surveys. The primary aim is to provide practical guidance concerning the measurement issues that need to be considered at various stages of the survey process, and to highlight those practices that should produce good quality statistics that conform to the guidelines provided in earlier chapters. This chapter is not intended as an operational guide for conducting such surveys, but rather as an assembly of useful information based on country practices.
- Chapter 7 ("Analytic measures") considers the ways in which the usefulness of the basic micro-level data on household wealth, produced using the sources and methods discussed in Chapters 5 and 6, can be maximised through statistical analysis and presentation. A range of analytic measures that can be derived from the basic data are discussed, and guidelines are provided for analysis of the data.
- Chapter 8 ("Dissemination") discusses the different formats and vehicles that can be used to disseminate micro-level data on household wealth to different types of users. It considers how presentation and dissemination choices can affect the usefulness of the data, and provides guidelines on best practice.
- Chapter 9 ("Quality assurance for household wealth statistics") focuses on the quality assurance of micro statistics on household wealth to ensure their fitness for purpose. It provides guidelines on best practice methods of assessing quality, which complement those in the previous chapters and are intended for use by both data producers and data users.
- Annex A ("Eurosystem Household Finance and Consumption Survey") provides a summary description of the Eurosystem Survey, which is referred to in various places in the main body of the document. It describes the purpose and content of the Survey, which is conducted in all 17 euro area countries to obtain information on income, consumption and wealth using an *ex ante* agreed common methodology. It outlines key methodological features, including country-specific features for each of the participating countries.
- Annex B ("Luxembourg Wealth Study") provides a summary description of the Study, which is mentioned in several chapters. It outlines the main features and experiences of the Study, which involves the *ex post* harmonisation of household wealth data based on data sets obtained from individual countries. It discusses the wealth and non-wealth variables that are included in the Study and the comparability issues that have been encountered in using the data sets from 12 participating countries.

- Annex C ("Differences between micro and macro measures of household wealth") provides a comprehensive list of the differences between the recommendations for micro statistics on household wealth and the standards for macro statistics in the 2008 SNA. While the differences are identified and discussed throughout relevant chapters in the document, they are shown here, in one place, for the convenience of readers.
- Annex D ("Inventory of country methodologies for producing micro wealth statistics") presents the results of a questionnaire designed by the Expert Group to obtain information on country methodologies for producing micro-level wealth statistics and to investigate the availability of such data. The questionnaire was despatched in mid-2011 to members and observers of the OECD Statistics Committee as well as to other non-OECD countries; responses were received from 26 countries and from the European Central Bank.
- Annex E ("Household definitions in other statistical standards") describes and compares the household concepts and definitions provided in several statistical standards used in measuring the economic circumstances of households. It expands on the summary information about these concepts and definitions provided in Chapter 3.

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Chapter 2

Overview of household wealth statistics

This chapter discusses the need for, and importance of, information on household wealth, the objectives of micro statistics on this topic and the current availability of such statistics. It also considers some strategies for better integrating micro statistics on household wealth with other statistics. It concludes with an overview of several international initiatives on data collection and measurement in this field.

Wealth is understood in this report as ownership of economic capital. It is viewed as a dimension of people's economic (or material) well-being, alongside income and consumption. There are other concepts of capital that are important to people's well-being and complement the concept of economic capital, such as human capital, social capital and collectively-held assets. However, while they may have considerable economic value to the people that possess (or have access to) them, they are not material assets and liabilities over which people can exercise ownership rights. They are therefore deemed to fall outside the scope of this report.

2.1. Need for information on household wealth

Information on household wealth is important at both the macro and micro levels. Wealth is one of the key components of the economic system. It is a source of finance for future consumption, for reducing vulnerability to shocks and to other unexpected developments, and for undertaking business and other economic activities. At both the macro and micro levels, household wealth statistics play a vital role in informing responses to a wide range of policy and research questions. However, the perspectives and insights provided at each level are also quite different. As indicated in Chapter 1, the primary focus at the macro level is on the household sector's wealth, its relation with the other sectors of the economy, and its role within the broader economic system; conversely, the primary focus at the micro level is on the wealth of individual households and its distribution across different types of households.

2.1.1. Macro level information

Macro level information on household wealth refers to the data contained in the balance sheet for the household sector in a country's national accounts. These data measure the total value of the household sector's assets and liabilities, including its net worth, and are an integral part of a comprehensive system of accounts. The full accounts cover all sectors of the economy and provide a consistent description of the economic activity and structure of each sector in terms of the production, distribution and use of income, the accumulation of assets and the stock of wealth.

While balance sheet data for the household sector are necessary to compile measures of national wealth, the data are also needed for many other purposes, such as:

- explaining, within a national accounting framework, how the household sector relates to and interacts with each of the other sectors of the economy and with the rest of the world;
- investigating the causal mechanisms at work within an economy, such as how asset price fluctuations affect households' consumption and saving behaviour, or how changing wealth levels affect household consumption patterns;
- assessing the household sector's financial status and analysing its financial risks; and
- analysing the sustainability of consumption, by assessing the consequences of certain types of behaviour (e.g. spending of wealth on consumption goods) that may lead to increases in current well-being at the expense of future well-being.

Over recent years there has been increasing recognition of some important analytical needs for macro-level wealth information that are currently not satisfied. For example, the 2009 report of the Stiglitz-Sen-Fitoussi Commission and the 2009 report of the G20 Finance Ministers and Central Bank Governors, both referred to in Chapter 1, drew attention to a number of critical data issues related to: *i)* data availability; *ii)* data interpretability; and *iii)* macro/micro data linkage.

In the case of data availability, many countries still lack a timely and complete set of balance sheet data for the household sector. While data for financial items are often available, data for non-financial items are less common. Even where complete accounts are regularly published, there are often large cross-country differences in the definition of the household sector. For example, in some countries the sector excludes non-profit institutions serving households (NPISH), as recommended by the SNA, while in others it includes them. Also, across countries the accounts for the household sector include a wide and varying range of unincorporated enterprises owned by households.* Other issues relate to the delineation of the asset boundary: for some types of analysis, such as the assessment of the "sustainability" of a country's development path, a wider asset boundary (e.g. including human capital) may be needed.

In the case of data interpretability, the valuation of balance sheet items is often problematic. For example, for some assets (e.g. entitlements in pension schemes) there may be no markets, while for others (e.g. housing) only a small fraction of the existing stock may be traded on markets. During a crisis, markets for some financial assets may "freeze", with no transactions taking place and no market prices observed to guide asset valuations. All these cases can lead to considerable uncertainty when drawing conclusions or inferences from the data.

In the case of data linkage, the macro data on household wealth needs to be linked with the corresponding micro data to bring a distributional perspective into the macro wealth measures and allow disaggregation by demographic and socio-economic population groups. While the wealth of an average household or individual can be derived from macro-level data, aggregate ratios can be misleading, as they shed no light on the way wealth is distributed across households. This is particularly relevant when the heterogeneity in household circumstances and behaviour is taken into account. In most countries, assets and liabilities tend to be distributed very unevenly across households, and changes in wealth can be unequally shared, leaving some households worse off than others. Consequently, to interpret changes in wealth levels properly, distributional measures (e.g. median wealth levels, wealth levels at the top and bottom of the distribution) are needed. However, because such information is available only at the micro level, the macro and micro-level data sets need to be brought together to develop relevant indicators.

* The SNA provides a mixture of practical guidance and conceptual treatments for such enterprises, and country practice ranges from including all unincorporated enterprises owned by households in the household sector accounts (i.e. no such enterprises are treated as quasi-corporations and included in the SNA corporations sector) to not including any in the household sector (i.e. all such unincorporated enterprises are regarded as quasi-corporations and excluded from the household sector account). No country appears to adopt the "rule of thumb" guidance provided in the SNA (i.e. to take the availability of a complete set of accounts for the unincorporated enterprise as evidence of a "quasi" corporation). Some countries treat such enterprises as quasi-corporations (i.e. if it would be meaningful from an economic point of view to compile a complete set of accounts for the unit), as recommended by the SNA, even if such accounts are not compiled. In other countries a range of practical criteria are adopted to delineate "quasi" corporations.

2.1.2. Micro level information

Micro level information on household wealth refers to data describing the assets and liabilities held by individual households. Such data provide measures of the level, distribution and composition of household wealth for the population as a whole as well as for particular population groups and for different types of households. When the data are brought together with micro-level data on income and consumption, a complete picture of the economic resources of individual households can be presented.

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 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 government policies and institutional arrangements on households' eligibility for social programmes and on household asset accumulation and indebtedness, including the barriers and incentives created by those policies and arrangements.

2.1.3. Examples of specific data needs at the micro level

Some examples of specific needs for micro-level wealth data are outlined below.

Wealth inequality

In many countries, a relatively small proportion of households hold the majority of total household wealth. 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. It can also be important to understand the distribution of particular types of assets or liabilities. 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 that can have a major impact on market outcomes.

In addition, policy makers and analysts are often interested in wealth heterogeneity because of its link with material living standards and economic well-being. For example, there may be a particular focus on households at or near the bottom of the wealth distribution when assessing vulnerability to future shocks, or when developing and evaluating policies designed to address the disadvantage of certain population groups. There may also be widespread interest in how the concentration of wealth, including particular types of wealth, is changing over time, in the factors driving these changes, and in the role of bequests and savings in changing wealth inequality over time.

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Joint distribution of income and wealth

To explore material living standards and economic well-being, it is important to look at the joint distribution of household income *and* wealth. For example, 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 programmes more directly towards households in need. Joint analysis of the distribution of these resources can lead to more effective policies and better outcomes. Micro-level wealth data are essential for such research.

Relationship between household wealth and consumption

Wealth can affect personal consumption through various channels. For example, households whose wealth increases due to higher asset prices may spend more because they have more resources available and 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 debt service costs may leave fewer funds available to smooth their consumption, and thus put them at risk of financial hardship. As household heterogeneity can play an important role in how average consumption responds to wealth changes, household level data are crucial in assessing the structural relationships between average wealth and average consumption. In particular, there are likely to be differences between households comprising young adults at the start of their working lives, and households made up of retirees.

Relationship between housing prices and household wealth

As changing real estate prices may have a major impact on household assets and indebtedness, a body of research has aimed at understanding the relationship between these variables. Micro data are essential for this research, as they show the detailed composition of assets and liabilities across individual households. They can also support investigations into mismatches between assets and liabilities and help to assess the risks that too much debt or inadequate diversification of assets might pose for the households concerned and for the wider economy.

Financial innovation and portfolio selection

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 portfolios in order to assess the possible positive and negative impacts of financial market developments on households.

Access to credit and borrowing constraints

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 useful insights into the nature and effect of such constraints and into their association with financial hardship and the inability to smooth income shocks.

Retirement funding and pension policies

In order to assess the adequacy of retirement savings and the possible risk to these savings from asset meltdowns or other financial shocks, it is important to know the level and composition of 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, e.g. tax incentives for employees to make their own contributions to pension funds, as part of a strategy to encourage saving for retirement. To assess the effectiveness of these policies, it is important to know whether such incentives are leading to higher savings or to a shift away from other products in asset portfolios.

Micro simulations of household behaviour

Micro simulations, based on models of individual household behaviour, can be used to simulate the behaviour of all households and therefore explore different scenarios. The incorporation of wealth variables into such models can provide important insights into the possible effects of a range of financial shocks and policy changes.

Derivation of distributional indicators for use in the national accounts

As already indicated when discussing macro wealth statistics, micro data on household wealth have the potential to provide distributional information that could be used to disaggregate national accounts wealth measures. Macro wealth measures are typically compiled from sources that do not provide information at the individual household level. 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.

2.2. Objectives and uses of micro statistics on household wealth

2.2.1. Main objectives of the statistics

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 individual household level that will support:

- policy development, implementation and evaluation in and across a range of areas, including fiscal, monetary, taxation, social welfare and housing policy;
- research into household economic behaviour, including influences, effects and mechanisms, taking into account the impact of household heterogeneity on each of these;
- analysis of the economic well-being of different types of households, including patterns and trends for population groups of special interest; and
- analysis of aggregates in the national accounts, including the distributional implications of economic developments.

To meet this objective, micro statistics on household wealth need to be accurate, comprehensive and regularly updated. They should include information on both the value of the different types of assets and liabilities in household portfolios and 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 the attributes of a particular household member, or by the level of their wealth or income. As the basic data relate to individual households, measures showing the

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distribution of wealth can also be derived, and these constitute a critical statistical input for a variety of policy and analytic uses. Such measures include median as well as mean values for the entire population as well as for various parts of the distribution, such as the top or bottom quintiles.

These micro-level wealth measures need to be as consistent as possible with the macro-level wealth measures in order 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 directly comparable 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.

The methodologies used to gather micro statistics on household wealth also need to be consistent between countries in order to facilitate cross-country comparisons and policy learning. Improving international comparability in this field is one important objective of this report.

Wherever possible, the micro wealth data should be brought together with micro data on household income and consumption so that these different dimensions of economic well-being can be analysed simultaneously. The benefits of doing this are considerable, as indicated earlier when discussing information needs. Guidelines for the joint compilation and analysis of micro data spanning the full range of household economic resources are presented in the companion publication, *Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*.

2.2.2. Country examples showing the use of micro statistics on household wealth in policy making

Table 2.1 draws on the experiences of several countries that have been producing micro statistics on household wealth for many years to illustrate some of the policy and analytic uses that have been made of such data.

2.2.3. Current availability of micro-level wealth data

Many countries currently produce micro statistics on household wealth or are in the process of producing them, according to the responses to the Expert Group's 2011 questionnaire on country methodologies in this field (see Annex D). A total of 26 countries indicated in their responses that they have collections in place for compiling such statistics.

This contrasts with the situation prevailing only a few decades ago. A report by the United Nations Statistical Office in 1977 noted that, "some countries gather data from households on selected items of wealth, for example the amount of outstanding consumer debt or the number of automobiles, radios and other consumer durables possessed; however, few official efforts have been made to compile systematic figures on the value of all items of household wealth". Because of this situation, the report's statistical guidelines contained no recommendations on household wealth (UN, 1977, para. 1.35).

However, while considerable statistical activity is now taking place in this field, most countries still do not produce comprehensive micro statistics on household wealth or do not produce them regularly. Questions also arise about the quality of some of the existing data due to both sampling and non-sampling errors. Furthermore, in the absence of agreed international standards, there are many differences in the concepts, sources and methods used to gather

Table 2.1. **Examples of the use of micro data on household wealth in policy making**

	Uses
United States	Wealth data have been collected from households in the Survey of Consumer Finances since the early 1980s. These data are widely used to understand and illustrate the effects of past changes in monetary, fiscal and regulatory policies and to simulate the potential effects of future changes. These data are also important inputs into the compilation of more aggregated statistics. Specific uses have included: understanding the structure of household portfolios and the implications of that structure for the transmission of monetary policy, including the role of debt; insights into the distributive effects of changes in monetary policy as they filter through the household sector; potential effects of steep declines in the stock market; monitoring the diversity of financial markets accessed by households (which has had important effects on bank competition policy); and provision of information on the structure of household deposits, which has been critical in some financial reforms.
Spain	Wealth data have been collected since 2002 in the Spanish Survey of Household Finances. Examples of the use of these data in policy relevant research are: analysing the consumption response to changes in housing prices; and assessing the financial vulnerability of households, including the impact of rising interest rates on indebted households and the characteristics of those households that would be most affected.
Italy	Wealth data have been collected from households since 1965 in the Survey of Household Income and Wealth. The information is important in domestic political debates on the economic conditions of households. These household-level data are also widely used in policy research and as a tool for simulating the impact of policy measures via micro simulation models. These data are also used in the compilation of financial and wealth accounts. Some of the specific uses of these data have related to: channels of transmission of monetary policy; the functioning of banking markets; the analysis of fiscal issues and pension reforms; the monitoring of poverty and inequality; analysis of asset allocation, uncertainty and risk aversion; the effects of market structures and imperfections; patterns of wealth accumulation and transmission; demand for credit and payment technologies; and spatial interest rate differentials.
The Netherlands	Wealth data have been collected since 1993 by Statistics Netherlands. Another survey is also produced by the Nederlandsche Bank. Policy makers and researchers make extensive use of these data. Examples include: research into the potential effects of a housing crisis in terms of the number of households that might be faced with mortgage payment problems and the proportion of outstanding mortgage loans that might result in a financial loss for the banking sector; the wealth effects on consumption; the financial behaviour of households; and financial stability.
Portugal	Wealth data have been collected since 1994 and have been part of the Income and Expenditure Survey since 2000. The data have been used to study the heterogeneity of household debt and the debt burden and portfolio composition in terms of particular household characteristics. Specific uses include: assessing the sustainability of rises in household debt due to falls in interest rates and changes in the supply of credit; and assessing the impact of the widespread marketing of new financial products on household portfolio composition, including the segments of the household sector that may have assumed greater risks.

Source: European Central Bank (2009), "Survey Data on Household Finance and Consumption: Research Summary and Policy Use", *Occasional Paper*, No. 100, January.

such information. As a result, the comparable statistics available in this field are very scant. This is evident from the experiences of the Luxembourg Wealth Study, which undertakes an *ex post* harmonisation of micro data, as described in Annex B, and from the information on country methodologies presented in Annex D. This has also been a matter of increasing concern to policy makers, researchers and others interested in cross-country comparisons.

The 2011 *Crédit Suisse Global Wealth Databook* (discussed further later in this chapter), which reported on research into household wealth in 216 countries across the world, summarised the situation of data availability as follows: "data on the level of wealth remains poor for many countries", and "information on the pattern of wealth within countries is even scarcer" (page 10). It noted that direct observations of wealth distributions across households or individuals were available only for 22 countries in the period since the year 2000, that the precise definition of wealth had not been agreed, that methods of valuation were not always clear, and that much work remained to be done to develop reliable estimates.

Areas where cross-country inconsistencies or differences exist in micro statistics on household wealth include: *i)* the definition and coverage of household wealth; *ii)* the definition and coverage of households; *iii)* the criteria used to value assets and liabilities; *iv)* the point in time at which wealth is measured; *v)* the extent to which assets are recorded gross or net of the liabilities pertaining to them; *vi)* the unit of analysis used in presenting

statistics; *vii)* the delineation, coverage and classification of individual wealth components; and *viii)* the household groupings that are used to present distributional information.

In other important areas, however, there is broad commonality in methodology. In particular, most countries that produce micro statistics on household wealth: *i)* base their data mainly on household surveys; *ii)* exclude the institutional population from their statistics; and *iii)* compile the three main wealth aggregates – non-financial assets, financial assets and liabilities – although the definitions used are generally not fully comparable and some detailed components are often missing.

2.3. Integration of micro statistics on household wealth with other statistics

As already noted, for joint analyses that consider the various dimensions of household economic well-being or that seek to bridge the macro and micro wealth perspectives, micro statistics on household wealth need to be brought together with other micro statistics, particularly those on household income and consumption, as well as with macro statistics on the wealth of the household sector. This can be difficult, especially where methodologies for these different streams of statistics have been developed separately and to serve different primary purposes.

In recent years, there has been increasing recognition that more integrated approaches are required to satisfy analytical and policy needs and to avoid the confusion that arises from different measures of very similar concepts. These approaches include integrated statistical frameworks, joint data collection, data matching and data confrontation. Each of these is discussed further below.

2.3.1. Integrated statistical frameworks

Statistical frameworks can play an important role in integrating different data sets by promoting the use of harmonised concepts, definitions, classifications and methodologies. As noted in Chapter 1, consistency with the SNA and other international standards has been a key consideration in the development of the statistical framework for micro statistics on household wealth in this publication. The parallel development of the *Framework for Statistics on the Distribution of Household Income, Consumption and Wealth* also reflects the potential of such frameworks to foster integration. At the country level, a few national statistical offices (e.g. in Australia and Canada) have developed their own frameworks over the years to guide their measurement activity in these fields.

2.3.2. Joint data collection

According to the inventory of country methodologies included in Annex D, most household wealth surveys currently collect information not only about wealth but also about income and often consumption expenditure as well. In euro area countries, a key instrument for joint data collection is the *Eurosystem Household Finance and Consumption Survey* (HFCS). This initiative is discussed further later in this chapter, with more detail in Annex A.

The joint collection of data on household income, consumption expenditure and wealth involves integrated and coincident measurement, the benefits of which are far-reaching. In particular, it results in greater coherence between the statistics for each dimension at the household level; it allows a better understanding of the relationships between these different dimensions; and it enables a more complete assessment of household economic well-being. However, the joint collection of data also raises a number

of measurement challenges (e.g. in terms of sample design and adequacy of response rates). The companion publication, *Framework for Statistics on the Distribution of Household Income, Consumption and Wealth* (Chapter 7, Integrated Statistics), draws on the experiences of a number of countries to provide guidelines on best practice for coincident measurement of the different dimensions of economic resources in household surveys.

2.3.3. Data matching

Where micro-level data on the different dimensions of household economic well-being are sourced from separate collections, data matching techniques can be used to achieve *ex post* integration of the data. Such techniques include direct and probabilistic record linkage of identical units and statistical (or synthetic) matching of similar units using a model-based approach. Record linkage can be applied where the households in different collections overlap to a large extent. Direct record linkage involves the use of an identification number to link records that correspond to the same unit, while probabilistic record linkage involves the identification of the same unit by probability methods based on a specified set of variables. Statistical matching can be used where the households in the various collections differ, but where the collections include a common set of variables that have good informative power in relation to the variables not collected together. This approach employs inference techniques to generate a synthetic micro-data file from the different collections.

Data matching techniques can enhance the analytical potential of existing data sources by facilitating the joint use of data collected at the household level. The *Framework for Statistics on the Distribution of Household Income, Consumption and Wealth* (OECD, 2013, Chapter 7) describes these techniques in more detail and considers their potential benefits, limitations and implications (e.g. for collection design). It also discusses country experiences with them.

2.3.4. Data confrontation

Research conducted at both national and international levels has indicated that differences in major aggregates common to both macro and micro statistics on household wealth (e.g. non-financial assets, financial assets, liabilities and net worth) can be large in both absolute and relative terms. The differences are also variable, both across countries and over time. Teasing out the many factors that contribute to these differences is challenging, as differences in the concepts and definitions, estimation methods and classifications used all play a role.

A number of countries (e.g. Australia, France, the Netherlands and the United States) regularly confront their micro and macro wealth data to assess their coherence, to explain the differences between them, and in some cases to adjust or reconcile them. Such assessments improve the understanding of the quality and consistency of both sets of data, including their strengths and weaknesses. They can also open up possibilities for, or reveal barriers to, the greater use of micro data for the compilation of national accounts, or vice versa.

Examples of two different types of data confrontation are provided below. The first is a country example based on published research. The second is an international study with potentially far-reaching implications that is being undertaken by the OECD-Eurostat Expert Group to Measure Disparities in a National Accounts Framework.

Confrontation of macro and micro wealth data: The case of Australia

The way in which a comparison of macro and micro wealth data can be informative to both data producers and analysts can be illustrated using information regularly published by the Australian Bureau of Statistics in its statistical releases on household wealth and wealth distribution. In this example, the first stage of the comparison involves the identification of quantifiable scope and measurement differences that affect the estimates of household net worth in each set of statistics, while the second stage involves making adjustments for these differences. The third, and final, stage of the comparison involves examining selected wealth items relevant to both sets of statistics, quantifying the size of the difference in the estimates for each item, and then analysing the factors that limit the comparability of the estimates (e.g. specific features of the different data sources, the methods used, coverage gaps, data quality problems, etc.). Where possible, the main contributors to these differences are discussed, including possible reasons for changes in the differences over time.

The routine confrontation of the household survey measures of wealth with the corresponding macroeconomic measures provides a number of opportunities to make improvements in either of the data sets as well as to inform users about the differences.

From the household survey perspective, the results of these comparisons are used to assist with the validation of the data and to identify areas where improvements can be made in future survey cycles. The publication of the results of these confrontations is also useful for explaining to users the differences in scope, data sources, measures and other limitations (e.g. under-reporting of certain items).

From the national accounts perspective, the results of these confrontations are useful for similar reasons. For example household survey data are used to confront a number of items in the household financial accounts, particularly those calculated as the residual of other sectors, and so reflect errors and omissions in the estimates for those sectors.

OECD/Eurostat Expert Group to Measure Disparities in a National Accounts Framework

To capitalise on the experiences of a number of countries in bridging the gap between micro and macro estimates and to meet growing policy demands, an Expert Group was set up jointly by the OECD and Eurostat in late 2010 to consider how existing micro data on household income, consumption and wealth could be used to produce measures of disparities between groups of households that are consistent with SNA household concepts and aggregates. The Group members included experts in both macro and micro statistics on household economic resources.

The Group pursued its goal in two ways:

- First, by taking stock of currently available macro data on household income, consumption and wealth across OECD countries, describing how these data are compiled and how micro data are used in that process and, finally, comparing aggregate values for the various types of household economic resources from macro and micro sources.
- Second, by breaking down the national accounts household sector amounts by household group using information available from micro data sources (i.e. allocating macro aggregates for income, consumption and wealth among different groups of households) for a number of countries, using common methodologies and disaggregation; these breakdowns allow the construction of inequality indicators that are consistent with SNA aggregates.

The main findings from the work of this Group will be available in the course of 2013 in a series of *OECD Working Papers*. The links with the OECD Expert Group responsible for both this publication and the companion publication presenting an integrated framework for micro statistics on the distribution of household income, consumption and wealth have been recognised through some overlap in membership.

2.4. International data collection and measurement initiatives

Over the last decade, two major initiatives have been taken with the aim of collecting micro-level household wealth data that is comparable across countries and with other micro statistics: *i)* the Luxembourg Wealth Study (LWS); and *ii)* the Eurosystem Household Finance and Consumption Survey (HFCS). There has also been a substantial body of research that has resulted in the development of estimates of the level and distribution of global household wealth. Each of these developments is briefly outlined below, with more detailed information on the HFCS and LWS in Annexes A and B, respectively.

The guidelines in this publication complement these international developments by providing an agreed conceptual and practical base for the design of relevant national statistical collections. As the approaches recommended in this report are increasingly being adopted and tested by national statistical offices and other data producers, it is hoped that the available statistics and their cross-country comparability should significantly improve over time.

2.4.1. Luxembourg Wealth Study

The LWS originated from discussion at the 2002 Conference of the International Association for Research in Income and Wealth. At that conference, participants recognised that the time was ripe for the creation of a wealth database that was comparable across countries, similar to what already existed for household income (the Luxembourg Income Study, LIS), based on the classification of available national micro data using a common nomenclature and classification scheme. The LWS was officially launched in 2004 as a joint project of the LIS and institutions from nine countries, and currently includes data for twelve countries.

The primary aim of the project is to assemble and organise existing micro data on household wealth into a coherent database in order to provide a sounder basis for comparative research on household net worth, portfolio composition and wealth distribution. This involves harmonising data from existing country-level surveys by defining a standardised set of variables for inclusion in the *LWS Database*. This allows constructing broadly comparable wealth aggregates. The focus is on increasing the *ex post* comparability of wealth data (unlike the focus in this publication on improving the *ex ante* comparability of wealth data).

While the *LWS Database* provides a critical tool for comparative research in this field, its usefulness is limited by several factors, such as: *i)* its country coverage is limited, especially relative to the range of countries that have micro-level data on household wealth; *ii)* its data coverage is limited to a sub-set of assets and liabilities that are measured by all the countries involved in the exercise; *iii)* the comparability of data for this sub-set can still be affected by country differences in survey methodology (e.g. the exclusion of data below a specified amount); and *iv)* its data are often not-up-to-date.

2.4.2. Eurosystem Household Finance and Consumption Survey

In 2008, the Governing Council of the European Central Bank decided to conduct a specific household survey in all euro area countries to provide the Eurosystem with micro-level data on household wealth and consumption expenditure. The HFCS is a decentralised effort in which each of the seventeen participating institutions conducts its own survey using a common methodology and drawing on a blueprint questionnaire. The survey is to be conducted every 2-3 years.

The main aim of the HFCS is to gather micro-level structural information on household assets and liabilities in the euro area. In addition, the survey collects other information in order to analyse the economic decisions taken by households, an essential part of which includes gathering information on sub-groups of the population. The survey data are considered to be a key to: *i)* understanding both individual behaviour and the evolution of aggregate variables; *ii)* evaluating the impact of policies and institutional changes across households and across different institutional structures; *iii)* understanding the implications of shocks for macroeconomic variables; and *iv)* gaining insights into issues like monetary policy transmission or financial stability. As the data will be comparable across the countries involved, they will allow analyses for the euro area as a whole.

The HFCS will provide complete data sets for at least the basic components of household income, consumption and wealth. However, as the survey's main focus is on household wealth, priority is given to a detailed and accurate collection of information on household assets and liabilities. The first dissemination of the HFCS research data set is planned for 2013. It will cover results from the first wave of the survey and will be accompanied by a set of aggregate indicators for the euro area.

2.4.3. Global Wealth Reports and Databook

The first estimates of the level and distribution of global household wealth were published in 2007 by the United Nations University-World Institute for Development Economics Research (Davies, Sandstrom, Shorrocks and Wolff, 2007). Building on this and on further research by Anthony Shorrocks and Jim Davies, the Crédit Suisse Research Institute launched its *Global Wealth Databook* (GWD) in 2010, with updates in 2011 and 2012.

The GWD aims to provide estimates of the wealth holdings of households around the world for the period since 2000. It includes information on the levels and distribution of wealth within and across countries and global regions. The data set is used to analyse long-term wealth patterns and emerging trends, as well as to study the link between wealth and other topics, such as population ageing. The main findings from the analysis of the data set are highlighted in the Crédit Suisse *Global Wealth Reports*.

The global wealth estimates are obtained by assembling and processing information from a variety of different sources, including published macro- and micro-level wealth data for individual countries, and by using econometric techniques for the large number of countries that lack data on wealth. The estimation procedure involves several steps:

- *First*, the average level of household wealth for each country is established. Data are gathered on the level of a country's wealth and the size of its population in order to derive estimates of mean wealth per adult. Separate data are gathered for financial assets, non-financial assets and liabilities. For countries with both balance sheet data (i.e. macro-level data) and survey data (i.e. micro-level data), balance sheet data are preferred based on the view that they typically use survey results as one input but also take into account other

data sources as well. For countries where only one of these two data sources is available, estimates are based on whatever source is available. For countries where information on one of the components of household wealth is not available, that component is estimated using independent variables and regression techniques.

- *Second*, the pattern of wealth holdings within countries is established. For those countries where data on the distribution of wealth are not available, these are estimated based on the observed relationship between income distributions and wealth distributions.
- *Third*, information in "Rich Lists" (e.g. those published by *Forbes Magazine*) is used to adjust the wealth distribution pattern in the highest wealth ranges, as the traditional sources of wealth distribution data are considered unsuited to providing an accurate picture of wealth at the top end of the distribution.
- *Fourth*, estimates of the global distribution of household wealth are derived by combining information on the level and distribution of household wealth for each country. This involves grafting the pattern of wealth holdings in a country onto its average level of wealth. A synthetic set of wealth values, consistent with the (actual, estimated or imputed) wealth distribution, is generated for each country, and these values are then scaled up to match the mean wealth of the respective country. The results are then merged into a single world data set.

For those countries (usually small ones) where no information on household wealth is available, data are imputed by drawing on data on the average level and distribution for the world region and income class to which the particular country belongs. In the 2011 GWD, 50 countries (out of the 216 countries covered in the study) fell into this category.

2.5. Summary

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

- Information on household wealth at both the macro and micro levels is important for policy development, implementation and evaluation across a range of areas, as well as for research and analysis concerned with many economic and social issues.
- Micro statistics on household wealth aim to support these information needs by providing measures of the level, composition and distribution of household wealth at the individual household level. The measures need to be accurate, comprehensive, regularly updated, and based on methodologies that are consistent across countries.
- Micro data on household wealth need to be as consistent as possible with the macro wealth data. They also need to be linked with the macro data to bring a distributional perspective into the macro measures.
- Micro data on household wealth need to be brought together with micro data on household income and consumption so that these different dimensions of people's economic well-being can be analysed simultaneously.
- While many countries currently produce (or are in the process of producing) micro statistics on household wealth, most countries do not produce comprehensive statistics in this field or do not produce them regularly. In addition, the currently available country statistics are often based on different definitions, classifications, recording principles and measurement practices. Comparable and reliable statistics are very scant. Improving international comparability in this field is one important objective of this report.

- Several approaches are being used by countries and international agencies to improve the integration of micro statistics on household wealth with other statistics. These include:
  - development of the *Integrated Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*, in parallel with the guidelines in this publication;
  - joint collection of data on household wealth and income, and often consumption expenditure as well, in household surveys;
  - data matching and linking techniques to bring together data from different collections;
  - data confrontation techniques to identify, explain and quantify (where possible) the differences between the micro and macro wealth estimates; and
  - disaggregation of the national accounts data for the household sector by groups of households, using information available from micro sources and the construction of wealth inequality indicators consistent with macro wealth aggregates.
- In recent years, several important initiatives have aimed at improving the availability and comparability of household wealth data. These include the Luxembourg Wealth Study, the Eurosystem Household Finance and Consumption Survey and the *Global Wealth Databook*.
- The guidelines in the following chapters of this publication complement the existing activity at national and international levels in order to improve the available micro statistics on household wealth. They provide an agreed conceptual and practical base for the measurement of household wealth at the level of individual households.

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Chapter 3

Standard concepts, definitions and classifications for household wealth statistics

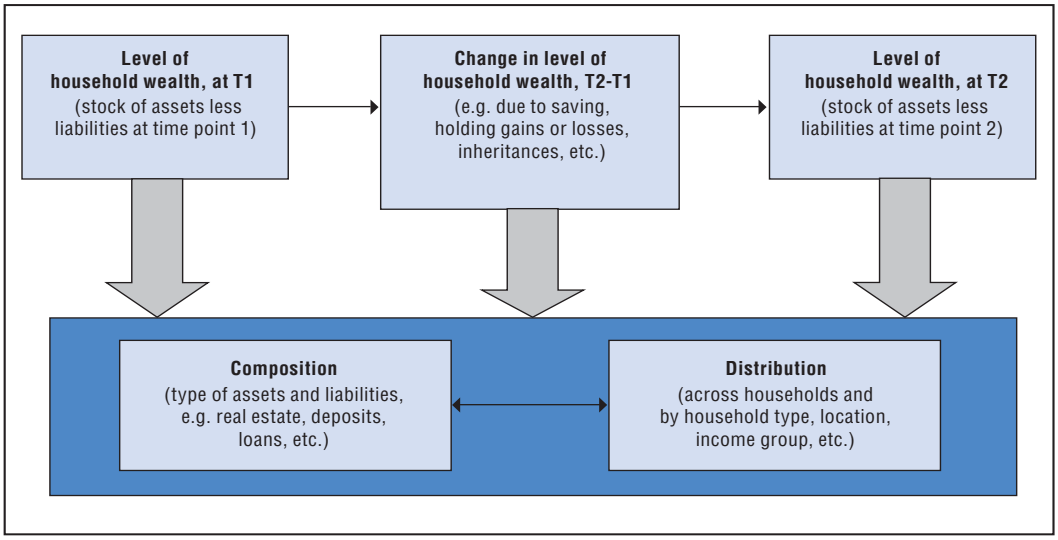
This chapter describes the conceptual framework for micro statistics on household wealth. The basic concepts and general principles for these statistics are introduced along with key definitions, standard components and standard classifications. The term "wealth", as used here, covers both the assets and liabilities of households.

3.1. Description of the conceptual framework for micro statistics on household wealth

3.1.1. The broad micro framework

In broad terms, 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 level of wealth refers to the value of the stock of assets held after deduction of liabilities outstanding. Composition refers to the dissection of wealth by type of assets and liabilities, while distribution refers to the spread of wealth across the population, including particular classes of households. Changes over time arise from factors such as saving or dissaving, holding gains or losses, inheritances and bequests. This specification of the scope of the statistics is reflected in the broad conceptual framework for their compilation, illustrated in Figure 3.1.

Figure 3.1. **Broad conceptual framework for micro statistics on household wealth**



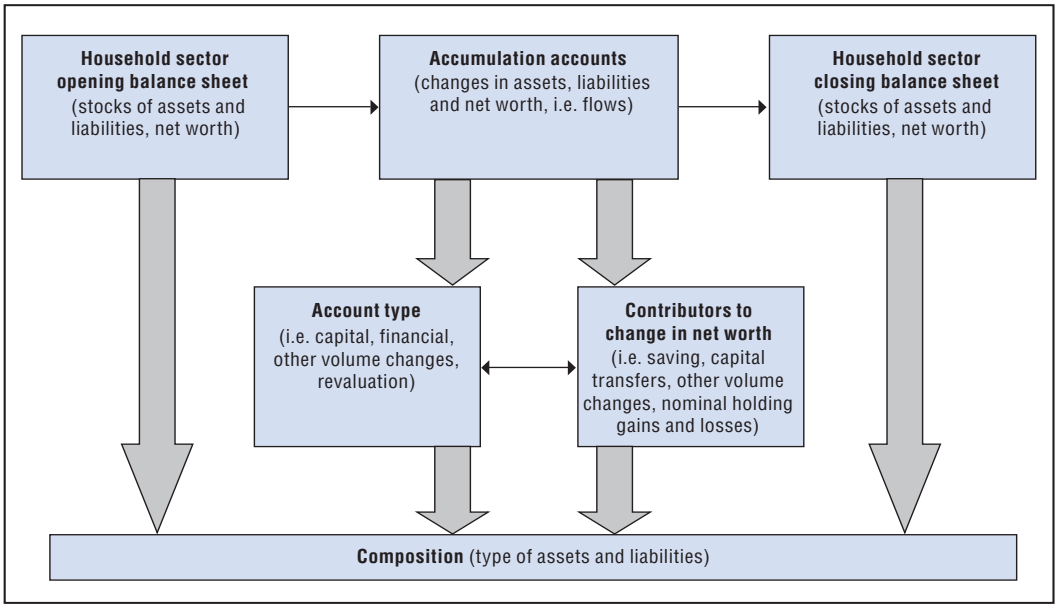
The guiding principles in the rest of this chapter have been formulated within this broad framework. The recommended concepts, definitions, classifications and recording principles flesh out the framework and provide an internally consistent conceptual base for micro statistics on household wealth. They are applicable to measuring the total stock of wealth at the household level as well as to measuring compositional and distributional patterns and trends, including factors contributing to changes in the stock of wealth.

3.1.2. Relationship between the micro and macro frameworks

The 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,

United Nations, 2008). The macro statistics framework centres on the SNA's balance sheet and accumulation accounts for the household sector and is illustrated in Figure 3.2.

Figure 3.2. **Broad conceptual framework for macro statistics on household sector wealth, based on SNA 2008**



The "balance sheets" in the macro framework record the stock of assets and liabilities and net worth (i.e. the difference between the stock of assets and of liabilities) at the opening and closing dates of the accounting period. The balance sheets also record the type of assets that are held and the type of liabilities that are outstanding. The "accumulation accounts" record the changes in the stock of assets, liabilities and net worth between these two dates. These changes are referred to as "flows" and relate to a period of time, whereas "stocks" relate to a particular point in time. The balance sheet and accumulation accounts of the household sector are part of the SNA's integrated system of accounts covering the economic activity and wealth of all sectors of the economy.

There are several types of accumulation account in the macro framework: the "capital account" records transactions in non-financial assets as well as saving and capital transfers; the "financial account" records transactions in financial claims (covering both financial assets and liabilities); the "other changes in volume account" records the effect of exceptional events that cause variations in not only the value of assets and liabilities but also their volume (e.g. changes due to wars or natural catastrophes); and the "revaluation account" records nominal holding gains and losses, split into real and neutral. Real holding gains reflect changes in the relative price of assets, whereas neutral holding gains reflect movements in the general price level. The total change in net worth is also explained in terms of four broad contributors, i.e. "saving", "capital transfers", "other volume changes" and "nominal holding gains and losses".

"Saving" provides the link between the current accounts of the SNA and the subsequent accumulation accounts. It is the balancing item of the last current account (the "use of income account") and is the starting entry in the capital account. It is an accounting

construct that cannot be measured independently of the other entries. It represents that part of disposable income that is not spent on the final consumption of goods and services, and it may be either positive or negative. For example, over a particular time period, if income exceeds consumption expenditure – that is, saving is positive – and there are no capital transfers, then the unspent income must be used to acquire assets or reduce liabilities. On the other hand, if consumption expenditure exceeds income – i.e. saving is negative (often called dissaving) – and there are no capital transfers, then some financial or non-financial assets must have been liquidated or some liabilities increased.

"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. Examples relevant to households are large donations and gifts, inheritances and inheritance taxes and lump-sum retirement payments.

The "household sector" in the macro framework refers to one of the five resident institutional sectors separately identified by the SNA on the basis of principal functions, behaviour and objectives. The sector consists of all resident households, with each household comprising one individual or a group of individuals. All individual persons belong to one and only one household. A household is said to be a resident of the economic territory of the country with which it has the strongest connection, i.e. its centre of predominant economic interest.

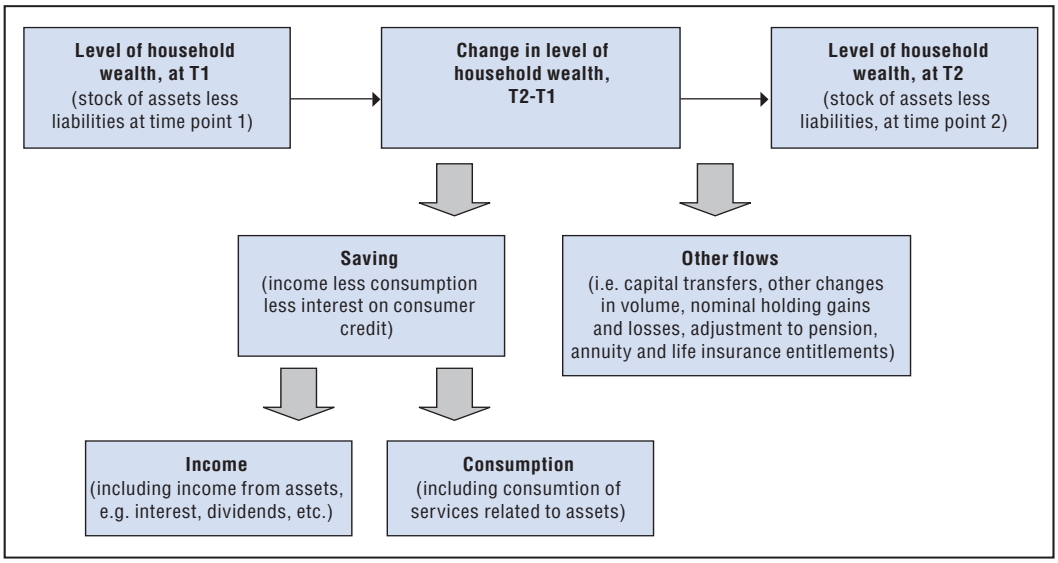
Comparing the broad micro and macro statistics frameworks illustrated in Figures 3.1 and 3.2, it is evident that they have much in common, but also some differences. Each framework has a focus on wealth (net worth) and on the level (stock) and composition (type) of assets and liabilities at a particular point in time, and the changes in levels (flows) over time. Each refers to households, although the macro framework relates to an institutional sector. Unlike the micro framework, the macro framework has an accounting focus and is based on a fully articulated set of linked accounts covering the whole economy; it distinguishes the different types of flows that lead to changes in the stock of wealth; and it does not include wealth distribution as a core element.

The differences in the frameworks reflect the different purposes and analytic focus of the statistics to which they refer. However, the similarities indicate that there are many areas where consistency between the statistics is likely to be both appropriate and achievable. In developing the standards in this chapter, consistency between the micro and macro statistics in respect of concepts, definitions, recording principles and classifications has been a key consideration. Wherever the treatment recommended for micro statistics is not fully aligned with the SNA, justification for the difference is provided and the adjustments needed to achieve alignment are explained.

3.2. Conceptual relationship between micro statistics on household wealth, income and consumption

Micro statistics on household wealth refer to one dimension of household economic well-being. Other important dimensions are household income and consumption. An overview of the conceptual relationship, from a statistical perspective, between wealth and these other dimensions is presented in Figure 3.3. For purposes of this discussion and to facilitate comparability with the earlier diagrams, wealth stocks and flows are taken as the starting point for explaining this relationship; the downward arrows from particular aggregates point to the direct contributors to those aggregates.

Figure 3.3. **Overview of conceptual relationship between micro statistics on household wealth, income and consumption from a statistical perspective**



As indicated earlier, in the macro statistics framework wealth is linked to income and consumption through "saving". This is also the case for micro statistics. Specifically, household income during a period is either consumed, used to pay interest on consumer credit, or saved; in turn, saving along with other flows (i.e. capital transfers, other changes in volume, nominal holding gains and losses, and the adjustment to pension, annuity and life insurance entitlements) during the period explain the change in the level of wealth between the beginning and end of the period. In the absence of these other flows, if income exceeds consumption during the period, then the level of wealth increases, whereas if consumption exceeds income, then the level of wealth decreases due to dissaving. Broadly, the income and consumption concepts used here are the same as the SNA's concepts of "household disposable income" and "household final consumption expenditure".

Just as income is available through saving for accumulating wealth, wealth is available through dissaving for spending on consumption. For example, in any particular time period and in the absence of capital transfers, a household's consumption may be financed wholly or partly out of its income, wholly or partly out of its wealth, or partly out of its income and partly out of its wealth. Where consumption and the payment of interest on consumer credit are funded wholly out of household income, saving is positive or zero. Where consumption is funded wholly or partly out of household wealth (implying that income is zero or that no income is saved), saving is negative. Such dissaving implies the disposal of some existing assets belonging to the household (e.g. a reduction of bank liabilities) and/or the incurrence of some new liabilities. If there are no other flows affecting the value of the household's assets and liabilities in the period, this dissaving would be the sole contributor to and fully explain an overall decline in the household's wealth.

There are also some other links between wealth and income and between wealth and consumption, as indicated inside the boxes in Figure 3.3. For example, households can earn property income from the assets they own. Such income includes interest, dividend and rent receipts. In addition, households may consume services produced by their assets. Such services include those relating to owner-occupied dwellings. The *Income, Consumption and*

Wealth Framework provides more detailed information on these additional links from the perspective of income concepts and their measurement.

Understanding the relationships between the concepts of wealth, income and consumption is particularly important when measures of each of them are brought together for joint analysis. As discussed in Chapter 2, there are many policy and research questions concerning the well-being and behaviour of households where joint analysis can add considerable value. Consistency across the statistical standards for each dimension is needed to produce statistical measures that support such analysis. This has been kept in mind in developing the standards in this chapter. Particular attention has been given to relevant recommendations in the 2011 *Canberra Group Handbook on Household Income Statistics* and the 2003 report of the 17th ICLS on Household Income and Expenditure Statistics.

It is also important to understand the relationships between wealth, income and consumption when only partial data are available. For example, if no wealth data are available or only stocks of wealth at one particular point in time, the extent to which wealth is being used to support consumption in a given period will not be clear. The observed relationships between income, consumption and derived saving may suggest significant use of wealth for consumption by some households, but timing issues, gaps in coverage, lumpiness in transactions and errors in measurement for both income and consumption will limit the conclusions that can be drawn. If users do not understand the broader framework, they may draw wrong conclusions from the available data. For example, they may conclude that some households are in much worse, or much better, economic circumstances than they actually are.

The need for consistent standards on the measurement of household wealth, income and consumption at the micro level has also been a key driver behind the concurrent development of the OECD publication, *Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*. That publication brings together the agreed standards for each dimension into a single reference. It also includes advice on best practice for generating integrated data sets and for deriving statistical measures for analysing joint distributions, such as income and wealth. The wealth standards described in this document have been incorporated in that publication.

3.3. Basic concepts and definitions for household wealth statistics

This section describes and defines the basic concepts used in producing micro statistics on household wealth. It contains recommended definitions of “household”, “wealth” or “net worth”, and “assets” and “liabilities”. The section also discusses the consistency of these definitions with those used for macro statistics compiled according to the SNA and with other relevant international standards.

3.3.1. Household

The concept of the household is important in many different fields of both micro and macro statistics. This is reflected in the various international statistical standards that describe and define the concept. While the main standards all focus on people’s living arrangements, their specific recommendations are not always consistent, and there are some substantial differences.

Comparison of different definitions

The international standards of most relevance for the measurement of the distribution of household wealth are those relating to population censuses, household income and expenditure surveys and national accounts. The definitions adopted in the harmonised wealth surveys conducted in the seventeen euro area countries are also relevant. These surveys are part of the euro area Household Finance and Consumption Survey (HFCS) that is described in Annex A. The main features of the household concepts and definitions in each of these standards are summarised in Table 3.1 and described in more detail in Annex E.

The basic household concept is very similar in all the standards described in Table 3.1. Both single person and multi-person households are recognised, and multi-person households are identified using criteria that have much in common. Generally speaking, a multi-person household refers to a group of people who have a shared place of residence and some shared expenditure on the essentials for living. This notion of shared resources also implies shared use of the income and/or wealth used to finance the expenditure on these goods and services.

The main differences between the standards relate to: *i)* the detailed specification of the resources that must be shared to qualify as a multi-person household; *ii)* whether or not a multi-person household is confined to occupancy of a single dwelling or other place of residence; *iii)* whether or not people living in institutions are included within the household concept; *iv)* whether or not different household categories are identified and how they are defined (e.g. private households, resident households, etc.); *v)* the extent to which statistical coverage is restricted to certain household categories; and *vi)* the treatment of particular borderline cases (e.g. boarders).

All the standards rely on the notion of "usual" residence to determine household membership. In the case of the UNECE/CES and HFCS standards, detailed rules are provided to address special situations where a person's usual residence may not be clear (e.g. due to work, study, hospitalisation, etc.). These rules differ in a number of ways. Those recommended by the UNECE/CES are based on convention, including length of time in a particular place, whereas those recommended by the HFCS take into account additional factors such as household ties and financial ties.

In practice, countries generally focus on private households when measuring household wealth at the micro level, and they use differing definitions of these households. Research conducted by the Luxembourg Wealth Study suggests that micro sources in this field rely on two main types of definition: *i)* those that are based on people living together and sharing expenses; and *ii)* those that are based solely on people living together in the same dwelling. Some countries also require that persons within a household be related.

Where there is no requirement for members of a private household to share resources other than the dwelling itself, the outcome is that one household is defined for each occupied dwelling. The UNECE/CES population census standard (paras. 481-482) notes that this approach may be more practical for some countries than its recommended one. The UNECE/CES also considers that this approach would generally have little impact on the total number of private households, although it may result in large differences for certain types of households such as one person households.

The selection of a uniform household concept and definition for use in micro statistics on household wealth has important implications for both data collection and analysis within countries as well as for international comparability of these statistics. The choice is also

Table 3.1. **Summary of the main features of the household concepts and definitions used in other standards**

UN World Population Census[1]	Basic household concept: A household is either a group of persons who make common provision for food and other essentials for living, or an individual person who makes his or her own provision for these essentials. Population covered by concept: All persons living in housing units and in collective living quarters other than the institutional population. Household categories: None. Housing arrangements: A household may occupy the whole, part of, or more than one housing unit, or be found in collective living quarters, or be homeless. Statistical coverage restrictions: None. The statistics cover all households.
UNECE/CES Population Census[2]	Basic household concept: A household is either a group of persons who make common provision for food and possibly other essentials for living, or an individual person who makes his or her own provision for these essentials. Population covered by concept: All persons. Household categories:[7] Private households, Institutional households and Other households. Housing arrangements: A private household may occupy the whole or part of a housing unit, but not more than one housing unit; there may also be private households within collective living quarters. An institutional household comprises persons whose need for shelter and subsistence is being provided by an institution. Statistical coverage restrictions: None. The statistics cover all households.
ICLS Standards for household income and expenditure statistics[3]	Basic household concept: Based on the UN World Population Census Standard, with a slight modification. A household is either a group of persons who make some common provision for food or other essentials for living, or an individual person who makes his or her own provision for these essentials. Population covered by concept: Same as the UN standard (i.e. the institutional population is excluded). Household categories:[7] Private households and Collective households. Housing arrangements: Same as the UN standard. Statistical coverage restrictions: Only private households living in housing units and those collective households whose members are involved in decision-making about their consumption (including consumption of housing services) are covered in the statistics. Other collective households (as well as institutions) are excluded.
Canberra Group for household income statistics[4]	Basic household concept: Based on the UNECE/CES Population Census Standard. Population covered by concept: Same as the UNECE/CES standard, by implication (i.e. all persons are covered). Household categories: Same as the UNECE/CES standard, by implication. Housing arrangements: A private household may occupy the whole or part of a housing unit, but not more than one housing unit. Statistical coverage restrictions: Only private households living in housing units are covered in the statistics. Private households in collective living quarters and institutional households are excluded.
Euro area Household Finance and Consumption Survey[5]	Basic concept: A household is either a group of persons who live together and share expenditures (including the joint provision of the essentials of living), or an individual person living alone. Population covered by concept: All persons living in private households and collective households. Persons living in institutions are excluded. Household categories:[7] Private households and Collective households. Housing arrangements: A private household may occupy either the whole or part of a private dwelling, but not more than one dwelling. Statistical coverage restrictions: Only private households residing in the national territory are covered in the statistics. All collective households (as well as institutions) are excluded.
System of National Accounts)[6]	Basic concept: A household is either a group of persons who share the same living accommodation, who pool some or all of their income and wealth, and who consume certain types of goods and services collectively (mainly housing and food), or an individual person who does not join with others in this way. Population covered by concept: All persons in the economic territory of a country. Household categories: Resident households and Non-resident households. Within Resident households, Institutional households are separately defined. Housing arrangements: A household occupies a dwelling or dwellings, an institution, or other types of living accommodation. Statistical coverage restrictions: Only resident households are included in household sector statistics. Non-resident households are excluded from these statistics.

1. Principles and Recommendations for Population and Housing Censuses, Revision 2, published by the United Nations in 2008, paragraphs 1.442, 1.448-1.455, 1.461-1.468.
2. *Conference of European Statisticians' Recommendations for the 2010 Censuses of Population and Housing*, published by the United Nations Economic Commission for Europe (UNECE) in 2006, paras. 158-170, 478-492, 592-595.
3. *Household Income and Expenditure Statistics, Report II* of the 17th International Conference of Labour Statisticians, published in 2003 by the International Labour Office, paras. 181-185, 193-195, resolutions 54-58.
4. *Canberra Group Handbook on Household Income Statistics 2011*, published by the UNECE, Boxes 3.2 and 6.1, and Section 3.3.1.
5. European Central Bank Household Finance and Consumption Network *Core Output Variables*, March 2011.
6. *System of National Accounts 2008*, paras. 1.48, 2.17-2.20, 4.10-4.37, 4.149-4.159, 24.12-24.17, 26.37-26.39.
7. Household categories are distinguished on the basis of the type of housing where each household lives. A "private household" generally refers to an individual person or group of persons occupying a separate housing unit; but, depending on the standard, it may also refer to a person or group occupying collective living quarters other than institutions. An "institutional household" refers to a group of persons whose need for shelter and subsistence is provided by an institution, such as hospitals, nursing homes, military barracks, prisons or student residences. A "collective household" refers to a person or group of persons occupying collective living quarters not classified as institutions, for example hotels, boarding or lodging houses and camps; some, all or none of these households may be regarded as private households, depending on the standard that is used and interpretation of that standard.

important for integration with micro statistics on other types of economic resources, particularly since household income is often also collected in wealth surveys and since data on both topics are often analysed together. As the household concept is already defined in detail in existing standards, there are advantages in basing the definition proposed for micro wealth statistics on one of these standards, provided that it is considered adequate for measuring wealth at the household level.

A case can be made for basing the household definition recommended here on any of the above standards. The SNA provides the conceptual base for macro statistics on wealth as well as on other economic resources. The value of consistency between the micro and macro wealth standards has already been discussed. The two population census standards provide conceptual benchmarks for micro statistics generally. In each case the household concept is the starting point for a range of other standard definitions and classifications (e.g. family, type of household, household characteristics, etc.). Many of these are relevant to micro statistics on household wealth. The ICLS, Canberra Group and HFCS recommendations are important from the perspective of integrating income, consumption and wealth statistics at the micro level. The first two explicitly draw on the population census standards to define their household concepts, but the differences in these census standards have led, at least partly, to different outcomes. The HFCS definition of household diverges at a detailed level from these other international standards but in a way that may be more attuned to the concept of wealth (e.g. its notion of financial interdependence is more suited to deciding on household membership in certain borderline cases).

In assessing the alternative approaches, the distinction between the "concept" of a household and the statistical "coverage" of households should also be kept in mind. As already illustrated, a statistical standard may recognise different categories of household within its overall concept but specify a narrower coverage for the statistics that are to be produced. For example, there may be analytical or practical reasons for excluding institutional households from the coverage of micro statistics on particular topics, even though such households are recognised within the household concept.

On balance, the UNECE/CES population census standard has been adopted as the household concept used in these guidelines on micro statistics on household wealth. The UNECE/CES household concept is closest to that in the SNA, as it encompasses all persons living in a country; it also underpins the Canberra Group's definition of a private household, and it can be broadly related to the concepts used in the other international standards, as it delineates private households separately from institutional households. However, differences in definitional detail preclude full alignment with the SNA, or with the ICLS standard and the UN world population census standard on which the ICLS concept is based. While the differences might be small in practice for many countries, they might still be significant for certain types of wealth analysis.

3.3.2. Definitions of household and associated concepts for micro statistics on household wealth

The *recommended definitions of household and associated concepts* for micro statistics on household wealth are provided below. The definitions of "household", "household categories", "housing arrangements" and "place of usual residence" are all 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 of a country from non-residents.

Household

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.

Household categories

In most countries, most people live in private households, but some live in institutional or other households. The main household categories are as follows:

- *Private households*. A private household is: *i)* 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 any of the other occupants of the housing unit to form part of a multi-person household; or *ii)* 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 *iii)* 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 and generally are allowed to use the household facilities; they 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 employer may be boarders or lodgers: if the employer and staff share food and meals, the staff are boarders; if they do not, the staff are lodgers and constitute a separate household or households.
- *Institutional households*. An institutional household comprises persons whose need for shelter and subsistence is 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: *i)* residences for students; *ii)* hospitals, convalescent homes, establishments for the disabled, psychiatric institutions, homes for the elderly and nursing homes; *iii)* assisted living facilities and welfare institutions, including those for the homeless; *iv)* military barracks; *v)* correctional and penal institutions; *vi)* religious institutions; and *vii)* workers dormitories. Employees of an institution who live alone or with their family at the institution should be treated as members of private households.

- *Other Household*. 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.

Housing arrangement

A Housing Arrangement refers to the type of housing at a person's place of usual residence. Based on these arrangements, the whole population can be classified into three basic categories: *i)* occupants of housing units; *ii)* occupants of collective living quarters; and *iii)* homeless people with no place of usual residence.

- *Housing Unit*. 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 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*. Collective living quarters comprise premises that are designed for habitation by large groups of individuals or several households and are 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).

Place of usual residence

A Place of Usual Residence is the geographic place within a country at which a person spends most of his or her daily night-rest. A number of special cases may however be distinguished.

In some cases where it may be difficult to determine this place, the treatment is as follows: *i)* for persons who work away from home and return at weekends, the usual residence is the family home; *ii)* for school students who are away from home during school term, the usual residence is the family home; *iii)* 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; *iv)* 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; and *v)* 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.

Another special case is that of tertiary students living away from home but in the same country. The term-time address of tertiary students living away from home but in the same country 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). This term-time address is regarded as their place of usual residence with the following exception: where the student has 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.

Country of residence

A household is resident in 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 dwelling. If there is uncertainty about which dwelling is the principal dwelling, 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.

This definition of the country of residence has implications for household membership. 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 otherwise spend periods of time abroad. If they work and reside abroad for such a long time that they acquire a centre of economic interest abroad, they cease to be members of their original households. 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: *i)* students who go abroad for full-time study continue to be residents of the territory in which they were resident prior to studying abroad; *ii)* 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; *iii)* 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; *iv)* 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; *v)* cross-border workers have their residence in the territory where their principal dwelling is located; *vi)* refugees have their residence in the economy where they stay or intend to stay for a year or more; and *vii)* 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 are provided below.

- *Tertiary students studying abroad*. As already noted, tertiary students who go abroad to study 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. In particular, if the student has sufficient financial support from the 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.

- *Persons undergoing medical treatment abroad*. Similar situations may be encountered with people who go abroad for medical treatment. These persons 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 twelve 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 the like serving abroad*. A further situation where differences may arise concerns national diplomats, military personnel, etc., employed abroad in government enclaves. As already mentioned, such persons and their households are considered to be residents of the territory of the employing government. In addition, the physical enclaves where they work and sometimes live are considered part of the territory of the employing government, rather than of 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.

Relationship between the household definition and statistical coverage

The coverage principles for micro statistics on household wealth are discussed later in this chapter. The recommended coverage of households is specified in terms of the types of households defined above, but not all types of households are to be included in the statistics. Specifically, the statistics should cover private households that reside in housing units and that are residents of the country to which the statistics relate, but exclude institutional households and private households residing in collective living quarters. They should also exclude non-resident households, even if they are physically located in the domestic territory of the country. The reasons for these restrictions, along with their analytical and practical implications, are explained in that section. These restrictions have implications for the alignment with macro statistics based on the SNA and with micro statistics based on recommendations by the Canberra Group and ICLS.

Relationship between the household definition and unit of measurement

The household definition is closely tied to the unit of measurement for micro statistics on household wealth. Both the collection unit and the analysis unit are usually based on the household or some dissection of the household, such as the family, the primary economic unit or the individual person. Many countries that have household wealth surveys also use more than one unit, especially to collect the data. The different types of units, and the analytical and practical considerations that need to be taken into account when choosing units, are discussed later in this chapter.

Relationship between the concepts of household and family

The concept of "household" should be distinguished from that of "family". The UNECE/CES standard for population censuses (paras. 493-504) defines several concepts of family, all of which refer to a group of two or more persons who live in the same household and who

are related to each other through blood, marriage or adoption. The narrowest concept is that of a "family nucleus". This refers to two or more persons who live in the same household and who are related as husband and wife, as cohabiting partners, as a marital (registered) same sex couple, or as a parent and child. Under this concept, a family comprises a couple without children, or a couple with one or more children, or a lone parent with one or more children. A family nucleus may also include "skip generation households", i.e. households consisting of a grandparent(s) and one or more grandchildren but with no parent of those grandchildren present. Other family concepts include: *i)* a "three generation household"; *ii)* a "reconstituted family"; and *iii)* an "extended family". The concept of a family may also cross the household boundary and involve much more complex relationships. Different cultural and institutional arrangements in countries can affect the relevance and usefulness of particular concepts as well as the practicality of measuring them.

While the concepts of household and family are related, there are three main differences between them. First, a household may consist of only one person, but a family must contain at least two members. Second, the members of a multi-person household need not be related to each other, while the members of a family must be related. Third, families may include persons who usually live separately or are permanently absent from the household. The value of producing wealth statistics in respect of family units, in addition to household units, is considered later in this chapter.

3.4. Wealth and net worth

The concept of "wealth" generally refers to economic resources in the form of assets and liabilities. For example, 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). However, concepts relating to these different types of capital are difficult to integrate with the established concepts dealing with economic resources. Also, their many dimensions are hard to measure comprehensively, particularly at the level of each individual household, 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 – comprising items that have an economic value and are subject to ownership rights – is generally considered to be the most relevant and useful approach for most purposes as well as the most practical. This concept of wealth is often summarised in a net measure representing assets less liabilities. For an individual household, the net measure may be positive or negative, depending on that household's specific circumstances. This net measure of wealth is equivalent to "net worth" as defined in the SNA (paras. 13.4, 13.85).

The *recommended definition of wealth,* or *net worth,* for micro statistics on household wealth is as follows: wealth, or net worth, is the value of all the assets owned by a household less the value of all its liabilities at a particular point in time.

This definition generally reflects country practices. Measures of total wealth at the individual household level typically refer to the level of assets less outstanding liabilities and are often described as net worth. In some data collection settings, however, practical issues may arise with the "point in time" condition. This condition and its implications are discussed in more detail later in this chapter.

3.5. Assets and liabilities

Assets and liabilities are defined in detail in the SNA as part of its integrated system of national accounts (SNA, paras. 3.30-3.49). The SNA definitions are also applicable to micro statistics on household wealth and are widely used in producing these statistics. Consistent definitions for both sets of statistics can enhance the usefulness of both the micro and macro wealth measures and facilitate the integration of these and other statistics.

The *recommended definitions of assets and liabilities* for use in micro statistics on household wealth, based on those in the SNA, are as follows: 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; while 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 the assets covered by the guidelines are economic assets, i.e. they are subject to property rights that give their owners the right to transfer them to another agent. Assets may be financial in nature or not, whereas all liabilities are financial. 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. It means 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 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 possible assets and possible 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; only if and when the overdraft is drawn down does the holder incur a liability. Similarly, a claim for compensation or damages being pursued through legal processes where the outcome is uncertain is a contingent asset of the claimant; only if and when payment against the claim is virtually certain does the claimant acquire an asset. Uncertainty about the value of an asset or liability does not make this 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.

It should be noted that financial derivatives – such as option contracts and forward contracts – are treated as actual assets and liabilities rather than as 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.

A household's net equity in any unincorporated business owned wholly or in part by the household is included as an equity asset of the household. These businesses are those, owned wholly or partly by a member (or members) of the household, 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.*

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 and partnerships, investment fund shares and units, and pension 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 is discussed in detail later in this chapter.

3.5.1. 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, as well as 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, 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 SNA recognises that information on the stock of consumer durables is of analytical interest, for example in the context of measuring household saving and wealth. It therefore suggests that information on the value of consumer durables should appear as a memorandum item in the household balance sheet, but that it should not be integrated into the balance sheet totals (SNA paras. 2.34, 3.46-3.47, 10.34, 13.93-13.94).

The SNA also notes that its central framework can be supplemented through satellite analysis using alternative concepts such as a different production boundary or an extension of the scope of assets to include consumer durables. One of the conceptual variations presented as an option in the context of satellite accounts is to treat household expenditure on consumer durables as fixed capital formation rather than as household final consumption expenditure. Under this option, the resulting fixed asset is treated as providing capital services to the household, estimates of these services are included in consumption, and the concept of saving

* This treatment is consistent with the economic principle (enunciated in SNA para. 4.47 in regard to such entities abroad) that: "[…] An unincorporated enterprise abroad should be treated as a quasi-corporation when indications of substantial operations can be identified separately from the rest of the entity. As with other quasi-corporations, either a complete set of accounts for the unit exists or it would be meaningful from an economic point of view to compile them. The availability of separate records indicates that an actual unit exists and makes it practical to prepare statistics." Practical guidance in the SNA on the treatment of unincorporated enterprises is more generally based on the availability of accounts (SNA, paras. 4.21, 4.32, 4.155-4.157, 24.29), so that when unincorporated enterprises are included as quasi-corporations in the corporations sector, the full accounts for the corporations sector can be compiled. However, the constraint of a complete set of accounts for the compilation of the corporations sector does not arise for micro-household statistics where only the household's net equity need be recorded.

is extended accordingly. Studies have shown that this approach can have a significant effect on saving ratios (SNA, paras. 2.167, 29.6, 29.46-29.51, 29.152-29.155).

Most countries collect information on consumer durables (at least on the more important ones like cars and other vehicles) in their surveys for measuring household wealth at the micro level. Several countries also include consumer durables as a component of non-financial assets in their wealth classifications. This information is useful for analysing household wealth, including the behaviour of different types of households, as economic conditions and policy settings change. Collecting the information in the context of assets is also convenient, as individual households typically regard their major consumer durables as assets, and they may have loans tied to the purchase of these items. The view that such items are assets is reinforced by the practices of financial institutions and government agencies in carrying out their administrative functions.

In the household income standards recommended by both the 2011 *Canberra Group Handbook* and the 2003 ICLS report, the value of services from consumer durables is included in the conceptual definition of income. In principle, consumer durables are treated like owner-occupied dwellings, i.e. the goods are treated as assets belonging to a notional unincorporated enterprise owned by the household and earning income from the production of the services consumed by the household. This income is valued net of expenses that go into the production of the services. Both standards recognise, however, that most countries do not measure such income in practice. For purposes of international comparisons, therefore, the Canberra Group provides a practical definition of income that excludes the value of these services (Sections 2.3.3, 4.5), while the ICLS also provides an operational definition of income that excludes them (paras. 75, 80 and Resolution 16.)

In the case of household consumption expenditure, the ICLS standard recognises that the different purposes for which the statistics are required may require different approaches. It allows countries to choose between two alternative operational definitions: one that treats durable goods in the same way as non-durable goods, whereby the purchase value of the good is recorded as consumption expenditure; and another that involves assessing the estimated value of the services provided by the goods and recording this as consumption expenditure. It identifies this second alternative – which is consistent with its conceptual definition of income and the treatment of consumer durables as assets – as the conceptually preferred approach for welfare analysis. It acknowledges that this preferred approach involves imputations and that most countries do not make them. Nonetheless, it argues on analytic grounds that statistical offices should collect information that could be used to value the flow of services for major durable goods (defined in terms of expected lifetime and cost). This information should be collected, whichever alternative is used for measuring household consumption expenditure. It also recommends that, regardless of the alternative used for consumption, the corresponding method should be used for income when both sets of statistics are used in combination (2003 ICLS, paras. 142-148, 170-172, and Resolutions 32-35, 37, 49).

The *recommended treatment of consumer durables* in micro statistics on household wealth is to treat them as assets and to include them in measures of household wealth. They should also be recorded separately from other types of assets. This treatment is considered to be the most useful approach for the many types of analysis that micro statistics need to inform. Country experience has also shown that it is a practical approach. For some types of households, such as those at the lower end of the wealth distribution, the value of consumer durables may account for a sizeable proportion of their assets and have a

significant impact on their net worth. Also, some types of liabilities (e.g. loans for vehicle purchases) may be closely associated with the acquisition of particular types of consumer durables. Inclusion of both the debt and the item giving rise to it is more informative than inclusion of the debt alone.

Separate recording will facilitate the compositional and distributional analysis of wealth at the micro level. It will also allow alignment with macro statistics on household wealth compiled on the basis of the SNA central framework, and with micro statistics on household income and consumption expenditure compiled on the basis of either the conceptually preferred or the operational definition in the standards for those statistics. As measures of household net worth at the micro level will have a wider asset coverage than those at the macro level, it is important to present these measures in a way that makes this difference clear to users.

3.6. General principles of recording

A number of general principles of recording are specified in this section. These relate to: *i)* valuation; *ii)* time of recording; *iii)* consolidation and netting; *iv)* coverage; and *v)* unit of measurement. Research comparing country methodologies (see Annex D) and the experiences of the Luxembourg Wealth Study indicate that there are some significant differences between countries in all of these areas.

3.6.1. Valuation

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 national accounting system, 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. It 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, paras. 3.118-3.139, 3.155-3.158, 13.18-13.84). These methods include: *i)* the derivation of values from prices established in related markets; *ii)* the estimation of fair values that approximate market prices; *iii)* the calculation of written-down replacement cost; and *iv)* the 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 that are traded only rarely. 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 different valuation bases, any one of which might be 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, its 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 in place, 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 issues like the household's propensity to consume out of wealth. However, this 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. The original price may provide useful insights for some wealth components, particularly when used in conjunction with the current price valuation and analysed at the individual household level. 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 also 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 it 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. In particular, it facilitates the alignment of micro statistics on household wealth with those on household income and consumption. To the extent that other bases of valuation may be useful for some purposes, any statistics compiled on these other bases should be treated as providing supplementary information.

While this "current value" principle underpins existing micro statistics on household wealth in many countries, putting the principle into practice in a data collection context is generally 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 in order to determine how the current price valuation can be best approximated. Information availability within households together with respondent burden also affect the options that can be considered. The current price valuation of each component of household wealth is examined from a practical perspective in Chapter 5, along with methods for approximating this basis of valuation.

3.6.2. Time 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 netting 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 change in levels over time may be blurred.

The principle proposed here for micro statistics on household wealth is consistent with the time of recording rules for macro statistics based on the 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 the end of an accounting period. Flows are to be recorded at the moment of accrual within the accounting period (i.e. the moment when economic value is created, transformed, exchanged, transferred or extinguished). It notes that the use of this timing for recording 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.

In practice, difficulties are likely to be encountered in applying this principle when collecting micro data on wealth. 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 refer to the "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 the possible adjustment methods required (e.g. use of indices, such as those relating to the stock market) are considered further in Chapters 4 to 6.

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-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 additional elements may need to be taken 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).

3.6.3. Consolidation and netting

A household's financial assets may include claims on other households. There is then an asset in the first household and counterpart liabilities in other households. A member of a household may also have financial claims on other members of the same household, who then have counterpart liabilities. However, these will generally cancel out by a process of consolidation when compiling household statistics.

A household may also 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. Again, in both cases the asset and its corresponding liability could be included in the asset and liability aggregates. Alternatively, they could be offset against each other with only the net position included in the aggregates.

In principle, for micro statistics on household wealth, all assets and all liabilities belonging to members of a household should be recorded on a gross basis (i.e. separately) and included in the respective asset and liability aggregates irrespective of the counterparty's attributes, the type of financial instrument involved, or any direct links between particular components. The only exception applies when the financial asset of a household member has other members of the household as the counterparties with liabilities. This basis of recording implies that the statistics – both levels and change in levels – should be compiled without using consolidation or netting to eliminate or adjust any types of assets and liabilities, except for consolidating intra-household asset/liability relationships.

This approach is generally consistent with the consolidation and netting rules for macro statistics based on the SNA (paras. 2.68 -2.72, 11.40-11.43). It also allows some flexibility in the presentation of data for different types of analysis. For example, it does not preclude some degree of netting for particular analytical purposes, if needed. From a practical perspective, this basis of recording is generally straightforward, and it is typically the one adopted by countries when producing micro statistics on household wealth.

The treatment in micro statistics of the ownership of unincorporated enterprises as equity investments by their owners not only treats all business investments similarly, but also avoids the difficulty of obtaining separate data on all the separate assets and liabilities relating to the business. This issue is discussed further later in this chapter.

3.6.4. Coverage

In principle, household wealth in macro statistics based on the SNA covers all households resident in a country at the reference date and all their assets and liabilities at that date. In comparison, household wealth in micro statistics usually refers to the assets and liabilities of a narrower range of households. Most countries restrict the target population to private households and their members residing in the domestic territory of a country at the time of

data collection. Persons living in institutions and other collective living quarters are typically excluded. Some countries also have additional exclusions, such as people living in sparsely populated parts of the country, people without a permanent address, and people overseas.

Similar restrictions on household coverage are found in most countries' micro statistics on household income and consumption. The 2011 *Canberra Group Handbook* (Section 3.3.1) on household income statistics limits its coverage to private households living in housing units, thereby excluding persons living in institutions and other collective living quarters. The 2003 ICLS report (Resolution 58) on household income and consumption statistics is only slightly less restrictive, limiting its coverage to private households living in housing units plus certain households living in collective living quarters (other than institutions) where the members are involved in decision-making about their consumption.

From an analytical perspective, coverage restrictions of the type that most countries apply in their micro statistics on household wealth limit, to some extent, the usefulness of the data. The following examples illustrate this. *First*, the country statistics generally available do not present a complete picture of household wealth; although only a small proportion of the population of a country is likely to be excluded, their wealth holdings and associated behaviour may differ significantly from the rest of the community. *Second*, some population groups (e.g. older people and students) are more likely than others to be affected by the restrictions. This may affect the type of analysis that can be undertaken concerning the wealth of those groups, as well as measures of the overall distribution of wealth if those groups are more or less wealthy than others. *Third*, there is likely to be added complexity when trying to align the micro wealth measures with the macro ones, unless a method can be devised for separately estimating the wealth of the households excluded from the micro measures. At the same time, different coverage may be a source of confusion among users of both sets of statistics, unless the different coverage of each of them is well explained.

From a practical perspective, obtaining comprehensive wealth data for those living in institutions and other collective living quarters would generally be very difficult. Special collection arrangements would usually be needed, as would special estimation methods for dealing with situations where the required data are unavailable. Methods for incorporating the data into analytical measures, such as frequency distributions, might also require special attention, as institutional households are likely to differ substantially in size and composition from private households living in housing units. In many cases the costs of including these additional households in micro-level wealth collections could significantly outweigh the benefits.

Overall, there appear to be strong grounds at the present time for restricting the coverage of micro-level wealth statistics to private households living in housing units. Limiting coverage in this way will facilitate cross-country comparisons of wealth data as well as integration of micro statistics on income, consumption and wealth. However, as the share of the population that is omitted and their characteristics are likely to vary between countries, analysts need to be aware of this to make meaningful comparisons of wealth data.

The recommended coverage of micro statistics on household wealth is all assets and liabilities of private households that reside in housing units and that are residents of the country to which the statistics relate. Definitions of the terms "private household", "housing unit" and "resident household" were provided earlier in this chapter. Based on this coverage

principle, measures of household net worth at the micro level will generally refer to most but not all households in a country. This will need to be made clear to users, particularly as the micro wealth measures will have narrower household coverage than the macro wealth measures. As a minimum, information should be provided on the estimated percentage of the population that is omitted and their demographic characteristics.

The statistics should exclude: *i)* institutional households; *ii)* private households residing in collective living quarters; and *iii)* non-resident households. Examples of institutional households and of private households residing in collective living quarters were also provided earlier in this chapter. In the case of non-resident households, the exclusion applies to those located in the domestic territory of a country – such as those containing foreign diplomatic and military personnel – as well as those located in other countries.

The statistics should include both the foreign and domestic assets and liabilities of the households that are to be covered. Examples of foreign assets and liabilities that should be included are: *i)* dwellings in foreign countries; *ii)* deposits in non-resident banks; *iii)* securities issued by non-resident entities; and *iv)* debts incurred with non-resident lenders. In the case of foreign assets in the form of land, dwellings and other buildings, their treatment should be consistent with that in the 2008 SNA (paras. 4.15d and 26.33), which in turn follows the IMF *Balance of Payment Manual*, 6th Edition. Such assets are always deemed to be owned by residents of the economy where they are located. This means that a resident owning such an asset in another country is treated as having a foreign financial asset in the form of equity in a notional enterprise in that country.

In practice, countries may encounter problems in implementing the coverage principle outlined above due to the geographic spread of their population. In particular, residents that are abroad at the time of data collection and those living in areas that are difficult to access or remote may be excluded, because obtaining data from them is impractical or too costly. These data collection constraints are not unique to household wealth surveys, and their statistical significance is likely to vary by country. These and other practical issues associated with coverage are discussed in more detail in Chapter 6.

It should be noted that the coverage principle recommended here is not intended to discourage countries from producing micro statistics on household wealth for all or for additional household categories where this is considered appropriate in their specific circumstances. However, if a wider coverage is adopted, separate details on private households residing in housing units should also be provided for use in international comparisons.

3.6.5. Unit of measurement

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 with respect to the collection unit.

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 data is available. In the case of household wealth surveys, countries use two main types of collection unit: *i)* the household (defined in different ways); and *ii)* 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 separately 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 Chapter 6.

In general, wealth data collected at the level of the individual person is likely to have greater flexibility for analysis than data collected at the household level. For example, where wealth data is collected at the person level, it may be analysed by person or aggregated for analyses of households, families or other units within a household. However, if it is collected at the household level, it may only be analysed for units below this level to the extent that they 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 is 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, household 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 to obtain accurate details. Often, core 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. The 2011 *Canberra Group Handbook* (Sections 3.3.1 and 6.3.1) favours the individual person unit for collecting household income data on the grounds of data quality and flexibility for analysis. However, it also recognises that some elements of income might be best collected at the household level. The 2003 ICLS report (Resolution 56) takes a different position: it favours the household unit for collecting household income and expenditure data, while recognising that some components of income might be best collected at the individual person level.

It is recommended that the choice of collection unit for obtaining information in household wealth surveys be left to individual countries, taking 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 units or multiple units may be appropriate, depending on a country's particular circumstances.

3.6.6. Analysis unit

The main unit of analysis for micro statistics on household wealth is generally the household unit. For some countries and 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 (i.e. the economically dominant individual or couple and all others in the household who are financially interdependent with that individual or couple).

The household unit is also the basic unit of analysis for micro statistics on income and consumption based on international standards in the 2003 ICLS report (Resolutions 54-57) and the 2011 *Canberra Group Handbook* (Sections 3.3.1 and 6.3.1), and this has been carried over to the *Income, Consumption and Wealth Framework*. These standards also recognise that the individual person unit and the family unit are useful as well.

While wealth is held by individual persons, wealth analysis usually focuses on households, since individual wealth, like other economic resources, may often be shared in some way 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 the partners in a couple. Other assets, such as 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 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 details would be very difficult to obtain, and generally countries do not attempt to collect them. However, as already noted, where information is collected at the individual person level it may be possible to obtain some limited 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 assumed to be 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 others, this may also affect wealth comparisons across countries. Grouping households by size and composition (including family type) can assist in addressing these issues, as discussed later in this chapter.

Although it is usual practice to produce micro statistics on the distribution of income and consumption by individual person units as well as household units, micro statistics on

the distribution of wealth are usually produced only for household units. However, some particular types of wealth analysis may target individual persons, since the intra-household distribution of resources can be very unequal and average household size and composition varies considerably, particularly between population sub-groups and across countries. For example, there may be interest in wealth distribution measures based on the number of people rather than on the number of households. To produce measures where the unit of analysis is the individual person, wealth estimates for households would need to be adjusted in a way that reflects the differences in household size and composition and the economies of sharing resources. For some types of analysis, adjustments of this kind could be calculated using adjustment factors determined by an equivalence scale. The relevance and use of equivalence scales for wealth statistics are discussed in Chapter 7.

It is recommended that the household be the basic unit of analysis for purposes of micro statistics on household wealth. The individual person unit, the family unit or possibly other units may also be used in particular cases where the analytical focus indicates they may be more appropriate. The following definitions should be applied when delineating these different levels of unit:

- *Household*. A household is defined earlier in this chapter.
- *Family*. A family refers to a group of two or more persons who live in the same household and who are related to each other to a specified degree through blood, marriage or adoption. The "specified degree" depends on the family concept that is used. In this context, reference should be made to the different family concepts defined in the 2006 UNECE/CES population census standard (paras. 493-504). As discussed earlier in this chapter, the narrowest concept is the family nucleus, which refers to two or more persons who live in the same household and who are related as husband and wife, as cohabiting partners, as a marital (registered) same sex couple, or as a parent and child. Other wider concepts are also defined in the UNECE/CES standard. Where the family unit is used in analysing micro statistics on household wealth, the particular family concept on which the unit is based should be clearly specified, and the definition of that concept should be based on the UNECE/CES standard.
- *Individual person*. An individual person refers to the individual members of a household.

3.7. Standard components of household wealth

For many analytic purposes as well as for the consistent derivation of "net worth", it is necessary to identify and define the separate components of household wealth in some detail. Such information about the composition of wealth is particularly important for understanding household asset market participation, 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 businesses and pension wealth.

3.7.1. List of standard components

The components of wealth consist of various types of assets and liabilities. Definitions of "assets" and "liabilities" were provided earlier in this chapter.

The recommended standard components are presented in Table 3.2. Each component should be separately identified in micro statistics on household wealth. The asset

Table 3.2. **List of standard components of household wealth**

Non-financial assets	Owner-occupied dwellings • Principal residence • Other owner-occupied dwellings • Other real estate Consumer durables • Vehicles • Other consumer durables Valuables Intellectual property and other non-financial assets
Financial assets	Currency and deposits Bonds and other debt securities Net equity in own unincorporated businesses Shares and other equity • Shares in corporations • Other equity Mutual funds and other investment funds Life insurance funds Pension funds • Social insurance pension funds • Private pension funds Other financial assets
Liabilities	Owner-occupied residence loans • Principal residence loans • Other owner-occupied residence loans • Other real estate loans Other investment loans • Financial asset loans • Valuables loans • Intellectual property and other non-financial asset loans Consumer durable loans • Vehicle loans • Other consumer durable loans Consumer credit loans and other liabilities • Education loans • Other loans and liabilities

components are grouped into financial assets and non-financial assets, as this is a key distinction for many types of analysis, and countries usually make this distinction in both their macro- and micro-level wealth statistics. The liability components consist mainly of different types of loans. It should be noted that the technical terms used here to distinguish between components may not necessarily be appropriate for collecting data from respondents. The importance of describing each component using terms with which respondents are familiar is discussed further in Chapter 6.

The selection of the individual standard components was partly based on information reported by countries in the survey of country practices for measuring household wealth at the micro level (Annex D). Where a large number of countries reported that they had data available for a particular component, this was taken as a broad indication of the importance of the component, the practicality of collection, and the potential for producing internationally comparable data sets. Consideration was also given to the types of assets and liabilities included in the *Luxembourg Wealth Study Database* and to those

shown in the SNA balance sheet. However, as the SNA wealth components apply to all sectors of the economy and are focused on the needs of macroeconomic analysis, some of them have no or limited applicability at the individual household level. On the other hand, some types of assets and liabilities that are important for understanding wealth at the individual household level are less important for sectoral and economy-wide studies.

Many countries collect household wealth data in finer detail than shown in Table 3.2, but may also have less detail in other areas. Some of the detail presented in Table 3.2 is included to allow direct comparison of asset and liability data with the corresponding categories used in micro statistics on income. Many countries also use different terminology for describing their components, and different 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.

The following paragraphs define the coverage of each component in broad terms. They also provide examples of some of the more common items associated with each component. Where appropriate, the definitions are based on, or consistent with, those in the SNA. A comprehensive examination of each component from a practical perspective, including detailed guidelines on what should and should not be included and what valuation methods are most appropriate, is provided in Chapter 5.

3.7.2. Non-financial assets

A non-financial asset is defined, based on the SNA (paras. 10.9-10.17), 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, inventories and valuables. Fixed assets are used repeatedly or continuously in production processes for more than one year (e.g. for micro household statistics they include dwellings, other buildings and structures and intellectual property products). As discussed earlier in this chapter, for purposes of micro statistics on household wealth, consumer durables are also included in fixed assets although they are not regarded as assets within the central SNA framework. 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.

The standard components of non-financial assets are:

- *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 in the value of principal residence when the land is owned by the household.
- *Other owner-occupied residences:* Dwellings or other types of housing unit regularly occupied by the household and owned by one or more of its members. They include dwellings used by one or more household members during the working week but not regarded as the principal residence of those members. They do not include dwellings owned by household members but only used occasionally, such as holiday homes.
- *Other real estate:* Other residential and non-residential buildings and land owned by household members other than own unincorporated business assets.

- *Vehicles:* The cars, motorcycles, boats, aircraft, etc., owned by household members other than own unincorporated enterprise vehicles.
- *Other consumer durables:* The 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:* 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).

3.7.3. Financial assets

The definition of a financial asset is also based on the SNA (paras. 11.7-11.8). In the context of micro statistics on household wealth, this 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 (conversely, equity is treated as a liability of the issuing unit). However, for wealth micro statistics, financial assets managed as an integral part of the operations of own unincorporated enterprises are not included in the other financial assets of the same class, since it is the net equity in the own unincorporated enterprise that is treated as the financial asset for the household.

With the exception on equity in own unincorporated enterprises, all the standard components of financial assets refer to financial instruments that are defined in the SNA, and the definition of each instrument is consistent with that in the SNA. The relevant instruments are: *i)* currency and deposits (SNA paras. 11.52, 11.54, 11.59); *ii)* debt securities (SNA para. 11.64); *iii)* equity (SNA para. 11.83); *iv)* investment fund shares or units (para. 11.94); *v)* life insurance and annuities entitlements (SNA para. 11.106); *vi)* pension entitlements (paras. 11.107, 13.78, 17.191-17.206, Table 17.10); *vii)* loans (para. 11.72); *viii)* financial derivatives (paras 11.111-11.125); and *ix)* other accounts receivable (paras. 11.126-11.127).

The standard components of financial assets cover:

- *Currency*: Notes and coins that are of fixed nominal value and are issued or authorised by the central bank or government.
- *Deposits*: Claims that are represented by evidence of deposit. Examples are 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.

- *Net equity in own unincorporated enterprises*: Household members' share of the net equity in unincorporated enterprises in which they work (analogous to shares in an incorporated enterprise). Net equity in an unincorporated enterprise is usually best valued on the basis of how much the enterprise could be sold for (i.e. a market value), since their operations may utilise non-financial and financial assets and liabilities in an integrated way, and the simple differencing on component assets and liabilities is unlikely to approximate market value. Otherwise, where a sale value cannot be estimated, the net value of the enterprise might be approximated by adding the values of the individual assets of the enterprise (e.g. industrial land and buildings, livestock, inventories, machinery and equipment of various types, intellectual property, cash and deposits of the business, and shares and other investments managed as an integral part of the business), and subtracting the liabilities of the household raised to finance the unincorporated business (e.g. business loans and accounts with business suppliers still to be paid).
- *Shares in corporations*: Instruments and records acknowledging claims on the residual value of incorporated businesses 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 (that is, unincorporated businesses which the members own or partly own and in which they also work) and their equity in mutual funds and other investment funds are all excluded from this asset class and reported separately.
- *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. 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, as recommended in the SNA (para. 17.6), and is therefore excluded.
- *Pension funds*: Claims of members and account holders on pension schemes, sometimes also known as retirement plans or superannuation schemes. These claims include entitlements in both defined benefit schemes (where the formula for defining a member's pension is agreed in advance) and 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, and government or private. Examples are current balances of accounts with public, occupational and industry schemes, and personal pension and superannuation accounts with financial institutions (e.g. superannuation or retirement savings accounts that meet conditions specified under superannuation or tax laws, tax

deferred retirement accounts and self-managed superannuation funds). Entitlements in pension schemes for a government's own employees are included, provided such schemes are distinct from social security and have separate accounting information. Other pension entitlements, accruing under government social security schemes, are excluded for reasons discussed in the following paragraphs.

- *Other financial assets*: Miscellaneous financial assets, including loans made to other people except other members of the same household, option contracts and other types of financial derivatives, and other accounts receivable.

From a conceptual perspective, it can be argued that all pension entitlements should be covered in financial assets, irrespective of whether the entitlements are in private schemes, government employee schemes or social security schemes. The exclusion of entitlements in social security schemes, as recommended here for micro statistics on household wealth, is primarily for practical reasons and to maintain consistency with the SNA's definition of financial assets. It reflects the view that reliable estimates of pension entitlements in social security schemes may not be readily available in many countries, especially for individual households, and that the case for departing from the SNA on this issue is not strong at this time. The recommended treatment is considered to offer the best prospects for the international comparability of micro-level wealth data at the time of writing, while at the same time facilitating integration of the micro and macro wealth measures. However, national accounts practices in this field are also evolving. The 2008 revision of the SNA, recognising that the exclusion of social security pensions from the core accounts will distort cross-country comparisons, recommends that all countries include entitlements from social security pensions in a supplementary (compulsory) table. As macro-level information on social security pension wealth becomes more widely available, the treatment recommended by these Guidelines is expected to evolve as well.

It may be argued that, even where estimates of pension entitlements in social security schemes can be derived for individual households, they would be of limited usefulness in cases where a government can change the basis on which the entitlements are determined in order to keep them within the bounds of what is feasible from a budget perspective. On the other hand, all schemes have their risks (e.g. private schemes can be affected by company collapses), and the exclusion of pension entitlements in social security schemes may create uncertainties for some types of analysis (e.g. analysis of wealth levels may be affected when people move between the included and excluded schemes, and cross-country wealth comparisons may be affected by differences between countries in the relative importance of the included and excluded schemes). To assist in analysing the wealth data in isolation, countries should provide some indication of the likely significance of excluding pension entitlements for their measures of financial assets and net worth. In addition, those countries that can make estimates of pension entitlements in social security schemes are encouraged to do so and to provide the estimates as supplementary information.

3.7.4. Liabilities

The definition of a liability recommended earlier in this chapter, again based on the SNA (para. 11.5), is restated here for convenience. 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, based on the SNA (para. 11.72), 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, for wealth micro statistics the liabilities of own unincorporated enterprises are not presented with the other liabilities of the same class for that household, since it is the net equity in own unincorporated enterprises that is treated as the financial asset for the household.

The coverage of each standard liability component is described below. Loans are primarily classified according to the purpose of the loan. Where the purpose of a loan relates to more than one component, the allocation should be determined on the basis of its primary purpose.

- *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 business properties). Examples are: loans used to purchase holiday homes; and loans used to purchase rental properties for investment purposes.
- *Financial asset loans:* Loans used to purchase shares and other financial assets. Excludes loans used to purchase financial assets that are integral to the operation of unincorporated 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 likely to be difficult to decompose credit card debt, bank overdrafts and similar types of ongoing loan facilities into separate purpose 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); to purchase valuables (including if they are purchased primarily as an investment); to pay tax obligations; for a capital transfer to another household (e.g. to help a relative purchase a dwelling); or to make a loan to another household (e.g. because the first household has better security or access to a better interest rate than the other household, where the first household would also have a financial asset equal to the value of the loan to the other household).

For some analysis, for instance, when considering a household's exposure to different forms of risk, it is also of interest to know the form of security used to obtain the loan. Therefore it is desirable to collect information on both the purposes for which a household obtained loans and the form of security used. The form of security may be a principal dwelling, other owner-occupied dwellings, other real estate, business assets, vehicles, valuables, or other security. Some liabilities have no form of security, and it may be useful to disaggregate these 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 proposed in Table 3.2, because it is net equity in own unincorporated enterprise that is treated as a financial asset, rather than the individual assets and liabilities related to the operations of that business. 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 as a supplementary data item.

Sub-components of assets and liabilities

For both assets and liabilities, countries may wish to identify sub-components within the standard components of Table 3.2 to meet the needs of data users and/or to facilitate data measurement. There are many possible bases on which such dissections may be specified, reflecting different user requirements and different data collection settings. Some specific components for which dissections may be useful are discussed below.

Shares in corporations

The assets component "Shares in corporations" covers the equity holdings of households in different types of businesses. These businesses may or may not have their shares listed on public stock exchanges. As equity holdings in businesses that are listed are likely to be much easier to value (as shares in these businesses have quoted prices) than those in unlisted businesses, it may be useful to distinguish listed shares from unlisted shares when collecting data. This distinction may also be useful for analytic purposes and for alignment with macro wealth statistics based on the SNA.

An illustration of the way this component may be split to show equity holdings in different types of businesses is provided below. The split is identical to that provided in the SNA (para. 11.85):

- *Shares in corporations*.
  - *Listed shares*.
  - *Unlisted shares*.

3.7.5. Pension funds

The assets component "pension funds" covers the claims of households on various types of public and private pension schemes, sometimes also known as retirement plans or superannuation schemes. Some types of claims, such as those in defined benefit schemes, may be much harder to measure than those in other types of schemes (e.g. defined contribution schemes or personal retirement savings accounts). There may also be considerable analytic interest in the different types of claims. For example, some countries find it useful to separate assets in government schemes from those in non-government schemes in their published statistics. A breakdown of claims may therefore assist in data collection as well as to enhance the usefulness of the collected data.

An illustration of the way the component may be dissected into different types of claims is shown below. This split can be readily aligned with that recommended in the SNA (Table 17.10) for macro-level wealth statistics. Pension funds, for example, may be dissected into:

- General government schemes.
  - Defined benefit.
  - Defined contribution.
- Non-general government schemes.
- Industry or occupational schemes.
  - Defined benefit.
  - Defined contribution.
- Personal schemes.

3.7.6. Loans

In the case of loan liabilities, many countries collect details of both the purposes for which loans are taken out by households and the collateral provided to secure these loans, as such data is of considerable value in analysing the nature of household debt and associated household behaviour, and it can usually be readily obtained at the individual household level. For example, the euro area HFCS collects data on loans split by type of collateral and purpose, and the LWS provides country micro data that shows home-secured debt separately from other debt.

3.7.7. Data availability

Results from the survey of country practices for measuring household wealth suggest that the majority of countries have either complete or largely complete data available for most of the standard components. However, the extent to which data is generally available varies across the different components, and for some countries there may be significant data collection implications.

In the case of non-financial assets, most countries collect data for the principal residence, other real estate, and vehicles. Some countries do not have any data on consumer durables other than vehicles, valuables or other non-financial assets.

In the case of financial assets and liabilities, most countries have data available for mortgage loans on the principal residence and on other real estate, but a number have no data or only incomplete data for various other components. These data gaps mostly relate to deposits, shares and other equity, mutual funds and other investment funds, pension funds and vehicle loans. In respect of pension funds, measuring a household's assets in public sector unfunded schemes (e.g. defined benefit schemes) can be particularly difficult and subject to considerable uncertainty. This and other measurement issues are discussed in detail in Chapter 5.

3.7.8. Consistency with the 2008 SNA balance sheet components

The standard components in Table 3.2 can be aligned with the 2008 SNA balance sheet components at a very broad level, i.e. non-financial assets, financial assets and liabilities. Beneath this level, however, alignment is more difficult, as the classification schemes underpinning the two sets of components differ in significant ways, reflecting the different

purposes of the statistics. As the household sector typically holds a more limited range of financial instruments than other sectors, the SNA (para. 11.30) recognises that a number of SNA balance sheet components are either not applicable to the sector (i.e. entries are conceptually impossible) or of limited relevance to it (i.e. entries are possible but expected to be small).

Table C.2 in Annex C outlines the relationship between the macro statistics components presented in the SNA and the micro statistics components recommended earlier in this section. While a number of micro components correspond – either alone or combined – with a single macro component, many do not. Full alignment at the component level is unlikely to be achievable for most countries, and even limited alignment at this level may require additional data collection and/or the use of special estimation or modelling techniques.

3.7.9. Relationship to micro statistics on household income

For purposes of integrating micro statistics on household wealth with those on household income, there needs to be a correspondence between the wealth components and those income components relating to income from wealth. The *Income, Consumption and Wealth Framework* (Chapter 4 and Chapter 7 of OECD, 2013) defines the following basic income components that can be brought together in specified ways to derive the main income aggregates (i.e. "total income" and "disposable income"):

- *Income from employment*. This is further dissected into: *i)* employee income; and *ii)* income from self-employment, such as the profit or loss that accrues to owners of unincorporated enterprises.
- *Property income*. This is defined as receipts that arise from the ownership of assets that are provided to others for their use. These receipts are dissected into: *i)* income from financial assets, such as interest and dividends, net of expenses; *ii)* income from non-financial assets, such as rents for the use of houses and land, net of expenses; and *iii)* royalties, i.e. receipts arising from the return for services of patented or copyrighted material, such as receipts from writings or the right to make use of inventions. The expenses deducted from receipts include interest payments made on loan liabilities.
- *Income from household production of services for own consumption*. This is further dissected into: *i)* net value of housing services provided by owner-occupied dwellings; *ii)* value of unpaid domestic services; and *iii)* value of services from household consumer durables.
- *Current transfers received*. These are split into: *i)* social security pensions and other cash benefits; *ii)* pensions and other employment-related social insurance benefits; *iii)* social assistance benefits; *iv)* transfers from non-profit institutions; *v)* transfers from other households; and *vi)* other current transfers.
- *Current transfers paid*. These are split into: *i)* direct taxes; *ii)* compulsory fees and fines; *iii)* inter- household transfers paid; *iv)* employee and employers' social insurance contributions; *v)* transfers to non-profit institutions; and *vi)* other current transfers.

Table 3.3 shows, for each standard component of household wealth, the income component(s) specified in the *Income, Consumption and Wealth Framework* within which income is generated.

3.8. Asset and liability groups

As indicated earlier in this section, there are many possible ways in which assets and liabilities can be grouped in micro statistics on household wealth. Different classification

Table 3.3. **Relationship between household wealth standard components and household income components in the *Income, Consumption and Wealth Framework***

Wealth standard components		Income from wealth: Corresponding ICW framework components[1]
	Non-financial assets	
Owner-occupied dwellings		
Principal residence	I3.1	Net value of owner-occupied housing services[2]
Other owner-occupied dwellings	I3.1	Rent from real estate other than owner-occupied dwellings, net of expenses[2]
Other real estate	I2.2	
Consumer durables	I3.3	Net value of services from household consumer durables[2]
Vehicles		
Other consumer durables		
Valuables	I3.3	
Intellectual property and other non-financial assets	I2.3	Royalties and other income from non-financial assets net of expenses[2]
	Financial assets	
Currency and deposits	I2.1.1	Interest from deposits, net of expenses
Bonds and other debt securities	I2.1.2	Income from bonds and other debt securities, net of expenses[2]
Equity in own unincorporated enterprises	I1.2	Income from self-employment[2, 3]
Shares and other equity	I2.1.3	Income from shares and other equity, net of expenses[2]
Mutual funds and other investment funds	I2.1.4	Income from mutual funds and other investment funds, net of expenses[2]
Life insurance funds		
Pension funds	I2.1.5	Annuity and other regular payments from life insurance funds
Social insurance pension funds	I4.2	Pensions and other benefits from employment-related social insurance
Private pension funds	I2.1.6	Regular payments from private pension funds
Other financial assets	I2.1.7	Income from other financial assets, net of expenses[2]
	Liabilities	
Owner-occupied dwellings loans		
Principal residence loans	I3.1	Net value of housing services provided by owner-occupied dwellings[2]
Other owner-occupied residence loans	I3.1	
Other real estate loans	I2.2	Rent from real estate other than owner-occupied dwellings, net of expenses[2]
Other investment loans		
Financial asset loans	I2.1	Income from financial assets[2]
Valuables loans		
Intellectual property and other non-financial asset loans	I2.3	Royalties and other income from other non-financial assets, net of expenses[2]
Consumer durable loans	I3.3	Net value of services from household consumer durables[2]
Vehicle loans		
Other consumer durable loans		
Education loans	E3	Interest paid on consumer credit[4]
Other loans and liabilities	E3	

1. Income component codes and descriptors are those shown in Table 4 of Chapter 4 of the ICW Framework.
2. Expenses include interest payments.
3. Includes profit/loss from own unincorporated enterprises; Goods and services produced for barter, less cost of inputs; and Goods produced for own use, less cost of inputs.
4. Classified as non-consumption expenditure, not a deduction from income.

schemes may be required for different types of analysis, and some of these may imply the collection of additional detail beyond what is necessary to compile the components in Table 3.2. For example, besides the conventional classification of assets into financial and non-financial, assets might be grouped in terms of risk, liquidity and/or duration.

- In the case of risk, assets carrying a level of return that is not guaranteed – such as publicly traded stocks, various types of bonds and other investment funds – are distinguished from other types of assets. The objective is to group assets and liabilities in a way that will facilitate assessment of the financial risks to which households are exposed.

- In the case of liquidity, assets are classified based on the speed with which they can be converted into cash (i.e. easily sold). Liquid assets are those that can be easily transformed into cash and enable households to pay debts when they fall due or easily moved into new investment opportunities. These assets include marketable securities that are highly liquid with minimal change in value (i.e. small capital gain or loss) as well as negotiable certificates of deposit, money market instruments, commercial paper, etc. Liquid assets are usually financial assets, and non-liquid assets are usually non-financial assets.
- The classification of assets based on duration is common in international accounting standards, specifically the International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS). The IAS/IFRS classification distinguishes current assets from non-current assets. Current assets are expected to be converted into cash within one year. Examples are cash or cash-equivalent accounts and demand deposits. They are also called short-term assets and include those financial assets available for sale as well as liquid assets. Non-current assets, also called long-term or capital assets, produce economic benefits for more than one year. Non-current assets comprise non-financial assets as well as fixed-term financial assets. Capital assets are usually divided into tangible assets and intangible assets. Tangible assets are all non-financial assets except patents, copyrights and trademarks, which are classified as intangible assets.

The classification of assets in the UN Central Product Classification scheme also includes a category for intangible assets that is then divided into financial assets and non-financial intangible assets. Non-financial intangible assets, as in the IAS/IFRS classification, consist of patents, copyrights and trademarks.

As previously noted, the standard categories of assets specified in the SNA are constructed around the basic dissection between financial and non-financial assets. Within the category for non-financial assets, sub-categories are provided for produced and non-produced assets, and two of the groups within these sub-categories – fixed assets and natural resources – are further dissected to indicate the physical nature of the component assets.

Similarly to assets, liabilities can also be classified in terms of their duration and nature. Interest-bearing liabilities are usually long-term, non-current liabilities, whereas non-interest-bearing liabilities are usually short-term, current liabilities. Current liabilities could also be reflected in short-term overdrafts on bank accounts, where liabilities will be settled within 12 months, or in the use of credit cards, where the payment is deferred for one month. Other bases on which liabilities can be grouped include by purpose of debt (e.g. to acquire particular types of goods, services or assets) or by collateralised status of debt (e.g. whether or not debts are secured against assets and the type of asset held as security).

It is recommended that financial assets and non-financial assets be treated as separate categories in micro statistics on household wealth, as shown in Table 3.2. As already indicated, this dissection is very useful for analysis of these statistics, and most countries collect the data needed to compile these categories. The breakdown is also important for alignment with macro statistics on household wealth and for integration with micro statistics on household income. Various other dissections may be compiled to satisfy analytic needs in particular countries. However, as the significance of different groupings is likely to vary according to country circumstances, no other dissections are specified for general compilation.

3.9. Household groups

Many types of analysis of household wealth require looking at different groups within the community which may differ in ways that are not readily apparent when the focus is on the total household population. This need is reflected in the practices of most countries that produce micro statistics on household wealth. It is usual to provide information about the wealth of different household groups or sub-populations as well as information about the wealth of the population as a whole. This section discusses the groups into which households – specifically private households – are often classified in these statistics and recommends a number of standard dissections.

The characteristics that are most commonly used to classify households in micro-level wealth statistics are:

- Household size and composition.
- Geographic location.
- Tenure type.
- Income and wealth classes.
- Age, educational attainment and/or labour force status of the household reference person.

The groupings based on each of these characteristics are considered in more detail below. The discussion includes a number of country examples to illustrate some of the ways in which wealth data can be shown for each grouping. Many other household dissections may also be appropriate for individual countries and may be compiled to satisfy the needs of different kinds of analysis and policy making. They may involve the use of specific indicators (e.g. debt-to-asset ratios, or contribution of government pensions and allowances to gross income) as well as the use of other characteristics not listed above for classifying households (e.g. gender of the reference person, status in employment or other characteristics of the major income earner, life cycle stage, or main source of household income).

In the case of macro statistics, the SNA leaves it to individual countries to determine what household sub-sectors (i.e. groups) might be most relevant for analysing wealth and other economic resources. It recognises that there are many useful ways in which the sector might be split into sub-sectors, but the value of any particular breakdown depends on the type of analysis to be undertaken as well as on individual country circumstances. It notes that more than one method might be adopted if there is a demand for different breakdowns from different users, analysts or policy makers (SNA, paras. 4.33, 4.158-4.165, 24.27-24.44).

One of the approaches discussed in the SNA involves classifying households according to the nature of their largest source of income, and then allocating them to the following categories: *i)* employers; *ii)* own-account workers; *iii)* employees; and *iv)* recipients of property income and transfer incomes (SNA para. 4.161). Other approaches that are mentioned involve classifying households according to: the characteristics of a reference person or the main income earner; the total household income; the number of persons in the household; the type of area in which the household is located; or the type of assets owned by the household. With respect to the latter, a basic breakdown is that between households with assets in the form of unincorporated enterprises and those without: because of the special relevance of this category of assets, compilers of micro-data on household wealth should consider this breakdown when disseminating their data.

3.9.1. Household size and composition

Household size refers to the number of persons that are members of a particular household. Household composition refers to the make-up of a household in terms of specified characteristics of its members. Examples of such characteristics are the age, gender and marital status of household members, their labour force status, and/or their family relationships. The number of possible characteristics and the variety of ways in which they may be combined means that household composition can be described in many different ways.

Grouping households according to their size and composition is crucial for understanding differences in the levels, structure and distribution of wealth across households and for analysing wealth trends and behaviours over time. Such groupings are also important for understanding household income and consumption, as noted in the 2011 *Canberra Group Handbook* (Section 6.3.2) and the 2003 ICLS report (para. 306, and Resolutions 102-105).

It is recommended that households be grouped by size and composition in micro statistics on household wealth. For this purpose data should be collected on:

- the size of each household in terms of number of members;
- the age and gender of each household member;
- the labour force status of household members (described below); and
- the family relationships between members of each household, at a level of detail sufficient to determine the household type (described below).

The "labour force status" of a household member refers to whether the person is "employed", "unemployed" or "not in the labour force". The benchmark for defining these categories should be the standard on labour force statistics maintained by the International Labour Organisation (ILO). As the ILO standard is consistent with the 2006 UNECE/CES population census standard and with the 2008 SNA, the adoption of this benchmark should facilitate integration of macro and micro statistics. It is recognised that, in practice, some countries may have difficulty in fully implementing this approach in household wealth surveys since labour market participation is generally not a major focus of these surveys.

"Household types" should be determined using the following classification, which is largely based on that recommended for private households in the 2006 UNECE/CES population census standard (paras. 547-551):

- Non-family household.
- One-person household.
- Multi-person household.
- One-family household.
- Couple only.
- Couple with one or more dependent children.
- Lone parent with one or more dependent children.
- Other one-family household.
- Two or more family household.

The collection of data on the range of characteristics recommended above will allow particular characteristics to be brought together in different combinations to describe

Box 3.1. **Definition of terms in the classification of household types**

Family. Family is defined here in the narrow sense, using the family nucleus concept discussed earlier in this chapter. It refers to two or more persons who live in the same household and who are related as husband and wife, as cohabiting partners, as a marital (registered) same sex couple, or as a parent and child. It therefore covers three situations: *i)* a couple without children; *ii)* a couple with one or more children; and *iii)* a lone parent with one or more children. This definition is based on the recommendations in the 2006 UNECE/CES population census standard (paras. 493-504).

Dependent children. Dependent children are defined as all persons under age 15, and people aged 15 to 24 who are full-time students, have a parent in the household, and do not have a partner or child of their own in the household. This definition is the same as that provided for illustrative purposes in the 2011 *Canberra Group Handbook on Household Income Statistics* (Section 6.3.2 and Box 6.2). It is recognised that, in practice, different definitions are in use in different countries, and the adoption of a standard definition may be difficult.

households in statistical terms. For example, household size may be brought together with household age structure to give a particular perspective on household composition. Different combinations may be appropriate for different countries and for different types of household wealth analysis.

The following two examples, sourced from the Bank of Italy (Table 3.4) and the Australian Bureau of Statistics (Table 3.5), respectively, illustrate how household size, household type and labour force status of household members can be incorporated into micro statistics on household wealth to show the impact of differences in these characteristics on median or mean wealth levels.

Table 3.4. **Household wealth by household size in Italy, 2008**

Household size	Median values of household wealth, 2008 (thousands of euros)	
	Total assets	Net wealth
1 member	101	100
2 members	188	174
3 members	200	183
4 members	206	185
5 members or more	163	149

Source: Bank of Italy, Supplements to the *Statistical Bulletin* – Sample Surveys, *Household Income and Wealth in 2008*, Table E2, p. 69, Vol. XX, No. 8, 10 February 2010.

3.9.2. Geographic location

Geographic location refers to the physical areas within a country, such as states, provinces, regions, capital cities and urban or rural localities. Classifying households into groups on the basis of their geographic location can be very useful, as wealth holdings and patterns of wealth distribution may vary substantially across different parts of a country. There may also be considerable interest by state and provincial governments in comparing data for their own and other jurisdictions.

The value of geographic information for micro statistics on other aspects of household economic resources is well established. The 2003 ICLS standard recommends that, as far as

Table 3.5. **Household wealth by household type and labour force status of household members in Australia, 2009-10**

Selected household characteristics	Household net worth (thousands of Australian dollars)	
	Mean	Median
Family composition of household		
One-family households		
Couple family with dependent children	827	495
One-parent family with dependent children	276	76
Couple only	983	560
Other one-family households	809	562
Multiple-family households	715	444
Non-family households		
Lone person	461	309
Group households	243	89
Total	**720**	**426**
Household includes		
Two or more employed persons	869	513
One employed person	632	337
No employed but at least one unemployed person	241	63

Source: Australian Bureau of Statistics, *Household Wealth and Wealth Distribution*, 2009-10 (Cat. No. 6554.0), Table 5.

possible, household income and expenditure statistics should be presented by geographic location of the household (Resolution 106). The 2011 Canberra Group standard also notes the usefulness of categorising households on a geographic basis for analysing household income (Section 6.3.2). Providing corresponding information for household wealth should facilitate the integration and combined use of all of these statistics.

It is recommended that, for purposes of micro statistics on household wealth, households be classified by relevant geographic areas. As the particular geographic dissections that may be appropriate will vary across countries, no recommendations are included here for standard dissections. In practice, the extent to which statistically significant data can be obtained for geographic dissections will often depend on the features of the data collection, such as the population coverage, sample size and sample design. Confidentiality constraints may also have a major impact on the extent to which geographic information can be released. Table 3.6, sourced from the United States Federal Reserve Board, shows two different classifications based on geographic location that provide additional insights into the net worth of families in the United States.

3.9.3. Tenure type

Tenure type refers to the arrangements under which a household occupies its place of residence. The 2006 UNECE/CES population census standard (paras. 556-559) includes the following classification for tenure status of private households: *i)* a member is the owner of the housing unit; *ii)* a member is a tenant of all or part of the housing unit; and *iii)* other form of tenure.

As home ownership is a major form of wealth for many households, and rental costs can have a large impact on the ability to accumulate wealth, grouping households by tenure type can add considerable analytic value to household wealth statistics. For those households that own their dwelling, it can also be useful to distinguish between those with

Table 3.6. **Family wealth by geographic location of family in the United States, 2004 and 2007**

Geographic location	Family net worth (2007, thousands of US dollars)			
	2004		2007	
	Median	Mean	Median	Mean
Region				
Northeast	178	625	159	653
Midwest	126	479	108	468
South	70	382	96	499
West	104	575	156	663
Urbanicity				
Metropolitan Statistical Area (MSA)	115	554	132	621
Non-MSA	65	193	77	241
All families	102	492	120	556

Source: "Changes in US Family Finances from 2004 to 2007: Evidence from the Survey of Consumer Finances", *United States Federal Reserve Bulletin*, February 2009 article, Table 4, p. A11.

or without a mortgage; and for those that rent, whether or not their rental costs are subsidised and/or the type of landlord they have (e.g. a government housing authority providing low cost housing, an individual person providing housing either directly or through a real estate agent, an employer, the owner/manager of a caravan park, a private non-profit organisation, etc). Grouping households by their tenure type is also useful for understanding household income and consumption, as noted in the 2003 ICLS report (Resolution 104) and the 2011 *Canberra Group Handbook* (Section 6.3.2).

It is recommended that households be grouped by tenure type in micro statistics on household wealth. For this purpose, data should be collected on the different types of tenure using the following classification, which is consistent with the 2006 UNECE/CES population census standard:

- Owner.
  - Without a mortgage.
  - With a mortgage.
- Renter.
  - Housing authority landlord.
  - Other landlord type.
- Other tenure type (e.g. rent-free).

Table 3.7, sourced from the Australian Bureau of Statistics, illustrates the application of a tenure type classification (similar to the one recommended here) in micro statistics on household wealth in Australia.

3.9.4. Income and wealth classes

In producing micro statistics on household wealth, households are often classified according to the size of their income and/or the size of their wealth. This can assist the analyst by drawing out some of the patterns and distributional aspects that are embodied

Box 3.2. **Definition of terms in the classification by tenure type of households**

Mortgage. In this context a "mortgage" refers to a loan that is secured against the owner's principal residence. Such loans may be for any purpose, and they are classified within the standard wealth component "principal residence loans".

Housing authority landlord. This refers to those government units that provide low-cost rental accommodation to eligible households. The units may be in the general government sector (including central, state and local governments and non-market non-profit institutions controlled by government units), or they may be government-controlled corporations. While their rental charges are likely to be subsidised in most cases, in some circumstances they may be equivalent to full market rates.

Other landlord type. This refers to other entities – both government and non-government – that own residential property and rent it out to households either directly or through an agent. Such landlords can belong to any sector of the economy. For example, they may be individual persons or households, public or private sector employers, property developers or other businesses, owner-managers of caravan parks, housing co-operatives, or community or church groups. While their rental charges are likely to reflect market rates in most cases, in some circumstances (e.g. involving related individuals, employers, or non-profit bodies) they may be subsidised.

Table 3.7. **Household wealth by household's tenure type in Australia, 2009-10**

Tenure type	Household assets, liabilities and net worth (thousands of Australian dollars)			
	Assets	Liabilities	Net worth	
	Mean value	Mean value	Mean value	Median value
Owner				
Without a mortgage	1 219	39	1 179	737
With a mortgage	1 033	263	770	487
Renter				
State/territory housing authority	46	4	43	20
Private landlord[1]	215	39	176	66
Other landlord type	256	58	197	49
Total renters	194	35	158	55
Other tenure type	518	66	452	130
All households	839	120	720	426

1. Private landlord refers to cases where the household pays rent to a real estate agent or to another person not in the same household.

Source: Australian Bureau of Statistics, *Household Wealth and Wealth Distribution, 2009-10* (Cat. No. 6554.0), Tables 18 and 19.

in the basic statistics. Labels such as "low income" or "low wealth" may be attached to households falling in particular classes to highlight their economic circumstances.

The standards in this chapter require details of household wealth to be collected for all members of each household. Using this information, a country can formulate appropriate wealth classes to suit its particular circumstances. These classes can be specified as monetary ranges or as quantiles (e.g. deciles or quintiles) based on a frequency distribution.

Results from the survey of country practices indicate that many countries also collect income data as a primary topic in their household wealth surveys. Where information on income is collected in conjunction with wealth, it should be possible to estimate total household income as well as total household wealth. This then allows the grouping of households by income classes as well as by wealth classes. Such information can throw additional light on the economic situation of different types of households. The value of classifying households by income size is recognised in the 2003 ICLS standard for household income and expenditure statistics, which recommends that basic tables should include such information (Resolutions 104-105).

It is recommended that, for purposes of grouping households by income classes in micro statistics on household wealth, data be collected on the income as well as the wealth of all members of each household. This information, aggregated for each household, should then be used to group households into appropriate income classes and wealth classes. Different classes may be appropriate for different countries and for different types of analysis. However, for purposes of international comparisons, it is recommended that: *i)* the wealth classes refer to net worth; *ii)* the income classes refer to disposable income; and *iii)* the classes themselves be expressed as quintiles (e.g. lowest quintile, second quintile, third quintile, fourth quintile and highest quintile). Chapter 7 provides guidelines on the use of quintiles and similar analytic measures and explains how they are calculated.

Disposable income is defined for micro statistics in the *Income, Consumption and Wealth Framework*. It includes all receipts, whether monetary or in kind, that are received by the household or by individual members of the household at annual or more frequent intervals. It covers, in its conceptual definition, income from employment, property income, income from household production of services for own consumption, and current transfers received less those paid. It excludes windfall gains and other such irregular and typically one-time receipts.

The following tables, sourced from Statistics Canada (Table 3.8), the Netherlands Central Bureau of Statistics (Table 3.9) and the Bank of Italy (Table 3.10), respectively, illustrate some of the ways in which wealth and income classes can be incorporated into household wealth statistics to shed light on distributional and compositional patterns.

3.9.5. Age, educational attainment and/or labour force status of the household reference person

Characteristics such as age, educational attainment and labour force status can be assigned to individuals but not to households. However, it can be useful to select a particular household member, who is assumed to represent the household in some sense, and then classify the whole household according to the characteristics of this member. The selected member is referred to as the "household reference person".

Many countries find it useful to classify households in this way in their micro statistics on household wealth. It is also considered to be a useful approach for micro statistics on household income and consumption based on the ICLS and Canberra Group standards. However, care is needed both in selecting the reference person (an issue which is discussed further below) and in interpreting the statistics derived from this process. Where households are grouped according to the characteristics of a reference person, it is always important to make this clear to the user.

Table 3.8. **Composition of family wealth by net worth quintile in Canada, 2005**

Composition of assets and debts held by family units by net worth quintile

Wealth component		All net worth quintiles	Lowest net worth quintile	2nd net worth quintile	Middle net worth quintile	4th net worth quintile	Highest net worth quintile
Assets							
Private pension assets	%	29	9	14	18	31	32
Financial assets, non-pension	%	10	8	8	7	7	13
Principal residence	%	33	33	51	55	46	24
Other real estate	%	9	5	4	5	5	11
Vehicles	%	3	18	9	5	4	2
Other non-financial assets (including equity in business)	%	16	27	14	10	9	19
Total assets	**%**	**100**	**100**	**100**	**100**	**100**	**100**
Average value of total assets[1]	Thousand USD	421	13	80	235	447	1.334
Debts							
Principal residence mortgages	%	64	26	71	75	73	44
Other real estate mortgages	%	11	9	4	5	6	30
Student loans	%	3	23	4	2	1	-
Vehicle loans	%	6	10	8	6	5	6
Other debt	%	16	32	13	12	15	20
Total debts	**%**	**100**	**100**	**100**	**100**	**100**	**100**
Average value of total debts[1]		82	25	57	104	103	111

1. Mean value in Canadian dollars. Refers to family units holding assets and debts.

Source: Statistics Canada, *Survey of Financial Security*, Table 6-3.

Table 3.9. **Household wealth by wealth and income classes in the Netherlands, 2011**

	Private households by size of wealth (at 1/1/2011) and size of spendable income (2010)											
			Household income 10% groups									
	Median wealth (thousand euros)	Total households	1st (low income)	2nd	3rd	4th	5th	6th	7th	8th	9th	10th (high income)
Average income (thousand euros)		33	6	15	18	22	26	31	36	42	52	84
			Per cent									
Total households	**29**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Household wealth 10% groups:												
1st (low wealth)	-29	10	6	4	6	7	9	14	16	15	13	10
2nd	0	10	32	20	15	12	7	5	4	3	2	1
3rd	1	10	23	21	16	12	9	8	6	4	2	1
4th	6	10	14	17	16	14	11	9	8	6	5	2
5th	19	10	9	15	16	14	12	9	9	8	6	3
6th	49	10	4	6	9	11	12	12	13	13	12	8
7th	112	10	4	5	7	9	11	12	13	14	15	11
8th	191	10	3	5	6	9	11	12	11	13	15	13
9th	302	10	3	4	6	8	11	11	12	13	15	17
10th (high wealth)	598	10	4	3	3	4	7	8	9	12	17	34

Source: Netherlands Central Bureau of Statistics, *http://statline.cbs.nl/StatWeb/publication*.

It is recommended that, for purposes of grouping households by the reference person's age, educational attainment and/or labour force status in micro statistics on household

Table 3.10. **Household wealth mobility by net wealth quintile in Italy, 2000-08**

Relative position of households, per cent[1]

	Households in 2008					
	1st net wealth quintile	2nd net wealth quintile	3rd net wealth quintile	4th net wealth quintile	5th net wealth quintile	Total
Households in 2000						
1st net wealth quintile	65	18	12	3	2	100
2nd net wealth quintile	22	44	22	10	2	100
3rd net wealth quintile	10	27	32	20	11	100
4th net wealth quintile	2	9	26	40	23	100
5th net wealth quintile	1	2	10	25	62	100
Total	**20**	**20**	**20**	**20**	**20**	**100**

1. Based on a sample of 1 682 households who were interviewed repeatedly over the time period.
Source: Bank of Italy, Supplements to the *Statistical Bulletin* – Sample Surveys, *Household Income and Wealth in 2008*, Table 2, p. 22, Vol. XX, No. 8, 10 February 2010.

wealth, data be collected on each of these variables from relevant household members. In the case of educational attainment and labour force status, the definitions of these variables should be based on the relevant international statistical standards covering these topics.

Table 3.11, sourced from Statistics Canada, illustrates the use of a reference person's age and educational characteristics in statistics describing family wealth in Canada.

Table 3.11. **Household wealth by age and education of the household reference person in Canada, 1999 and 2005**

Net worth of family units, thousands of Canadian dollars in 2005 prices

Selected characteristics[1]	% of net worth		Mean net worth		Median net worth	
	2005	1999	2005	1999	2005	1999
Age	100	100	364	281	148	120
Under 65	76	75	338	259	120	97
Under 35	5	8	77	87	19	20
35-44	18	20	304	218	135	110
45-54	27	26	468	381	232	215
55-64	26	22	649	518	407	312
65 and older	24	25	486	378	303	238
Education	100	100	364	281	148	120
Less than high school	15	20	259	204	92	88
Graduated high school	23	21	314	255	120	103
Non-university post secondary certificate	26	24	341	241	171	118
University degree or certificate	36	35	534	467	237	220

1. Characteristics refer to an unattached individual or, for families, the member with the highest pre-tax income.
Source: Statistics Canada, *Survey of Financial Security*, Table 3.

3.9.6. Selection of the household reference person

The choice of the household reference person can have a significant impact on the usefulness of statistics that classify households according to the characteristics of these persons. Countries define this reference person in different ways in their micro statistics on household wealth. A common approach is to define the reference person as the highest income earner in the household. Other approaches define the reference person as the person responsible for the household's accommodation, the person responsible for or most

knowledgeable about household finances, or the oldest person in the household. Each of these approaches may be useful for particular types of analysis.

There are also differences in the approaches taken by other international statistical standards when selecting a household reference person. In the case of macro statistics, the SNA (para. 4.163) considers that the reference person should be decided on grounds of economic importance rather than age or seniority. On this basis it concludes that the reference person should normally be the person with the largest income, although the person could also be the one who makes the major decisions with regard to the household's consumption.

In the case of micro statistics on household income and consumption, the ICLS standard (paras. 202-206 and Resolutions 60-61) concludes that the choice of reference person should depend on the purpose of the analysis. It notes that criteria linked to employment status, economic activity, demographic factors, etc., may be used. The Canberra Group standard (Section 6.3.2) presents, for illustrative purposes, an ordered set of objective criteria for selection of the reference person in the context of household income statistics. These criteria are designed to select the person likely to best represent the household as a whole.

It is recommended that, for purposes of grouping households by age, educational attainment and/or labour force status of a household reference person in micro statistics on household wealth, countries consider the usefulness of the following criteria for selecting the reference person. The criteria are the same as those presented in the 2011 *Canberra Group Handbook on Household Income Statistics*. Applying them in wealth statistics should help in achieving cross-country comparability for these statistics as well as consistency with micro-level statistics on household income. The criteria should be applied to all household members in the order listed until a single appropriate reference person is identified:

- one of the partners in a registered or de facto marriage, with dependent children;
- one of the partners in a registered or de facto marriage, without dependent children;
- a lone parent with dependent children;
- the person with the highest income; and
- the oldest person.

For example, in the case of a household containing a lone parent with a non-dependent child, application of these rules will result in the person with the highest income being selected as the reference person. However, if both individuals have the same income, the older one will be selected as the reference person. The definition of dependent children to be used in applying the rules is the same as that provided earlier for the household type classification.

The choice of a reference person for purposes of classifying households should be distinguished from the choice of such a person for collecting data. For example, the 2006 UNECE/CES population census standard (paras. 505-519) recommends that a reference person be used in certain situations for collecting information on the relationships between household members. This information is then used to determine a household's family status and to assign individuals to families. An illustrative set of criteria is provided for selecting the reference person in these situations. The criteria do not include "the person with the highest

income" or "the oldest person", as these persons may not be appropriate for determining the broadest range of relationships.

3.10. Other variables related to wealth/net worth

When measuring household wealth at the micro level, many countries also collect a range of information on related topics. This information can help to provide a broader and deeper understanding of the wealth circumstances of households and the differing influences on household wealth accumulation. Some of these topics look beyond wealth (as defined in this chapter) to factors such as income, consumption expenditure, housing, material deprivation and employment. Other topics explore particular features of wealth accumulation and associated attitudes and behaviours. This section is concerned with these other variables relating to wealth. Specifically, it discusses those variables that describe the different types of flows that together explain the changes in wealth levels over a period. It also considers some of the main variables that are used by countries to describe different types of household attitudes and behaviours that may influence wealth outcomes.

3.10.1. Flow variables

Changes in the levels of household wealth between two points in time can be analysed from various perspectives. For example, the focus may be on the compositional changes that have occurred, on the distributional shifts that have taken place, or on the different types of flows that have contributed to these changes. The interest in different types of flows is most strongly associated with macro statistics where the distinction between transactions and other flows is of fundamental importance. However, information on different types of flows can also be useful in the context of micro statistics. The following discussion covers the main measures used in differentiating flows.

In the case of macro statistics, the SNA's accumulation accounts provide for complete recording of the different types of flows that directly contribute to changes in wealth between two points in time, as well as the different types of flows that change the asset and liability composition of wealth. The capital account and the financial account record flows that arise from "transactions", while the revaluation account and the other changes in volume account record "other flows", i.e. those that do not arise from transactions. Transactions are either an exchange of economic value between two parties by mutual agreement, or a voluntary transfer of economic value by one party to another without a counterpart (i.e. an unrequited transfer).

The SNA's capital account shows acquisitions and disposals of non-financial assets due to transactions, the redistribution of wealth by means of capital transfers, changes in inventories, consumption of fixed capital and the contribution to wealth from saving. The balancing item on the capital account is "net lending" when positive, and "net borrowing" when negative. When positive, this item indicates the net amount a unit or sector has available to finance, directly or indirectly, other units or sectors and, when negative, the amount a unit or sector is obliged to borrow from others. The financial account records acquisitions and disposals of financial assets and liabilities, also as a result of transactions. In principle, the net result of all these transactions in the financial account is identical to net lending/net borrowing.

The SNA's revaluation account records flows that arise from price changes, i.e. "nominal holding gains and losses". These holding gains and losses are further dissected into "neutral"

and "real". The other changes in volume account records flows that are not attributable to transactions or price changes. These flows include those arising from the economic appearance and disappearance of assets, the reclassification of assets and liabilities, and exceptional, unanticipated external events.

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 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 levels and composition of wealth. Examples are: *i)* capital transfers in the form of large gifts and inheritances; *ii)* purchases and sales of household assets (e.g. the main residence, or securities); *iii)* capital gains or losses realised on these sales; *iv)* nominal holding gains and losses; and *v)* a rough indicator of saving, involving comparison of expenses for the last 12 months with average income.

Several conceptual and practical issues need to be kept in mind in order to produce useful data on these flows at the micro level. For example, the valuation and time of recording principles and practices for flows and stocks need to be fully consistent. This can be difficult to achieve in practice. Also, since countries generally do not record the asset and liability levels of a household at the same point in time for all households, the specification of any single reference period for flow measures can be problematic.

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 and consumer credit payments from disposable income. Each of these variables, in turn, has to be 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, its magnitude 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.

It is recommended that, where a country considers it useful to produce micro statistics on particular types of wealth flows, the definitions of those flows should be based as closely as possible on the standards provided in the *Income, Consumption and Wealth Framework*. The definitions that are likely to be the most relevant in this context are presented below. They cover: capital transfers; transactions in non-financial assets; transactions in financial assets and liabilities; holding gains and losses; and flows not arising from transactions or price changes.

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. A capital transfer is defined as one where either the party making the transfer realises the funds involved by disposing of an asset (other than cash or inventories) or relinquishing a financial claim (other than accounts receivable), or where the party receiving the transfer is obliged to acquire an asset (other than cash), or where both

conditions are met. Capital transfers receivable represent an increase in net worth for the recipient, while those payable represent a decrease in net worth for the payer. Transfers that are not identified as capital transfers are described as current transfers. Whereas capital transfers redistribute wealth, current transfers redistribute income (SNA, paras. 2.28, 3.60, 8.10, 8.38-40, 10.19-10.20, 10.200-10.212).

In practice, capital transfers tend to be large, infrequent and irregular, whereas current transfers tend to be comparatively small and are often made frequently and regularly. 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; exceptionally large insurance settlements in the wake of a disaster; and major payments in compensation for extensive damages not covered by insurance policies. Examples of current transfers are: personal remittances between households; income taxes; social insurance payments; and social assistance benefits. If there is any doubt about whether a transfer should be treated as current or capital, it should be treated as current.

While the need to differentiate between current and capital transactions is clear, the boundary between them is difficult to define. Terms such as "irregular" and "infrequent" are imprecise and lie on a continuous spectrum. Also, a transfer that may be considered large in a household with few economic resources may be considered small in a household with considerably more resources, which may be involved in transfers of that magnitude on a regular basis. These issues are discussed in more detail in Chapter 7 of the *Income, Consumption and Wealth Framework*.

Because that Framework focuses on transactions from a household perspective, it departs from the SNA in several respects. It allows for the possibility that a transfer that might be considered a current transfer in one household may be considered a capital transfer in 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 the Framework they are regarded either as negative consumption expenditure or 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, as well as purchased goodwill and marketing assets. The transactions in these assets should be valued at the actual prices agreed upon by the people involved in the transaction, and they 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; purchases and sales of land; and purchases and sales of gold, fine jewellery or recognised works of art regarded as

alternative forms of investment. Where relevant, transactions should be classified using the groupings recommended for non-financial assets, described earlier in this chapter.

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 transactors, and they 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 earlier in this chapter.

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, both of non-financial and financial assets and of liabilities. They include both realised and unrealised gains and losses over the period. Holding gains are sometimes described as "capital gains", but the term "holding gain" is preferred in the SNA because it emphasises that holding gains accrue purely as a result of holding assets or liabilities over time without transforming them in any way (SNA paras. 2.109, 3.105-3.106, 3.153-3.154, 12.73-12.93).

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 and 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 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. Where relevant, holding gains and losses should be classified using the groupings recommended for assets and liabilities, described earlier in this chapter.

Flows not arising from transactions or price changes

These 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, they record the economic appearance and disappearance of assets, the reclassification of assets and liabilities, and exceptional, unanticipated external events (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 the write-off of claims by creditors due to bankruptcy or liquidation. Where relevant, flows should be classified using the groupings recommended for assets and liabilities, described earlier in this chapter.

3.10.2. Attitudinal and behavioural variables

A variety of information on household attitudes and behaviours can also be useful for understanding developments in household wealth at the micro level. Many countries gather data on at least a few variables of this kind in their household wealth data collections. The topics covered include: *i)* saving and investment attitudes and behaviours, including risk aversion; *ii)* housing attitudes; *iii)* loan refinancing, payment behaviour and credit lines available; *iv)* use of online banking and different types of financial institutions; *v)* financial constraints (e.g. ability to get financial assistance, ability to pay off liabilities and loan rejections); *vi)* the probability of losing/finding a job; *vii)* pension rights and retirement plans; *viii)* house value expectations; *ix)* income and inheritance expectations; and *x)* saving, spending and borrowing expectations (e.g. direction of change expected in saving, and future expenses compared with current expenses).

As the circumstances in individual countries can affect the relevance, usefulness and practicality of measuring particular variables, no specific recommendations are made here for the collection of data on any of them. However, countries may wish to consider the experiences of others when developing or reviewing their own collections in this area.

Table 3.12 provides some examples of attitudinal and behavioural questions that are used in household wealth surveys. The examples are drawn from the *Household Finance and Consumption Survey 2009-11* for the Euro area (Euro HFCS), the *Survey of Consumer Finances 2007* by the United States Federal Reserve Board (US SCF) and the *Wealth and Assets Survey 2006-08* by the United Kingdom Office for National Statistics (UK WAS).

3.11. Consistency with other international statistical standards

This section brings together and summarises the differences between the recommendations proposed in this chapter for micro statistics on household wealth and the international standards in the 2008 SNA, the 2011 *Canberra Group Handbook on Household Income Statistics*, the 2003 ICLS Report on Household Income and Expenditure Statistics, and the UN and UNECE/CES recommendations for the 2010 round of population censuses. In most cases, details of the differences and their significance have already been discussed in relevant parts of the chapter, together with possible ways of achieving alignment. Many practical issues also affect consistency, and these are discussed in later chapters. In the case of the differences from the SNA, Annex C provides a comprehensive listing of those that arise from both the standards in this chapter and the operational guidelines in later chapters, including the adjustments needed to achieve alignment between the measures of household wealth compiled on each basis.

Table 3.12. **Examples of attitudinal and behavioural questions in household wealth surveys**

Selected topics	Survey[1]	Questions
Saving and investment	Euro HFCS	People have different reasons for saving, even though they may not be saving all the time. What are your (your household's) most important reasons for saving? (purchase own home; other major purchases [other residences, vehicles, furniture, etc.]; set up a private business or finance investments in an existing business; invest in financial assets; provision for unexpected events; paying off debts; old age provision; travel/holidays; education/support of children or grandchildren; bequests; taking advantage of state subsidies [e.g. a subsidy to building society savings]; other)
	US SCF	Which of the following statements comes closest to describing your (and your husband/wife/partner's) saving habits? (don't save – usually spend more than income; don't save – usually spend about as much as income; save whatever is left at the end of the month – no regular plan; save income of one family member, spend the other; save regularly by putting money aside each month) About how much do you think you (your family) need to have in savings for emergencies and other unexpected things that may come up?
	UK WAS	There are many reasons why people don't save. During the last 12 months, what were your reasons for not saving? (can't afford to; had unexpected expenditures; not interested/not thought about it/not got around to it; would lose out on benefits; don't trust financial institutions; don't know how to save/invest; too late to start saving now; don't want to save; don't need to save; other) Using a scale of 1 to 5 (where 1 is agree strongly, 3 is neither agree nor disagree, and 5 is disagree strongly), to what extent do you agree with the following statements? I would rather have a good standard of living today than save for retirement; having a pension is the best way to save for retirement; investing in property is the best way to save for retirement; I feel I understand enough about pensions to make decisions about saving for retirement. How important, if at all, is it to you to leave property or money as an inheritance at some point in the future?
Assets and debt	US SCF	Over the past year, would you say that your spending exceeded your income, that it was about the same as your income, or you spent less than your income? To make up the difference, did you borrow additional money, did you spend out of savings or investments, or did you do something else (e.g. got behind on payments, didn't pay bills, help from others, sold assets, declared bankruptcy, did nothing)? Thinking of all the various loan or mortgage payments you made during the last year, were all the payments made the way they were scheduled, or were payments on any of the loans sometimes made later or missed? For the principal residence mortgage, what was the most important reason in choosing the lender? Was it because they were recommended to you, because they had low interest rates or fees, because of the location of their offices, because you had done other business with them, because it was easier to qualify for the loan, or for some other reason? When things that you (and your husband/wife/partner) own increase in value, are you more likely to spend money? On a scale of 1 to 5 (where 1 is agree strongly, 3 is neither agree nor disagree, and 5 is disagree strongly), where would you/your family be on the scale?
	UK WAS	Using a scale of 1 to 5 (where 1 is agree strongly, 3 is neither agree nor disagree, and 5 is disagree strongly), to what extent do you agree with the following statements? I tend to buy things even when I can't really afford them; I am more of a saver than a spender; I tend to buy things on credit and pay it off later.
Financial risks	Euro HFCS	Which of the following statements comes closest to describing the amount of financial risk that you (and your husband/wife/partner) are willing to take when you save or make investments? Take substantial financial risks expecting to earn substantial returns; take above average financial risks expecting to earn above average returns; take average financial risks expecting to earn average returns; not willing to take any financial risk.
	UK WAS	If you had a choice between a guaranteed payment of one thousand pounds and a one in five chance of winning ten thousand pounds, which one would you choose?
Financial decision-making	US SCF	When making major decisions about borrowing money or obtaining credit, some people shop around for the very best terms while others don't. On a scale of 1 to 5 (where 1 is almost no shopping, 3 is moderate shopping, and 5 is a great deal of shopping), where would you (and your family) be on the scale? *(This question is also asked in respect of saving and investment decisions.)* What sources of information do you (and your family) use to make decisions about borrowing and credit? Do you call around, read newspapers, magazines, material you get in the mail, use information from television, radio, the internet, or advertisements? Do you get advice from a friend, relative, lawyer, accountant, banker, broker, or financial planner? Or do you do something else? *(This question is also asked in respect of saving and investment decisions.)* In planning your/your family's saving and spending, which of the following time periods is most important to you? Next few months, next year, next few years, next 5-10 years, longer than 10 years?
	UK WAS	In the past five years, have you received any professional advice about planning your finances? Who have you received advice from? Which of the following (list provided) would you trust for advice about saving for retirement?
Access to finance	Euro HFCS	In the last three years, has any lender or creditor turned down any request you (or someone in your household) made for credit, or not given as much credit as you applied for? In an emergency, could you/your household get financial assistance of say EUR 5 000 from friends or relatives who do not live with you?

Table 3.12. **Examples of attitudinal and behavioural questions in household wealth surveys** *(cont.)*

Selected topics	Survey[1]	Questions
Expectations	Euro HFCS	Over the next year, do you expect your/your household's total income to go up more than prices, less than prices, or about the same as prices?
		In the future, do you (does anyone in your household) expect to receive a substantial gift or inheritance from someone outside the household?
		At what age do you expect to retire?
	UK WAS	Over the next few years, do you expect your financial situation to be better, worse, or about the same?
		Do you think it is likely you will save any money in the next 12 months?
		How much money do you think you will have to live on in your retirement? More than your income now, about the same, two-thirds, half, one-third, less than one-third?
		(Only asked if not a proxy, not retired and aged 40 or over.)

1. For some selected topics, there are one or more similar questions in the different surveys. In such cases, only one survey has been chosen to illustrate the particular question(s).

3.11.1. SNA standards

The concepts, definitions and classifications recommended in this chapter are consistent with those in the SNA with the exception of: *i)* the definition and coverage of households; *ii)* the selection of a household reference person; *iii)* the treatment of consumer durables; *iv)* the detailed classification of assets and liabilities; *v)* the treatment of net equity in own unincorporated enterprises; and *vi)* the definition of transfers.

The SNA definition of household has a different specification for multi-person households: the resources to be shared by members must include "some or all income and wealth" and the members must "collectively consume" certain types of goods and services, mainly housing and food". Also, the definition does not separately recognise "private" households. A further difference concerns domestic staff who are boarders in the same dwelling as their employer: the SNA treats them as belonging to a separate household from the one of their employer. In terms of statistical coverage, the SNA covers all resident households in its household sector, including institutional households. Full alignment with statistics compiled according to the SNA's definition and coverage of households is not achievable, although approximate alignment might be possible in situations where the SNA-based statistics contain separate details for institutional households and households living in collective living quarters.

Also, the SNA considers that the household reference person (for purposes of classifying households) should normally be the person with the largest income, although the person could also be the one who makes the major decisions with regard to the household's consumption. It is not possible to align statistics based on this approach with those based on the "ordered criteria" suggested in this chapter.

In the case of consumer durables, the SNA excludes these goods from the definition of assets in its central framework, although it suggests they should be recorded in a memorandum item in the household balance sheet. It recognises that these goods may be treated as assets in satellite accounts. Alignment with statistics compiled according to the central SNA framework can be achieved by omitting consumer durables from the asset aggregates in micro statistics on household wealth. This can be readily done, as the standards in this chapter recommend that consumer durables be recorded as a separate component of household assets.

While the asset and liability components recommended in this chapter can be aligned with the SNA's balance sheet components at a broad level, alignment at the component level would generally require additional data collection and/or the use of special estimation or

modelling techniques. The more significant differences in classification relate to non-financial assets, but there are also differences for financial assets and liabilities.

In this chapter, net equity in own unincorporated enterprises is treated as a financial asset (an equity investment in a business). This treatment is consistent with a household perspective on assets, in which the household is likely to have a notion of "what the business is worth", and it treats households' investments in business symmetrically regardless of the legal form of the business in which the investment is being made. In contrast, while the SNA appears to offer a conceptual treatment of unincorporated enterprises that is consistent with the micro framework, it also provides a threshold rule which, in some circumstances, only treats the unincorporated enterprise as a "quasi" corporation if it maintains a complete set of books. Otherwise, the SNA recommends that all of the individual asset and liability classes associated with the business operations be separately recorded as individual assets and liabilities of the household, even though they may be operated as an integrated entity and the compartmentalisation of the components may result in under- or over-estimation of the value of the business in the household account.

The treatment of transfers also differs somewhat from the SNA. In micro statistics, transfers are classified as current or capital on the basis of the size in the context of the household concerned, so a transfer of a given size may be considered current for one household but capital for another. Micro statistics also treat some transactions as negative consumption expenditure, whereas the SNA regards them as current transfers received.

3.11.2. Canberra Group standards for micro statistics on household income

The concepts, definitions and classifications recommended in this chapter are consistent with those in the Canberra Group's standards for household income, with the exception of: *i)* consumer durables; *ii)* and royalties.

While the conceptual treatment of consumer durables is the same, the practical treatment is different. However, alignment with statistics compiled according to the Canberra Group's recommended practice can be achieved by omitting consumer durables from the asset aggregates for household wealth. As noted above, this can be readily done.

In the case of royalties, the Canberra Group's standards provide a separate income component for them, as they are not regarded as property income from non-financial assets. Alignment with statistics based on this approach can be achieved only by combining royalties with income from non-financial assets, as assets in the form of intellectual property, contracts, leases and licences are lumped together within the standard wealth components for non-financial assets.

3.11.3. ICLS standards

The concepts, definitions and classifications recommended in this chapter are consistent with those in the ICLS Report, with the exception of: *i)* the definition and coverage of households; *ii)* the collection unit; *iii)* the treatment of consumer durables; and *iv)* the basis of recording and classification.

In respect of the definition of households, the ICLS standard adopts a different specification for multi-person households: the resources to be shared by members must include "other essentials of living" (in addition to food), and a household may extend beyond a single housing unit. Also, the ICLS concept of a household excludes institutions. In respect of statistical coverage, the ICLS includes some types of households living in collective living quarters (other than institutions) as well as private households. Full alignment with

statistics compiled according to the ICLS standard is not achievable, although approximate alignment might be possible in situations where ICLS-based statistics contain separate details for collective households and non-single housing unit households.

In the case of the basic collection unit, the ICLS standard favours the household unit, although it recognises that some components of income might be best collected at the individual person level. In general, this should not prevent alignment between the statistics compiled on the basis recommended in this chapter and those compiled according to the ICLS standard.

For consumer durables, the ICLS conceptual treatment is the same, but the practical treatment differs for income and may differ for consumption expenditure, as an alternative approach is allowed. Alignment with statistics compiled according to the ICLS's practical treatment for income and its alternative approach for consumption expenditure can be achieved by omitting consumer durables from the asset aggregates for household wealth. Again, as already noted, this can be readily done.

The differences in the basis of recording reflect the netting of payments against receipts in measuring some income components relating to wealth. These differences, along with those relating to the classification of components, limit the extent to which alignment can be achieved between the wealth and income components.

3.11.4. UN and UNECE/CES population census standards

The concepts, definitions and classifications recommended in this chapter are consistent with those in both these standards, with two exceptions: *i*) the definition of household, including some associated concepts; and *ii*) the coverage of households.

The UN household definition (but not the UNECE/CES definition) excludes institutions and does not separately recognise "private" households. It also contains a different specification for multi-person households: the resources to be shared by members must include "other essentials of living" (in addition to food), and a household may extend beyond a single housing unit.

While there is general consistency with the UNECE/CES definition of household, two aspects of the detailed concepts underpinning that definition differ from what is recommended here. Specifically, the UNECE/CES standard equates a person's country of residence with the country in which the place of usual residence is located. This chapter recognises that the two countries are generally the same, but not necessarily so. Also, the UNECE/CES standard provides for an exception from its recommended place of usual residence for tertiary students studying away from home but in the same country. This chapter provides for the same exception, but also allows the exception to be applied in the case of tertiary students studying abroad.

In respect of statistical coverage, both the UN and UNECE/CES standards cover all households within the scope of their particular definitions. Full alignment with household measures compiled according to the UNECE/CES standard should be achievable if institutional households and those living in collective living quarters can be separately identified and excluded from the UNECE/CES-based statistics. However, only approximate alignment is possible with the UN standard, and only in situations where the UN-based statistics contain separate details for collective households and non-single housing unit households.

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Chapter 4

Data sources and methods for producing household wealth statistics

This chapter describes the different types of sources and methods that are used to collect and compile household wealth statistics, and discusses the ways in which they are used. The main strengths and weaknesses of the different approaches are presented, with the aim of assisting countries to determine the best approach in particular circumstances.

4.1. Different types of sources and methods

Micro-level 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 household surveys on wealth and income, or wealth, income and consumption;
- surveys of financial institutions;
- administrative records; and
- specialised databases covering items such as works of art, historical dwellings and luxury vehicles.

The optimal source for compiling statistics on household wealth may vary, depending on the country circumstances and on the budgets available to statistical offices and other data collecting agencies, co-operation agreements between different institutions, privacy laws, content of public records, cultural factors influencing the propensity to participate in sample surveys, and characteristics of the market for private databases.

In general terms, no single source is completely informative or error-free; methodologically sound combinations of different sources may sometimes offer the best results. There may be important conceptual differences in measures of wealth collected in various sources, and careful thought should be given to the congruence of a given measure with a given analytical objective.

4.2. Strengths and weaknesses of different approaches

All approaches involve data quality challenges, but the nature of the challenge varies significantly with the source or method.

Household surveys, discussed in detail in Chapter 6, are currently becoming the prevalent source of micro-level data on household wealth. In the past, some wealth-related items were generally included in multipurpose surveys on economic activity and living conditions of households, mainly focusing on income, employment and/or consumption. After the recent financial crisis, in an effort to gain more insight about financial vulnerability, several countries started running new surveys focusing on wealth, or renovated pre-existing surveys to include detailed information on assets and liabilities.

Household surveys often collect a core set of demographic and socio-economic information along with the topic or topics of particular interest. This core information can be used to classify households into groups and then show the distribution of total wealth or other aspects of wealth across these groups. Such classificatory information is generally not available from other sources. In 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 ratios, sources of wealth accumulation by income class, etc.), without the added variability or error in results 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, particularly for sensitive or conceptually complicated topics such as wealth. Minimising these reporting problems and their effects is usually 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 the amount of wealth tends to be inversely proportional to a household's propensity to participate in surveys. Under a fixed budget, resources may be diverted from interviewing more ordinary households to interviewing wealthy ones. Precision in measuring rarely held assets may therefore translate into a 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; sometimes, other wealth items – such as savings held in foreign currency or in specific financial instruments – are too. Administrative records might also exist for debts exceeding a certain threshold, especially in countries where credit risk is evaluated by government agencies.

Administrative records provide two significant advantages over competing sources. They normally cover the whole population of an administrative unit (e.g. country, state/province/region, etc.); and, 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 this information is used only for a specific purpose, such as calculating taxes, or that it is released only in an 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 if using such sources alone.

Quality issues might affect administrative records too. Compared to the case of surveys, where data quality generally varies across the sample, administrative 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 take market dynamics into account. Conceptual differences may also be important. For example, in some instances, the value of real estate assessed for tax purposes follows a formula that has only a rough connection with one of the variety of 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 cover a variety of wealth items. Some are created as standard outcomes of business relationships, for private administrative purposes: for example, banks keep

records of financial assets owned by their clients. Some are assembled to support business operations: for example, a category association of real estate brokers might sponsor a database of recent contracts so as to provide a pricing reference to associates.

The main advantages provided by these data sets are timeliness and accuracy. They tend to be updated more often compared to public-sector administrative records and survey databases. Money and time are generally spent to prevent errors in data that may end up damaging business operations.

Other private data sets exist that are more specific: auction houses document their own transactions involving valuables, etc. Also, specialised companies may construct data sets with the sole intention of selling them for marketing, research or similar purposes. Accuracy might be lower in these cases, especially when record-keeping is not mandated by the law, because data producers are separate from data users and therefore may not be as strongly motivated to deliver high-quality output. Most often, information needed to evaluate the quality or the construction of such data sets is not available.

The most accurate private databases are often not available in their full form. Customer information cannot be released by most companies on account of legal provisions, except in aggregate or highly anonymised form. Analogously, most for-research or for-marketing data sets do not contain identifying information; linking them with other sources might be particularly difficult.

Finally, private data sets generally cover 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 get a fuller picture, this results in additional costs that are often incompatible with the budget constraints faced by institutional data producers.

4.3. Combination of different sources: Purposes and methods

Combinations of different sources can occur for several purposes. Data sets originally conceived for separate reasons might be brought together so as to have archives that are more comprehensive, covering a wider span of topics and allowing users to study them simultaneously. Archives might also be merged in order to assess or improve data quality; this happens, for example, when a data set generally known to be reliable is combined with another one that is either new and of unknown quality or known to be affected by various issues. Data from the latter can then be evaluated based on discrepancies with analogous data from the former, and/or substituted where necessary. Finally, data from one source can be used as auxiliary information when designing or using another source, without any immediate comparison taking place. Depending on the goal, different merging techniques are available.

Conceptually, two families 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); indirect, i.e. based on the incorporation of data from one source as background information for another (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).

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 immediate needs. This is the case with many sample surveys, especially when fieldwork activities are outsourced; for example, interviewers may receive a list of addresses to visit from the sponsoring agency, and they will have to acquire the names of households residing at each address for operational reasons, but the law may forbid them from relating this information to the sponsor.

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. If this institution has the right to store and use identifying information, then it can merge different archives, e.g. a wealth survey and a register of dwellings. Experiments with exact matching have also been carried out in the context of ad hoc projects where two or more data producers co-operated to assemble a specific data set, with the prior explicit consent of the households involved.

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 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 due to incorrect models or to scarcity of information in at least one of the involved databases. If survey data are used in a matching exercise, survey error enters the process, increasing this margin.

Sophisticated models for statistical matching have been developed in order to overcome these limitations, at least in part, and to estimate the level of uncertainty of the estimates based on matched data sets. Nonetheless, for purposes of complex modelling, the dimensions of the statistical matching define the limits of the possible relationships that can be captured between the survey data and the matched data.

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 ones focused 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.

The indirect combination of sources can also take many forms. In most wealth-related cases, a household survey is the central element of the measurement process, but information from other sources may be used in the process of designing the survey, producing estimates, and evaluating the results. For example, sample design for a wealth survey may benefit from estimates of average real estate prices or average credit scores on a territorial basis; this information, extracted from administrative records or private databases, can be incorporated in the structuring of strata and/or in post-stratification (see Chapter 6). Data on assets generally owned by wealthy households only, such as dwellings

in certain premium locations, works of art or leisure boats, can help when there is a need to oversample such households. Macro-level estimates of real and financial wealth, where considered reliable, can be used to benchmark survey results, helping data producers to understand any weaknesses in their data collection process.

4.4. Summary

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

- Micro-level data on household wealth can be obtained from a number of sources, including multipurpose household surveys, household surveys focusing on one or more dimensions of economic well-being, administrative records and records from businesses such as financial institutions.
- The choice of source or sources for micro-level data on wealth depends on a number of factors, such as the budgets available for collecting data and privacy laws.
- Household surveys are the most common source of comprehensive wealth data. They can collect a core set of demographic and socio-economic information that is useful for classifying households into groups of particular interest. However, there is a trade-off between the perceived response burden and the amount of data collected.
- Administrative records do not place an additional response burden on households and often cover the whole population. While they are not subject to sampling error, they may be subject to other errors, and are unlikely to contain all the data required for a detailed analysis of household wealth. Access to administrative records may be restricted by privacy laws.
- Business records can be more up-to-date than administrative records, but they are less likely to cover the whole population and will include only some items of interest. Access to these records is also likely to be restricted by privacy laws.
- Data from multiple sources can be combined using data-matching techniques. 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 the definition of criteria for assessing similarities between households, based on variables present in all the archives involved.

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Chapter 5

Measurement guidelines for standard components of household wealth

This chapter focuses on how the standard components for micro statistics on household wealth, specified in Chapter 3, are best measured using sound, consistent methodology. For each standard component or group of components, the main measurement issues are considered in depth, and practical guidance is provided in the light of data collection experience from countries that produce statistics in this field.

5.1. Measurement units

As discussed in Chapter 3, the unit of analysis when studying micro wealth data may be the household, a smaller unit such as the family economic unit or income unit, or the individual. Whatever the unit of analysis, the data items studied are normally household variables because of the sharing that takes place within households. For example, a person-level distributional study would categorise people according to the wealth of the household in which they live, and not the wealth they hold as individuals.

The measurement units, or units about which data are collected, need to support the units to be used in analysis of the data. Therefore, at a minimum, a wealth micro data set needs to contain information about assets and liabilities at the household level. The data set also needs demographic information about the individuals in the household, so that the household wealth data can be analysed from a life-cycle perspective, which is fundamental for understanding the distribution of wealth, as discussed in Chapter 7. Information about individuals is also essential to support use of the individual or family as the unit of analysis, including the derivation of equivalised estimates of wealth, as discussed in Chapter 7.

While the asset and liability data need to be collected with respect to the household, it may be useful or even necessary to collect the data at an individual level. If the data are being collected through a sample survey, more complete results might be obtained by asking for certain data items with respect to each individual in the household, for example the value of bank deposits. If the data are being collected by matching survey data to administrative or other records (as described in Chapter 4), it is most likely that the matching can be done only at the level of the individual.

5.2. Reference points and reference periods

Wealth is a stock concept and relates to a point in time, or a reference point. This contrasts to the concept of a flow over a period of time, which underlies variables such as income, consumption, saving, capital transfers, holding gains and losses, and so on. Because flows are measured over a period of time, flow statistics relate to a reference period. For maximum comparability within data sets, all wealth observations should have a common reference point and all flow statistics should have a common reference period. Furthermore, if wealth statistics are to be compared to related flow statistics, the reference point of the wealth statistics should be defined in terms of the reference period of the flow statistics. The most common way of doing this is to have the wealth reference point equal to the end of the flow reference period.

In a complete and fully integrated set of micro data, there would be two subsets of wealth data, one with a reference point at the beginning of the reference period and a second with a reference point at the end of the reference period. It would then be possible to explain changes in wealth between the two reference points by analysing all the flows that contributed to changes in wealth, such as saving, capital transfers, holding gains and losses, and so on.

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For practical reasons, wealth collected in household surveys is often collected with respect to the time of interview or a time for which data are available, rather than with respect to a standard reference point. Departures from the preferred basis of collecting wealth data should always be clearly explained to users of the data, along with the likely implications of those departures.

5.3. Valuation basis

In principle, for micro statistics on household wealth, all of a household's assets and liabilities should be valued at their current value in the market at the reference point date, or at the closest equivalent to this, as discussed in Chapter 3. 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.

In practice, it can be difficult to establish current value on the market, since there may not have been recent transactions in assets or liabilities identical to those which need to be valued, and there might be no markets at all for some assets or liabilities that are not new. Some assets, such as pension entitlements, cannot be traded at all. In all such cases, it is necessary to estimate the value. This is sometimes known as estimating a "fair value", i.e. an estimate of the value that would have been observed if an arms-length market transaction had taken place. There are a number of approaches that might be taken, summarised below and explained in more detail in the following sections.

The household may know the historical cost. For non-financial assets and some financial assets, it may be possible to adjust the historic value using a price index that can be expected to move in a similar way to the price of the asset concerned. It may also be necessary to make an allowance for depreciation if it is a non-financial asset that has a finite life and wears out over time. For loans, it may be possible to take the original value of the loan and work out how much the value of the loan has reduced (or increased), if the interest rate(s) and schedule of payments are known.

It may be possible to estimate how much it would cost to replace a used non-financial asset with a new one, and make adjustments to reflect the age and depreciation of the asset.

Some assets, such as pension entitlements, cannot be traded and are defined in terms of a cash flow to be paid in the future. In order to derive a current asset value, it may be necessary to estimate the present value of the cash flow expected to be received from the asset over time. Whenever calculated, present value estimates for an asset should be derived using a conservative discount rate, such as a risk-free government bond rate, rather than a discount rate based on the expected rate of return of the asset, even if such a rate of return can be estimated.

Some loans involve a series of set payments; this implies that during the life of the loan, it is difficult to determine how much principal is still outstanding, that is, i.e. what the current value of the liability is. In such cases, it may be necessary to estimate the present value of the loan repayments still to be made. Alternatively, for short-term loans, it may be sufficient to assume that the principal of the loan is paid off evenly over the period of the loan contract.

For assets such as dwellings, which normally have features that make them unique to some degree, it may be necessary to obtain an estimate of the likely market value on the basis of actual market values for assets that are as similar as possible. The estimate may be made by an experienced expert or by the household.

Guidelines to the measurement of individual assets and liabilities are provided in the following sections. In many cases, alternative methods are presented, reflecting the variety of contexts found in different countries and data collection agencies. Users of the guidelines will need to consider which of these methods are the most cost-effective to their particular circumstances.

5.4. Non-financial assets

5.4.1. *Real estate*

Three real estate components are included in the list of standard components of Chapter 3, excluding the real estate comprising part of the assets of an unincorporated business owned by household members. These are:

- *Principal residence,* defined as 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,* defined as dwellings or other types of housing unit regularly occupied by the household and owned by one or more of its members. They include dwellings used by one or more household members during the working week but not regarded as the principal residence of those members. These do not include dwellings owned by household members but used only occasionally, such as holiday homes.[1]
- *Other real estate,* defined as other residential and non-residential buildings and land owned by household members, other than own unincorporated business assets. It includes residences such as holiday homes for living temporarily, blocks of flats, commercial real estate, agricultural and forestry land, and other sites and plots of land.

There exist other types of dwellings or housing units in which households reside permanently or temporarily. For instance, a houseboat or a mobile home might be a place for permanent living. In the case of permanent living, the value of these dwellings should be included in the category of principal residence, but the measurement should be done in the same way as for vehicles, as described later in this chapter. If the houseboat or the mobile home is used for temporary living, e.g. for vacation, it should be included in vehicles.

Sometimes a household's residence is owned by an incorporated enterprise that is owned by the household. In that case, the household is not an owner-occupier household but a renting household, and the residence is not regarded as a non-financial asset of the household.[2] The value of the dwelling is included in the value of the incorporated enterprise, and contributes to household wealth in this way.

In the case of an unincorporated enterprise, like a self-employment business, an owner-occupied residence that is integrated with business assets ought to be separated as private-owned housing, with the value of the residence treated as a non-financial asset and the business assets included in the financial asset of equity in an own unincorporated enterprise. However, it might be hard to distinguish the owner-occupied housing from the business, especially if the dwelling is not a regular house or apartment. If it is not possible to separate it from the business assets, it should be treated in the same way as a dwelling owned by an incorporated enterprise.

If a household owns real estate that is not an owner-occupied residence, it should be included as part of equity in an own unincorporated enterprise, if the real estate is an

integral part of the operations of a self-employment business. If it is not part of a self-employment business, it should be included as part of the other real estate category.

In most countries, the value of an owner-occupied dwelling is the main asset for many households. It is also the main collateral security for loans. Thus it is very important to get accurate statistics on this asset.

Valuation of real estate

The main task of data compliers is to get a valuation of the real estate at the current value on the market. While there is an active market for real estate in many localities, it can be difficult to extrapolate the prices obtained in actual sales to obtain market valuations for other real estate in the same area. Many factors may impact on the value of individual items of real estate, including the size of buildings, the quality of buildings and their fittings, distance to shops or other facilities, ease of access, neighbourhood reputation, view, the area of land included, and the suitability and quality of the land for building activity, agriculture, forestry or other purposes.

Given the many factors influencing real estate values, it is likely that a value can only be estimated directly if the real estate has been recently purchased by the household. In all other cases, an indirect method is required, with a number of possible approaches to making an indirect estimate.

The most accurate in most cases is probably to have professional real estate valuers inspect and provide an opinion on the value of the real estate of each household. This is also likely to be the most expensive approach. Valuations provided by professional valuers are based on relevant experience. In addition to the sales in which they have personally been involved, they are likely to utilise databases of sales information that are maintained by their organisation or by an industry body for that purpose.

Estimates of market value can also be obtained from the households themselves. Such valuations will vary greatly in accuracy, depending on whether the household has recently bought the real estate, has actively monitored the local market, and has a realistic (rather than optimistic or pessimistic) view of the market, and perhaps also on how active the relevant local market is. Box 5.1 provides a summary of an Israeli study into the accuracy of self-reported dwelling valuations, while Box 5.2 describes how self-reported property values are collected in the Wealth and Assets Survey of Great Britain, and how the results compare to other estimates of property prices.

Valuations could be based on information supplied by households and supplemented by other information. Households could be asked for the purchase price of the real estate and the date around which it was acquired, and that value could be indexed by an appropriate price index, if such an index exists. However, there would be difficulties for real estate that has been owned by the household for a very long time, perhaps having been passed on from a previous generation. In addition, there are unlikely to be price indices for each locality, and over time relative prices between localities are likely to change. For example, prices of inner city real estate are likely to behave differently to the prices in outer suburban areas.

In many countries, households pay some form of property tax based on a valuation of the real estate. Households liable for property tax should be able to provide that valuation. Alternatively, it may be available from administrative sources. Sometimes such valuations are based on the average valuation over several years or are only updated every few years, and so do not represent current market value. Consideration could be given to establishing

Box 5.1. **Self-reported dwelling valuations in Israel**

Owners' valuations of dwelling prices are central in the construction of price indices, for empirical research into housing markets and households' economic behaviour. Previous studies show that, on average, owners tend to overestimate the value of their dwellings by 5% relative to the market valuation. Romanov (2001) analysed the variation of the bias over the distribution of dwelling sale prices, using a unique data set of more than 22 000 observations from Israel's Household Expenditure Survey, from 1997 to 2008, merged with the national sample of housing sale transactions by census tract. The author found that the self-reported estimates of dwelling values were, on average, 27% higher than the mean market prices of houses in the corresponding census tracts. Valuations of inexpensive and costly dwellings are biased in different directions: estimates reported by people who occupy dwellings in the lowest eight deciles of the price distribution were upward-biased, whereas those who live in the most expensive dwellings more typically understate the value of their homes. The valuation bias is systematically associated with owner's traits as well as with dwelling and neighbourhood characteristics. The frequency of dwelling sales in the respondent's tract also had an effect on the self-reported valuation bias.

Source: Romanov, Fleishman and Tur-Sinai (2011).

Box 5.2. **Estimates of property wealth from the Wealth and Assets Survey for Great Britain**

The Wealth and Assets Survey (WAS) for Great Britain is a longitudinal household survey that aims to provide measures of the economic well-being of households and individuals by gathering information on, among other items, the level of savings and debt, saving for retirement, how wealth is distributed among households, and factors that affect financial planning. Measures of household wealth are split into four categories: property wealth, financial wealth, physical wealth and private pension wealth.[1]

Property wealth comprises: the value of the main residence and of any additional property or properties owned by the household (or persons within the household). Estimates of gross property wealth and any mortgages secured on the properties (liabilities) are used to provide estimates of net property wealth. Property wealth is derived from the respondents' own valuation of their property. A number of steps are used to collect the value of properties.

- For households who own, part own or are buying their main residence, the value of the main residence and of any mortgages or loans secured on it is gathered at a household level, with the response usually being obtained from the household reference person (HRP) or the spouse.[2]
- For other property owned by members of the household, the value of the individual's share of other property (and any liabilities on these properties) is gathered at an individual level – as other members of the household could own property that the HRP may not be aware of or know the details of.
- For all estimated values of property assets and liabilities collected through the WAS, respondents are first asked to give a point estimate. If the respondent does not feel able to estimate it to this level, they are shown a list of banded values and asked to estimate which of the bands is most appropriate. From this banded value, a point estimate is imputed using recognised statistical imputation methodologies. Similarly, any missing estimates are imputed so that estimates of property wealth are available for all households, which can then be fed into estimates of overall household total wealth.

Box 5.2. **Estimates of property wealth from the Wealth and Assets Survey for Great Britain** *(cont.)*

The table below compares estimates from the WAS with three other sources of house prices available in the United Kingdom, broken down by type of property.

Table 5.1. **Value of principal residence in Great Britain, by dwelling type, 2006-08 and 2008-10**

Thousands of pounds

		2006-08	2008-10
Detached	Land registry	267	249
	Halifax	324	282
	Nationwide	244	224
	WAS	327	317
Semi-detached	Land registry	167	152
	Halifax	198	166
	Nationwide	174	156
	WAS	202	195
Terraced	Land registry	138	124
	Halifax	184	148
	Nationwide	148	131
	WAS	178	178
Flat	Land registry	167	150
	Halifax	189	154
	Nationwide	135	121
	WAS	173	132

The values derived from these external sources vary considerably, with the Halifax data being consistently higher than the data from both the Land Registry and Nationwide (a financial institution). Whilst in 2006-08, the WAS results are very similar (or lower) than the Halifax estimates, WAS was consistently higher than all three sources in 2008-10.

While the perceived value of property may lead to an over-estimate of property wealth compared with market prices, the importance of the perceived value should not be under-estimated. It is the perceived value that may be influencing the behaviour of households with respect to their property assets as well as their other assets such as financial, pensions and to a lesser extent their physical wealth.

1. For more information, see "Wealth in Great Britain: Main Results from the Wealth and Assets Survey 20086H10", *www.ons.gov.uk/ons/rel/was/wealth-in-great-britain-wave-2/2008-2010--part-1-/index.html*.
2. The household reference person is defined as follows: *i)* in households with a sole householder, that person is the HRP; *ii)* in households with joint householders, the person with the highest income is taken as the HRP; *iii)* if both householders have exactly the same income, the older is taken as the HRP.

the average relationship between the property tax valuation and average current market prices available from real estate industry databases or similar sources, and then adjusting the reported valuations accordingly. It should be noted, however, that certain types of property may be sold more frequently than others, for example dwellings at the high end of the market, or dwellings purchased by landlords for rental. The typical property sold may then be of different quality to the typical property not sold, and these may affect the accuracy of the relationship between property tax valuations and market prices. Box 5.3 describes experience using administrative data on property values in Sweden and

Box 5.3. **Using administrative register data for the valuation of real estate in Sweden and Denmark**

In some countries, different administrative registers can be used to get information on households' or individuals' holdings of real estate. By connecting this information to a wealth survey, one will get very good estimates on the extent of real estate ownership. Depending on what information exists in these registers, a proper value of a tax or asset value can be obtained. However these tax values very often are far from the market values.

Tax values often reflect differences in value between houses based on regions, size and other variables. Sometimes the value is based on a fixed proportion of market value. Thus the tax value may take into account the standard, size, type, age and location of a dwelling. If the status of the real estate as a principal residence or a holiday house is recorded, this information can be used to produce more detailed data on the composition of wealth.

Combining these tax registers with data on purchasing statistics, one can get better estimates on the market value. The main path to obtain this market value is to calculate the ratio between the purchase value and the tax value for units that have been sold during a specific period, often during a year. In Denmark and Sweden, there exists data on the purchase-price coefficient for different types of real estate and in different local regions, municipalities or lower subdivisions. This has been used to adjust the tax value to make an estimate of the market value.

The average of the purchase price coefficient for each local area must have enough observations, otherwise one has to get a coefficient based on a larger area. By performing some statistical calculations on this ratio, one can get information on the dispersion of the ratio and thus on how much the market value for real estate can vary.

The estimate of the market value of the real estate can differ from the actual market value, since it relies on the average ratio between purchase price and tax value. Within a municipality, the market prices might have changed at varying levels. Therefore the real estate value of some households might be overestimated, while the value for others is underestimated.

There are two methods of using the ratio of purchase price to tax value.

Σ *purchase values*/Σ *tax values* [1]

Σ *(purchase value/tax value)*/Σ *number of observations* [2]

It is recommended to use [2], as using [1] will increase the risk that extreme values will influence the result disproportionately.

Denmark, while Box 5.4 describes the New Zealand proposal to use the rateable capital value of properties in its Household Economic Survey.

In some cases, property taxes may in effect be a land tax, based on the unimproved value of the land and therefore not include the value of any structures on that land, the value of a dwelling or any other buildings. Furthermore, dwellings that are in blocks of apartments may not pay land tax for their individual dwellings, especially if they are owned under a co-operative arrangement. In such cases, property tax data may be suitable for obtaining values for rural land, but not urban real estate.

Sometimes a household may have real estate located in an area where there is no active real estate market, at least for a property with the type of building or other construction as the property of interest. In such cases, it may be necessary to estimate the value of the construction by estimating the cost of replacing the construction, and adding that value to

Box 5.4. **Use of rateable capital value of property in New Zealand**

In the Household Economic Survey for 2014-15, Statistics New Zealand will collect information on net worth, including the value of property owned. The method of valuing property that will be used in the survey will be to collect from households the current rateable capital value of the property, if this cannot be provided, the address of the property will be collected.

The current rateable capital value is the rating valuation of a property. Rates are a charge against a property (rating unit) set by local and regional councils. Rates are based on a valuation of the property. The capital value is the probable price that would be paid for the property at the date of the latest general revaluation. Revaluations for rating purposes are generally performed every three years. If the household has had a more recent valuation done, then this is what will be collected.

The information on the capital value is available on rates statements that are issued every three months, so this information is readily available for most households. If the household cannot provide the capital value for whatever reason, Statistics New Zealand will use publically available information on the capital value of the property to estimate the value.

The advantage of using current rateable value to value property is that a consistent methodology is used to value properties for all households.

an estimate of the land value. However, consideration would have to be given to the quality of the original construction and whether the property is likely to be marketable in current times. Some unique structures may still be marketable, especially if they are the only one in the area, while others may not be marketable because, for example, they have been superseded in their use.

In summary, a number of approaches can be taken to obtain real estate values for household properties, and it may be necessary to take a mix of approaches. Countries need to select an approach or approaches on the basis of data availability, the nature of their real estate markets and the relative implementation costs.

5.4.2. Vehicles

The vehicles category includes the cars, motor cycles, boats, caravans, aircraft, etc., owned by household members other than those mainly used in own unincorporated enterprises.

There are alternative survey approaches on how best to estimate the value of vehicles. The most common and most straightforward approach is to ask respondents to provide their own estimates, even though such estimates may not be very accurate.

Alternatively, households could be asked for the age and historical cost of the vehicle, and then standard depreciation rates and appropriate price indices could be applied. If vehicles are insured against theft or destruction in an accident, obtaining the insured value of the vehicle may give a similar value, depending on the valuation practices used by the insurance companies concerned. However, many factors affect the actual rate of depreciation of individual vehicles, and so these approaches may not always be a very reliable way of valuing individual vehicles.

Another approach for the more common vehicles is to obtain the information needed and the year of each vehicle from the respondent, and then look up the wholesale prices of those vehicles in the databases of second-hand vehicle prices that are maintained in many countries.

5.4.3. *Other consumer durables*

Other consumer durables include the 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.

A relatively small proportion of used consumer durables other than motor vehicles are traded in the second-hand market. Those that are traded probably tend to be in above-average condition for their age. Therefore, even in principle, the current value of these consumer durables cannot normally be established by referring to actual market values. A sounder approach would be to consider the cost of replacing each durable with a new item and then discounting the value by a depreciation factor that reflects the age of the durable and its expected life span. An equivalent approach would be to adjust the historical cost of the durable with a price index, and then discount a current value by the depreciation factor.

Generally, it would not be practicable to separately list and account for each of the consumer durables owned by a household, apart from motor vehicles and perhaps a few other major items. Therefore more approximate methods are required. It is possible to simply ask households for the value of their consumer durables, perhaps by broad group as a check list. However, households are likely to have difficulty knowing on what basis to make their estimates.

A better approach may be to ask the respondent how much it would cost to *replace* each broad category of consumer durable, and the average age of those durables. A depreciation factor can then be derived for each category of durables and applied to the respondent's estimates. The depreciation factor can be based either on an estimate from the respondent about how long they expect to keep those items, or on a standard factor established by the statistician or data analyst for general application.

Households often have insurance policies that provide cover against the loss of the contents of their dwellings, sometimes with major items listed and valued separately. Households are likely to be able to provide the value covered by insurance relatively easily, and this value can be taken as an estimate of the value of consumer durables owned, excluding motor vehicles. However, care needs to be taken to ensure that the insurance policy covers the same items defined as consumer durables in the wealth statistics. For example, a policy may cover valuables, which are not included in the wealth category of consumer durables, but may not cover outdoor furniture, which is included. Consideration also needs to be given to whether the insurance policy valuation covers the cost of replacing used items with new items, and how accurate households are likely to have been in establishing the value that is used for insurance purposes. The appropriateness of using insurance policy valuations may vary from country to country.

5.4.4. *Valuables*

Valuables are defined as 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.

Since valuables are stores of value, there are by definition active markets for valuables. However, individual items are often likely to have unique features whose value cannot necessarily be determined directly by reference to a standard price in a catalogue or

database of past sales. Therefore, in some cases a reasonably accurate valuation can be determined only by an industry expert. Households that own high-value valuables are likely to have them insured separately, and the insurance company will normally require a valuation for this purpose. It will normally be satisfactory to accept the respondent's estimate of the value of household valuables, using insured values where these exist.

5.4.5. *Intellectual property and other non-financial assets*

Other non-financial assets 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 tradeable licences and permits to undertake specific activities). It will normally be satisfactory to value these assets by asking households how much they would receive if they sold these assets.

5.5. Financial assets

5.5.1. *Currency and deposits*

Currency includes the notes and coins that are of fixed nominal value and issued or authorised by the central bank or government. It is sometimes known as cash, although the term cash is sometimes also used to include deposits with financial institutions that can easily be converted to currency. *Deposits* are claims that are represented by evidence of deposit: examples are 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.

Deposits are in many countries the most common form of financial asset. This category comprises highly liquid assets that allow access to currency relatively quickly for performing economic transactions. Deposits can be classified into three subgroups in terms of the speed with which they can be converted into cash:

- *Overnight deposits,* when convertible into cash and transferable on demand without delay and penalty.
- *Agreed maturity deposits,* defined as non-transferable deposits which cannot be converted into currency before an agreed fixed term or which can be converted into cash before the agreed term by accepting some kind of penalty.
- *Redeemable at notice deposits* are non-transferable deposits without any agreed maturity, which cannot be converted into currency without a period of prior notice, without which the conversion into cash is not possible or possible only with a penalty.[3]

If household members own an unincorporated enterprise, it may be that currency and deposits used for household purposes are not kept separate from those used for business purposes. If the household cannot easily allocate currency and deposits into these two purposes, they should all be allocated to the major purpose. Currency and deposits allocated to unincorporated enterprise purposes should then be included in the net value of the unincorporated business, as described later in this chapter.

Currency and overnight deposits should be valued at their nominal value. Agreed maturity deposits should be valued at the present value of their expected redeemable value (assuming that that amount is higher than their redeemable value at the current time after penalty for early redemption). Redeemable at notice deposits should be valued at the

present value of the amount expected if notice of redemption were given at the current time (also assuming that that amount is higher than their redeemable value at the current time after penalty for redemption without notice).

Sample surveys provide a feasible way to obtain information on the amounts of these assets. It is recommended that information be collected separately for each deposit category in order to avoid under-reporting of the less-used accounts.

In some countries, a direct measure of the assets can be obtained using administrative personal data. Even if this source offers more precise data, some caution should be exercised since the aggregation of personal information at the household level may create duplications, for example in the case of joint account holders. Also, if one account is held by members of different households, it may not be clear how to share its amount among the households.

Bank administrative data are an alternative data source, which is particularly useful in the compilation of macro statistics. However, this information is often available only at an aggregated level. If it is available at the individual level, it is unlikely that the demographic characteristics of the holder will be available to enable matching to other data for the household. Therefore, these statistics are normally useful for reference values for an external validation of aggregate data.

5.5.2. *Bonds and other debt securities*

Bonds and other debt securities are 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.

This category includes quite different fixed-income securities that can be classified according to the maturity date, the frequency of coupon payments and the nature of the issuer. Among these financial assets, government bonds usually have an important share. Corporate bonds, issued by resident enterprises and banks, also have a significant presence in household portfolios, while the other debt securities usually play a minor role.

The standard valuation method of fixed-income securities is to report the market price at the end of the reference year. The market value of a bond depends mainly on the value of the principal amount, the accrued interest, the length of time until the amounts are received, and the difference between the market interest rate and the interest rate of the security.

Sample surveys collect information on the stock of bonds and other debt securities held by households. However, respondents often report the face value of these securities instead of the market value. For bonds in particular, this difference is likely to be significant since the value of bonds sold in the secondary market fluctuates in response to interest rate changes.

A standard practice with survey data on fixed-income securities is to collect their face values from respondents and then revalue the face values by taking into account the difference between the market interest rate and the interest rate of the security. For this revaluation operation, it is recommended to collect the stock information separately for each of the most common fixed-income security categories (government bonds and bonds of listed and unlisted companies). In particular, it is a standard practice to classify government bonds by the type of payments (coupon vs. zero-coupon bonds), the type of interest rate (fixed vs. floating) or the maturity length (within a year or longer).

It is unlikely that information about bonds held by households could be supplied by the financial institutions issuing the bonds in a way that would enable the data to be linked to the households of interest.

5.5.3. *Equity in own unincorporated enterprises*

Equity in own unincorporated enterprises comprises 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.[4] Equity in unincorporated enterprises in which household members do not work is included in the category of shares and other equity.

The most appropriate valuation for an unincorporated enterprise is its net market value, i.e. the amount that it could be sold for as an operating entity, including any business good-will and the like, less any liabilities. If it is unlikely that the business could be sold as an operating entity (because, for example, it is largely dependent on the unique attributes of the owner, or the business has no prospect of being profitable), the appropriate valuation is to sum the market value of the individual saleable business assets and deduct the amount needed to satisfy any outstanding business liabilities. The latter valuation approach can be applied to 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. Liabilities of an unincorporated business include business loans and accounts with business suppliers still to be paid. An unincorporated enterprise may have negative value because the value of the liabilities may be greater than the gross market value of the business assets.

The valuation of a household's equity in own unincorporated enterprises is normally obtained by sample survey from the household. The valuation may not be very accurate, for a variety of reasons, including because there may not have been recent sales of similar businesses. Also, respondents may need assistance in understanding what should and should not be included as part of this item, especially the boundary between this asset and other household assets such as real estate, motor vehicles, and cash and deposits. In some cases it may be very difficult to make this distinction.

5.5.4. *Shares and other equity*

Shares in corporations are instruments and records acknowledging claims on the residual value of a corporation after the claims of all creditors have been met. They generally entitle the holders to a share in the profits of the corporations. Examples are publicly traded shares that are listed on an exchange and unlisted shares (i.e. private equity securities or unquoted limited liability companies).

Other equity comprises instruments and records acknowledging claims on the residual value of a non-corporate 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,[5] and equity in family trusts. Household members' equity in own unincorporated enterprises (i.e. unincorporated businesses which the members own or partly own and in which they also work), mutual funds and other investment funds is excluded.

For listed companies, the value of the assets should be based on the quotation prices of the shares. For unquoted companies and other equities, their value should usually

correspond to the current market value of the financial and non-financial assets of the owned business activity, net of its financial liabilities (and adjusted for the ownership percentage). In practice, obtaining such a valuation may be difficult for many households. First, anyone making a valuation will face the same issues as those described in the discussion above of equity in own unincorporated enterprises. Second, households that own shares in unquoted companies and the other equities included in this item may not be closely involved in the management of the businesses concerned and therefore not have access to the information required for the market valuation of their worth.

While households may have difficulty providing values for these items, it is unlikely that there are alternative sources of information that can be used.

5.5.5. *Mutual funds and other investment funds*

Mutual funds and other investment funds are collective investment schemes 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.

Investment fund shares are usually split into subcategories of funds classified according to their main support: money market funds, real estate funds, bond funds, mixed funds and equity funds. A common distinction is drawn between open-end investment funds and closed-end ones. Open-end investment funds are dedicated to small retail investors and for that reason are prevalent in many countries. Other open-end funds include funds reserved to qualified investors and hedge funds. Close-end funds are usually specialised for investments in real estate or securities. With open-end funds there is no restriction on the amount of shares that can be issued from the fund, while for close-end funds the number of shares is fixed.

The standard valuation method is to report market values at the reference point. Household data are collected in sample surveys. It should be noted that the distribution of these financial instruments is highly concentrated in the hands of rich households. Unfortunately, these households usually have both a lower propensity to participate in surveys and a greater under-reporting behaviour.

5.5.6. *Life insurance funds*

Life insurance funds are claims of policy holders on enterprises offering life insurance or providing annuities. These claims include life insurance entitlements where the insurer guarantees to pay a beneficiary an agreed minimum sum or an annuity at a given date, or earlier if the insured person dies beforehand. Although life insurance has an insurance component, it is primarily seen as a saving and investment vehicle, and there is a guaranteed return whether or not the event insured against (the death of the insured person) actually occurs. An entitlement to a life insurance payout at the policy maturity date is therefore regarded as an asset. Term insurance providing benefits in the case of death within a given period (e.g. from an accident) but in no other circumstances is regarded as non-life insurance, as recommended in the SNA (para. 17.6), and is therefore excluded.

Life insurance policy before maturity

This wealth asset is based on a life insurance contract between an insurance company and a policy holder. The holder pays a premium, either regularly or as a lump sum. The asset is owned by the policy holder until it matures, even if the beneficiary is a third party to whom the pay-out is transferred when the policy matures.

The pay-out to the beneficiary of a life-insurance policy can be determined in a number of different ways, depending on the nature of the policy. At one extreme, the pay-out is largely determined by the current equity of the policy holder in the fund, plus a true insurance component against early death which diminishes according to a set schedule as the policy ages. The "true" insurance component may reach zero by the time of the specified maturity of the policy. The benefit paid is therefore largely determined by the yields obtained from the investment portfolio of the fund, especially as the policy nears the maturity date, and such policies are described as unit-linked. At the other extreme is an index-linked policy, where the total benefit to be paid is stipulated from the commencement of the policy in terms of a current value that is increased over time in line with an indicator such as the consumer price index. The true insurance component is greater in these policies, and the proportion of premiums going to policy holder equity consequently lower, because the policies insure against adverse investment outcomes as well as early death. Other policies lie somewhere in-between, with lower and upper caps on the amount that will be paid out.

In some cases the company allows a policy holder to borrow against part of the insurance cash value. The amount eventually paid out on the policy needs to be reduced by any such borrowings that have been made.

A policy holder in a life-insurance scheme explicitly pays into the scheme by making premium payments and implicitly pays into the scheme because the fund earns investment returns on equity already in the fund. Notionally, the aggregate of the two forms of payment are disbursed in three ways.

First, the insurance company will take some part of the aggregate as compensation for operating the scheme and to pay any tax and other costs incurred.

Second, there is a true insurance component, which is used to provide cover for when policy pay-outs are greater than policy holder equity at the time the insured person dies.

Third, there is a residual component, i.e. an addition to the policy holder's equity in the fund. If the fund has had poor investment returns, this residual may be negative and policy holder equity may decline. It is the notional policy holder equity in the fund that should be included as a financial asset of the household.

While the policy holder's equity in the fund can be described notionally, this may not be consistent with the way that insurance companies actually structure their accounts, at least at the policy holder level. Even if insurance companies do have values that approximate the concepts described above, they may not appear on the annual statements provided to policy holders, and almost certainly will not appear labelled with the terms used above. An approximation to the required values is most likely to appear on the annual statement of a unit-indexed policy. It may indicate that the benefits payable on death at the time of the statement comprise an insured sum and various other components, such as annual bonuses. Current equity in the fund can be taken as the total benefit payable, minus the insurance component as indicated by the insured sum. As a policy ages, the insured sum is likely to decline, and the other components will increase as equity increases.

Life insurance policies sometimes have a surrender value. To discourage policy holders from exiting the policies before they mature, the surrender value is likely to be discounted significantly below the actual equity value as defined above. Nevertheless, it may be possible to assume a relationship between the surrender value and the equity value and use it as a basis for estimation.

The discussion above assumed that the benefit to be paid from a life insurance policy that has not yet matured is in the form of a lump sum. If it is in the form of an annuity, the present value of the annuity should be treated in the same way as a lump sum of equivalent value.

In general, data collectors will need to negotiate with the life insurance industry of the country to determine the best way of approximating policy holder equity value, either through rules of thumb that can be applied to data contained in annual statements or through access to insurance company records when authorised by respondents.

Annuities

An annuity is an obligation for a life insurance company or similar institution to make a stream of payments to a beneficiary in exchange for an initial deposit of money. The deposit may be the benefit received on the maturation of a life insurance policy, as discussed above, or it may not be related to a previous life insurance policy. It is an asset of the beneficiary, rather than of the original policy holder, if they are different; a capital transfer from the original policy holder to the beneficiary takes place at the time the annuity commences.

The nature of the stream of payments varies widely. At one extreme, it is a guaranteed regular payment at least once a year for the remainder of the beneficiary's life, where the payment may be for a fixed amount or it may be linked to the consumer price index or some other index. At the other extreme, the initial deposit is simply an investment fund from which the beneficiary makes withdrawals. It is differentiated from other types of investment fund because the beneficiary normally has to make a minimum withdrawal each year, and there may also be a cap on the maximum withdrawal that can be made. Investment earnings within some annuity funds may attract taxation concessions, and may only be available to people of retirement age.

The asset value of an annuity depends on the type of annuity. For an annuity with guaranteed payments for the remainder of the beneficiary's life, the data collection agency needs to derive the asset value, which is equal to the present value of the payments expected to be made. Payments expected to be made are derived by using actuarial life expectancy data for the beneficiary and the schedule of payments, which the beneficiary should normally be able to provide. For an annuity that is essentially an investment fund, the asset value is equal to the equity remaining in the fund, which would normally be reported in an annual statement received by the beneficiary.

Sometimes annuities have more than one beneficiary, and the payment stream may be reduced when one of the beneficiaries dies. In these cases, the calculation of present value needs to include the appropriate actuarial probabilities and potential payment streams that are covered by the terms of the annuity.

5.5.7. *Pension funds*

Pension funds are claims of members and account holders on pension schemes, sometimes also known as retirement plans or superannuation schemes. These claims include entitlements in both defined benefit schemes (where the formula for defining a member's pension is agreed in advance) and 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, and government or private. Examples are current balances of accounts with public, occupational and industry schemes; personal pension accounts with financial institutions (e.g. superannuation or

retirement savings accounts that meet conditions specified under pension fund or tax laws, and tax-deferred retirement accounts); and, in countries where permitted, private investment funds meeting specified pension fund requirements. Entitlements in pension schemes for a government's own employees are included, provided such schemes are distinct from social security and have separate accounting information. Other pension entitlements, accruing under government social security schemes, are excluded for reasons discussed in Chapter 3.

For many individuals, claims on pension funds are one of their largest assets – without some measurement of this asset, any estimate of total wealth is an underestimate of the true wealth of the household. However, as for life insurance, the assets held by households' pension funds are not tradable, and there is no market that can be used to determine the current value of these assets in a direct way. It is therefore recommended to use a more indirect approach to valuing these assets, especially for defined benefit schemes and hybrid schemes, which have a defined contribution element and a defined benefit element. The remainder of this section provides an overview of the approach to be taken in valuing pension entitlements. It is necessarily a broad description because of the variety of pension schemes in existence, and the need to adopt a methodology that is appropriate and feasible for the country concerned. Box 5.5 is a case study of the estimation of pension wealth in Statistics Canada's Survey of Financial *Security*, and Box 5.6 describes measures of private pension wealth from the Wealth and Assets Survey for Great Britain.

Defined contribution schemes

In a defined contribution scheme, employer and/or employee contribute to a pension fund throughout the time of an employee's eligible employment. The contributions are invested and the employee's equity in the fund accumulates over time. In some schemes, the employee must withdraw his or her entitlement from the fund on retirement. In other schemes, it may be possible to leave part or all the entitlement there as an investment until a later date. In some schemes, the entitlement must be rolled over into an annuity.

In the simplest case, the pension benefit received from the scheme equals the employee's equity in the fund at or after retirement. If the employee has not yet retired, or has retired and not taken all the benefit available, the current value of this asset is simply equal to the equity accumulated in the fund at the current time and not yet withdrawn or rolled over into an annuity. The value of the accumulated equity would normally be available from an annual statement received by the employee or directly from the pension fund manager if permission is given by the respondent. Whether or not the lump sum will be converted into an annuity in the future is not relevant to the estimation of the asset value, since the lump sum is a well-defined asset at the point at which it becomes due.[6] If, on the other hand, a respondent is currently in receipt of an annuity that has been converted from or rolled over from a defined contribution fund entitlement, the asset value of the annuity should be estimated as discussed earlier in this chapter.

In some schemes, some or all of the employer's contribution may be made only at the time that the employee retires, perhaps as a multiple of employee equity already in the fund or as a function of the length of time that the employee has been employed. There may be other reasons why the final benefit is not simply equal to the equity that has accumulated in the fund for the employee over time. For example, it may be possible to convert the equity in the fund into an annuity at more favourable rates than would be available in the commercial market, or the benefit may include health insurance that is not

Box 5.5. **Estimating the value of pensions in Statistics Canada's Survey of Financial Security***

Types of pensions valued

SFS estimated the value of occupational pension plans. It did not include an estimate of the social security wealth from the Canada/Québec Pension Plans (C/QPP). In order to produce a reliable estimate of the wealth associated with the C/QPP, it was ideally necessary to obtain the information on work history from the administrative file for these plans, which Statistics Canada does not have access to. SFS also included an estimate of the value of personal retirement savings held in Registered Retirement Savings Plans (RRSPs). This information was reported by the respondent from financial statements provided to them.

Data sources

SFS used a number of sources to estimate the value of occupational pension plans such as:

Respondents: Every attempt was made to include in the survey questions that could, with reasonable ease, be answered by the respondent (e.g. demographic information, earnings). Respondents were not asked about the provisions of their occupational pension plan, because of concerns that they would not be familiar with these details. Whenever possible, they were asked to consult their own records (e.g. financial statements, tax forms).

Tax records: Respondents were asked for permission to access their tax records from the Canada Revenue Agency (CRA – the agency that administers the federal tax laws). Permission was provided by about 80% of respondents. This information was vital to the estimation of pension wealth, as it included the identification number of the pension plan to which the respondent belonged. With this information it was possible to confirm that a respondent did belong to an occupational pension plan.

Database on occupational pension plans: Statistics Canada conducts a survey of occupational pension plans (entitled Pension Plans in Canada [PPIC]). This database contains information on the provisions of these plans. It also contains the same plan identifier used by the CRA. Using this identifier, it was possible to identify the plan characteristics (e.g. benefit rate) required to estimate the pension value. Without this information a much more generalised estimation process would have been required. For those respondents who did not provide permission to use their tax records, the provisions of typical plans, determined based on the industry of employment, were identified and used in the estimation process.

Actuarial data: Actuaries provided the required information on interest rates and life expectancy as well as the factors used to estimate pension wealth.

Estimation method

The estimation method is described in detail in the report Survey of Financial Security: Methodology for estimating the value of employer pension plan benefits.

* Pension wealth was first estimated in Canada's Household Asset and Debt Survey (SFS) in 1999.

purchased using equity accumulated in the fund. In these cases, the amount reported as employee equity in the fund at the current time needs to be adjusted according to procedures that will determine the final retirement benefit of the employee. If the adjustment relates to the employee's length of service, the current length of service (rather than the expected final length of service) should be used.

Box 5.6. **Measures of private pension wealth from the Wealth and Assets Survey for Great Britain**

Private pension wealth is one of the four categories of wealth (alongside property wealth, financial wealth and physical wealth) considered by the Wealth and Assets Survey (WAS) for Great Britain, Private pensions are defined as all pensions that are not state basic retirement or state earnings-related.[1] They include occupational and personal pensions, including those for public sector employees. The WAS collects information about membership of private pension schemes, including the types of these pensions and the value of the assets held in these schemes, at the time of the survey. In addition, information is collected on private pension schemes from which the respondents expect to receive an income in the future on the basis of contributions made by a former spouse and also on private pensions from which they were receiving an income at the time of the survey (including pension income based on a former spouse's pension membership).

Respondents are asked either for information that allows analysts to calculate their pension wealth or to estimate the value of their pension pots. However, where possible, respondents are encouraged to consult recent statements from their pension provider to improve the accuracy of their responses. Like other areas of the WAS, point estimates of values are asked through banded values if respondents are unable to give a point estimate. Any missing data in any of the variables that feed into the pension wealth measures are imputed using recognised statistical imputation methodologies.

Calculating the value of private pensions is more complicated than measuring the other forms of wealth. There are different categories of private pension wealth to which slightly different valuation methodologies are applied in order to arrive at comparable figures. These categories are defined benefit pensions, pensions and personal pensions to which the individual was contributing at the time of the interview, additional voluntary contributions (AVCs) made to current pensions, retained rights in defined benefit (DB) and defined contribution (DC) schemes, pension funds from which the individual was drawing an income through income drawdown, pensions in payment, and pensions expected in the future based on the pension contributions of a former spouse.

The exact methodologies used for calculating these measures are explained in the main reports of the survey.[2] Broadly speaking, the pension wealth figures from the WAS represent the amount of money that an individual would have needed to set aside at the date of interview to provide themselves with the same income stream throughout retirement as that which they will receive from their private pensions, given the pension rights accrued at the date of the interview.

All wealth from state pensions is excluded from the WAS pension figures. The exclusion of state pension wealth leads to two issues relating to the comparability of pension wealth across individuals.

- *Firstly*, some individuals would have been "contracted-out" of the second tier of the state pension system, receiving rebates of their National Insurance Contributions that would have been invested in their private pension. For these individuals, this element of pension wealth will show up in the private pension wealth figures, whereas for those who did not contract out of the second tier, this wealth will show up in state pension wealth.
- *Secondly*, some DB pensions are "integrated" with the state pension system – i.e. the pension income that members will receive from their private DB scheme will be reduced by the amount of their entitlement to state pensions. To this extent, for some individuals the DB pension wealth shown below will include some wealth that ought to be labelled as state pension wealth and excluded from these figures. However, knowledge of scheme integration

Box 5.6. **Measures of private pension wealth from the Wealth and Assets Survey for Great Britain** *(cont.)*

has been found to be extremely low and so no attempt was made in the WAS to distinguish individuals whose schemes were integrated from those whose schemes were not.

Employer-provided defined benefit pensions: Current members. Some employers offer their employees the opportunity to join a pension scheme from which the income received will depend on some function of the member's years in the scheme multiplied by some fraction (typically 1/60th or 1/80th), multiplied by some measure of the member's salary. These types of schemes are known as defined benefit pensions. Individuals who were in employment when surveyed were asked if they were at that time a member of such a scheme offered by their employer.

Additional voluntary contributions to employer-provided defined benefit pensions: Current members. Individuals who belong to a DB scheme offered by their employer can choose to build up extra pension entitlement by making Additional Voluntary Contributions (AVCs). These contributions are placed in a separate fund and the pension income derived from them at retirement will depend on the investment return earned on this fund. Very few individuals reported having made AVCs. Only those who were members of employer DB pensions would have been able to make this type of pension contribution.

Employer-provided defined contribution pensions: current members. Some employers offer their employees the opportunity to join a pension scheme from which the income received will depend on the contributions paid in and the investment return received on those contributions. These types of schemes are known as defined contribution pensions. Individuals who were in employment when surveyed were asked if they were members of such a scheme offered by their employer.

Personal pensions: Current members. Individuals (including the self-employed, those not currently working, those not offered a pension scheme by their employer and also, in some cases, those who are) are eligible to make contributions to personal pensions should they choose to do so. Personal pensions are usually purchased from a pensions or insurance company by an individual, and as such, in most cases, do not attract any employer contributions This type of pension also includes Group Personal Pensions and Stakeholder Pensions offered by employers where individuals choose not to classify these as employer-provided or occupational pensions.

Retained rights in private pensions. Some individuals have a private pension scheme to which they can no longer make contributions but from which they are not yet drawing an income. This will typically be the case when an individual has been a member of their employer's pension scheme and then left that employer. The proportion of individuals with this type of scheme therefore increases with age, before falling again once individuals start cashing in their retained rights and drawing their pension incomes.

Private pensions in receipt. Some respondents will be receiving an income from a private pension at the time of interview. This includes private pensions received from a former spouse. The wealth from pensions in receipt is calculated as the present value of the future income stream that the individual will receive over their remaining life.

Total Private Pension Wealth. Private pension wealth is calculated on a person level basis – this being the most meaningful level for pensions. However, in order to calculate household pension wealth, the pension wealth of every member of a household is combined. This also feeds into measures of total household wealth.

1. For more information, see "Wealth in Great Britain: Main Results from the Wealth and Assets Survey 2008-10". *www.ons.gov.uk/ons/rel/was/wealth-in-great-britain-wave-2/2008-2010--part-1-/index.html.*
2. *www.ons.gov.uk/ons/rel/was/wealth-in-great-britain-wave-2/2008-2010--part-2-/index.html.*

Defined benefit schemes

The benefit that an employee receives from a defined benefit scheme is not directly tied to the value of the contributions made to the fund and to the associated investment earnings by the fund. Rather, the benefit is defined by other factors such as the employee's salary (either shortly before retirement or over a longer period) and length of employment.

If a participant in a defined benefit scheme has not yet retired, their current pension asset is based on the pension benefit that they would receive from this scheme at retirement time (if they were not employed under the scheme between the current time and the time of retirement, in other words, as if they earn no additional benefits in the scheme between the current time and retirement). After the nominal value of the benefit at retirement is derived, it needs to be discounted to a present value to give the current value of the participant's entitlement.

The benefit at retirement may be derived partly or in its entirety as a lump sum, for example as a multiple of the final salary. It is then straightforward to derive the present value of that lump sum. In some cases the lump sum may be converted into an annuity, but that does not necessarily need to be considered in the derivation of current asset value, as discussed above for defined contribution scheme benefits.

The benefit at retirement may also be defined partly or in its entirety as an income stream or annuity, for example as a percentage of final salary to be paid monthly for the remainder of the participant's life. In this case, each payment needs to be converted to its present value. The adjusted values can then be weighted by the probability of each of them being paid, as based on actuarial information, and the average aggregate value derived. This value is the current asset value of the pension scheme entitlement.[7]

When defined in terms of an income stream, defined benefit pension scheme entitlements often also provide survivor benefits that are paid if the employee has a spouse or dependent children at the time of his or her death. If so, these also have to be included in the possible stream of payments, with the appropriate probabilities attached.

If a respondent is currently in receipt of an annuity that is being paid from a defined benefit pension scheme or that has been rolled over from a defined benefit pension fund entitlement, the asset value of the annuity should be estimated as discussed in the annuities sub-section in this chapter.

Retirement age

There is normally a minimum retirement age for pension schemes, although participants may often choose to work beyond that age. Some schemes also have a maximum retirement age. There are two approaches that can be taken in defining retirement age when deriving entitlements in pension schemes:

- The first approach is to use the minimum retirement age for people who are below that age and current age for people who are at or above the minimum retirement age but have not yet taken their benefit.
- The second approach is to use the minimum retirement age or the age that the respondent nominates as their expected retirement age, whichever is the greater.

The advantage of the first approach is that it better reflects entitlements currently available and minimises the need to project into the future. The advantage of the

second is that it may better reflect the basis of economic decision-making in the household.

Benefits before retirement age

Pension schemes normally include special provisions for the benefits to be provided if the scheme participants are unable to work until retirement age because of incapacity or death. The benefits are normally greater than the entitlement in the fund that would apply if they voluntarily stopped working at that age. Most scheme participants will not receive this extra benefit, and therefore it need not be treated as an asset, but rather as a form of accident insurance that is not included in wealth. However, for those recipients who do receive benefits from this insurance, there is an increase in wealth equal to any additional lump sum, pension or other annuity that they receive.

Some pension schemes allow participants to make early withdrawals, perhaps with some penalty. The ability to do so does not alter the value of the entitlement in the scheme, but any early withdrawals actually taken will obviously impact on the value of the remaining entitlement.

Collecting data

If the present value of a pension fund is provided to scheme participants in an annual statement, it can be relatively easy to collect the detailed information required in the context of a wealth survey. Nonetheless, it will be necessary for the survey organisation to have researched the various pension options in their country and to structure the survey questions so as to collect information based on the types of funds available in that country.

Generally, the challenge for wealth surveys is that very few individuals can provide this type of detailed information in the context of an interview. In such cases, the survey organisations must therefore look for another way to collect the information required to estimate the respondent's claim on a pension fund.

Other than getting the information on their pension plans from the individuals covered by the plans, the other option is to obtain the information from their employer or another administrative source. In the case of government-administered pension schemes,[8] this should be fairly straightforward, since there normally is a common set of provisions that applies to all participants in the plan, though a fair amount of research may be required on the part of the survey organisation to get the detail required to estimate the value of the pensions.

For employer-sponsored schemes, it can be quite a challenge to get the detailed information that is required. If the survey organisation already has information on employer-sponsored schemes, it may be relatively simple in the context of the survey to collect some key information on the pension plans an individual is covered by, and then link to the information they have on the employer-sponsored schemes in order to get the detail required to estimate the respondent's claim on a pension fund. Statistics Canada uses this approach to estimate the value of pensions for its *Survey of Financial Security* (see Box 5.5).

If a survey organisation does not have the information on employer-sponsored schemes, the organisation could contact the employers of the respondents to the survey to obtain the details on the pension scheme based on summary information provided by the respondents

(Box 5.6). However, this could add significantly to the costs of the survey and result in delays in producing the estimates of total wealth, including the values of pensions.

5.5.8. *Other financial assets*

Other financial assets are miscellaneous assets including loans made to other people except other members of the same household, option contracts, other types of financial derivatives and other accounts receivable. This residual category may comprise very different financial assets. Its importance in the household portfolio is usually marginal. As for all financial assets, the valuation method is usually to report at market value. For loans made to other people, this value should include any interest accrued to date, but not interest that may accrue in the future.

In survey data, the standard practice is separately to collect the private loans, that is, loans to friends or relatives, and then have a generic residual category for all other loans not already recorded.

5.6. Liabilities

The liabilities of households are primarily loans that have been taken out by household members. Loans are categorised according to the purpose of the loan so that interest payments on those loans can be matched to the income streams that are derived from ownership of the associated assets. For example, a mortgage on the household's principal residence is classified to an owner-occupied residence loan if the mortgage is primarily for the purpose of constructing, purchasing or improving the residence; but if it is primarily for purchasing a motor vehicle, it is classified as a vehicle loan; and if it is primarily to fund an overseas holiday, it is a consumer credit loan included in the other loans and liabilities. With this treatment, only interest on loans that have primarily been used to provide the household with a dwelling is deducted from gross imputed rent when deriving the income item "net value of housing services provided by owner-occupied dwellings" (see Chapter 3 of the ICW Framework for more detail).

While loans are categorised according to the purpose of the loan, it is also of interest to know the collateral or security used to obtain the loans. Therefore, the form of collateral is recommended as a secondary criterion for the classification of loans. In order to help respondents to provide more precise information, it is recommended organising the loans section of the questionnaire by classifying each debt for its purpose rather than for the collateral pledged. Clearly, the combination of the information on the purpose of the loan and on the collateral used allows reorganising *ex post* the information from a collateral perspective.

In some countries (i.e. Belgium, France, Italy and Spain), a central credit register collects information on customers' borrowings from the financial institutions for quantifying the risk position of each customer *vis-à-vis* the banking system. The information included relates to all loans as well as any overdue payment arising from them. However, often there exists a minimum threshold for reporting a loan to the register, so a problem may arise with sample representativeness. Furthermore, a person is the reference unit of these administrative archives; if they are to be used to produce household statistics, there needs to be some way of linking the person data to household information, as discussed in Chapter 4.

5.6.1. *Real estate loans*

Owner-occupied residence loans are loans for the purpose of constructing, purchasing or improving the household's principal residence and any other owner-occupied residences they may have, whether or not the loans are secured against the residence. Examples are home mortgage loans, reverse mortgage loans, home equity lines of credit for home improvement and investment purposes, money borrowed for a deposit on a home purchase, and bridging finance taken out before a home loan is obtained.

Other real estate loans are loans for the purpose of constructing, purchasing or improving other dwellings, buildings and land (other than own unincorporated enterprise properties). Examples are loans for the purchase of holiday homes and loans for the purchase of rental properties for investment purposes.

Among the major types of household liabilities, home mortgages represent the largest share of total outstanding debt: in 2009, this percentage ranged from 42% in Italy to 75% in the United States.[9] However, not all home mortgages are used primarily for the purpose of constructing, purchasing or improving the household's owner-occupied residences, and not all owner-occupied residence loans are mortgages. In particular, households often borrow from relatives in other households.

Of the means of borrowing available to households, home mortgages are usually the most effective in terms of cost of financing. The redefinition of the contractual terms of the primary residence loan is often much easier with respect to other debt refinancing.

In general, household liabilities are valued at the outstanding balance of the debt, including any outstanding interest that is currently due, i.e. any interest that has already accrued but has not yet been paid. In survey data, the direct method of measurement of the amount of debt outstanding is the respondent valuation. In some countries, this quantification is not difficult for the respondent. While the respondent may not know how much of a regular mortgage repayment is principal and how much is interest, they are likely to get an annual statement from the financial institution that reports the amount of principal still outstanding. In countries where this quantification could be difficult, additional information is needed. This would include the initial amount borrowed, the cost of mortgage repayments in the reference period (which also includes interest), the year in which the mortgage was obtained, the total contract length (or term) of the mortgage, and the interest rate and its characteristics (i.e. fixed or floating); such information will allow the researcher to internally validate the declared outstanding balance or to impute it.[10, 11]

5.6.2. *Other investment loans*

Other investments loans include a range of items:

- *Financial asset loans* are loans used to purchase shares and other financial assets, excluding loans used to finance purchases of, or the operations of, own unincorporated enterprises. Loans used for own unincorporated enterprises are deducted when deriving the value of equity in those enterprises and are not included separately as a liability of the household.
- *Valuables loans* are loans used to purchase art works, jewellery and other valuables primarily as stores of value.

- *Intellectual property and other non-financial asset loans* are loans used to purchase intellectual property and other non-financial assets not included elsewhere (excluding loans for own unincorporated enterprises).

As for real estate loans, other investment loans are valued at the amount currently outstanding, i.e. the amount of principal still to be paid and the value of any currently accrued interest still outstanding.

The data would normally be obtained from survey respondents. It is recommended to make an initial division of all the liabilities involving business activities into medium and long-term debts (i.e. over 12-18 months) and short-term debts (less than 12-18 months). The medium and long-term loans are more often mortgages, while short-term debts consist in bank account overdrafts or in loans against personal guarantee. The distinction in terms of the loan maturity implicitly not only reflects the characteristics of the collateral and the purpose, but also facilitates the calculation of the outstanding debt. In fact, without consulting accounting records, a self-reported evaluation of the outstanding debt in a bank account overdraft may be very inaccurate.

5.6.3. Consumer durable loans

- *Vehicle loans* are loans for the purchase of cars, motorcycles, boats, aircraft, etc., excluding vehicles used primarily for the business of an own unincorporated enterprise. Loans for vehicles such as motor homes, caravans or house boats that are used as a household's principal dwelling are categorised as principal dwelling loans, but the collection of the data is the same as for regular vehicle loans.
- *Other consumer durable loans* are loans for the purchase of other consumer durables such as furniture, electrical appliances, clothes, etc., excluding vehicles used primarily for an own unincorporated enterprise.

As for other loans, consumer durable loans should be valued at the amount currently outstanding, i.e. the amount of principal still to be paid and the value of any currently accrued interest still outstanding. However, the loans used to purchase motor vehicles and other consumer durables are more frequently obtained through short-term financing arrangements such as instalment credit, which may make it more difficult to identify how much principal is outstanding. For example, the financing arrangement may specify that regular monthly payments are made over two or three years, and during the life of the contract there may be no monthly or annual statement reporting the extent to which past monthly payments have paid off principal and the extent to which they have met accrued interest liabilities. It may be possible to derive the amount outstanding by obtaining the value of the original loan, the interest rate being charged, and the amount already paid. If this is not possible, or if the procedure does not seem cost-effective, a more approximate method can be considered. For relatively short-term contracts covering only a few years, an adequate approximation to the preferred value can be obtained by the *pro rata* method in which the total amount to be paid under the loan contract is multiplied by the proportion of regular payments already made. This is particularly appropriate if the loan is a fixed-interest loan rather than a variable-rate loan, and if interest is worked out as simple interest rather than compound interest. Alternatively, an estimate can be made of the present value of the repayments scheduled to be paid in the future.

Consumer durable loans may also be in the form of a bank overdraft or credit card debt. Documentation on the amount of debt outstanding for these types of loan will normally be available. However, these types of loan may provide financing for many different purposes. Respondents should be asked to nominate the main use of overdraft and credit card debts, and the entire debt allocated to that purpose category.

5.6.4. *Education loans*

Education loans are loans to cover study expenses. These loans are prevalent in countries where the tuition fees of college or graduate school are substantial. Education loans can be subsidised and, in this case, can be considered as a form of financial aid that must be repaid with a low interest rate. Education loans come in two major categories, i.e. student and *parent loans*. In the former case, it is recommended to include these loans only if the student is a member of the household according to the survey definition (e.g. she/he lives in the household for most of the year).

5.6.5. *Other loans and liabilities*

Other loans and liabilities includes all loans and liabilities of the household not included in previous items (excluding loans and liabilities of own unincorporated enterprises), such as loans taken to purchase consumption items (e.g. food or holidays), to purchase valuables (except if they are purchased primarily as an investment), to pay tax obligations or make a capital transfer to another household (e.g. to help a relative purchase a dwelling) or to make a loan to another household, for example because the first household has better security or access to a better interest rate than the other household.[12]

In practice, it is likely to be difficult to decompose credit card debt, bank overdrafts and similar types of ongoing loan facilities into separate categories. If that is the case, they should be allocated to the major purpose for which they are normally used. If the household is unable to nominate the major purpose of such a loan, it should be included there.

5.7. Summary

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

- The unit of analysis when studying micro wealth data may be the household or a smaller unit, including the individual. However, whatever the unit of analysis, the data items studied are normally household variables because of the sharing that takes place within households. The measurement units, or units about which data are collected, need to support the units to be used in analysis of the data.
- Ideally, wealth data relate to the stock of wealth held at a single point in time, i.e. the reference point. It may the end of the reference period used for comparable income and consumption data, or it may be the mid-point of the period.
- Household assets and liabilities should be valued at their current value in the market at the reference point date, or at the closest equivalent to this. This can, however, be difficult to establish. There may not have been recent transactions in assets or liabilities identical to those that need to be valued, and there may be no markets for certain assets or liabilities that are not new. Some assets, such as pension entitlements, cannot be traded. In all these cases, it is necessary to estimate an approximation to a current market value, with different approaches used for different types of assets.

- If the historical cost of an asset is known, it may be possible to work out the approximate current market value by adjusting the historical value by a relevant price index. It may also be necessary to make an allowance for depreciation in the case of a non-financial asset that has a finite life and wears out over time. For loans, it may be possible to take the original value of the loan and work out how much the value of the loan has reduced (or increased) if the interest rate(s) and schedule of payments are known.
- It may be possible to estimate how much it would cost to replace a used non-financial asset with a new one, and make adjustments to reflect the age and depreciation of the asset.
- For assets such as dwellings, which normally have some features that make them unique to some degree, it may be necessary to obtain an estimate of the likely market value on the basis of actual market values for assets that are as similar as possible. The estimate may be made by an expert or by the household.
- Some assets, such as pension entitlements, cannot be traded and are defined in terms of a cash flow to be paid in the future. In order to derive a current asset value, it may be necessary to estimate the present value of the cash flow expected to be received from the asset over time.
- Some loans involve a series of set payments, and during the life of the loan it is difficult to determine how much principal is still outstanding, i.e. what the current value of the liability is. In such cases it may be necessary to estimate the present value of the loan repayments still to be made. Alternatively, for short-term loans it may be sufficient to assume that the loan principal is paid off evenly over the period of the loan contract.

Notes

1. Owner-occupied residences are usually houses or flats/apartments/condominiums. Sometimes owner-occupied apartments/condominiums are owned as part of a co-operative, without occupants having separate title to the individual dwelling in which they live. However, tenants and lodgers do not fulfil the condition for owning their own residence.
2. If the household does not pay market rent to the enterprise for use of the dwelling, micro income statistics regard the difference between the value of the market rent and any rent actually paid as dividend income in kind.
3. Some classification problems are associated with non-negotiable certificates of deposit, which are more similar to long-term bonds in terms of characteristics, but are classified within deposits due to the lack of a secondary market.
4. Income from that work is regarded as self-employment income.
5. These investors are sometimes known as “sleeping” or “silent” partners.
6. This assumes that the annuity is purchased at more or less commercial rates. If the beneficiary can purchase the annuity through the pension scheme at significantly more favourable rates than available in the commercial market, some additional adjustment may be needed.
7. The current value of this pension scheme entitlement can be viewed as approximately the amount of money the participant would have to set aside now in a conservative investment fund so that at the time of retirement he or she could withdraw the invested money and buy an annuity with the same income flow as would be provided by the pension scheme.
8. Entitlements to pensions paid from social assistance and social security schemes are not included in wealth. As discussed in Chapter 3, only entitlements in employment-related social insurance schemes and private pension schemes are treated as financial assets. However, an employment-related social insurance scheme may be administered by the government.
9. *Sources:* OECD (2011), “Household wealth and indebtedness”, Economics: Key Tables from OECD, No. 18 (*http://dx.doi.org/10.1787/2074384x-table18*) and Bank of Italy (2011), “Household Wealth in Italy

– Year 2010", Supplements to the *Statistical Bulletin*, No. 64 (*www.bancaditalia.it/statistiche/stat_mon_cred_fin/banc_fin/ricfamit/2011/en_suppl_64_11.pdf*).

10. If the original loan was refinanced, the information collected should refer to the characteristics of the latest refinancing.

11. For loans to purchase an owner-occupied residence, it is recommended that the original acquisition price also be collected. This information allows the calculation of important economic indicators such as the loan-to-value ratio. Survey field experiences have shown that directly requesting this information is subject to significant rounding and recall errors.

12. The first household would also have a financial asset equal to the value of the loan to the other household.

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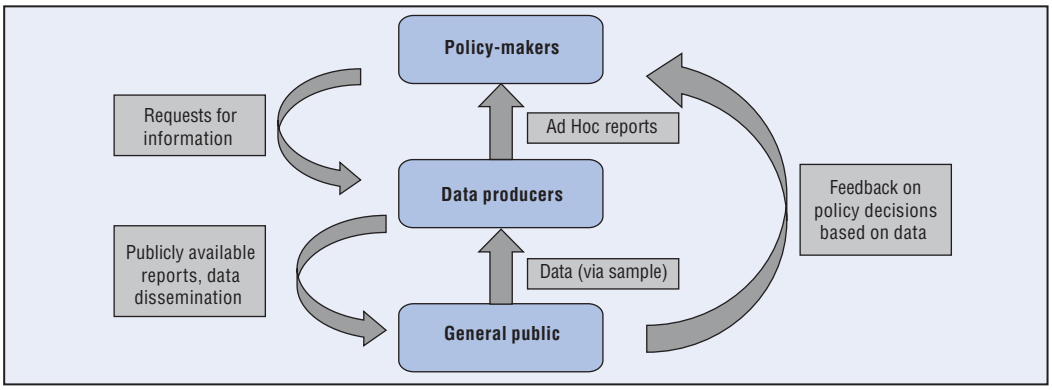
Chapter 6

Measuring household wealth through surveys

This chapter discusses the use of surveys for producing reliable and relevant wealth statistics for households. Sample surveys have been employed for many decades for measuring household income and expenditure, but regular and broad use for the collection of wealth information is more recent. The challenges for practical implementation are discussed.

While the collection of surveys on household income and expenditure is part of the regular production of National Statistical Offices for many decades, the measurement of wealth distribution through surveys is more recent (see Figure 6.1 for a sketch of the typical information cycle for a household survey).

Figure 6.1. **Information cycle for a household survey**



In defining the questionnaire, the sampling design, the interview procedures and the indicators appropriate to this task, and a variety of associated tasks, designers of a wealth survey face particular challenges. They need not only to address the potential problems raised by the highly asymmetrical distribution of wealth, but also to present complex questions to respondents in ways that minimise cognitive difficulties, while persuading the respondents to part with information that most people regard as very sensitive.

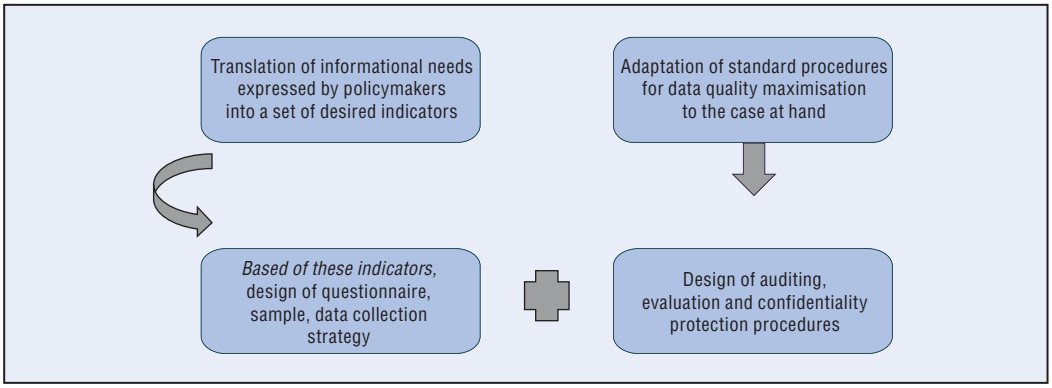
The next section provides general background on survey design, emphasising the dimensions that matter most for studies focusing on economic variables. The following section points out the core challenges related to the measurement of household wealth. The remaining sections go into deeper detail, offering a conceptual summary and some practical suggestions related to each phase in the development of the wealth survey.

6.1. General measurement issues

Sample surveys serve the purpose of estimating the value of certain parameters for a population of interest, e.g. the median wealth or the average mortgage debt of households, in a cost-effective way, i.e. collecting data only from an appropriate subset of the population. When designing a survey, data producers must keep in mind that their goal is to achieve the best possible estimates for the outcome measures of interest, subject to a budget constraint (Figure 6.2).

While several possible metrics exist to define what "best" means in this context, they all rely on the same sequence of steps that support the desired estimates. *First*, an instrument is constructed to obtain the information sought, generally in the form of a questionnaire. *Second*, a random sample of the population – sometimes called a *theoretical sample* – is selected. *Third*,

Figure 6.2. **The role of data producers in sample surveys**



fieldwork activities (generally, attempts to contact or interview sampled households) are conducted and data from the *final sample* are obtained. *Fourth*, the data are processed and weights are constructed. *Finally*, the target estimates are computed. There may be various choices of method at each of these steps, and often such choices have different implications for aspects of the quality of the ultimate results and the overall cost of the work.

The information provided by respondents, sometimes called *raw data*, may be inaccurate or incomplete. Data producers must work on correcting inaccuracies through data-editing and dealing with missing information, typically through imputation. The resulting data set is sometimes referred to as a *validated* or *final* data set.

The final sample differs from the theoretical sample when the former is affected by unit non-response, that is, by the failure to obtain an interview with the desired sample element. If unit non-response rates are high and/or concentrated in specific sectors of the population, the final sample might look quite different from the theoretical sample. *Estimation weights* must be computed for each observation in order to account for any disproportion in the initial probabilities of the selection of sample units, to adjust for differential propensities to unit non-response and to align the final sample composition with that of the target population.

The desired *estimates* are obtained by applying mathematical formulae called *estimators* to the final data and weights. Each estimator has the statistical properties of a distribution. Survey designers generally aim at minimising a version of its *mean square error*, i.e. the sum of the square of its *bias* (distance between the expected value of the estimator and the true population parameter) and its *variance* (a measure of the variation of the estimate that would be expected as a result of repeated execution of sampling and all other steps toward the construction of the estimate). In other words, the distribution of a good estimate is tightly centred around the true parameter. The key steps in designing any sample survey are summarised in Figure 6.2.

The first input tends to come from researchers or policy makers, and it is typically expressed in general terms, e.g. "there is a need for more information on household wealth" or "it is urgent to know who the highly indebted individuals are". Data producers need to translate this policy demand into a clearly defined set of key indicators: for example, median net wealth, average debt-to-income ratio, shares of indebted individuals by employment status, etc. Subsequently, categories must be defined and sequences of questions designed to obtain such information for individual sample elements (see Box 6.1 for an example). Very often, there may be a desire for relatively broad information that can be used to address research or policy questions that are unknown at the time a survey is

Box 6.1. **Measuring household financial vulnerability**

The subprime crisis that hit the United States and, subsequently, the rest of the world in 2007-08 was triggered by the inability of a cluster of low- and middle-income households to repay their mortgages. Events such as this, which depend on the concentration of a given phenomenon in a specific segment of a population, cannot be predicted based on aggregate statistics. An increasing trend in aggregate household debt, or even the average debt-to-income ratio, does not necessarily signal increasing systemic vulnerability; this could also emerge during periods of solid economic expansion.

Sample surveys produce a tool for estimating the probability of financial difficulties at the micro level and the possible economy-wide effects that they may trigger. They allow reconstructing household budgets individually, while also controlling for characteristics such as education and employment history, which help in determining earning potential. They give a fuller picture of each debtor's situation and default risk. For this reason, after the crisis policy makers have expressed a growing demand for survey-based statistics to assess financial vulnerability. Data producers are key to this in that they have to translate this generic demand into a set of target estimates, and then devise optimal strategies for the collection of data, the production of the estimates and the communication of the results. The questions and possible answers involved in this process can be sketched as follows:

- What is "financial vulnerability"? The idea is clearly related to the likelihood of incurring financial difficulties, but measurement requires a clear definition, both in terms of content and in terms of reference unit. In turn, this implies a number of choices. At the time of writing, no international standard existed for this concept, but several countries have defined it as a binary indicator, valued positively if the amount of debt-related payments (capital and interest, summed over all existing debts) at the household level exceeds a certain share of aggregate household income in a given year. Some data producers look only at mortgage debt, while others estimate vulnerability at the individual level. Fine-grained versions of the indicator may also be produced, taking into account the depth of vulnerability.

Once a definition has been decided upon, and assuming a survey framework already exists, target variables must be selected. What is the essential information set? Should it be complemented by auxiliary variables and, if so, which ones? In the case of the most widely adopted definition outlined above, households need to provide at least an estimate of each debt-related payment or set of payments over the course of the reference period, along with an estimate of income. It may also be useful to collect additional information on each debt, in terms of stock (e.g. outstanding principal), the incoming flows of funds (e.g. any refinancing during the year), interest rate, mode of collateralisation and so on. While these items are not strictly necessary to estimate vulnerability in terms of a ratio between outgoing flows and income, they are instrumental in giving a fuller representation of each household's debt situation, which might be of help to policy makers. Since a balance must be struck between respondent burden and information completeness, any additional variables that go beyond what is essential to the original request should be chosen parsimoniously and, if possible, through a bilateral clarification process between the data producers and policy makers.

A measurement strategy should then be determined for each of the target variables. In the following, we forego issues related to the measurement of income and focus on debt. Different types of households may recall debt-related information with varying degrees of difficulty: for example, those who operate under a strict budget constraint might be more aware of the exact amount of each payment, while affluent respondents might not be

Box 6.1. **Measuring household financial vulnerability** *(cont.)*

equally attentive and might even fail to recall some outflows, such as small-amount payments for consumer durables debited automatically every month on a credit card or bank account. One possible strategy to improve accuracy entails an initial set of Yes/No filter questions, i.e. asking households whether they hold a certain type of debt (mortgage on primary residence, mortgage on other real estate, consumer credit for vehicles, consumer credit for other durables, credit card debt, bank overdraft, informal debts towards friends and relatives and so on). For each debt identified by a positive answer, details are then requested. Another strategy, used in some broader-scope surveys, consists in asking how each type of asset is or was financed, and then investigating details whenever debt is mentioned as a form of financing. Additional questions are then needed to cover loans that do not go directly toward a specific asset, including the reason why they were taken out. Compared to the former measurement strategy, this one has the advantage of giving a clearer picture of how households plan and carry out the acquisition of assets; however, it generally entails a larger response effort.

Data producers should also envision in advance whether respondents may need help in answering certain questions; if yes, they should predispose cognitive aids for respondents such as cards and glossaries, and integrate information on using them in interviewer training sessions. For example, in the case of Yes/No questions covering different types of debt, it may be useful to provide interviewers with a standard definition of concepts such as revolving credit or bank overdraft.

Once the data has been collected, it must be checked, validated and, where necessary, subjected to imputation procedures before it is fit for the production of estimates. Choices have to be made on editing rules, treatment of outliers, and computation of variability in results. Generally speaking, these choices should be made beforehand for the whole survey, and not on a variable-by-variable basis, in order to achieve methodological consistency.

Finally, the results have to be presented to policy makers and, in some cases, to the general public. Population-level statistics, such as the total share of financially vulnerable households, should generally be accompanied by meaningful information on the distribution of the phenomenon. Depending on the variables available in the surveys and on any external information pointing to problematic population segments, breakdowns by age, gender, education level, household size, employment status and/or sector, etc., and any combination thereof, can be offered to users.

constructed. In the case of wealth measurement, this desire argues for binding the approach to question design as closely as feasible to a general accounting framework, such as that described in Chapter 3.

When establishing a survey that will be carried out regularly, as opposed to a one-off study, data producers should choose the frequency based on the characteristics of the target concept. An additional consideration is whether a repeated survey should be executed as a repeated cross-section or as a sequence of interviews with a fixed panel, possibly supplemented with additional elements to compensate for population changes since the formation of an initial panel. Repeated cross-sections can provide good estimates of changes in characteristics of population groups over time. In contrast, a panel (longitudinal) component may be desirable if changes over time at the level of individual households figure importantly in the desired estimates, or if other statistical concerns motivate repeated observation. Obtaining estimates that are representative both of a panel

and of the population in periods after the initial panel formation typically requires supplementing the panel observations with elements that were either not present at the time of the panel formation or were present but in a different proportion in the population.

The sample should always be selected according to a probabilistic scheme, i.e. each unit in the population should have a known *ex ante* probability of being selected. Only in this case will the survey estimates have good statistical properties. Because such properties are undefined for non-probabilistic samples, it is usually not possible to describe scientifically what estimates based on such samples represent, or to provide meaningful measures of precision for those estimates.

A tolerable level of error for each of the key estimates should be agreed upon with the researchers or policy makers requesting the information, subject to any cost constraints. Survey error is a consequence of both *sampling error* and *non-sampling error*. Sampling error is a consequence of making estimates on the basis of a sample, rather than on the entire population. Non-sampling error is a consequence of non-response, conceptual error, reporting error and processing error. Once an error tolerance has been set, the minimum sample size compatible with it and with cost constraints must be computed, exploring various possibilities until an optimal sampling plan has been determined. Particular care should be taken in making realistic assumptions about the response process and the full range of survey costs. If a sample design cannot satisfy both the desired error tolerance and the budget constraint, the project might have to be reconsidered: narrowing the scope of the survey, for example, might be preferable to delivering a large quantity of inaccurate results.

A *main sample* should be drawn, with a size equal to the target size, supplemented by a *reserve sample* large enough to substitute non-responding units based on reasonable assumptions on response rates. For example, if the target size of the sample is 1 000 households and a response rate of 50% is anticipated, the total sample should comprise 2 000 households. Some variations on this approach are dealt with later in this chapter.

The quality of estimates starts with the quality of the raw data. Questionnaire design and implementation, interview mode, interviewer selection and training, economic incentives offered to participants, and real-time quality control methods are critical contributors to data quality, and each should be considered carefully.

Audit activities should be carried out both during the fieldwork phase and after its conclusion. In all cases, data producers should have a clear monitoring scheme covering contact activities, refusals, substitutions, the contents of completed interviews, and any data manipulation taking place prior to transmission to the agency sponsoring the survey. If data collection is not outsourced, a third-party auditor should be involved in the process. As a part of audit activities, a share of the sampled households should be re-contacted in order to verify the truthfulness of interviewer statements.

When the results are released, measures of variability should be published, accompanied by a non-technical explanation of what these measures mean. If a micro-level data set is released for research or public use, it should contain information that allows users to compute the variability of their own estimates.

As an ethical requirement and sometimes a legal requirement, a clear programme for protecting the confidentiality of the data collected must be developed and implemented. In some cases, a plan must be put in place to further restrict the use of the data; for example, the data might be allowed to be used only for non-commercial purposes.

A thorough and continuing programme of evaluation of all steps in the survey should be instituted. Systematic evaluation enables quality improvements as well as the detection of changes in the behaviour or opportunities available to the population.

6.2. Measurement issues specific to wealth surveys

Three broad categories of issues are of particular concern to survey designers interested in the measurement of household wealth, apart from the more detailed issues discussed in the following sections of this chapter.

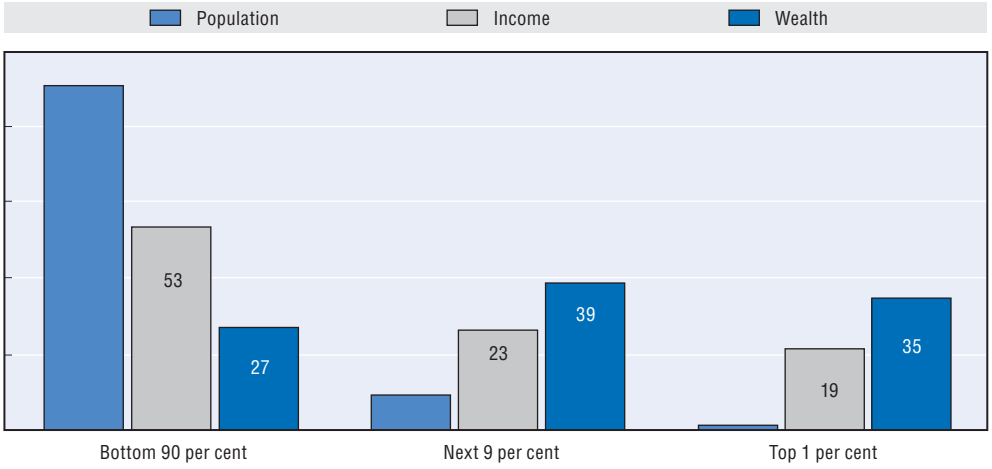
- *Distribution-related issues*. Wealth inequality differs across countries, but where it has been measured, it exceeds inequality in the distributions of income and expenditure (Figures 6.3 and 6.4). To obtain meaningful estimates of many wealth statistics, it is important to have an accurate representation of the entire spectrum of wealth. In practice, the greatest difficulties are in obtaining sufficient observations of the two extremes of the wealth distribution. Households with very low wealth sometimes see little relevance in participating in a survey about wealth. Although under-representation of these households may have little effect on estimates of totals, it would result in bias to many other estimates, particularly those related to inequality or credit use. Effort should be devoted to instructing interviewers and respondents about the importance of interviewing these households. At the other end of the spectrum, very wealthy households may be extremely difficult to contact and when contacted they may be difficult to persuade of the value of participation in a survey or that information collected in a survey could not be associated with them. Although such households are small in number, they own a large share of total wealth. Thus, under-representation of these households would have detrimental effects on many wealth-related estimates. Great persistence and other special efforts may be needed to reach this part of the population successfully, and such efforts are most often expensive. Effort should be devoted to developing measures of effort applied to all parts of a survey sample and to ensure that these measures are used to learn both about potential biases in the final sample and the most cost-effective means of reaching and persuading respondents, particularly those at the two extremes of the wealth distribution. Evaluation efforts toward this end should pervade the entire measurement process.
- *Data quality issues*. Respondent error may be particularly high in wealth surveys on account of several factors: *i) deliberate misreporting of assets or liabilities*, out of security concerns about the use of the data or social desirability considerations; *ii) misreporting as a consequence of* cognitive *difficulties in recalling information,* such as recall or framing bias; *iii) reporting incomplete or outdated information*, particularly when a respondent is answering questions about another member of the household; *iv) lack of clarity for the respondent in the questions asked or in any instructions given*; *v) unwillingness of the respondent to consult records*, often owing to time constraints or mistrust of interviewers; or *vi) respondent fatigue*, particularly near the end of the interview or in sections with a high degree of technical complexity. The failure of interviewers to follow instructions or to probe for clarity in ambiguous or obviously incorrect responses may also contribute to reduced data quality; commonly, interviewers may not press respondents for clarification, feeling they might refuse to complete the interview. Thorough testing of the questionnaire, provision of automated data evaluation during the interview, rigorous interviewer training and evaluation, and efforts to build trust with respondents may all serve to offset some of these sources of error. Careful review and evaluation of the raw data and supporting

procedures may provide insights into how to improve the procedures for subsequent surveys, in addition to possibly identifying errors in the data.

- *Privacy and confidentiality issues*. For many people, wealth information is considered very private and often not even to be shared among members of a household. Experience suggests that such data are typically considered more sensitive than information on income or sexual behaviour. In addition, some respondents may be so conscious of the possibility of identification that they may not even want to provide demographic information. Given the special sensitivity of wealth information, survey designers should begin with a credible plan for protecting the confidentiality of respondents' data. Such a plan is helpful not only in persuading respondents to co-operate, but also in convincing interviewers that they are not betraying the people they interview. A strategy should be developed to address respondents' initial concerns about legitimacy and confidentiality directly and clearly and to reassure respondents as necessary throughout the interview and beyond. Once the survey is completed, it is essential that the survey designers rigorously execute their plan for protecting the data. Even if only tabular data are released, there may still be important data confidentiality concerns to be addressed.

Figure 6.3. **Income and wealth distribution in the United States, 2007**

Percentages held



Source: Wolff, E.N. (2010), "Recent Trends in Household Wealth in the United States: Rising Debt and the Middle-Class Squeeze – An Update to 2007", *Levy Economics Institute Working Papers Series*, No. 159; graphics by the Economic Policy Institution, 2010.

6.3. Survey development and data collection

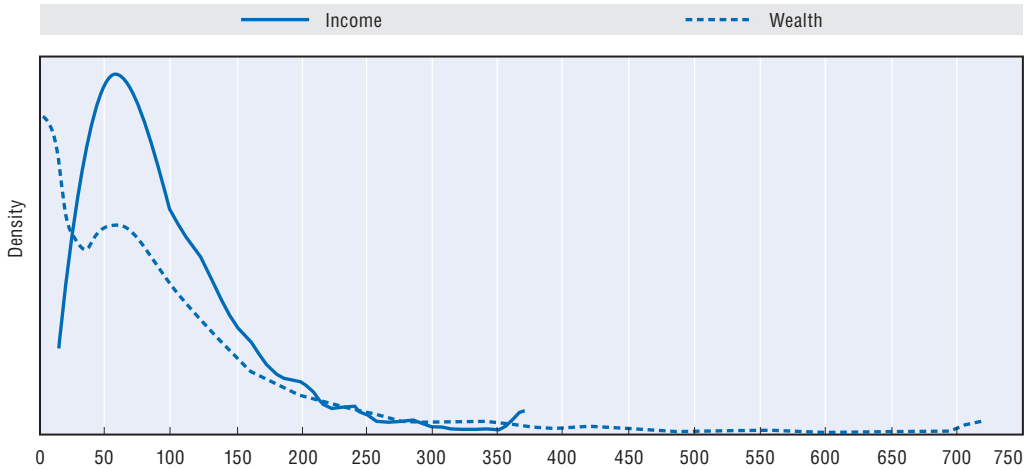
The development of a household wealth survey and the collection of data based on it requires addressing a number of different issues, such as the choice of survey scope and , cross-sectional or panel, content, frequency, sample design, execution protocols, etc. Guidance on each of step is provided below.

6.3.1. Survey scope

The scope of a survey depends on the needs of the sponsor. Colleting a variety of variables other than wealth enables a broader range of analysis of the effects of household characteristics on wealth, and on the effects of wealth on other household characteristics. However, there are limits to the willingness of most respondents to answer survey questions.

Figure 6.4. **Income and wealth distribution in Italy, 2008**

Estimated densities



Source: Own calculations based on data from the Bank of Italy's Survey of Household Income and Wealth (2008).

Many data producers run multi-purpose surveys on the economic behaviour of households, with separate modules covering demographic characteristics, income, employment and wealth; in some cases, expenditure questions are also asked. This solution is chosen frequently in an attempt to strike a balance between cost and serving a variety of informational needs. Within multi-purpose surveys, the relative weight of different topics may vary a lot: for example, wealth is the predominant concern in the US Survey of Consumer Finances, while it takes up only about one-fifth of the questionnaire in the Dutch DNB Household Panel, alongside other topics such as health conditions, psychological attitudes and income. A higher focus on wealth allows for more intensive efforts to gear sampling plans and fieldwork efforts toward achieving a balanced representation of the entire wealth distribution by oversampling wealthy households to support the investigation of narrowly held items and to improve the precision of overall wealth measures.

6.3.2. Cross-sectional or panel observations and survey frequency

Cross-sectional and panel surveys provide very different estimates. Repeated cross-sectional surveys provide good information for groups in existence at the time of each survey. However, because some groups may change composition over time, it is only possible to talk about changes for members of groups in different periods. Panel surveys make it possible to characterise changes at the level of individual households, which may be aggregated into groups using the characteristics of any given period. Panels also allow for more complex treatments of error structures in formal models. However, because the household population changes over time – through immigration, emigration, births and deaths in households – estimates from a panel for a given period may not represent the state of the full population at that period. Some survey designers attempt to approximately "refresh" their panel samples with new cross-sectional observations that are followed in subsequent panel waves. Another potential problem with panels is that respondents may lose interest and learn how to avoid being asked various types of questions.

A survey might be conducted only once or be repeated over time (as a panel, cross section or mixed type of design). A one-time survey may be adequate for assessing a particular situation – for example, ownership of hedge funds. However, when a survey is

executed only once, there is generally no adequate basis for comparing survey estimates. In addition, there is much learning-by-doing in any survey, and that knowledge would be discarded in a one-time survey. Multi-wave surveys of any sort provide a series of comparisons and allow progressive learning about successful strategies in the survey. The time interval between waves of a repeated cross-sectional or panel survey should be a function of the expected change of the items that are measured, the desired statistics from the survey, and the expected minimum detectable level of change. The sample size and design determine the sampling error of the estimates, where non-sampling error is likely to inflate that amount. Typically, wealth moves relatively slowly overall, but the rate of change at a more disaggregated level may be more pronounced, and there may be substantial and abrupt changes, for example when an asset bubble bursts. The relationships among variables may also change significantly, even while some statistics might not change much (see Box 6.2). The researchers or policy makers requiring the data must be given the information necessary to determine the trade-off between cost and the likelihood of meaningful change and use that information to set a survey frequency. Setting a regular frequency has the advantage of allowing both straightforward comparisons over time and a principled approach to evaluation, production and analysis.

Box 6.2. **Choosing the frequency for a survey of household participation in financial markets**

While several statistics on financial assets, both at the macro and the micro level, are available through surveys of financial institutions, the additional information (e.g. on household size and composition, education, income, employment) afforded by a household survey is relevant to tasks such as efficient planning of taxation, estimation of the impact of market events on the economic condition of households, and the selection of appropriate targets for financial literacy campaigns.

Survey modules on financial assets tend to induce relevant costs: even when they are limited to basic "Yes/No" questions on ownership of certain financial instruments, they require a high degree of technical preparation on the part of interviewers, and a considerable response effort on the part of certain categories of respondents. For example, in some countries, middle-income households frequently buy financial "packages" from their bank, i.e. bundles of assorted assets with a given expected yield; when the contents of such bundles are described in the contract signed with the bank, it is often forgotten by household members after a few weeks. If the survey questions go beyond simple ownership and probe the value of each asset, numerous evaluation issues emerge (see Chapter 3); cognitive difficulties also may come into play, ranging from a lack of information about current market conditions to recall bias.

Based on these considerations, and given that data producers normally work on a tight budget, surveys of household participation in financial markets are not carried out frequently. Most happen every two or three years, and as modules in broader-ranging surveys. This may be a problem, however, considering that markets can be volatile; in countries where investments in financial assets represent a significant part of household saving, failing to observe the effects of a market boom or crash for months or years may result in severe misunderstanding of the economic conditions of households.

One way to strike a balance is represented by the deployment of special survey modules whenever a major event happens, while keeping a low frequency in ordinary times: for example, the recent financial crisis was monitored by the Federal Reserve through a one-off

Box 6.2. **Choosing the frequency for a survey of household participation in financial markets** *(cont.)*

panel wave of the Survey of Consumer Finances, an operation that was costly for both data producers and respondents, but necessary in the light of the magnitude of market fluctuations and their effects. Another possibility consists in interpolating regular survey waves with low-cost intermediate modules, administered only to a part of the sample, and limited to qualitative questions that are relatively easy to answer and aimed at updating information on the type of assets held and at understanding whether the value of each asset increased, decreased or stayed roughly the same compared to the previous observation. Also, models can be built based on a combination of household survey data with contemporaneous data from financial institutions; as the latter are typically more frequent, on account of supervisory requirements, they can constitute a basis for estimating some household-level variables in intervals between two survey waves. This operation should, however, be performed with great care, considering that periods of financial turmoil are often accompanied by changes in the structure of relationships between variables.

As noted earlier, a survey must start with a set of objectives, from which nearly every element of the survey process should flow. The connection is particularly obvious in the case of the survey content. When elaborating the detail associated with the objectives, data producers should balance meeting the analytical goals, keeping within budget, and making the survey experience sufficiently tolerable to respondents. Measurement of wealth requires the use of a balance-sheet framework, such as that described in Chapter 3. Particular problems may arise when trying to obtain information about assets or liabilities that can be classified in a variety of ways. For example, in many countries, people may contribute to tax-deferred retirement accounts, and those accounts may be invested in a variety of assets; although a complete balance-sheet classification could be made for all items held in such accounts, if there are dominant investment modes – e.g. mutual funds – it may be sufficient to ask briefly about the direction of investment. Knowledge of additional attributes of balance-sheet items is often quite useful, but care should be taken not to reach a level of detail that would be too thinly supported by the data. In general, an additional question is generally worth asking only if it adds information or enables the calculation of more complex estimates that would otherwise not be available. For example, asking households for the model year of each car owned might be redundant if a public register of cars already exists in the country. But if there were a specific analytical interest in such data – e.g. to track and project household inventories of vehicles – or the data were useful in estimating other values – e.g. to match to auction prices of used vehicles or to use in imputation models – then it may be useful to collect such data. Similarly, including a question about financial derivatives unknown to the large majority of the population would require asking every household about ownership of such items, yet risk not having enough observations of respondents who own such assets for their answers to be statistically meaningful. Often, rarely held items can be collected either as part of a higher-order aggregate or in questions designed to capture any items not explicitly enumerated.

For many analytical purposes, it is not sufficient to have only balance-sheet data in a wealth survey. At a minimum, a variety of household characteristics are likely to be important. Because work and income are usually very central to understanding patterns of wealth, variables describing at least the basic outlines of these topics should also be included.

Questions about attitudes, expectations, institutional relationships, indicators of financial sophistication, past or expected inheritances and other factors may also be relevant.

6.3.3. Design and development of the survey questionnaire

To design a questionnaire, a list of output variables should be defined and those variables should then be translated into preliminary versions of the survey questions. The questionnaire must be clear and parsimonious, so as to minimise the cognitive effort required by respondents and to save time. Key to this effort is the sequencing and framing of sections and individual questions to exploit the range of understanding and order that respondents would bring to the interview. For example, as mortgages are typically tied to the purchase of real estate, it may make sense from a respondent's perspective to ask about such items together. In general, the order should minimise the extent to which a respondent is likely to feel that the same subject is being addressed in more than one place, as switching can lead to respondent fatigue or to error.

The same questions must generally be used for a broad set of respondents. Thus, it is important to develop a questionnaire that is no more technical in content that is required to approach logical coherence. Because there is sometimes a trade-off between logical coherence and other sources of measurement error, it is important to minimise total error for the survey objectives, rather than only a local source of error at the cost of introducing or exacerbating others. *Cognitive testing* is conducted by a moderator (sometimes a cognitive psychologist) with one person to shed light on both the understanding survey participants have of questions and the thought mechanisms behind the answers they give. Where sufficient resources are available, cognitive testing may be used to refine the design of sequences of questions.

Ideally, the reference time for the items reported in a wealth survey might be a fixed time, such as the end of the previous calendar year. For a variety of reasons, there is no unanimous agreement on this point; some believe that use of a fixed time as reference period leads to better data quality, because of a lower recall bias. Wealth holdings often have a high degree of persistence, but their value may change abruptly. Because fieldwork activities may continue for a substantial period, values at the time of recording would reflect different economic conditions at different interview times, though it might be possible to adjust values for analytical purposes using market indices. A potential disadvantage of a fixed reference time is that this time point may not be salient to respondents if it is many months in the past; in that case, additional measurement error might be introduced for respondents who knew the approximate current values but not the value as of the reference time. However, for co-operative respondents with complete records who are also willing to consult those records, use of a fixed reference time would not be problematic. Ultimately, the survey designer must consider the trade-off between variation due to a variable reference period and variation due to additional measurement error for respondents who must estimate their answers.

Particular care should be taken to allow variant text depending on previously provided answers; for example, if the respondent is a married female and her spouse is a male, questions about the spouse's employment should use the correctly gendered pronouns or other language adaptations that may be relevant. Introduction of variant text is more straightforward with the use of computer-assisted interviewing (CAI), including computer-assisted personal interviewing (CAPI), computer-assisted telephone interviewing (CATI), computer-assisted web interviewing (CAWI) and related technologies. Where it is known in

advance that certain questions may arise in the interview, an effort should be made to place relevant answers or instructions directly into the questionnaire for use by the interviewer at the appropriate moment. References to any supporting materials aimed at interviewers (such as a glossary) or at households (such as a supplemental card used in defining appropriate answers) should be included in the question text or clearly spelled out alongside the relevant question. For CAI, conditional routing instructions should be encoded directly in the software; for paper-based questionnaires, such instructions should be made clearly visible through the use of bold typeface, arrows, colours, etc.

Although the goal of an interview is to gain complete information from each respondent, this is not always feasible. In some cases, the respondent may have only partial information, but that information may still be helpful either in the analysis or imputation of missing data. Thought should thus be given to providing alternative means of reporting some types of information. For example, a respondent may have no information about the specific types of mutual funds the household owns, but still have a reliable value for the total amount they own. A common problem in wealth surveys is the inability or unwillingness of respondents to provide an exact answer to a question denominated in a monetary amount. Thought should be given to allowing respondents to report range information – using their own range, a value from a range card, a value determined by progressing through a decision tree, or a combination of these options.

It is generally the case that not every possible category can be included for questions that have a categorical answer. Including too many answer categories may confuse both the interviewer and the respondent and decrease the reliability of the answers. However, including too few categories may lead interviewers or respondents to classify some responses inappropriately, unless such responses are far outside the categories included. Except where there is a relatively small and exhaustive set of answers – e.g. "*yes*" or "*no*" questions – a residual *other* category should be included. Where resources are available, that residual code should be specified by the respondent, and the answer entered verbatim to be recoded after the interview.

It is desirable to push efforts to enforce data quality into the interview process to the extent that doing so does not create serious offsetting problems. Although this process is more straightforward with CAI, it is possible to take similar steps with a paper questionnaire. In the case of CAI, when programming the computer interface data producers may implement three checks on the information input.

Hard checks, *soft checks* and *confirmations*. Hard checks may be programmed in the form of acceptable ranges for a given variable, acceptable ratios between two variables, or a variety of other logical tests. For example, a respondent in 2010 might say he is 30 years old, but he first worked for wages in 1970. Failing a hard check should cause the computer to generate an error message to the interviewer and to reject the value first entered. In principle, hard checks should eliminate all values that are deemed impossible. However, care should be used in instituting such checks, since there may be very unusual occasions where the value might be correct and the respondent (and interviewers) may become alienated as a result of disallowing the answer. Soft checks may be used alert interviewers to values that are very unlikely, but not impossible (Box 6.3). In practice, the computer might simply generate a warning to the interviewer or require a short comment before allowing the questioning to proceed.

Box 6.3. **Soft checks for real assets**

Measuring the current value of real assets can sometimes be difficult, especially in the case of households who own only their primary residence and have either acquired it in the distant past or inherited it. Such households may not be aware of market conditions, and they might attempt to answer questions based on outdated prices. The implementation of soft checks in a CAPI program can be very useful for these cases, and different levels of sophistication can be achieved based on information available to data producers. Surveys of real assets normally include a simple question on the surface area of each dwelling; this is a solid base for checks because it is not as prone to measurement error as other indicators. Most households have an idea of their home's size and, if they don't, interviewers can easily walk them through the production of a rough estimate. Once a reliable measurement of size is achieved, a question on current value can be asked: computing the ratio between the answer given and the dwelling size yields a price per surface unit (square meter or square foot), which can then be compared to average prices for the area. In some countries real estate transactions are a matter of public record, which means that data producers can assemble a detailed database of reference prices for each geographical subdivision and use it to benchmark responses, instructing the CAPI program to generate a warning message every time the ratio falls outside a reasonable interval, e.g. between the 5th and the 95th percentile of the distribution of prices for the area. If such a possibility does not exist, other sources – such as private databases produced by real estate agents or classified ads in specialised publications and/or the generic press – can be used to construct a reference database.

- Depending on the complexity of the survey, checks can be even more fine-grained, taking into account the quality of the building as observed by the interviewer, the number of bathrooms, the type of heating system, the presence of certain amenities, etc. Once checks have identified a value as potentially unrealistic, interviewers should proceed to confirm the number reported with the household in case a reporting error has been made.
- These checks should allow for specific situations where there is a reason for anomalous values, such as proximity to a source of loud noise or pollution, or recent changes in the area that have not been discounted in recent transactions yet.

The confirmation of values may lead to higher data quality for some variables. Interviewers may routinely repeat what they have heard the respondent say, but computer-driven confirmation ensures that what is entered into the computer is what the respondent intended. For example, the respondent may provide a monetary answer such as the purchase price of the household's home but using a currency that is no longer used (such as the Italian lira), rather than the current unit of account (such as the euro); the computer can be used to generate the words implied by the numbers entered and ask the interviewer to repeat the figure to the respondent, framing the number as an amount in the current unit of account. This approach may also be useful in confirming values computed from other values, such as the respondent's age given that person's birth date.

Where possible, it may be helpful to introduce a facility in the interview for the interviewer to record comments made during the course of the interview. Similarly, it may be helpful to provide a place for interviewers to make a systematic record after leaving the respondent of any case-specific problems, whether with respondents or the survey instrument. This information may assist both in reconciling values in individual cases and in improving subsequent waves of the survey.

The questionnaire, whether CAI or paper, should be extensively tested by developers and interviewers, and then by a small sample of the general public selected for a *pilot survey*. The pilot survey does not serve the purpose of collecting data, but rather of getting feedback from interviewers and respondents on any difficulties arising with specific questions. The questionnaire should then be modified to take this feedback into account and subjected to another pilot survey if the changes are substantial and time and resources permit.

6.3.4. Sampling design: General principles

Precise knowledge of population characteristics can be gained only if data are collected from all units in the population and in the absence of measurement error. However, reaching every unit (household, firm, bank, etc.) with a survey may be expensive, and gathering complex information from such a large set of respondents in this way would also be extremely time-consuming. For these reasons, in most countries a full census is carried out infrequently and limited to basic demographic variables. In some places, administrative records make it possible to observe important data for all or a sufficiently large part of the population that can substitute for surveys to a degree.[1] The utility of survey statistics rests on the fact that meaningful information can be obtained by applying scientific procedures to select an appropriate subset of the population, a *sample*, and by collecting data only from this subset. While such information is not exact, statistical procedures can be used to characterise and manage the level of uncertainty associated with sample-based estimates.

Effective sampling design entails a sequence of activities that lead to the selection of an optimal sample, i.e. the population subset that yields the best results for a given budget, or that minimises survey costs for a given degree of variability of the estimates. As argued above, data producers should start with a clear definition of three elements: *i)* the key target variables; *ii)* the acceptable level of uncertainty; and *iii)* the budget available. Statements should be formulated clearly, such as, "The sample must be selected in order to estimate average net wealth, average income and average expenditure at the regional level, with a 3 per cent standard error, within a USD 500 000 budget". As a general principle, respondents should be chosen in such a way that they parsimoniously and accurately represent the range of variation of the target variable(s) within the population.

The problem with this criterion is that in most cases the survey is run precisely because there is only limited unit-level information on target variables. Moreover, because it is usually expensive to construct a sample frame, surveys often use general-purpose frames that may contain little information directly related to the objectives of the survey. In such circumstances, data producers may have to rely on external sources in order to get an idea of what easily observable factors may be roughly related to variations in the target variable(s) across the population. Similar surveys carried out in the past are one potential source for defining meaningful subgroups. The available information should be used in order to plan the *sample stratification*, a partitioning of the population into groups (*strata*) that have the highest possible *variance between groups*, (i.e. they are as different as possible from each other) and the lowest possible *variance within groups* (i.e. they are internally homogeneous). Stratification variables should be discrete, free from measurement error, simple, and compatible with the sampling frame. Further, they should identify cells that are not too small.

Geographical indicators for large sub-national areas (e.g. states or counties in the United States, NUTS-1 regions in Europe) are often an acceptable choice in defining strata: in most countries regional variations exist in living conditions. By the same token,

municipality size may also be an acceptable choice. Other variables could be suitable in some countries but not in others, depending on the relevance to the survey topic, e.g. immigration status, linguistic group, birth cohort, gender, average level of house prices in the region/province/cluster of municipalities, average number of small businesses in the region, etc.). Sometimes a sample may blend more than one approach; for example, in the United States many surveys partition the sample universe into municipalities and groups defined in terms of other geographic units.

In very small countries, stratification might not be necessary or feasible; in that case, units may be chosen through simple *random sampling*, a direct draw from a complete listing of relevant population elements. Conversely, because it is often infeasible to send interviewers everywhere in large countries, a *multi-stage* design may be used to select a sample from a limited number of areas: first a certain number of primary sampling units, generally corresponding to geographical locations (municipalities or districts), is randomly chosen for inclusion in the sample; then households are drawn within each location. The general principles of stratification apply but are adapted to take the number of stages into account. Once strata have been defined, data producers can see whether their design is compatible with the budget and the estimated quality constraints.

Standard formulae are available to determine the optimal allocation of units to strata and to derive either the minimum number of units for a given variability of the survey estimates or the minimum variability for a fixed number of units. Any information on stratum-specific expected response rates *should* be incorporated in the calculations performed to determine stratum size. When an acceptable sample design has been chosen, specific units should be chosen randomly from each stratum. Where a survey must use a predefined set of sample areas or subgroups, as might be the case when using an existing sample frame, the only option available in sampling is to vary the rate of selection from the various predefined domains.

As noted above, allowance must be made for the expected level of unit non-response in setting the total sample size for a survey. If the achievable level of response is known *a priori*, the most straightforward option would be to draw a main sample and reserve sample of a size large enough to achieve the target number of interviews. If the response rate is not known *a priori*, another option is to divide the reserve sample into *sample replicates*, where each replicate is a smaller version of the main sample. As the rate of non-response becomes clearer during the field period of a survey, replicates can be introduced individually up to the level needed. The replicate approach helps to control costs and to assure that all observations in the sample are exposed to approximately the same level of effort. In some cases, a *substitution sample* is selected, where the substitutes are defined at the case level (i.e. if a particular case does not participate – typically after a fixed maximum number of attempts – a designated substitute is used; that substitute may be determined by a fixed unit specified in advance or a by mechanism specified in advance). Substitutes can be helpful in achieving the desired number of interviews and in controlling costs, but they introduce an element of uncertainty about what the achieved sample represents. Presumably, there are several reasons why some households participate in a survey and others do not; if there are systematic components to non-response, then using substitutes introduces an element of unobservable selectivity into the final set of respondents. In some situations, it is possible to match original sample units and substitutes based on a large range of key attributes, so that the potential selectivity may be tolerable. Whenever substitutes are used, it is recommended that the data creators make every effort to identify

systematic elements introduced by the substitutes; one way of doing this might be to compare weighted estimates made from the set of respondents excluding the substitutes with those from the full set of respondents. The use of substitutes should be fully documented in the data, and proper account should be taken in reporting response rates.

6.3.5. Sampling design: Wealth surveys

When designing a sample to measure household wealth, the specific challenges described above should be kept in mind. Sufficient representation of households at all wealth levels should support the desired estimates. Care should be taken that the least wealthy part of the population is properly represented. To obtain reliable measures of the upper tail of the wealth distribution, it is likely to be necessary to *oversample* wealthy households, except perhaps where it is feasible to have a very large sample. Relatively wealthy households account for a disproportionate share of the total wealth, and existing evidence suggests that the likelihood that they will not complete interviews when included in a sample is disproportionately high. Thus, there are potentially both bias and variance implications stemming from the treatment of wealthy households. Standard designs used when measuring income or expenditure might not be adequate for measuring wealth. If external information about the distribution of wealth exists, it might be employed to stratify the sample. Constructing a list of wealthy households may be easy in countries with accessible administrative records on wealth or income from wealth, though it might be necessary to study both the degree to which administrative definitions correspond to the desired ones and the accuracy of the administrative data.[2] However, only a minority of countries have such data available for use in sampling. Other possibilities include the assessed value or taxes for real estate, vehicle registrations, electricity consumption, etc. However, such information may be only loosely related to overall wealth. In cases where information is available only at a higher level of aggregation, for example property taxes by area, there may be so much variance within areas that disproportional sampling of high-tax areas would increase the estimation variance. There is often no information sufficiently related to wealth. Where only weak proxies are available or where no such information is available, attention should be given to estimating the effects on key estimates of potential misrepresentation of the wealthy.

In some cases where there is partial information in more than one sample frame, a more complex design may be desirable. For example, one strategy might be to use two separate sampling frames, one with no wealth information to sample respondents in general, and one with wealth information but incomplete coverage of poor people for oversampling relatively wealthy respondents. If the defects in the two frames are sufficiently well known, the two samples could be combined through weights, or the estimates from the survey could be made using a dual-frame estimation procedure.

Although oversampling of the wealthy, when done effectively, may lead to improvements in data quality for wealth measures, such improvements come at a cost. The general experience in countries where such oversampling is possible is that it requires a much more substantial effort to reach and persuade a very wealthy respondent to participate than is the case for a middle-class respondent. One explanation of such differences is the frequency with which very wealthy people employ other people to protect them from unwanted intrusions. Because many surveys must serve multiple purposes, it may make sense not to oversample the wealthy, but to select a larger general sample and tolerate higher variance and possible bias in wealth measures, if there is enough gain for the other purposes of the survey.

6.3.6. Scope and coverage

Household surveys on economic themes generally target the non-institutionalised resident population, i.e. people living in an independent accommodation and residing in the country at a certain time. The exclusion of people living in institutions follows both from practical considerations of reaching and interviewing people in such restricted environments as well as from the idea that people living in institutions do not have the same degree of decision-making authority as people living in independent households. If these populations grow over time, it may be necessary to re-examine the implications of their exclusion; also, in some cases such people may already be included in principle as absent members of survey households. The definition of a non-resident may also vary across countries, but the idea is that transient populations generally should not be included; in principle, non-residents might be included as an absent member of a household in the wealth survey of another country. Because there is some imprecision in the definition of both institutionalised people and non-residents, these populations are likely to contribute to non-sampling error.

Appropriate coverage of the target population generally depends on the quality of the *sampling frame*, i.e. the structure from which sampled units are drawn. A probabilistic sampling design requires that each unit has an *ex ante* known selection probability: ideally, this would be best attained by drawing names from a comprehensive list of households. In most countries, no such list exists; at best, the closest substitute would be a census-based list of individuals, which might include duplicates and might be at least somewhat outdated. If a list-based approach is adopted, particular care should be taken to anticipate and prevent incomplete coverage, that is, a situation in which certain groups of eligible households are omitted. Auxiliary frames covering certain segments of the population, or alternative sampling techniques, can be of help with under-coverage; they should, however, be used with a measure of care (see Box 6.4).

Where lists of households or individuals are not available, address lists may be a satisfactory substitute. Options that also include a name attached to the address, e.g. lists obtained from post offices, are to be preferred to options that refer only to a residential dwelling at a given address. The use of address lists, besides complicating the calculation of selection probabilities, may induce coverage problems for rural and other sparsely populated areas; GIS-based maps identifying dwellings, where available, could provide useful auxiliary information. In any case, an effort should be made to understand and document the degree to which the sampling frame over- or under-covers the target population.

6.3.7. Collection methods

Several data collection methods can be employed in household surveys. Some involve the participation of an interviewer, who either visits the respondents at their residence (face-to-face interview) or talks to them on the telephone, noting down answers on a paper questionnaire or storing them in a computer's memory. In other cases, questionnaires designed for self-administration are made available to respondents on the Internet, sent through surface mail or left by field representatives. Sometimes a self-administered questionnaire is used as a supplement to an interview mediated by an interviewer. In the case of wealth surveys, personal interviews conducted by experienced, well-trained interviewers are particularly recommended. Wealth is generally perceived by respondents to be sensitive information; direct interaction with an interviewer projecting an image of trustworthiness may increase response rates, both in terms of overall participation and in terms of co-operation in answering sensitive questions. Also, certain questions are

Box 6.4. **Sampling highly mobile populations of new immigrants**

In some countries, immigration is a long-established phenomenon. New immigrants join family members or groups of fellow nationals who already live in the country, finding employment through community networks and entering a geographically stable lifestyle from the moment of arrival. In other countries, where communities are not as established and/or where jobs are not as easily found, new immigrants are among the most mobile socio-demographic groups. They may change residence several times per year in the pursuit of job opportunities, e.g. in the agricultural sector or in home assistance to the elderly.

All highly mobile subpopulations create difficulties in surveys, because administrative records of residence are often outdated, and once the sampled units are not found at their official address it may be impossible to track them down. In the case of new immigrants, these difficulties have a particularly large impact, because they may deprive policy makers of information on a key subpopulation for the planning of integration, labour and welfare policies. Auxiliary sampling frames can be of help: in some instances, some records that are produced only for immigrants (residence permits, work permits) are more updated than general residence records, and contain contact information. In other cases, alternative sampling techniques such as snowball sampling can be used, counteracting the lack of official information with data gleaned from informal networks. In both cases, however, care should be applied in estimating the effects of integrating this information on estimates. Assembling auxiliary sampling frames based on work permits, for example, will probably result in the overestimation of income, consumption and even wealth, because those who do not produce income are automatically excluded. Snowball sampling or variations thereof, being based on personal recommendations, result in over-representation of tightly knit groups, which could in turn be correlated positively to economic conditions. In general, every deviation from a clear plan of probabilistic sampling will induce alterations in the characteristics of estimates; while this may sometimes be necessary so as not to incur serious information gaps, it should be accounted for when releasing results.

technically complex, either because they concern items that are difficult to evaluate (e.g. a dwelling bought 70 years ago and received in inheritance by a 30-year-old respondent) or because they mention concepts that are not very familiar to the general public (e.g. hedge funds). Giving respondents a chance to ask the interviewer for clarification may reduce misunderstandings. Interviewers are also able to observe the progress of the interview and to record notes that may be helpful to the data creator during the later review of the data.

Whether or not an interview is directly mediated by an interviewer, in the case of wealth surveys it is recommended that at least the core measurements should be carried out using a computer-assisted interviewing (CAI) method. With a paper questionnaire, it is very difficult to implement a detailed and consistent review of the most essential aspects of the data at the time they are collected, which is the point when correction is most straightforward; in addition, such questionnaires generally require a separate data entry stage, which provides an opportunity for misinterpretation of handwriting and other transcription errors. In contrast, with CAI the underlying computer program can be set to conduct real-time checks on the plausibility of individual items and on the overall consistency of the responses obtained; such checks can also help in detecting errors made by interviewers in recording respondents' answers.

6.3.8. Collection unit

The most common collection units of observation for survey data on wealth are the individual, the household or a concept of economic family. The latter two types of approaches typically use a reference person to provide most of the data about the wealth of the unit, and sometimes allow for reporting on more personal forms of wealth by the relevant individuals. There are trade-offs in these approaches. Individuals may have the best understanding of their own pension rights, their credit card use and other such items, but it may be less clear to them how collectively owned items should be valued and how ownership shares should be distributed; indeed, in some cases ownership shares cannot be known for certain without breaking up a household. Thus, recording wealth solely at the person level introduces the possibility that some items held within a household may be omitted altogether, and that others may be counted multiple times.

Households are often straightforward: a single individual or one couple, with or without children. However sometimes, and particularly in some countries, households may be complex, containing multiple generations and multiple simple families within generations. In such situations, a large variety of ownership patterns may be present, and a similarly large array of potential measurement errors may be present as a consequence. In addition, where complex households are present in a relatively high degree, compositional differences across households cause variations in wealth within and across countries, obscuring the effects of underlying life-cycle factors and other behavioural patterns. Generally, some allowance for household composition is appropriate in the analysis of household-level wealth data. A close alternative to the household as a unit is a subdivision of the household, defined in terms of economic independence; if such economic units were sampled within households, comparison across households and across countries might be simplified. Nonetheless, because even such units vary in composition, allowance should be made for compositional differences. Most of the discussion in this chapter assumes that the desired approach is either the household or an economic family within the household.

6.3.9. Reference person

After gaining the co-operation of a household for a survey, a *screener questionnaire* must be administered to determine the person or persons who should provide information during the interview. A household reference person (HRP) is generally selected to collect core information about the composition of the household and the basic characteristics of its members. This person may also be in a position to provide accurate details on shared wealth. Data producers should set a rule for identifying the reference person, and define their role clearly. In some countries, the HRP is responsible only for providing demographic information and may be any adult; questions of an economic nature are instead asked of the financially knowledgeable person (FKP) identified in the screener questionnaire, who may or may not coincide with the HRP. To determine the FKP, the screener questionnaire should contain a question such as, “Among adult household members living here, who is the person most knowledgeable about financial matters?”.

Given the logistical constraints of fieldwork activities, and the possible coexistence of different cultural norms in the same country, the rule used for identifying the HRP and the FKP should be context-dependent. If the sample is drawn from a list of names, using the named individual as the HRP might be counterproductive: if this person is not home at the time of contact, but their spouse is and is knowledgeable about the relevant matters, there

is no reason why he or she should not be the HRP. It is generally best to give some latitude to interviewers in deciding the person to serve as the HRP, consistent with rules set by data producers. In some cases, there may be no FKP in a household or the person who might be the FKP is too ill or disabled to do the interview; in such cases, a proxy for that person, who answers the questions on behalf of the household, may be allowed if that person is knowledgeable about the finances of the household. Such use of a proxy should be appropriately flagged in the data set. Interviewers should also be asked to provide *paradata* (see below) on the perceived level of competence of proxy respondents.

6.3.10. Respondent co-operation

Effective efforts to gain respondents' co-operation start with clear communication about the purpose of the survey and direct attention to their concerns about participation. Households should know the reasons why they are being asked sensitive questions. Whenever applicable, they should also be persuaded that their willingness to provide data is important for effective policy making; this may be particularly hard when trust in policy makers is low, e.g. during a crisis. Emphasising the importance of the data for longer-term research purposes may also be helpful. The confidential nature of the interviews should be stressed repeatedly when contacting potential respondents and the measures taken to protect confidentiality outlined. If possible, data producers should send a letter to households included in the sample some weeks before fieldwork starts, explaining to them that they have been selected for a statistical study of household economic conditions and that they should expect an interviewer to make contact with them within a given period; the letter should be signed by a public figure recognisable by households and generally deemed authoritative and trustworthy (e.g. the Director of the National Statistical Institute or the Governor of the Central Bank). In general, interviewers should be prepared to deal with a wide variety of questions about the content of the survey and its potential uses. Toll-free telephone numbers and e-mail addresses should be provided to households in case they want to acquire further information or to confirm the information they have been given. It must always be clear to the household that the entire survey depends on the representativeness of the sample and that the interviewer would allow a wide range of flexibility to accommodate the needs or reservations of the household. In some countries, surveys of people must be approved by special committees that are required to monitor the treatment of human subjects in research. Such committees typically insist on clarity in stating the purposes, risks and countervailing protections in a survey and on avoiding actions that might be interpreted as coercive.

Research suggests that offering households a tangible incentive to participate, in the form of a gift or a cash payment, can be very effective in obtaining co-operation. Such incentives must be evaluated in light of local cultural norms. Because adequate monetary compensation for respondents' time and effort is almost always impossible under realistic budget constraints, it is important to emphasise to respondents that the incentive is merely a token of respect. It may be effective in some instances to have the option of offering a donation to a designated neutral charity. In no case should there be a requirement to accept the incentive, but respondents should always understand that their contribution is valued and appreciated.

6.3.11. Role of the interviewer

In all household surveys there is an interaction between a person and a technical survey instrument, which usually must be the same for all respondents, aside from text that may be variable depending on previous answers. Introducing an interviewer into that process allows the possibility that quality standards can be maintained through that engagement as the particular situation of the respondent is encoded in the standardised framework. However, the introduction of an interviewer also raises the possibility that the respondent may react to the presence of an interviewer by providing inaccurate information, out of a concern not to appear unusual to the interviewer or some other concern about the interviewer. Interviewers must be trained in the technical skills necessary to gain co-operation and execute an interview, but also to cultivate an image of neutrality as they do their work.

In surveys where interviews are mediated by an interviewer, the selection and training of interviewers is of central importance. Respondents must be persuaded that the interviewer knocking at their door is a trustworthy person whom they can let into their house without fear, and who is not going to use the data provided for any purpose other than the one stated. Identification systems (badges, advance letters/telephone calls providing the interviewer's name to the household, etc.) are necessary, but they are not sufficient. Interviewers should display traits appropriate to the cultural context that enhance the likelihood of gaining the respondent's trust.

The interviewers most successful in gaining co-operation are generally those who are able to project personal empathy with the concerns of the respondent, but who are nonetheless able to remain neutral and non-threatening. Although in many countries interviewers are predominantly female, both male and female interviewers have been successful in surveys of wealth, with one gender sometimes being more effective than the other with certain sub-groups. The managers of interviewers should be attuned to the personal style of each of their interviewers and how they may be used most effectively with different types of respondents. Role-playing in training is often an effective way to teach both those directly involved and those who are observing how to engage with respondents, and it may also provide insights to managers about the relative strengths of different interviewers for interviewing different population subgroups.

Besides demonstrating strong "people skills", the ideal interviewer should also show appropriate technical competence to execute a high-quality interview. Because high levels of such skills do not always appear bundled in a single individual, sometimes it may be advisable to consider a degree of specialisation of tasks; for example, one interviewer might be devoted to gaining co-operation and another might be available on the telephone to conduct the interview. In any case, training should give all interviewers an understanding of the questionnaire, the general economic concepts underlying it and the broad technical aspects of the interview. Interviewers who are expected to complete actual interviews need to know more detail about the economic concepts referenced in the questionnaire, so that they can answer any questions respondents may have, or to have sufficient knowledge to explain information set out in a glossary made available for that purpose. When applicable, they should be trained in the detailed technical operations required to conduct an interview using a computer interface and to be able to deal with basic computer problems.[3]

Where possible, the one-time training should be supplemented with continuing education. At a minimum, interviewers should have regular contact with their supervisor to discuss problems. During the field period of the survey, trends may become evident and

it may be helpful to share information across all interviewers about coping with related situations. As the types of problems shift over the field period, it may be helpful to reinforce relevant lessons from the original training. When it is possible to identify particular problems in the work of individual interviewers, it is beneficial to intervene where possible to re-train the interviewer on the relevant material. In some surveys, a formal system of written feedback is used to provide comments to interviewers about individual cases and to solicit their input on problems detected. Materials developed from an overall view of issues confronted during the field period and posted on a project website accessible to the interviewers can be a cost-effective means of disseminating information.

6.3.12. Survey administration

Ideally, an interviewer might screen a household to identify the FKP and interview that person and any other relevant parties in the same session. Often it is wise to allow respondents time to consider the request for an interview and to check on the legitimacy of the project; prematurely pressing for a decision to participate may precipitate a refusal to continue. Many times the FKP will not be available at the time of the screening, and it is necessary to make an appointment with that person at a later time; if possible, the interviewer should obtain sufficient information for re-contacting the household to confirm the appointment without having to make an additional personal visit. Some respondents may be very pressed for time; making clear to busy respondents that it is possible to break the interview into short segments that can be completed either in person or by telephone may be helpful. Above all, the respondent should feel that the entire process operates at his or her own convenience. In the case of some wealthy respondents, there may be people whose job is to control access to the person; persuading a "gate keeper" may be difficult and time-consuming.

Steps should be taken to develop measures of the effort applied to individual survey cases and to monitor that level of effort to ensure that all the sample cases are given an opportunity to be informed about the survey and to participate. Such process data or *paradata* may be very important in assessing the potential for non-response bias in the final estimates. In some cases it may be possible and desirable to use *responsive design*, a technique that uses information about the sample management to direct effort efficiently to observations that would tend to reduce non-response biases.

6.3.13. Assessment and treatment of collected data

At the close of fieldwork activities, data producers are in possession of raw data, which constitute the basis for the estimation of population parameters. To reach this point with reasonable confidence, the data creators need to review the information for consistency, to deal appropriately with both unit and item non-response, and to apply appropriate procedures to create the estimates and related measures of statistical confidence. At the beginning of the post-survey processing of the data, it is recommended that the data creators generate a shadow variable for each main variable; the shadow variable should be used to keep track of the original status of the data contained in the main variable and any action taken on it.

6.3.14. Data checking, editing and imputation

An appropriate set of automated *data checks* in a CAI program can reduce the number of inconsistencies and errors in raw survey data, but this is not generally sufficient to eliminate all addressable errors. Data review and *editing* are usually required for the data to

be usable. Editing is an organised attempt to bring various sources of information together to assess the plausibility of reported data and to update the raw data (including setting new values or setting values to missing). Sometimes there are instances of incorrect CAI programming that go undetected even in a rigorous testing phase but that become evident in the raw data; inexplicable malfunctions of the CAI software may also generate errors. Timely evaluation of data during the field period can help to detect systematic problems in time to repair the program at that point. Automated checks on the raw data should include verification that the data match the logical flow of the questionnaire (e.g. households living in owner-occupied dwellings should not report a value for monthly rent payments).

More importantly, because some erroneous values can be detected only through complex analysis that cannot usually be performed using the CAI software, core variables should be analysed using both univariate and multivariate techniques to identify outliers. Ideally, suspicious values should always be verified by re-contacting households, but this is usually too costly to undertake for all except the most influential outliers. Data producers must thus make judgments about the validity of anomalous data values. At this stage, it may be helpful to have comments from interviewers, from the main data collection or from debriefing interviews or other *paradata*. Some errors (e.g. reporting values in a currency, adding extra zeroes to a reported number, incorrect use of negative numbers, etc.) are common or regular enough as to be reset mechanically either to a more plausible value or to a missing value. Editing should be random, with consistent application of the principles guiding the work. Conservatism in over-riding reported values should be emphasised. General guidelines on data editing are provided by several National Statistical Offices; international projects such as Euredit (EU) also exist, and should be taken as a reference.

The process of *imputation* consists of using a method to fill in missing values in the edited data. Items may be missing because they were not provided by respondents (*item non-response*), because the respondent gave only partial information (e.g. a range response to a question specified in terms of a continuous variable) or because the value provided was deemed to be incorrect during the data editing and set to missing. In wealth surveys, the share of missing values is sometimes relatively high: respondents might decline to answer on subjects that they find particularly sensitive, or they might not be able to value certain items. In general, the checking procedure should seek to address the process causing the problem rather than simply to find a way to rectify the results Thus, interviewers should help respondents by keeping them focused on the task, by reassuring them of their confidentiality, by convincing them to use records where possible, and by probing for partial information when nothing else is available.

It is usually argued that the data producers should provide imputations for missing values. Data producers often have information about survey observations relevant for imputations that is not included in the public version of the data. Because most statistical software performs only complete-case analysis, distributing data sets with a significant rate of item non-response imposes limits on users through the reduction in the number of observations available for analysis; cases with missing data may represent a systematic subset of the population, and omitting this group might introduce bias. Although some relatively sophisticated users may cope with estimation with missing data – by either using elaborate models or performing their own imputations – most users lack such skills. Even if users want to perform their own imputations, however, it would still be useful to have a standard set of imputations as a point of reference. Users who desire to do so may reset all imputed values to missing by using the information contained in the shadow variables.

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Imputation of missing items also has costs, mostly in terms of the resources devoted to the development of the process.

In some countries, questionnaires with more than a few missing values on certain core variables are considered invalid and excluded from the data set. This approach is arguably the best strategy to maximise superficial data quality, since imputed values are not as informative as those collected directly from households. However, such a requirement may alter the incentive the interviewers or respondents face and lead to reporting unreliable values so as to avoid missing values. Moreover, the set of cases discarded may be systematically different from those retained in the data set, thus introducing the possibility of selectivity bias in the survey estimates. Discarding incomplete interviews is also very expensive, because more households have to be interviewed to attain the same final sample size.

While a number of technical options for imputation exist, all are based on the idea that there is enough commonality across households that relationships among cases without missing data on a given variable provide information about the likely value of a variable that is missing in another record. One of the simplest types of imputation model, *hot-deck imputation*, substitutes missing values in a case with values taken from a *donor household* with similar characteristics. A variety of regression-based approaches also exist, where missing values are substituted with fitted values, either based on an econometric model or on replication of the global correlation structure of observed values on missing ones. Imputed values should incorporate a stochastic element to preserve the variance of the variable in the observed population. In *single stochastic imputation*, a random term drawn from an appropriate distribution is added to a single hotdeck or regression estimate. In *multiple stochastic imputation*, the same process is repeated independently a given number of times. Multiple imputations allow a formal expression of the uncertainty of survey estimates; such uncertainty exists regardless of the method of imputation, but with simpler approaches estimation of the uncertainty becomes difficult or impossible.

Generally, even after checking, cleaning, editing and imputation, survey data sets are still not fit for immediate use. Weighting to account for selection and non-response is usually essential. The final sample on its own is not representative unless all units included have the same cumulative probability of selection and observation; this is unlikely to be the case in practice. For example, if the original sample oversampled areas near the sea, and blond people of all ages live disproportionately by the sea and older people have more time to participate in surveys, then the unweighted survey estimates would tend to be overly influenced by the condition of blond older people living by the sea. The sample can be realigned to the population through appropriate *estimation weights*, scale factors that indicate how many households are represented by each of the records included in the data set. Estimation weights result from a three-stage process. *First*, *design weights* are computed, corresponding to the inverse of each household's selection probability under the sampling design. *Second*, these weights are adjusted for unit non-response, based on models that predict participation probabilities of various socio-demographic groups (e.g. weights are inflated for respondents in low-participation groups, and deflated for those in high-participation ones). *Third*, estimation weights are derived by *calibrating* the sample to align with key dimensions of the population, such as the age distribution. In some surveys, the second and third steps are not distinguished.[4] Weights are usually made available to users in one or two forms: *not-normalised weights* that reflect the number of households represented by each case and thus sum to the total number of

households in the population, or *normalised weights* that reflect the fraction of households in the population represented by each case and that sum to one.

While weights are generally necessary in order to obtain unbiased estimates, they are sample-dependent and therefore stochastic; in most cases, they add to the variability of the final results. Techniques exist to limit this effect, such as the trimming of extreme weights. In the case of wealth surveys, the most difficult step in the construction of analysis weights usually lies in non-response adjustments. Given the substantial rate of non-response for wealthy households, the few who do participate risk being assigned very high weights, greatly inflating the variance of many key wealth-related measures. This may also lead to an under-representation of variance within the upper tail of the distribution, because so few cases would represent a very heterogeneous segment of households. Although this problem may manifest itself through weighting, it is more properly thought of as a problem of the inadequate representation of wealthy households. If only a few extremely wealthy households participate, it may be best to assign then a weight of one (reflecting their near uniqueness in the population), or to treat them as sufficiently different types of cases to be excluded from the final data set.

6.3.15. Estimates and variability

Estimates can be subdivided into positional and distributional. The former (e.g. simple or conditional means and medians) give an idea of the order of magnitude of a variable; the latter (e.g. simple or conditional standard deviations) give an idea of how heterogeneous the population is with respect to that variable. Most data producers concentrate on describing the distribution of wealth according to socio-demographic characteristics. Examples include: average/median wealth by household characteristics (e.g. income quintile, employment status, household size, education level of the highest earner), and inequality indices, such as the Gini coefficient, the 90/10 percentile ratio, etc. Whenever sample size allows, *domain-specific* estimates can be produced describing a particular sub-group: the debt-to-income ratio for the self-employed, the average interest rate on outstanding mortgages in a certain region, or the share of individuals over 65 owning life insurance. Published estimates generally include standard descriptive statistics and a few detailed indicators based on user needs. In light of the distributional/response behaviour issues described above, surveys may not be the best instrument for the estimation of total wealth.

Data creators and first-round analysts often publish a variety of descriptive statistics as a preliminary summary. Generally, such statistics include extensive tabulations of simple or conditional percentages (e.g. percentage ownership of at least one savings account, percentage ratio of debt payments relative to income, etc.), various simple or conditional indicators of size (e.g. mean or median savings account balances, quintile values of income, etc.) and a variety of other summary measures (e.g. Gini coefficients, standard deviations, etc.). The summary publication should include enough information about the survey methodology and context that technically knowledgeable readers can evaluate the plausibility of using the data for further research. Subsequent analysis may also employ more complex statistical models, such as regressions, Probit models, factor analysis, etc.

Wherever feasible, published estimates should include at least some indication of the degree of uncertainty about the results, typically in the form of a confidence interval or a standard error. The measure reported should be as comprehensive as possible, given the available data; most often, this will mean publication of a measure of sampling error. When data are multiply imputed, it should also be possible to report the combination of sampling

and imputation errors. There is usually no basis for estimating the magnitude of other sources of non-sampling error. Users should also be able to estimate measures of error from the data available to them. In many countries, however, complete design information cannot be released by the data creators owing to restrictions imposed by privacy laws; for example, for a geographically based design, the indications on the location of the sampled unit that would be necessary for calculating a simple design-based estimate of sampling error often cannot be made available. Where it is not possible to release the necessary design information for a simple design-based estimate of sampling error, the distributed data set should include *replicate weights* that can be used to simulate that estimate. Typically, replicate weights consist of weights computed using the same methodology as the main analysis weight, but computed over each element of a set of structured random subsamples of the final set of observations. The replicate weights are used to estimate a distribution of a given survey estimate over the sample replicates as a proxy for the distribution of sampling error.

6.3.16. Preserving confidentiality

Preservation of the confidentiality of respondents' data is an ethical and often a legal necessity. In the initial design of a survey, thought should be given to the question of what information can be made available for use at the end of the survey process – among the data creators and among researchers or policy makers beyond that group. This step is sometimes helpful in crafting survey measures that are useful but less sensitive than the most obvious ways of proceeding; it may also be helpful in establishing credibility with both respondents and interviewers.

Throughout the survey process, careful thought must be given to the control of not just information stored in computer systems but also paper documents, which are usually less easily controllable. Paper documents containing any type of identifying information should be kept to a minimum and procedures should be established for collecting and securing or destroying such documents. Electronic data held outside of the secure facilities of the data creator, particularly data held by interviewers, should be encrypted whenever feasible; such information should remain outside central control for the minimum time possible.

Standards for both what can be released from a survey and the types of users to whom the data may be released vary across countries. In general, it is not sufficient to remove obviously identifying information, such as names, pre-existing identification numbers, addresses, employer names, etc. It is also necessary to consider *indirect re-identification*, i.e. the possibility of using an attribute or collection of attributes to determine the identity of a given respondent with high probability. For example, unusual household structures taken together with detailed occupational data for household members might provide a basis for identifying the household. Increasingly, publicly available data about individuals makes it possible to identify people in unusual groups, thus raising the risk of re-identification. In general, it is not possible to remove all probability of re-identification without destroying the utility of the data for analytical purposes. However, it is possible to keep the probability sufficiently low. Data creators should consider all aspects of their data and consult the literature on the protection of confidentiality available at that time.

6.3.17. Survey evaluation

If a survey is a one-time project, data creators may limit the evaluation of the data to relatively simple summary measures, such as unit and item response rates, indications of

the comparability of survey estimates (aggregates, distributional estimates, change estimates) with estimates of the same quantities from other sources, etc. In some countries, there is an obligation to conduct a study to characterise potential non-response bias whenever the response rate to any official survey falls below a certain threshold; even where this is not a requirement, it is a good practice. For surveys that are expected to be repeated, evaluation should aim at identifying elements anywhere in the survey process that are capable of being improved. Data creators are encouraged to gather data and take notes over the course of the survey design and execution, which may help in the subsequent evaluation of the survey. Where possible, a debriefing of the full range of participants, other than respondents, should be conducted near the close of the survey work. Evaluation work should include research on basic aspects of survey measurement as well as comparisons of the outcomes of current and past practice.

6.4. Summary

This chapter has provided technical guidance on how to handle both general and specific challenges when designing and fielding surveys on household wealth. To that end, the chapter has taken potential data producers and users through the process of questionnaire design, sample selection, survey implementation and the production of estimates as well as the dissemination of the results.

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

- Sample surveys are a critical tool for the measurement of household wealth. Direct data collection at the micro level, especially in the context of multi-topic surveys also investigating income, employment and expenditure, allows users to take into account distributional facts and correlations between variables that are only latent in macro statistics. Appreciation of such surveys has grown along with an understanding of the potential importance of heterogeneity in explaining overall economic performance as well as in characterising responses to economic policies, (e.g. those directed at financial stability or tax design).
- Sample surveys focusing on household wealth confront data producers with certain challenges that are common across most types of surveys: samples have to be designed so as to maximise accuracy for a given cost, overcoming difficulties created by incomplete frames or lack of auxiliary information; complex computerised interviewing interfaces have to be implemented in order to ensure high data quality; field staff have to be selected and trained appropriately; whenever the survey is not compulsory, respondent co-operation must be encouraged, and the effects of non-response must be examined and appropriate adjustments made; the results have to be disseminated in a timely and clear fashion, offering users non-technical guidance on the variability of estimates. Some of the most serious problems occur during the interaction of the respondent with the questionnaire and, in the case of interviewer-mediated surveys, with the interviewer.

The distribution of wealth is more skewed than the distribution of other economic variables, and *ceteris paribus* both the unusually poor and the unusually wealthy are less likely to participate in sample surveys compared to the rest of the population. These facts combined suggest that in order to obtain accurate information on the overall distribution of household wealth, care should be taken to convince relatively poor people of their importance in a wealth survey, and special efforts should be focused on obtaining responses from the wealthy. Both efforts may have implications for sampling design and the allocation

of human resources; surveys where distributional estimates of wealth are not a priority may need to devote less attention to such issues, but the data creators should document clearly for subsequent users an appropriate level of caution for other uses of the wealth data.

For many people, wealth-related topics are more complicated than information collected in most other household surveys. Careful thought, research and evaluation needs to be devoted to the structuring and wording of a questionnaire, avoiding technical language as far as possible, and enabling respondents to report what they know, even if the information is only partial.

Experience suggests that wealth and income are among the most sensitive topics addressed in household surveys. Respondents will often need assurance that that their information will remain confidential. To this end, data creators must develop credible systems and procedures to maintain the confidentiality of respondents' information and develop effective means of informing respondents about the steps taken.

Notes

1. But even in those places it is necessary to turn to surveys to obtain important information not held for administrative purposes.
2. For example, information from a wealth registry or information on wealth or capital-income tax might be possible.
3. Training protocols should include the following: remarks from the data sponsor, if possible; explanations to interviewers of the purpose and the contents of the surveys; class-work on issues related to gaining co-operation, including role-playing exercises; class work on the contents and technical aspects of executing an interview; small workshops where interviews are simulated and interviewers are able to receive feedback from fieldwork managers and from each other; an exam covering procedural questions (e.g. "Which illustrative materials should I give to the household upon first face-to-face contact?"; "How do I answer doubts about the usefulness of the survey?"), technical questions (e.g. "What is the difference between a stock mutual fund and individual stock shares?" or "What is the evaluation rule for the main residence and how do I help households give the correct answer?"), and practical exercises (simulated full interview or sections).
4. Calibration can be a computationally intensive iterative process that requires abundant auxiliary information; it should be used carefully, limiting the number of calibration variables to the minimum necessary for the purposes of the survey.

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Chapter 7

Analytic measures

This chapter considers ways in which the usefulness of micro-level data on household wealth produced using the sources and methods discussed in Chapters 4 and 6 can be maximised through statistical analysis and presentation. The discussion covers a range of analytic measures that can be derived from the basic data. Empirical examples are provided where appropriate.

The chapter discusses the importance of considering a life-cycle perspective when analysing wealth statistics, followed by a consideration of units of analysis. It then presents basic measures such as means and medians, and tools to analyse distributions, such as frequency distributions, quantile measures, Lorenz curves, Gini coefficients and other inequality measures, ratios and percentage shares. In addition, the chapter provides suggestions on adjusting for price differences over time and across geographical areas. Finally, it provides a list of wealth indicators that can be used for international comparisons.

7.1. Life-cycle perspective and analysis by population subgroups

A life-cycle perspective is particularly important when analysing wealth data. Young individuals at the beginning of their working careers tend to have low (or negative) levels of wealth. As they grow older, they save and accumulate wealth, creating a stock that can be drawn upon during retirement. As a result, older households, near retirement, are expected to have wealth levels close to the maximum of their life-time wealth. As they enter retirement, individuals begin decumulation and use up some of their wealth in order to supplement their income and maintain their desired level of consumption. At some point during their life, inheritance may be passed on to them, increasing their stock of wealth.

Given the various roles that wealth can play, household-level data allow for an examination of a wide range of topics that are of interest to researchers, central bankers and policy-makers, such as studying the wealth effect on consumption, housing indebtedness, housing prices, retirement income and pension reforms, access to credit and credit constraints, financial innovation, consumption smoothing, household portfolio choice, and wealth inequality. Micro data on wealth make it possible to evaluate the impact of policies and changes in institutional arrangements, and allow for a better understanding of the effect of shocks on macroeconomic variables, hence providing important information for monetary policy and financial stability.

Analysing the behaviour of population sub-groups can also be very important. Having adequate data allows analysts to perform a variety of tasks, including identifying vulnerable groups such as those that are asset (and income) poor, assessing the adequacy of retirement portfolios, and gaining a better understanding of the onset of a crisis or of its impact on economic well-being. Aggregate statistics can also be affected by changes in the distribution of wealth, as the consumption, saving and investment behaviour of households differs substantially across wealth levels and population groups. For example, the 1% of households in the United States with the most wealth hold more than one-third of total wealth, implying that changes in their portfolios can exert significant effects on aggregate statistics. Another population sub-group that holds a large share of household wealth is the elderly, whose behaviour can also drive changes in the aggregate statistics.

7.2. Unit of analysis

Chapter 3 makes recommendations on the unit of analysis and identifies the household as the preferred unit for wealth statistics. Although it is usual practice to produce micro statistics on the distribution of income and consumption by individual as well as by household unit, micro statistics on the distribution of wealth are usually produced only for household units. However, some particular types of wealth analysis may target individual persons, since the intra-household distribution of resources can be very unequal and average household size and composition vary considerably, particularly between population sub-groups and across countries.[1]

To produce statistics pertaining to individuals as the unit of analysis, wealth estimates for households need to be adjusted in a way that reflects the differences in household size and composition and the economies that arise from the sharing of resources. For some types of analysis, adjustments of this kind can be calculated using adjustment factors determined by an equivalence scale. The use of equivalence scales for wealth statistics is discussed later in this chapter.

When analysing people, each person should be attributed the characteristics of the household to which they belong. Based on this assumption, household wealth can be presented for the household or reweighted so that it represents the number of individuals instead of the number of households. These latter are sometimes known as person-weighted estimates, because the unit of analysis is now the person. When person-weighted estimates are compiled, the weight in the distribution of each person in a household is the same, whatever the size of the household to which they belong. Further information on weighting methodologies is provided in Chapter 3.

The distinctions mentioned above allow for different type of analyses, such as wealth distribution across different types of households and geographic areas; changes in wealth levels and distributions over time; differences in the level and composition of assets and liabilities of households with different characteristics; the number and characteristics of households holding particular types of wealth; joint patterns of income and wealth inequality; and studies of household economic well-being.

7.3. Specific analytic measures and their use

This section describes those analytic measures that are most commonly used in countries that produce micro statistics on household wealth. For each measure, the section discusses the issues that need to be considered in deriving and presenting it, including its usefulness and limitations. The importance and implications of negative wealth holdings for the summary measures are also discussed. Much of the content of this section draws on Chapter 6 of the *2011 Canberra Group Handbook on Household Income Statistics*.

The discussion that follows takes into account the conceptual framework for micro statistics on household wealth presented in Chapter 3 to characterise the level of composition and distribution of wealth. It should also be noted that wealth consists of several components, some of which augment the level of wealth (assets) and some of which diminish it (liabilities). Consequently, the specific characteristics of wealth data are somewhat different than for income data. Some components of wealth (i.e. assets) are always non-negative, but aggregate net worth is likely to be zero or negative more commonly than is the case for income. These and other wealth data characteristics will affect some of the measures traditionally used for analysing household income.

7.3.1. *Means and medians*

Estimates of wealth and its components are often summarised in the form of mean or median measures, such as the mean or median household net worth for different types of households.

The mean is frequently used to measure *wealth levels*. The arithmetic mean, or average, is defined as the sum of all components divided by the number of observations. Advantages of the mean are that it is easy to calculate and interpret, and that the means of the different components of wealth will sum to the mean of total wealth. Its main drawbacks are its sensitivity to outliers and to asymmetry of the distribution, both of which are common characteristics of the wealth distribution.

The mean value of a data item is usually calculated by selecting all the survey records for the population of interest, multiplying the value of the data item in each record by the weight of the record, summing the resulting products, and then dividing the total by the sum of the weights of the records. For example, the mean net worth of a particular sub-group of households is the weighted sum of net worth of each household belonging to the group considered divided by the sum of the corresponding weights.

For some purposes, the mean for a household variable may be required with respect to all people in a population group, including children. Such measures are referred to as person-weighted measures. Person-weighted means are obtained by multiplying the data item of interest for each household by the number of people in the household (including children) and by the weight of the household, summing across all households and then dividing by the estimated number of people in the population group.

An alternative measure of the central tendency is the *median*. Compared to the mean, the median is more stable and robust and is less affected by values at the lower and upper extremes of the distribution and by sample fluctuations that may occur between two observation points. It is therefore often preferred to the mean as an indicator of a typical level of wealth for the whole population.[2]

For wealth analysis, the median is often provided alongside the mean (Table 7.1). The difference between the mean and the median is a simple measure of wealth inequality. In most countries, the mean (average) household wealth will be higher than the median household wealth, reflecting the usual situation that most households have low wealth compared to the mean and a smaller number of households have wealth above the mean. The greater the asymmetry, the greater the degree of inequality is likely to be. However, this is not always the case, as a symmetrical distribution could contain great inequality if it has very long tails in both directions.

Table 7.1. **Mean, median and mean of the median person wealth in the United States, 2007**

US dollars

Mean	Median	Mean of median person (inter-quartile mean)	Difference (mean less median)
556 846	120 780	383 490	436 066

Note: The mean median person is a group defined as being between the 25th and 75th percentile of the wealth distribution.
Source: 2007 Survey of Consumer Finances.

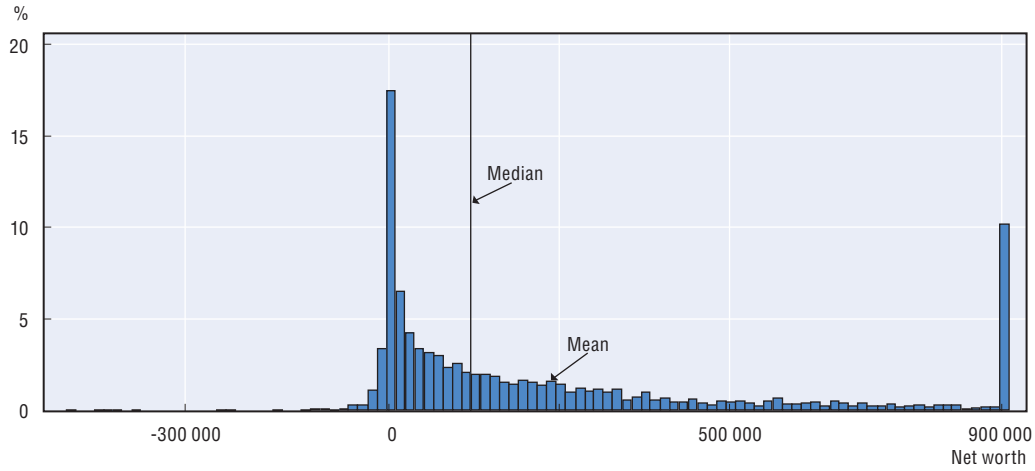
A mean value can also be derived after discarding the upper and lower extremes of the population, giving what is sometimes called the mean of the median person. One example

is the inter-quartile mean, which is the mean of the values lying between the first and third quartiles of the population.

7.3.2. Frequency distributions

In order to get a basic idea of the distribution of wealth across the population, the frequency diagram (histogram) can be used to illustrate the location and spread of the distribution. This is particularly important for wealth variables in order to identify extreme values. The frequency diagram is often accompanied by estimates of the mean and median, and it can throw light on the situation at the bottom of the distribution (important for poverty analysis) as well as at the top (which is important for wealth concentration). In Figure 7.1, the population has been grouped into "bins" by the size of wealth, with the vertical axis showing the proportion of people in each net worth range in the United States. The top 10% of households has been recorded to the value at the 90th percentile. Figure 7.1 highlights some of the distinct features of wealth distributions: the presence of negative values, the spike at zero, the asymmetry or skewness of the distribution.

Figure 7.1. **Distribution of net worth in the United States, 2007**

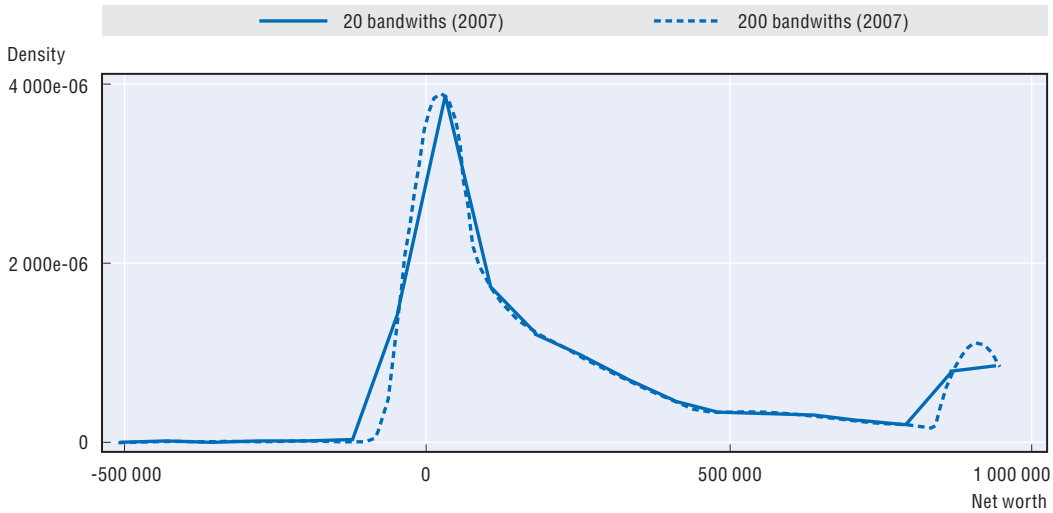


Source: 2007 Survey of Consumer Finances.

The distribution is also asymmetrical, with a small number of units having relatively high net worth and a larger number of units having relatively low wealth with a few having negative values. The greater the asymmetry, the greater the difference between the mean and median values (as shown by the fourth column of Table 7.1).

The problem with frequency distributions (or kernel density estimates) is that the shape is determined by an arbitrary assumption about the optimal number of bins (or bandwidth in the case of kernel density estimates). Although the shape theoretically should not be relevant, it does influence how people interpret the results. Using the same US data used for Figure 7.1, Figure 7.2 shows kernel estimates for 20 and 200 bandwidths. The dashed line indicates a larger clustering around zero, while the solid line shows a clustering around small values of wealth. These two presentations can alter the type of conclusion one can reach regarding the distribution of wealth among low-wealth households.

Figure 7.2. **Kernel density estimates of net worth in the United States**



Source: 2007 Survey of Consumer Finances.

Kernel density estimation is a non-parametric way of estimating the probability density *f(x)* of a random variable, in this case wealth. This function is estimated as follows:

$$\tilde{f}(x) = \frac{1}{nh}\sum_{i=1}^{n} K\left(\frac{x - x_i}{h}\right)$$

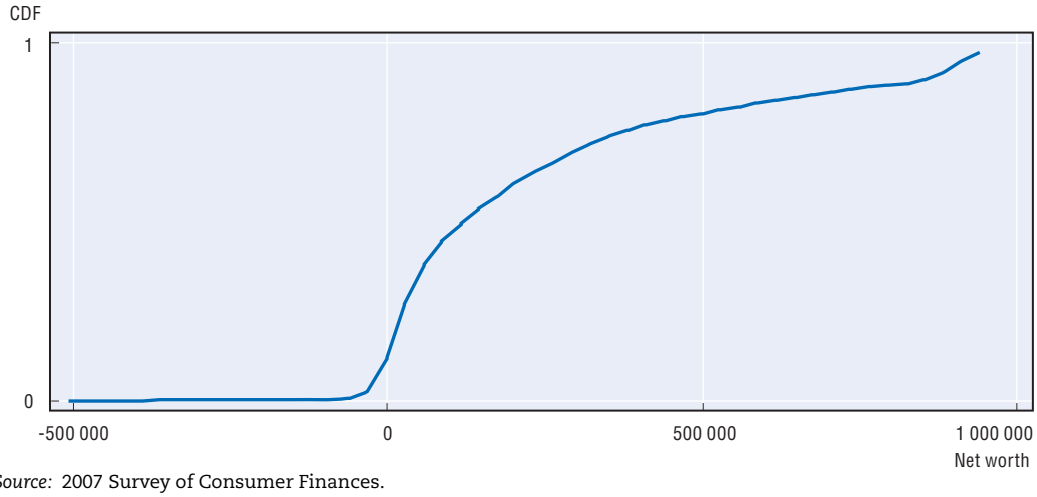
where *K(.)* is the kernel function.

There are many choices for these functions (Deaton, 2000; Pagan and Ullah, 1999), although the literature indicates that choice of the kernel function is not a critical one. The choice of the bandwidth is more important. A large bandwidth will provide a smoother estimate but risks biasing the distribution by bringing observations from other parts of the density, while a small bandwidth allows readers to pick specific features of the underlying density but risks producing an unnecessarily variable plot. Hence, kernel density methods can be used to smooth raw observations into an estimated density, with the bandwidth controlling how much smoothing is done.[3]

7.3.3. Distribution function

In order to look at the distribution of assets or liabilities, or to compare net worth for different countries or groups, another mode of presentation, which does not require making a decision regarding the number of bins, is to use the *cumulative distribution function* (CDF). The CDF describes the probability (shown on the vertical axis) that the variable of interest (e.g. wealth levels, shown on the horizontal axis) will have a value of *X* or lower. In this case, one can ascertain the relevant percents by looking at differences in percentile points on the *y*-axis for a given interval – as the probability that *X* lies in the *interval* (a, b), where $a < b$ is defined $P(a < X \leq b) = F_X(b) - F_X(a)$. Figure 7.3 presents the same US data as shown in previous figures. It highlights the low share of negative outliers, a sharp increase in the share of households with wealth values around 0, and the spike in the shares of the distribution at the top, reflecting the top coding of the last 10% of the population.

Figure 7.3. **Cumulative distribution function for household wealth in the United States, 2007**



Source: 2007 Survey of Consumer Finances.

7.3.4. Quantile measures

Another approach used in income analysis that can be applied to wealth data is based on a ranking of the units of analysis from the lowest to the highest, then dividing them into equally sized groups and finally calculating the shares of wealth accruing to a given proportion of the units (e.g. household or persons). The generic term for such groups is *quantiles*. When the population is divided into four equally sized groups, the quantiles are called quartiles; if there are 5 groups, they are called quintiles, if there are 10 groups they are called deciles, and 100 groups gives percentiles. Thus the first quintile will comprise the first two deciles and the first 20 percentiles.

In some analyses, the statistic of interest may be a particular percentile point, i.e. the boundary between two quantiles. The latter is usually expressed in terms of the upper value of a particular percentile. For example, the upper value of the first quintile is also the upper value of the 20th percentile and is usually denoted as P20. The upper value of the ninth decile is denoted as P90. The median of a whole population is denoted as P50, which is also the median of the third quintile, while the median of the first quintile is denoted as P10, etc.

Percentile ratios

Ratios of percentile points may be used to summarise the relative distance between two points on the distribution. The full spread of the wealth distribution is given by the difference in the upper and lower values, but such measures are likely to be unstable when the tails of the distribution are thin. If net wealth is negative or zero at the chosen lower value, the measures may be difficult to interpret or even undefined. Statistics such as the P90/P10 ratio or the P80/P20 ratio may provide a more robust indication of spread. In some situations, other indications of the spread, such as the P90/P20 ratio, may be appropriate. Other common ratios relate the extremes of the distribution to the midpoint or median (e.g. P80/P50, P50/P20). All these measure will provide meaningful results only if the asset of interest is held at those percentiles.

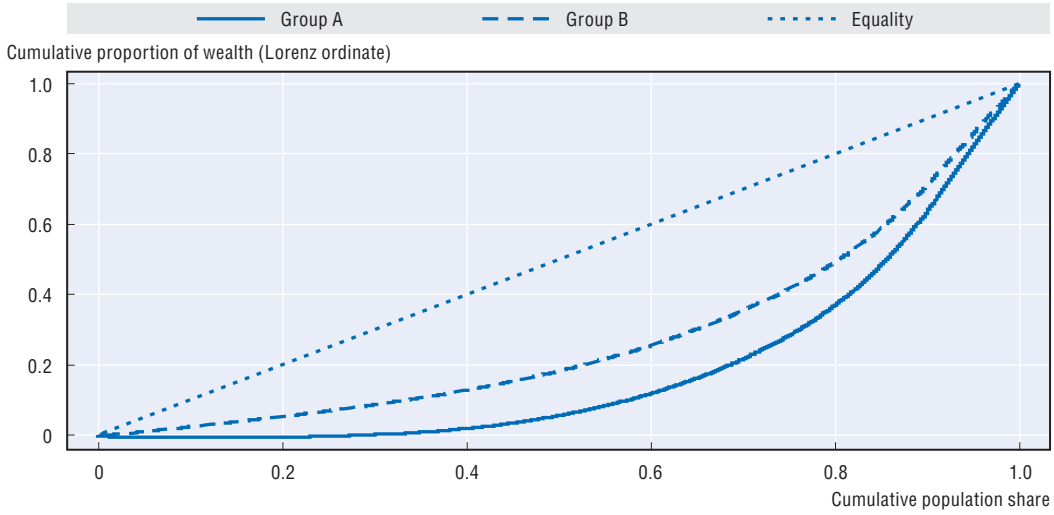
Wealth shares

As mentioned above, focusing attention on the top of the distribution is necessary to capture the majority of wealth held by households. Simple descriptions can be made by calculating the shares of total wealth held by the richest 1%, 5% or 10% of the population. In this case, the aggregate wealth of the units in each quantile is divided by the overall wealth of the entire population to derive wealth shares. Reporting wealth shares held by the richest 1%, 5% and 10% is the inverse of reporting ordinates of the Lorenz curve, in this case the shares of the poorest 99%, 95% and 90% respectively. Table 7.7 provides an example of top shares.

7.3.5. Lorenz curve

Another graphical tool used to describe income inequality that can also be applied to wealth data is the Lorenz curve. The Lorenz curve is a graph with the horizontal axis showing the cumulative proportion of the population ranked according to their wealth and with the vertical axis showing the corresponding cumulative proportion of household net worth. The diagonal line represents a situation of perfect equality, i.e. all households have the same net worth. Figure 7.4 shows the Lorenz curves for two population groups in the United States; the continuous line shows the net worth for all households (Group A), while the dashed line refers to households with net worth exceeding USD 100 000 (Group B).

Figure 7.4. **Lorenz curves for household wealth in the United States, 2007**



Note: Group A refers to all households; Group B refers to all households with net worth above USD 100 000; the "Equality" line refers to a situation where all households have equal net worth.
Source: 2007 Survey of Consumer Finances.

All points of the Lorenz curve for Group B are closer to the line of perfect equality than the corresponding points for Group A.[4] In this situation, Group B is said to be in a position of Lorenz dominance and can be regarded as having a more equal net worth distribution than Group A. The slope of the Lorenz curve at each value of net worth is equal to the value of net worth at that level divided by mean net worth. Note that if some households have negative net worth, the first part of the Lorenz curve will drop below the horizontal axis and have a negative slope (assuming mean wealth for the whole population is positive). For households that have zero net worth, the Lorenz curve will be horizontal. This situation is likely to be

more significant for wealth statistics than for income statistics, as the incidence of negative and zero values is much higher in wealth statistics (Cowell, 2010; Amiel et al., 1996).

The negative slope of the Lorenz curve may signify two things: either the household is in a very dire position and has negative wealth values, or it is at a point in its life cycle where it is accumulating debt and expects to increase its wealth levels in the future. An example could be education loans taken out by young college students; the extent to which these would be prevalent in a country depends on the institutional environment.

Another form of Lorenz curves, known as the Generalised Lorenz curves, depict the cumulative wealth of populations after adjusting for differences in averages between the populations. Therefore, if mean wealth is negative, the Generalised Lorenz curve will not be affected in the way the Lorenz curve is. Generalised Lorenz curves can be used to analyse differences in the level of wealth as well as differences in the distribution, but do not show differences in inequality (Deaton, 1997). The slope of the Generalised Lorenz curve at each wealth value is the value of net wealth itself. One cautionary note is that the ordinates of Generalised Lorenz curves are not unit free as in the case of Lorenz curves. Comparisons over time or between countries may therefore be sensitive to the choice of price deflators or exchange rates.

7.3.6. Equivalence scales

In the case of household income, there are internationally recognised equivalence scales that are used to standardise the estimates with respect to household size and composition while taking into account the economies of scale that arise from living together, in particular through the sharing of dwellings. In the case of household wealth, however, no internationally agreed equivalence scales exist, and there is no consensus on whether the scales used for income are appropriate for wealth. In studies jointly analysing income and wealth, the equivalence scale applied to income is also applied to wealth (OECD, 2013).

The use of equivalence scales in the case of wealth depends on the purpose of the analysis. Equivalence scales should not be used when analysing the characteristics of individual components of wealth. If, on the other hand, wealth is treated as a source of income streams that can be used to finance consumption and contribute to economic well-being in the household, wealth might be equivalised just as income. Equivalised estimates are often expressed in terms of single-person household equivalents (i.e. the level of wealth that would be required by a lone person household to have the same level of economic well-being as the household in question).

Failure to equivalise could provide a misleading picture of the distribution of wealth, for example by overstating the share of single-person households at the bottom of the distribution. Table 7.2 provides an example of three types of equivalence scales and their effect on the levels and inequality of the wealth distribution in the United States. “No scale” assumes that larger households require no more resources than smaller households to achieve the same standard of living; the so-called modified OECD scale assigns a value of 1 to the household head, of 0.5 to the remaining adults, and of 0.3 to children; the square root scale divides household wealth by the square root of the household size, without differentiation between children and adults; and, finally, the per capita approach assumes there are no economies of scale as household size increases, i.e. the needs of a household are directly proportionate to the number of people in the household.

Table 7.2. **The effect of equivalence scales on the levels and inequality of household wealth in the United States, 2007**

US dollars

	Italy				Germany				United States			
	No scale	OECD modified scale	Square root scale	Per capita	No scale	OECD modified scale	Square root scale	Per capita	No scale	OECD modified scale	Square root scale	Per capita
Mean	171 312	92 395	101 922	63 994	106 847	64 793	69 110	47 329	219 149	127 528	135 874	89 447
Median	113 707	59 267	66 446	36 660	23 629	14 707	15 284	10 219	42 010	21 874	23 799	13 644
Gini	0.59	0.60	0.59	0.62	0.79	0.80	0.80	0.81	0.84	0.85	0.85	0.86
½CV^2	1.03	1.14	1.11	1.34	3.62	4.19	4.07	4.96	13.41	14.56	14.39	16.38

This example indicates that equivalising affects the levels as well as top sensitive inequality measures such as ½CV^2 (half the square of the coefficient of variation), but has less impact on the Gini coefficient (½CV^2 and the Gini coefficient are explained in the next section).
Source: 2008 Survey of Households Income and Wealth (SHIW); 2007 German Socio-Economic Panel (SOEP); 2007 Survey of Consumer Finances from Luxembourg Wealth Study, accessed October 2012.

Table 7.2 indicates that equivalising wealth affects the levels and those inequality measures that are most sensitive to the top of the distribution, such as ½CV^2 (half the square of the coefficient of variation), but has less impact on other inequality measures such as the Gini coefficient (see the next section).

7.4. Inequality indices

As most inequality measures are defined for non-zero values, the same measures that are used in the case of income can be applied to wealth. This is the case when the focus is on positive holdings of many assets and debts. However, a common characteristic of wealth data is that at various points in the life-cycle households may have negative (due to higher debts) or zero values of net wealth. Inequality measures are of most interest with respect to net wealth. This implies that only a subset of inequality measures can be used to describe wealth inequality, such as the Gini coefficient, the coefficient of variation, the relative mean deviation, and the exponential measures described below.[5]

7.4.1. Gini coefficients

The Gini coefficient can be defined by referring to the Lorenz curve. It is the ratio of the area between the Lorenz curve and the diagonal (or line of equality), compared to the total area under the diagonal. The Gini coefficient equals zero when all people have the same level of wealth and equals one when one person receives all the wealth. In other words, the smaller the Gini coefficient, the more equal is the distribution. The Gini can also be computed as the ratio to the mean of half the average over all pairs (i, j) of absolute deviations of wealth (w) between households. Mathematically, the Gini coefficient can be expressed as:

$$G = \left[\frac{1}{2n^2\mu}\right]\sum_{i>j}^{n}\sum_{j}^{n}\left|w_i - w_j\right|$$

where n is the number of people in the population and μ is the mean of household wealth in the population.

The Gini coefficient is a summary of the differences between each household and all other households in the population. The differences are the absolute arithmetic differences, implying that a difference of USD 10 000 between two relatively high-wealth households contributes as much to the index as a difference of USD 10 000 between two low-wealth households.

An increase in wealth of a person with wealth above the median will always lead to an increase in the Gini coefficient, and a decrease in wealth of a person with wealth below the median will also always lead to an increase in the Gini coefficient. The extent of the increase will depend on the proportion of people that have wealth in the range between median wealth and the wealth of the households with the changed wealth, both before and after the change in wealth.

The Gini coefficient is sometimes criticised as being too sensitive to changes around the middle of the income distribution. This sensitivity arises because the Gini coefficient reflects the ranking of the population, and ranking is most likely to change the densest part of the distribution, which is likely to be around the middle.

The Gini coefficient is well defined when wealth values are negative, but estimates of the coefficient in this case may be greater than one. In this case, the Lorenz curve will lie below the horizontal axis, and the area between the curve and the line of equality may be greater than one. The Gini is one of the more commonly used measures in wealth analysis.

7.4.2. Coefficient of variation

Half of the square of the coefficient of variation ($\frac{1}{2}CV^2$) is defined for all values of wealth, but may be substantially affected by the inclusion/exclusion of just one very high person. The coefficient of variation is the ratio of the standard error to the mean.

7.4.3. Exponential measure

A less-known measure that is defined for zero and negative values is the exponential measure discussed by Wolfson (1997). This measure is computed as follows:

$$E = \sum_{i>j}^{n} p_i \exp(-y_i / \mu)$$

where p_i is the proportion of the population in the i-th group, y_i is the average wealth in that group, and μ is the overall mean.

7.4.4. Theil and Atkinson indices

For non-negative values of assets and debts, the Theil index is particularly useful where analysts wish to decompose the measure of inequality in a population into the inequality that exists within sub-groups and the inequality that exists between those sub-groups. The Atkinson indices, on the other hand, highlight that summary measures of inequality depend on the underlying assumptions made, and assist the user in varying some of those assumptions. For more information on these measures, the reader is referred to Chapter 6 of the 2011 *Canberra Group Handbook on Household Income Statistics* or to Cowell, 2011.

7.4.5. Comparison of summary measures

Tables 7.3 and 7.4 show the sensitivity of summary measures of inequality to the treatment of outliers at the low and high-end of the wealth distribution. In the second column of Table 7.3, the top and bottom 1% of the distribution are "shaved" from the sample based on weighted observations, while in the third column both the top 1% and the bottom 0.5% are shaved. The measures of wealth inequality and the mean are sensitive to this treatment; this implies that care must be taken when analysing wealth distributions, as varying conclusions may be reached depending on which measure is examined.

Table 7.3. **Effect of the treatment of outliers on summary measures of wealth inequality in the United States, 2007**

	Raw	Shave top and bottom 1%	Shave top 1% and bottom 0.5%
Mean	556 846	378 215	559 361
Median	120 780	120 780	123 800
Gini	0.82	0.74	0.81
½CV^2	18.1	2.4	14.6
P90/P10	30 000	3 369	3 061
P75/P25	26.3	24.5	24.3
P90/P50	7.6	7.0	7.4
n	4 418	3 698	4 359

Source: 2007 Survey of Consumer Finances.

Table 7.4. **Effect of the inclusion and exclusion of households with zero and negative wealth and of top and bottom coding in the United States, 2007**

	Raw	Bottom 1%	> 0	Top 1%	Both 1%
Mean	556 846	557 321	618 403	453 526	454 001
Median	120 780	120 780	154 700	120 780	120 780
Gini	0.8	0.8	0.8	0.8	0.8
½CV^2	18.1	18.1	16.2	3.2	3.2
P90/P10	30 000	30 000	167	30 000	30 000
P75/P25	26.3	26.3	12.6	26.3	26.3
P90/P50	7.6	7.6	6.5	7.6	7.6
n	4 418	4 418	4 087	4 418	4 418

Source: 2007 Survey of Consumer Finances choice.

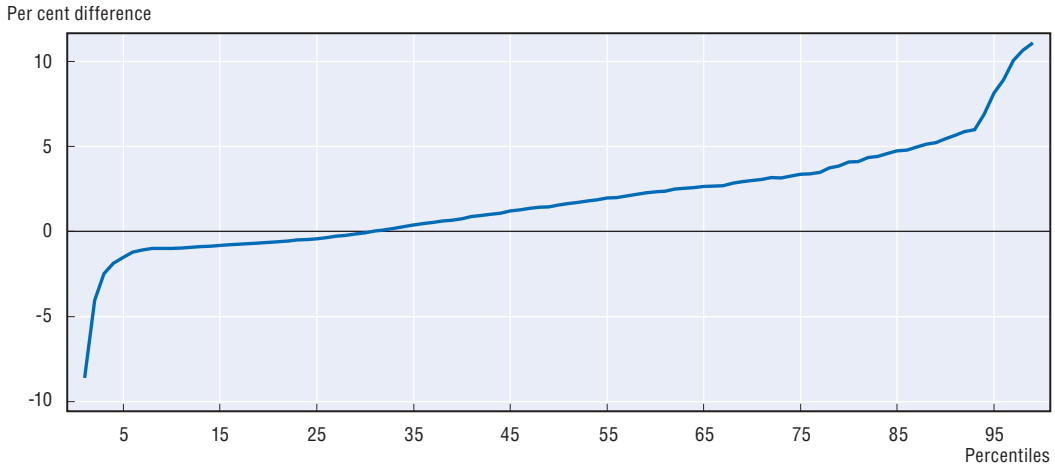
Apart from shaving, one may decide to top or bottom code wealth values above/below a certain threshold. This has no influence on the median, but affects inequality measures that are more sensitive at the top of the distribution (Table 7.4). Alternatively, zero and negative values could be excluded. However, in the data set used in this example, omitting zero and negative values result in 7.5% of the population being excluded. Since negative and zero values are much more common in wealth statistics than in income statistics, this approach excludes a significant proportion from the bottom of the distribution and may have a serious impact on any analysis.

Choice of summary measures

Rather than considering just one summary measure, analysts will often look at a range of measures to see whether they give a consistent indication about wealth inequality, especially if there is no Lorenz dominance among the distributions compared. Comparisons can be made for the same population over time, or between different populations at a point in time.

A model-free way to do this would be to compare CDFs or "quantile-difference plots" (Q-D). A Q-D plot shows the numerical difference in two distributions at each percentile point of the distributions, as a percent of the values for one of the distributions (Kennickell 1999, 2009). Figure 7.5 shows the difference between wealth and income as a share of income at each percentile of the population. This indicator can also be computed for different wealth measures, either at a different point in time or for different countries. If the two distributions are identical, the plot would appear as a horizontal line at zero.

Figure 7.5. **Relative quantile-difference plot for the United States, 2007**



Note: This figure shows a steep upward sloping curve at low percentiles, where wealth quantiles are lower than corresponding income quantiles. The equality between income and wealth levels occurs around the 34th percentile. The positive upward slope for most of the percentile values above the 34th percentile is followed by a steep increase for the highest percentiles. Both patterns reflect the higher dispersion of net worth, and indicate the presence of very large values for net worth at the top of the distribution.
Source: 2007 Survey of Consumer Finances.

7.4.6. Ratios and percentage shares

Presenting shares or ratios are a common way of summarising many aspects of household wealth. They can be useful to show change over time and to compare different geographic areas or population groups, and can refer to asset and debt participation rates, portfolio composition (percentage share of asset values on total assets), debt intensity (share of indebted households with a specified debt-to-asset ratio [leverage ratio], loan-to-value ratio, or debt-to-income ratio), wealth distribution (quintile share ratios, share of wealth held by top percentage of the households). Tables 7.3 and 7.4 provide examples of ratios, and Table 7.6 of shares.

Table 7.5. **Mean and median values of the main components of household wealth in Italy, Germany and the United States**

Euros

	Italy			Germany			United States		
	Mean	Median	Difference	Mean	Median	Difference	Mean	Median	Difference
Total assets	*178 437*	*123 728*	*54 709*	*143 177*	*45 002*	*98 175*	*310 200*	*124 567*	*185 633*
Financial assets	19 101	6 416	12 685	19 353	2 206	17 147	84 173	3 653	80 520
Main residence	126 022	91 650	34 372	91 794	0	91 794	166 615	101 553	65 062
Other assets	33 314	0	33 314	32 031	0	32 031	59 412	0	59 412
Total debt	*7 124*	*0*	*7 124*	*36 330*	*0*	*36 330*	*91 051*	*38 357*	*52 694*
Mortgage	6 048	0	6 048	20 455	0	20 455	62 077	16 804	45 273
Net worth	*171 313*	*113 707*	*57 606*	*106 847*	*23 629*	*83 218*	*219 149*	*42 010*	*177 139*

Note: Most of financial assets and other debt for Germany are recorded only for values exceeding EUR 2 500.
Source: Luxembourg Wealth Study.

Table 7.6. **Share of households by type of assets and debt in Italy, Germany and United States**

Percentages

	Italy	Germany	United States
Financial assets	83.7	57.8	91.1
Risky assets	22.5	n.a.	34.3
Other assets	22.4	15.1	19.5
Total debt	27	45.2	82.4
Housing debt	14.7	25.2	53.6
Other debt	16	25.5	71.7

Note: Most of financial assets and other debt for Germany are recorded only for values exceeding EUR 2 500.
Source: Luxembourg Wealth Study.

Table 7.7. **Inequality measures and top shares by type of assets and debt in Italy, Germany and the United States**

	Italy	Germany	United States		Italy	Germany	United States
	Total assets				Total debt		
Gini	0.6	0.7	0.7		0.9	0.8	0.7
½CV^2	1.0	3.0	7.6		4.9	5.1	2.7
Top 10%	40	53	61		88	75	52
Top 5%	27	38	49		66	55	37
Top 1%	10	18	25		24	27	16
	Net worth						
Gini	0.6	0.8	0.8				
½CV^2	1.0	3.6	13.4				
Top 10%	41	58	70	NW > 0	90.1	67.7	74.7
Top 5%	27	42	58	NW = 0	6.0	18.2	3.6
Top 1%	10	19	31	NW < 0	4.0	14.1	21.6

Note: Most of financial assets and other debt for Germany are recorded only for values exceeding EUR 2 500.
Source: Luxembourg Wealth Study.

7.5. Adjusting for price differences

In order to make comparisons over time, wealth data should be adjusted for price changes. Similarly, when comparing wealth data across geographical areas in the same time period, adjustment for differences in price levels across regions should be made. Estimates adjusted for price changes over time are often referred to as "real" measures (e.g. "real" net worth or net worth "in real terms").

If there is no adjustment for price differences, the validity of such comparisons may be undermined. The need to adjust for price differences increases with the magnitude of these differences. Hence, when comparing wealth 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.

The next section describes the main issues that should be addressed when adjusting wealth for price differences over time, or over regions or groups of households. Consultation should be undertaken with the statistical office about the availability of suitable price indices for these purposes.

7.5.1. *Adjusting for price changes over time*

To obtain valid estimates of changes in "real" levels of wealth over time, wealth data need to be deflated, or adjusted by appropriate price indices. The price indices to be used depend on the analysis to be undertaken.

When time series of income estimates are deflated, it is usual to use a price index that measures the prices of goods and services that households consume. The deflated income data then provide an indication of changes in real living standards that can be supported by household income over time. Consumer price indices are appropriate price indices for this purpose, although some adjustments may be needed to obtain a better match between the scope of the income estimates and the scope of the consumer price index.[6]

When the analysis is focused on wealth, then it is appropriate to deflate aggregate estimates of wealth with the same consumer price index (or similar deflator) used to adjust income estimates.

It is also possible to adjust the value of non-financial assets according to changes of prices of those assets, if the focus of the analysis is the assets themselves rather than the ability of wealth to support consumption. For example, the value of dwellings could be adjusted by a dwelling price index, while the value of consumer durables could be adjusted by a consumer durable index. However, there are no price indices reflecting the prices of financial assets or liabilities, in the sense of the value of an underlying single unit of these variables. Therefore, it is possible to deflate them only by using a more general price index of the goods and services that might be purchased with a corresponding amount of cash. The consumer price index might be used for this purpose, or an aggregate index of producer prices, or a more broadly based indicator of prices in the economy, such as the implicit price deflator of Gross Domestic Product or domestic final demand, which are available from the national accounts.

To consider the appropriateness of price indices for deflating wealth estimates, analysts need to consider the purpose of the analysis to be undertaken and to consult with the compilers of the price index that is used. The index compilers will also be able to provide more information on the availability of price indices for types of households or by region, where this may be of relevance.

7.5.2. *Adjusting for price and currency differences between countries*

In some studies, wealth data are presented in relative terms, e.g. showing ratios or percentages. Such presentations are not made in monetary terms and thus the question of adjusting for differences in price levels does not arise. Similarly, when comparing such distributions across countries there is no need to convert data to a common currency. However, analysts and policy makers are also interested in the relative standards of living in different locations in real terms.

For comparisons between countries in the same time period, monetary data should be adjusted to take into account differences in price levels and currencies. To this end, a measure of the relative prices needs to be applied, such as purchasing power parity (PPP). The PPP compares the price of a product or a group of products in one location to the price of the same product or group of products in another location and at the same period in time, and thus can be used to measure the relative purchasing power of incomes in the locations compared. For example, if prices in region A are 10 % higher than in region B, the same nominal income will be worth more in region B than in region A. To make "real comparisons, it is hence necessary to adjust for these price differences.

PPPs have been developed primarily to facilitate international comparisons of economic data, in particular national accounts and their aggregates. They are therefore usually compiled at country level, and cannot be broken down by regions or types of households. However, in some (usually larger) countries, PPPs may be compiled also at a regional level; in other countries, PPP surveys that allow the construction of regional aggregates may be conducted on an *ad hoc* basis.

In most countries, PPPs are compiled to cover a wide range of goods and services beyond household consumption. When PPPs for individual consumption by households are available, they should be used for wealth (and income) distribution, since PPPs for GDP also include in the basket of goods and services used for calculation government services, investment goods and construction projects. PPP sub-indices that exclude goods and services such as health care, education and housing, which may be purchased by households rather than provided by government in different countries, may also be available.

PPPs are regularly compiled by the OECD and Eurostat for their member countries and some additional countries. PPPs are compiled less frequently by the World Bank for a wider range of countries as part of the International Comparison Programme. When PPPs are not available annually, those which are as close as possible to the years for which the household data are to be compared should be used.

For international comparisons, it is highly recommended that PPPs be used, rather than exchange rates, for conversion into a common currency. This is because exchange rates are often influenced by more factors than just the relative price levels in the two countries concerned. When an economic aggregate is converted using PPPs for household consumption expenditure, the conversion is made on the basis of the goods and services likely to be purchased by households for consumption purposes, as well as by taking account of differences in national price levels. This allows comparisons in real terms, or purchasing power, of the converted amounts.

The PPPs are compiled by comparing the average price of groups of goods and services in different countries. However, it may not always be possible to obtain identical products in different countries, or the products found may be of different economic importance in the countries compared. Thus, PPPs for countries with similar structure and income level may provide fairly good indices for adjusting wealth (and income) data, while the accuracy of the PPPs is likely to decrease the more the countries differ in structure and income level.

Differences in climate and natural resources also play a role, e.g. heating is important in colder climates, while air-conditioning is not. Food is another area where comparisons are difficult, since a staple in one country may be a somewhat exotic article elsewhere.

7.5.3. Wealth indicators

Discussions continue on which type of household wealth indicator is more useful on a regular basis. This section draws on country experiences to identify those indicators that are considered to be the most useful for such comparisons.

Studies on wealth have focused on examining the portfolio composition of households, with a particular focus on participation rates and values (assets and liabilities). This type of analysis also considers the incidence of debt as well as the intensity of debt (debt burden of indebted households). Other studies have looked at the distribution of wealth, savings and access to finance, intergenerational transfers, and pension and insurance policies. These indicators could be presented for different household types, e.g. according to

household size, age of head of the household, education level, family type, employment status, tenure status, or income or wealth decile group.

Common indicators that have been used are as follows:

- Median and mean values. Median is a more robust measure of central tendency, but when presented alongside the mean is also an indication of the inequality of the distribution.
- Share of households by type of assets and debt.
- Structure of assets and debts.
- Debt-to-income ratio.
- Debt-to-asset ratio (loan-to-value ratio).
- Debt service-to-income ratio.

To measure wealth distribution, indices are borrowed from the income literature. Care must be taken, as not all indices are defined for negative or zero values:

- Gini coefficient, Lorenz curves, relative mean deviation, $\frac{1}{2}CV^2$ (half of the square of the coefficient of variation).
- Theil coefficient (only for positive values).
- Share of households with negative/zero and positive wealth.
- Wealth shares.
- Ratio of mean to median.
- Percentile and quantile ratios.

These indicators can be used in addition to those on income to assess the economic well-being and economic adequacy of households.

Examining low-wealth and high-wealth individuals may call for different types of measures. High-wealth individuals are best captured using measures of top shares. Low-wealth individuals can be identified using the concept of asset poverty. Asset poverty can be defined as a household's wealth that is insufficient to provide for basic needs over a specified period of time (e.g. three to six months). By taking into account wealth and not just income, this measure provides a more accurate account of the financial state of the household (Shapiro and Wolff, 2001; Brandolini et al., 2010). Asset poverty is generally more prevalent and persistent than income poverty.

7.6. International statistical comparisons

The value of statistical comparisons across countries is illustrated below by presenting some of the findings from research based on the Luxembourg Wealth Study. For a detailed description of the study, see Sierminska et al. (2006).

The analyst needs to spend some time thinking about the following issues in order for the comparisons to be sound: whether the wealth definitions and unit of analysis are comparable; whether price adjustments have been made; whether outliers have undergone similar treatment; what are the key differences in data collection methods; the effect of pension wealth (and other missing components) on the results; and other institutional differences that may impact on the results. All of the analytic measures described in the previous section can be useful in making these comparisons.

7.7. Summary

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

- A life-cycle perspective is particularly important when analysing wealth data. Young individuals at the beginning of their working careers tend to have low (or negative) levels of wealth. As they grow older, they save and accumulate wealth, creating a stock that can be drawn upon during retirement. As a result, older households near retirement are expected to have wealth levels close to the maximum of their life-time. As they enter retirement, individuals begin decumulation and use up at least some of their wealth in order to supplement their income and maintain their desired level of consumption.
- The availability of data about population sub-groups supports analysis to identify vulnerable groups (e.g. those that are asset-poor), assess the adequacy of retirement portfolios, and gain a better understanding of the onset of a crisis and its impact on economic well-being.
- The household is the main unit of analysis of household wealth, since the number of households with particular characteristics is generally the focus. However, where there is interest in analysing wealth data on the basis of the number of persons in households with particular characteristics, the unit of analysis is the person and person-weighted estimates are needed.
- The mean is frequently used to measure wealth levels. For some purposes, means for a household variable may be required with respect to all people in a population group, including children. Such measures are referred to as person-weighted measures and are the preferred approach when analysing equivalised household wealth.
- An alternative measure of central tendency is the median. Compared to the mean, the median is a more stable and robust measure. The mean and median together provide a simple indicator of wealth dispersion.
- Wealth dispersion can also be described using frequency distributions, cumulative distribution functions, Lorenz curves, and quantile-based measures such as percentile ratios and the percentage of wealth held by the richest 1% of the population.
- In the case of household income, equivalence scales are widely used to standardise the estimates with respect to household size and composition, while taking into account the economies of scale that arise from living together in a household, in particular sharing dwellings. The same approach can be taken when analysing wealth as a potential stream of income that can be used to finance consumption and contribute to economic well-being in the household. Failure to equivalise could provide a misleading picture of the structure of the distribution of wealth, for example by overstating the share of single-person households at the bottom of the wealth distribution.
- There are a number of inequality indices that can be useful in analysing household wealth, including the Gini coefficient, the coefficient of variation and the exponential measure.
- In order to make comparisons over time, data should be adjusted for price changes. Similarly, when comparing data across geographical areas in the same time period, adjustment for differences in price levels across regions should be made. For international comparisons, prices should be adjusted by the use of purchasing power parities rather than exchange rates.

Notes

1. The distinction between counting households or individuals can be illustrated by the statement that "the top 10% of the wealth distribution hold 66% of total wealth". If referring to households, this would mean that the top 10% of households, who might constitute more or less than 10% of the population, hold 66% of the total wealth, whereas if the statement refers to persons, it means that the top 10% of persons hold 66% of the total wealth.
2. To identify the median record, the population is first ranked in ascending order according to the data item of interest. For household-weighted measures, the weights of the records are then accumulated until half the households are accounted for. The record at which this occurs is the median record, and its value for the data item of interest is the median value. For person-weighted measures of household variables, the household weights are multiplied by the number of persons in the household before accumulation. Accumulation takes place until half the number of persons is accounted for, and the record at which this occurs is the median record.
3. Kernel density estimates can easily be calculated in Stata using the command kdensity or akdensity (for an adaptive kernel density estimator).
4. If the Lorenz curves of two groups cross over, there is no Lorenz dominance and no generally accepted way of defining which of the two groups has the more equal distribution.
5. Inequality measures differ in their sensitivity to different parts of the distribution. The coefficient of variation is more sensitive to the top, the Gini is more sensitive to the middle, and the exponential measure is more sensitive to the bottom.
6. For example, when the income definition chosen is disposable income, the price index should capture those consumption items that can be purchased out of disposable income; if income is measured net of local government/property taxes, then local government/property taxes should not appear in the price index; or if a broader definition of income is used, such as including imputed rent, social transfers in kind or income from own account production, then ideally the weights of the price index should be expanded to reflect the consumption of the goods and services obtained in these ways as well as the consumption of goods and services purchased in the market.

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Chapter 8

Dissemination

It can be challenging to determine how to present wealth data in a way that is useful to a variety of users, particularly because of the importance of this data in understanding the economic situation in each country. This chapter provides guidance in this field.

8.1. Types of dissemination

When disseminating wealth data, it is important to take into account the needs of the various users of the data. In order to meet this challenge, it is helpful to have a multi-faceted dissemination strategy with a variety of products to meet the needs of the different user groups.

Generally, the data products based on wealth data will fall into three broad types – analysis, data tables and micro-data. Ideally, products from any individual wealth data program would cover all three types (Box 8.1).

Box 8.1. **Data products from Australia's 2009-10 Survey of Income and Housing**

With the release of wealth data from the 2009-10 Survey of Income and Housing (SIH), the Australian Bureau of Statistics ensured that there was a wide variety of products available to cater to a large variety of users. These included:

- Media release – Short high-level summary (less than 2 pages) of the key findings from the data being released. Ideally suited for the media or the casual user who is looking for a few interesting results. No tables or graphs are included in such a release.
- Summary of findings – Aimed at users looking for more detailed analysis than the media release but still oriented to a general audience. This summary is less than 10 pages in length but covers the broad range of data available, and includes a few graphs and summary tables.
- Feature article – Analysis on a specific sub-population, in this case the *Low economic resource household,* exploiting the unique nature of the wealth data. Of interest to a fairly broad audience and provides an example of the type of in-depth analysis that can be achieved using wealth data.
- Data publication – Contains a number of detailed data tables covering the breadth of the data from the survey. Of interest to users who want to know more about a specific sub-group of the population.
- Micro-data file – A set of micro-data files that are screened for confidentiality (to ensure that an individual respondent cannot be identified) and can be made available to more sophisticated groups of users who want to conduct their own analyses. This is accompanied by a user's guide describing the content of the file in detail.

Readers interested in learning more about the output from the wealth component of the 2009-10 SIH should consult the ABS website (*www.abs.gov.au*) and search for *Household Wealth and Wealth Distribution, 2009-10*.

8.2. Analysis

Generally, two types of analyses will be produced from a wealth survey: those oriented to a general audience, and more in-depth analyses of interest to academics or policy makers. The more general analysis is often made available at the time of the initial release

of the wealth data set in order to publicise the release and highlight key findings. In-depth analysis usually takes more time and is often conducted by the more sophisticated users once the data are released by the organisation that conducted the survey. These analyses will be produced by a variety of users in various organisations and may be made available to the general public depending on the mandate of the individual or group sponsoring the analysis. In addition, the broad distribution of analysis based on the wealth data can be used to educate users on the correct interpretation of the wealth data.

8.2.1. Data tables

Data tables are one way to make a variety of data available to users who may not have the analytical skills, resources or data access required to produce their own output from the micro-data file of wealth data. Often the tabulated data are produced in a publication or in an on-line database to allow users to browse the data tables and choose those statistics that are of more interest to them. This is a way of providing broad access to a wide variety of data to a large number of users.

As noted in Chapter 3, there are many ways in which household wealth data can be grouped to look at different sub-sets of the population. Table 8.1 provides an example of how data for various groups can be presented in a table to provide a general picture of one aspect of wealth data, in this case net worth.

Table 8.1. **Family net worth by selected characteristics of families in the United States**

Thousands of 2010 US dollars

Family characteristic	2004		2007		2010	
	Median	Mean	Median	Mean	Median	Mean
All families	107.2	517.1	126.4	584.6	77.3	498.8
Percentile of income						
Less than 20	8.6	83.6	8.5	110.3	6.2	116.8
20-39.9	38.8	139.8	39.6	141.3	25.6	127.9
40-59.9	82.8	224.0	92.3	220.6	65.9	199.0
60-79.9	184.0	392.9	215.7	393.9	128.6	294.0
80-89.9	360.9	563.7	373.2	638.1	286.6	567.3
90-100	1 070	2 925	1 172	3 475	1 194	2 944
Age of head (years)						
Less than 35	16.3	84.6	12.4	111.1	9.3	65.3
35-44	79.9	345.2	92.4	341.9	42.1	217.4
45-54	167.1	625.8	193.7	694.6	117.9	573.0
55-64	290.0	976.4	266.2	986.7	179.4	880.5
65-74	218.8	795.1	250.8	1.064.1	206.7	848.4
75 or more	187.7	607.7	223.7	668.8	216.8	677.9
Family structure						
Single with child(ren)	24.0	149.9	24.4	187.4	15.5	143.7
Single, no child, age less than 55	24.2	179.8	26.3	217.2	14.6	117.5
Single, no child, age 55 or more	134.0	405.8	150.7	408.9	102.0	391.6
Couple with child(ren)	140.6	580.5	147.5	629.1	86.7	555.7
Couple, no child	240.2	868.2	236.2	998.6	205.7	864.8
Education of head						
No high school diploma	23.7	157.1	34.8	149.7	16.1	110.7
High school diploma	79.1	227.2	84.3	263.8	56.7	218.1
Some college	79.8	355.7	88.8	384.5	50.9	272.2
College degree	260.2	982.3	298.6	1 54.5	195.2	977.7

Table 8.1. **Family net worth by selected characteristics of families in the United States** *(cont.)*

Family characteristic	2004		2007		2010	
	Median	Mean	Median	Mean	Median	Mean
Race or ethnicity of respondent						
White non-Hispanic	162.2	648.3	179.4	727.4	130.5	654.5
Non-white or Hispanic	28.5	176.2	29.7	240.3	20.4	175.9
Current work status of head						
Working for someone else	77.4	310.7	98.5	369.1	55.2	298.8
Self-employed	402.2	1 639.9	407.3	2 057.4	285.6	1 743.7
Retired	160.9	539.8	169.9	569.1	151.1	485.3
Other not working	13.6	186.7	6.0	130.1	11.9	137.5
Current occupation of head						
Managerial or professional	227.3	995.6	258.8	1 174.8	167.3	1 047.0
Technical, sales, or services	51.7	284.8	77.0	325.8	32.6	219.1
Other occupation	65.0	169.8	68.4	201.3	46.6	162.8
Retired or other not working	127.9	485.0	135.6	500.6	93.5	410.4
Region						
Northeast	186.1	655.0	167.1	684.6	119.9	615.2
Midwest	132.4	503.8	112.7	491.2	68.4	399.8
South	73.4	401.0	102.0	525.9	68.2	440.8
West	109.3	605.3	164.1	695.4	73.4	599.9
Urban status						
Metropolitan statistical area (MSA)	120.1	582.0	138.8	652.6	78.4	553.6
Non-MSA	68.2	203.5	82.0	253.9	74.5	236.1
Housing status						
Owner	212.6	720.9	246.0	817.6	174.5	713.4
Renter or other	4.6	62.3	5.4	74.7	5.1	57.2
Percentile of net worth						
Less than 25	2.0	-1.6	1.3	-2.3	..	-12.8
25-49.9	50.2	54.2	56.8	60.9	32.2	35.6
50-74.9	196.7	213.7	230.8	238.6	157.2	168.9
75-89.9	586.7	608.4	601.2	616.7	482.7	527.9
90-100	1 645.5	3 591.1	1 991.9	4 176.9	1 864.1	3 716.4

..: Less than 0.05 (USD 50).

Source: United States Federal Reserve Bulletin, June 2012 article, "Changes in US Family Finances from 2007 to 2010", Table 4, pp. 17-18.

As the power of desktop computing increases, so has the potential for statistical organisations to provide users with the ability to customise the tabular output to meet their own specific requirements through the use of self-help web-based table-builder products. Often the starting point of such products is aggregate data at the lowest level of detail possible from the micro-data file. Then users are provided with options on how to build their own tables based on the themes or variables of interest. One of the advantages of starting with aggregate data, rather than a micro-data file, is that less computing power is needed to group aggregate data than to produce tabulations for large micro-data files. Another advantage to this approach is that the detailed aggregate data can be screened for confidentiality prior to being made available to the general user population. An example of this type of product is the OECD.Stat web browser, which provides a single online platform for access to statistical databases from the OECD (*http://stats.oecd.org*).

8.2.2. Micro-data files

Some users will prefer to conduct their own analysis of the wealth data. In these situations, the main challenge for the organisation that has produced the wealth data is making the data files available with the greatest level of information possible, while still ensuring the confidentiality of the individual survey respondents. Dissemination of wealth data in light of this trade-off can prove to be a challenging task, as wealth distributions are heavily concentrated on specific individuals. However, several solutions in this field enable dissemination with a sufficient level of information. The use of Statistical Disclosure Control techniques, a set of statistical methods that analytically address this trade-off, is one of these solutions, and has been recently explored by Eurostat.[1] The creation of safe centres for micro data access also allows wider dissemination (see Box 8.2). The wide range of solutions available in this field is currently being reviewed by an OECD Expert Group on micro data dissemination that will lead to the publication of some guidelines in this field.

Box 8.2. **Statistics Canada's Research Data Centres**

Data from the periodic wealth surveys conducted by Statistics Canada are made available as part of the collection of data sets in the Research Data Centres (RDCs). The RDCs are part of an initiative to strengthen Canada's social research capacity and to support the policy research community. RDCs provide researchers with access to micro-data from population and household surveys in a secure university setting. The centres are staffed by Statistics Canada employees, and operated under the provisions of the Statistics Act in accordance with all its confidentiality rules: they are accessible only to researchers with approved projects who have been sworn in under the Statistics Act as "deemed employees". RDCs are located throughout the country, so researchers do not need to travel to Ottawa to access Statistics Canada micro data.

To find out more about the activities of RDCs, please visit the Canadian Research Data Centre Network (CRDCN) website *www.rdc-cdr.ca*.

In addition, extensive documentation must be provided to the researchers, including but not limited to the survey questionnaire, detailed description of the survey methodology and detailed description of all variables in the data file (including code sets or ranges of the values of each variable).

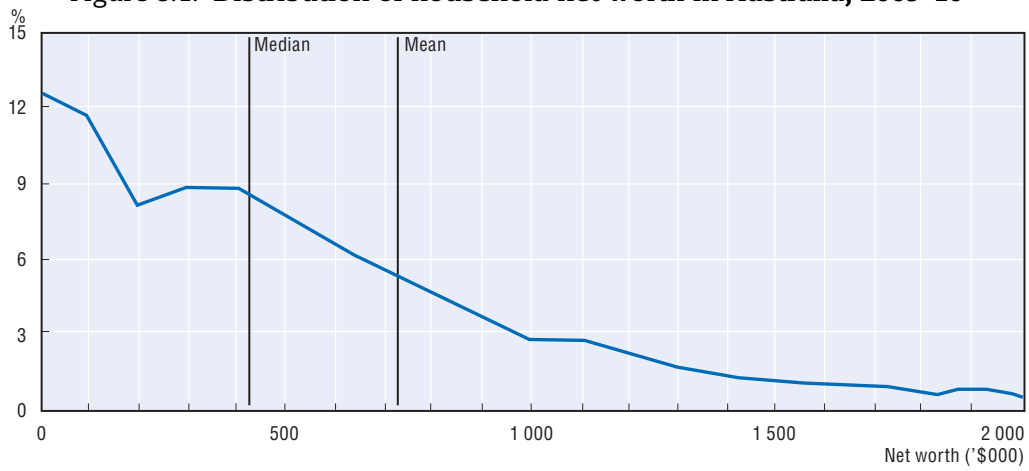
8.3. Specific issues concerning the dissemination of wealth data

In this section, some of the specific issues that may arise when disseminating wealth data are discussed.

8.3.1. Characteristics of the distribution of wealth data

As was discussed in detail in the previous chapter, the specific features of wealth distribution (e.g. negative wealth, concentration of wealth in a relatively small number of observations) can present a challenge to users (Figure 8.1). It is therefore important that the documentation provided to users includes a description of the distribution of the wealth data so it can be taken into consideration when using the data. Also, as part of the initial release of the data, analysis of the distribution of the wealth data must be front and centre in the material provided.

Figure 8.1. **Distribution of household net worth in Australia, 2009-10**



Note: Households with net worth between $ 150 000 and $ 2 050 000 are shown in $ 100 000 increments.

8.3.2. On trends in wealth data

Most wealth surveys are conducted on a periodic basis, often with a gap of several years between each iteration of the survey. This can cause challenges when determining and explaining any trends in the data. It is important that any trend analysis is accompanied by contextual information that will help the user understand these trends. For example, have there been any economic upturns or downturns that might explain changes in wealth over the time period covered by the data? In addition, it is important when analysing trends in wealth data that any conceptual changes introduced over time which may have affected the final output are explained to users. In some cases, this may result in a break in the time series, where previous data may no longer be comparable to the current data. This case is important so that the organisation producing the wealth data does everything it can to prevent comparisons of data before and after the break in the series. For example, Statistics Canada has wealth data going back to the 1970s, but the wealth data produced since 1999 include an estimate for the value of pensions. As a result, when the 1999 data was released, earlier wealth data was not referenced, since it was no longer comparable with the newer wealth data. In subsequent releases of new wealth data, the trend starts in 1999.

Not all changes in the wealth concepts covered by a survey will be significant enough to cause a break in the time series, but all changes must be documented so that users can decide for themselves if they feel comfortable comparing data over time for their purposes. In addition, it is highly desirable to post revisions to data if errors are detected at a later point in time.

8.3.3. Longitudinal wealth data

Dissemination of longitudinal data presents many challenges. It normally takes multiple iterations of the survey of create a true longitudinal data set (at least 3 waves of data), and the techniques and skills required to analyse the data are often limited to a fairly small group of researchers. Normally, the dissemination of longitudinal data involves making the data set available to researchers. However, survey organisations will often sponsor various analyses of the longitudinal data, since the resulting research papers are a way to signal the availability of the longitudinal data to the research community and to highlight the analytical uses of the data, as a way of inspiring other researchers to begin to use the data.

8.3.4. Dissemination guidelines

Useful guidelines for the general presentation and dissemination of statistical output are available in a number of publications, most notably those by the UNECE (UNECE, 2009a and 2009b). Much of what is provided here is taken from Section 6.11 of the *2011 Canberra Group Handbook,* which provides best practices for the dissemination of income data, and which are also applicable to wealth data. As with income data, the complexity of wealth data means that the data provider must provide in-depth information on the data (i.e. metadata) and guidance in the appropriate use of the data, such as:

- Definitions of the wealth concepts used, including:
  - Glossary of all the wealth components included in the output, including clear, detailed definitions of any derived variables. The definitions should include enough detail so that users understand the input to the calculation of the derived variable, allowing them to interpret the survey estimates appropriately.
  - Description of the measured and non-measured components of wealth. It is important that users know which components were directly measured in the survey and which were not. One key non-measured component could be information on the value of a respondent's pension: if this information is derived based on a combination of survey data and information on the pension plan(s) the respondent is covered by, it is important to provide the methodology on how the value of the pension was calculated.
- Basic information about the sources of the data, including:
  - Whether wealth data is from a sample survey, administrative data or a combination of the two. If a combination of different sources is used, there must be clear documentation on each source for the various wealth components being disseminated, and an indication of the data source used to produce them. For administrative data sources, it is also important to describe the original reason for collecting the administrative data and any strengths or limitations of the data relevant to the data being disseminated.
  - Specific information about the data source, such as the statistical units used – individuals, families or households; reference period(s) – the time period(s) covered in the data being disseminated; the survey population – who is included, and equally important, excluded in the survey population. For example, does the data source include the entire population or only a subgroup of the population, such as a specific age group.
  - Any background information on the survey or administrative data source, such as questionnaires, detailed file layouts of administrative data sources or interviewer instructions.
- The survey methodology, including:
  - Summary information on the survey methodology, in a form readily available for all users. For example, if there is a general web page for the survey, there should be a link on the main page to information on the methodology.
  - Detailed documentation on the survey methodology should be made available to users at the time of the initial data release or if that is not feasible, soon thereafter. While important for data users, this documentation will also prove invaluable in the future, considering the often sporadic nature of wealth surveys, which makes it difficult for an organisation to ensure continuity of staff working on subsequent rounds of the survey. Some of the information that should be included are:
    - Sample size and design, including whether a probability sample has been used (or alternatively whether random walk or quota methods were applied); and coverage of

the survey population in the sampling frame and whether the design was single stage or involved some clustering.

- Imputation, including how any imputation was done, the percentage of imputed information, including the number of incomplete units for each wealth aggregate and the percentage of the wealth amount that was imputed. This is particularly important for wealth data, since non-response varies by wealth categories. The results of any studies conducted on the impact of imputation on the data should be included.
- Procedures taken to protect data confidentiality. Wealth is often concentrated in a relatively small number of observations, which can cause problems in protecting the confidentiality of the individual survey respondents when disseminating the data. It is important that users are informed of any special procedures implemented to protect confidentiality and of the impact of these procedures on the estimates.
- Comparability of the data over time. 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 administrative records, it is important to provide users information about any changes in the administrative 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 time period or changes in survey concepts, then it is important to mention these changes in the documentation accompanying the release of the data. Ideally, data in a time series should be adjusted to ensure that the data are comparable over time, but often it is not possible to quantify the precise effect of these changes.
- Guidelines on the use of the wealth data. In addition to detailed descriptions of the variables available, survey organisations should make available any information that could help users in using and interpreting the survey data. For example, if there are data manipulations that are often performed by some users, such as creating different aggregates or custom-derived variables, the survey organisation should endeavour to make the computer code for these manipulations available to all users. Making available the various analyses done using the data in the past is another way of educating users on how to interpret the data.

- Information on data quality. Information about the quality of the wealth data being disseminated should be made available to users, including, but not limited to, information on:
  - Sampling errors. Where information is from probability samples, an indication of sampling error should be provided. As a minimum, the relative standard error (RSE), 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.
  - Suppression of unreliable data. While it is recommended that data 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.[2] In the case of complex designs or indicators, the standard errors may not be readily available for all breakdowns. In this case it can be appropriate to use the number of underlying observations instead. For example, if it was found that estimates with an acceptable standard error normally were based on at least 30 observations, then any estimates based on fewer than 30 observations would be suppressed.
  - Response errors. These may be due to many factors, including faulty design of the questionnaire, interviewers' or respondents' misinterpretation of questions, or

respondents' lack of knowledge/records, or faulty reporting. If there is information available on the type of response errors that may have occurred in a survey, this should be provided in the user documentation.

- Non-response errors. 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 income groups had higher non-response rates) and, in the case of time-series data, if the non-response pattern is different now than in the past. This is particularly important for wealth surveys, since it is difficult to convince high-wealth households to respond to these. For correct interpretation of response rates, it is useful to provide information on whether substitutions were allowed.
- Effect of large values. Wealth data 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 of the fact that the results may include extreme values and that some estimates may be influenced by the presence or absence of these extremes.
- Comparability of data to other sources. As part of the validation of the wealth estimates produced, the estimates should be compared with other sources of wealth information, often the data available from the System of National Accounts. The results of any such comparisons, including explanations of any differences, should be provided to users.
- Comparability of the data over time. 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 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 time period or in survey concepts, then it is important to mention these in the documentation accompanying the release of the data. Ideally, data in a time series should be adjusted to ensure that the data are comparable over time, but often it is not possible to quantify the precise effect of these changes.

In addition, the documentation should include a description of any procedures put in place to adjust the estimates for data quality issues that make have arisen.

8.4. Summary

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

- When disseminating wealth data, it is important to take into account the needs of the various users of the data. In order to meet this challenge, it is helpful to have a multi-faceted dissemination strategy with a variety of products to meet the needs of the different user groups. Generally, the data products based on wealth data will fall into three broad types – analysis, data tables and micro-data. Ideally, products from any individual wealth data program would cover all three.
- The more general analyses produced from a wealth survey are often made available at the time of the initial release of the wealth data set in order to publicise the release and highlight the key findings. A more in-depth analysis usually takes more time and is often conducted by more sophisticated users once the data is released by the organisation that conducted the wealth survey. These analyses will be produced by a

variety of users in various organisations and may be made available to the general public, depending on the mandate of the individual or group sponsoring the analysis.

- Data tables are one way to make a variety of data available to users who may not have the analytical skills, resources or data access required to produce their own output from the micro-data file. Statistical organisations may provide users with the ability to customise tabular output to meet their own specific requirements through the use of self-help web-based table-builder products.
- Some users will prefer to conduct their own analysis of the wealth data. Often survey organisations will need to provide various ways for researchers to access the micro-data, for example by producing two versions of the data set. The first is a general micro-data file suitable for wide distribution after extensive screening to ensure confidentiality. The second is a more detailed micro-data file, with the results of analysis based on this file vetted to ensure confidentiality.
- At a minimum, the documentation provided to users of wealth data needs to include a description of the wealth distribution so that it can be taken into consideration when using the data. Also, as part of the initial release of the data, analysis of the distribution of the wealth data must be front and centre in the material provided.
- Any trend analysis should be accompanied by contextual information that will help the user understand the trends shown. For example, there may have been economic upturns or downturns that might explain changes in wealth over time. In addition, it is important to explain any conceptual changes introduced over time that may have affected the final output.
- Disseminated data should be accompanied by metadata to help users understand the data. The metadata should include definitions of concepts used, information about data sources, survey methodology, guidelines on use of the data, and data quality information including sampling error rates, non-response rates, etc.

Notes

1. *http://neon.vb.cbs.nl/casc/SDC_Handbook.pdf*.
2. Estimates can be divided into three groups: those with a low RSE, which can be used without restriction; those with a higher RSE, where the data should be used with caution; and the third group, where data with a very high RSE are suppressed.

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Chapter 9

Quality assurance for household wealth statistics

This chapter focuses on the quality assurance of statistics on household wealth to ensure their fitness for purpose. It provides guidelines on best practice methods of assessing quality. These guidelines complement those on measurement, analysis and dissemination in previous chapters. They are intended for use by both data producers and data users.

The importance of quality assurance frameworks as a tool for defining data quality and assessing the quality of a set of statistics is discussed. The roles of existing frameworks developed by international bodies – including the UNECE, Eurostat and the OECD – are noted and the key features of these frameworks are described. Their relevance to micro statistics on household wealth is considered. The recommendations that follow are intended to cover both micro (individuals or families) and macro data (e.g. National Accounts). Although the quality of aggregate statistics is largely determined by the quality of the components, which are usually constructed using micro data, the estimation procedures error evaluation procedures may differ between the two categories and thus may require different considerations.

9.1. Quality assurance frameworks

The concept of "quality" has many different meanings, depending on the context in which it is defined and in its intrinsic subjective nature. The International Organisation for Standardisation defines quality as the "degree to which a set of inherent characteristics fulfils requirements" (ISO 9100). In producing wealth data there are often multiple requirements, and accommodating them may require a trade-off in terms of the quality of information to support individual objectives.

Using OECD definitions, the quality of statistics can be defined by reference to the following seven criteria: *institutional environment*, *relevance*, *accuracy*, *comparability, coherence, timeliness* and *accessibility*. Drawing on existing quality frameworks, this section briefly describes the different dimensions of data quality that should be considered in assessing the quality of household wealth data.

Each dimension is illustrated by quality issues that often arise in existing household-level wealth data. These include: variations in the understanding or attention of survey respondents; the accuracy of asset valuations (e.g. market value may not be approximated, or the price volatility of some assets may lead to inconsistent valuation); the impact of sampling errors (e.g. distortions due to outliers, or bias in mean/median measures and in the degree to which the wealth distribution is skewed); gaps or other deficiencies in coverage (e.g. differences from the standard coverage for certain types of households, such as those containing immigrants or those regarded as institutional households); non-response and under-reporting of data; the extent of comparability with macro and other micro sources; and the availability of confidentialised unit record data for use by the general public.

9.1.1. Institutional environment

The first dimension of quality is the institutional environment. This dimension refers to the institutional and organisational factors that may affect the image of the data producer. The institutional environment can be evaluated by considering different attributes:

- Impartiality and objectivity are related with the data production and dissemination using standardised statistical procedures in such a way that these practices are objectively transparent.

- Independence refers to the extent to which the institution producing the statistics is independent from political pressure and other regulatory or administrative bodies, as well as from private sector operators and potential conflicts of interest. The mandate for data collection is defined as the extent of the legal act by which administrative organisations, firms and households may be compelled to provide data to the institution.
- The adequacy of resources is the extent to which the resources available to the agency are sufficient to meet its needs for the data production.
- Finally, the quality commitment is the extent to which processes, staff and facilities are in place for reaching the target quality levels.

Caution may be required when using wealth data from private operators who are not compelled by law to collect such data, as they may have an interest in providing a biased representation of reality; for instance, the evaluation of property prices by real estate agents may suffer from a conflict of interest.

9.1.2. Relevance

The *relevance* of data is the degree to which statistics meet the needs of actual and potential users. Relevance thus depends upon both the coverage of the required topics and the use of appropriate definitions or concepts.

As noted in Chapter 3, there are broader and narrower concepts of household wealth. In general, the definition of household wealth refers to the sum of real assets and financial assets less financial liabilities. However, more comprehensive concepts of wealth may include pension entitlements, various state-contingent assets, human capital and public resources. For some relatively extended wealth definitions, quality may suffer, particularly when there is a need to incorporate estimates of future situations in a present value, as is generally the case in estimating the present wealth value of future pension rights.

9.1.3. Accuracy

The concept of *accuracy* is related to the degree to which the data allow estimation of the population characteristics they are designed to describe. Accuracy has many attributes, and in practical terms there is no single aggregate measure to summarise it. Typically, this characteristic is more easily described in terms of sources of errors. In a survey, errors cause survey responses or distributions of survey responses to deviate from their true values.

The total survey error (TSE) refers to the accumulation of all errors that may arise in the design, collection, processing, and analysis of survey data. Data producers should optimally allocate the available resources to minimise TSE for investigating a limited number of relevant population characteristics. Insofar as possible, major sources of error should be analysed as part of the initial development of a survey, so that resources can be assigned efficiently to reduce errors to the extent possible, while still satisfying specified costs and timeliness objectives.

The sources of error in sample surveys can be divided broadly into two categories: sampling and non-sampling error. The former includes errors in estimating the interested population parameters that derive solely from the sampling or estimation process. Non-sampling errors mainly relate to measurement, data collection and processing; this class comprises quite diverse specific types of error that are usually harder to control than sampling ones. Administrative data collected for non-statistical purposes usually cover the

whole reference population; thus they are generally affected by non-sampling errors only. Similar considerations apply for census data.

For sample survey estimates, an evaluation of sampling errors can be carried out with the computation of classical standard errors of estimators. In simple cases, these can be obtained by means of algebraic formulas; more frequently, the adoption of complex sample designs suggests approximate solutions (e.g. the Jackknife Repeated Replication method or other replication methods).

Non-sampling errors can be classified in specification error, coverage error, non-response error, measurement error and processing error.

- Specification error occurs when the collected data do not include relevant economic variables for the objectives of the survey, where the relevant variables can only be approximated, or where the elaboration of questions and instructions are ambiguous.
- Coverage error exists when some statistical units belonging to the reference population are not included in the sampling frame or when the density of the sampled population differs in some other way from the reference population.
- Non-response error occurs because some households do not participate in the survey at all or they decline to answer or cannot answer individual questions in the survey.
- Measurement error arises during the data collection process and includes errors made by the interviewer or by the respondent, and errors in the survey instrument or other measurement protocols.
- Processing error includes errors emerging from data entry, data editing, or other computer programs or processes that affect the data after they are collected.

In budgeting a survey, there is a clear trade-off between sampling and non-sampling errors. Resources can be devoted to procuring a large sample and thus minimising random sampling error, or else concentrated on a smaller sample but with better interviewer controls, a higher response rate, more accurate data collection procedures, and other measures intended to improve the survey process.

Most often, in household sample surveys not all the units selected for the survey will actually be interviewed. The difference between the target and the actual sample reflects unwillingness to participate or other factors, with the most common one being difficulty in contacting the selected household. When non-response occurs, the estimators of the population parameters will generally be biased unless the pattern of non-response is completely random. In the absence of information to the contrary, it seems prudent to assume that there are reasons that some households are more or less likely to participate in a survey and that those reasons might be confounded with the variables of interest in the survey. In some surveys, substitutes for individual non-respondent cases will have been introduced into the sample. While use of replacements can allow a given realised sample size to be maintained, it does not address the possibility of bias. Where it is possible to closely match non-respondents and substitutes along key dimensions of a survey, there may be some ground for treating estimates using the sample with substitutes as approximately unbiased. Nonetheless, every effort should be made *ex post* to evaluate the reliability of any system of substitution.

Response rates may vary over different groups. For example, surveys in many countries often show lower response rates in urban areas, particularly the largest cities. Because older people usually are more likely to be at home than others, they are also more likely to be

reached and persuaded to do an interview than other types of households. Similarly, relatively wealthy people may be difficult to contact and less willing to participate.

Where auxiliary data are available on respondents and non-respondents, it is recommended that the sample survey designers estimate response rates at the level of the available classification variables and investigate the implications for bias in survey estimates. It is also important to consider differential co-operation across interviewers. *Paradata* (process data generated in the execution of a survey, such as the time and date of all attempts to obtain an interview with a given respondent, together with the characteristics observed for all sample members) may also be useful in understanding patterns of non-response and their potential implications for bias. In fact, some characteristics of both respondents and non-respondents can be detected. In conducting personal interviews, for example, the characteristics of the neighbourhood and of the building are observable. Comparing respondents and non-respondents as regards these characteristics can help to understand the possible bias arising from the response process. Information on the characteristics of non-responding households can also be inferred by analysing the effort required to get an interview from responding households. A comparison of the households that were interviewed at first visit with those that agreed to be interviewed only after their first refusal provides information on non-response. When the non-response rate is high and the analyses show a possible presence of bias, one should also produce adjusted estimates by re-weighting the interviewed households by the inverse of the estimated propensity to participate, to the extent that this is possible.

Several statistical techniques, based on various assumptions, can be employed to address non-response issues. Knowledge of the distribution of some relevant characteristics for the entire population can be used to adjust the corresponding sample characteristics with the census or administrative compositions. Moreover, a significant deviation of the sample distribution from that of the population gives indirect information about random missingness in the response process. The sample composition can then be aligned with population distributions by means of post-stratification techniques. When auxiliary information is available in the form of knowledge of marginal distributions, the Iterative Proportional Fitting method can be employed. More generally, calibration techniques, based on a linear regression model, offer a wide variety of solutions to adjust the sample weights so as to reproduce external known information.

Longitudinal household surveys present other problems. A household may not be fixed over time, and only some part of the original household (perhaps living in a household with other people not in the original survey) might be available to be interviewed later. Even for a given household unit, non-responses may differ from one wave to the next, because non-response in later waves may be affected by the experience of earlier waves. As in the case of cross-sectional surveys, every effort should be made to understand the patterns of non-response and the implications for bias in key survey estimates.

In sample surveys, bias due to non-sampling errors may sometimes be reduced by adopting a few simple practices in the initial contact with the household. It is usually recommended that respondents be sent a letter explaining the purpose of the survey and encouraging participation. Additional material, such as a clearly designed booklet describing the main uses of the information and providing explanations and assurances of confidentiality, may also be helpful. In a wealth survey, it may be particularly important to offer the respondent a means of verifying the validity of the survey. The availability of a toll-

free telephone number for respondents to call to obtain more detailed information can be a valuable asset for participation. Symbolic incentives or gifts have also proved useful in encouraging participation. For in-person or telephone interviews, the role of the interviewer as the mediator of the survey and the representative of the sponsor is very important. Effective interviewers need to have both a high level of persuasive skill and sufficient logical skill to navigate a complex technical interview. The training, experience and compensation of interviewers are important factors in non-response. Interviewers should adapt their schedule to the respondents' availability. In this regard, it is also recommended that surveys develop and enforce a protocol to ensure that interviewers make a minimum number of attempts to obtain an interview and that those attempts take place at different times of the day and week.

A best practice for reducing non-response to questions about money values is to record range information. For each money amount for which the respondent cannot or will not provide an answer, an alternative answer consisting of a range containing the answer may be solicited in a variety of ways. There is a long history of surveys that use a "range card", i.e. a list of a sequence of ranges with a means of identifying each range without have to read the entire range. Evidence also exists that allowing respondents to offer their own ranges may provide a tighter range than alternative approaches. There is also experience of using a logical decision tree to specify a sequence of "unfolding brackets", using questions in the form, "Is it EUR 10 000 or more?" Some surveys have used a combination of all three approaches. Several studies have shown that relatively large proportions of respondents who initially refuse to answer or don't know the exact answer to an income question will provide range information. Although range information is only a partial answer to the intended question, it does allow for the possibility of more efficient estimates. Such information may also still help to reduce biases if respondents who provide a range of information are systematically different from other respondents.

The sampling frame is a list or a mechanism from which a sample is drawn. For most household sample surveys, the target population is the civilian non-institutionalised population. Sometimes the sampling frame is a list of target population members, such as a population census or fiscal registry. At other times, a method, such as area-probability sampling, is used to select an unbiased sample without the need to enumerate or know the entire population. In principle, the frame should allow a non-zero probability of being placed on the selection of every member of the target population, and no element should be duplicated or have the uncontrolled possibility of being selected in multiple ways under a given mechanism. Unfortunately, sampling frames sometimes fail to satisfy these requirements. The accuracy of data obtained from household surveys may depend to an important extent on the quality of the sampling frame from which the sample was selected. In sample surveys, the most common and critical frame omissions involve population "non-coverage" errors. A non-coverage error refers to the incompleteness of the sampling frame in assigning *ex ante* a positive probability to the selection of each unit of the target population. For instance, for a list-based sample, this problem may arise for particular subgroups of the population, such as illegal immigrants or households that have a higher geographical mobility, for which the lists rapidly become inaccurate. Whenever it is possible, a measure of sample under-coverage should be computed and the implications for the key survey estimates should be considered.

The specification error arises from the discrepancy between the concept implied by the survey question and the concept that should be measured in the survey. This error is often rooted in the planning stage of a survey, where the specification of the desired information is

inadequate and/or inconsistent. Specification error may arise from poorly worded questions, inadequate instructions, or confusing framing or sequencing of topics in the survey.

Processing errors comprise editing, data entry, coding, assignment of survey weight errors, and any other incorrect manipulation of the data before it reaches its final state. Such errors arise during the data collection and processing stages. In this class, one of the most critical errors is the miscalculation or misspecification of the survey weights; such errors may produce severe bias in the estimates. Data entry errors may be reduced through appropriate implementation of Computer-Assisted Personal Interviewing (CAPI) to administer the questionnaire. CAPI allows the automatic routing of questions, contingent on answers to other questions, and including a variety of consistency checks.

Measurement error may arise from the action or inaction of respondents or interviewers. Respondents may misunderstand questions, they may have an inadequate understanding of their own situation, they may be unwilling or unable to check records during the interview, or unable to answer a question at all, or they may deliberately provide incorrect information in response to questions. Interviewers may cause errors directly by failing to follow instructions or other survey protocols, by incorrectly entering information in the questionnaire, or by falsifying data. They may also cause errors indirectly if their way of speaking or acting influences respondents to provide incorrect information. If measurement error differs across groups in ways that cannot be controlled by in estimations, then some differences across groups seen in the data may be illusory.

The components of wealth are usually evaluated at a market price, i.e. the price at which a particular asset may be sold at a given time on the market. However, households may not know the precise market value of their assets. For example, this situation may occur for dwellings bought a long time before the interview or for highly volatile financial assets. The analysis of wealth values over time should take into account a certain weakness in the information provided.

Even involuntary errors in reporting values of some phenomena (e.g. the size of the respondent's dwelling), due to rounding or to lack of precise knowledge, may cause serious problems to estimators. In particular, the "classic" measurement errors (independent of the true latent value) inflate the standard errors of estimates.

The evaluation of measurement errors is useful both for producers, as it can give an insight into improving the questionnaire or collection procedures, and for users, who must be conscious of the limitations of the data they use. Often, measurement errors can be evaluated only indirectly, through examination of inconsistent or implausible values, or through comparison of survey responses at the household level or for groups of households to estimates obtained from other sources.

In household wealth surveys, the most critical type of measurement error is the under-reporting of wealth assets, which may arise from recall difficulties, or from a reticence to report what is perceived to be sensitive information. In particular, the propensity to report wealth may differ from country to country, depending on cultural norms and more practical issues related to tax evasion. This type of error can produce severe bias in estimates, and special techniques are required to overcome it. To evaluate the under-reporting problem, a useful approach is to compare estimates derived from different data sources (sample surveys, administrative registers, fiscal data and National Accounts). A typical example is the discrepancy between the number of dwellings declared by households in the sample survey and the number owned by households according to the census or the administrative register.

In the presence of under-reporting behaviour, estimates of real and financial wealth will be underestimated by comparison with the macro amounts. If the under-reporting is not uniform across the different wealth components, averages and other statistics will be biased. For example, if the under-reporting is higher for financial assets like equity and investment fund units, which are more frequently held by rich people, it is presumable that the concentration index will also be downward-biased.

Different approaches to measuring the under-reporting can be constructed using statistical matching procedures performed between answers of household surveys and data from other sources, such as the statistics held by commercial banks on their customers. In particular, micro data may allow measuring both the non-reporting and under-reporting of wealth assets for different groups of households.

It is recommended that, in the course of the interviews, interviewers provide additional information, e.g. comparing household's answers and the objective evidence they can see for themselves: the type of neighbourhood and type of dwelling, the standard of living implied by the quality of furnishings, and so on. In fact, the interviewers' opinions can be a good instrument to assess the credibility of the sample survey responses.

Compared to sample surveys, administrative data usually allow an analysis of specific geographical domains (e.g. house registers or fiscal data) and high-frequency statistics (e.g. stock market indices). The monetary costs specifically attributable to the production of these data and the statistical burden of respondents are usually limited. However, using administrative data requires a deep knowledge of the regulatory environment for which these data are collected. In particular, typical drawbacks of these data are lack of coverage of specific sub-populations (e.g. unlisted companies), incoherence between legal and statistical definitions (as in the case of official registers of the values of dwellings) and a lack of data freshness. Reporting errors may also occur in fiscal data.

The evaluation of the accuracy of aggregate statistics does not rely on the tools applied for micro data. In fact, these estimates are obtained using complex procedures in which measurement and processing errors are rarely monitored, preventing an analytical computation of the estimation error. An indirect quality indicator of such statistics can be obtained by analysing the number and size of past revisions.

9.1.4. Comparability

Comparability refers to the degree to which data can be compared over domains, across countries, and over time. Comparability aims to eliminate (or at least reduce to the maximum extent) the effects of differences in definitions and measurement procedures when statistics are compared. Therefore, consistent procedures, particularly ones based on the use of international agreed definitions and standards, are important. Known deviations from standards should be fully documented for data users.

The fluctuations in the market prices of certain assets may produce large differences over time, even in the absence of stock variations, in both the amount and the inequality of wealth. Typically, a rise in the stock market is associated with an increase in inequality, as the shares are held mostly by wealthier households. The contrary tends to happen when there is rise in the housing market.

In comparisons over time, any change in the survey, such as the mode of the interview, the interview questions or question ordering, the sampling frame, the strata definitions or the oversampling of a specific domain, may produce significant effects in the comparability

of estimates. The extent of these effects should be accounted for through specific tests. A typical example of a change in the survey is the effect of a reformulation of a question, which can be evaluated by randomising the old question on one half of the sample and the new formulation on the remaining half. Measures may also decay in terms of the inter-temporal comparability if the institutional structures dealt with by households change. For instance, the introduction of tax amnesties, which regularises undeclared or untaxed assets, may produce an increase in the reporting of wealth.

Comparisons of wealth across countries may be strongly affected by institutional differences in entitlements. Pension systems in particular often have distinctive features at the national level, which may have important effects on the accumulation of other forms of wealth that are more easily measured. Such institutional features may also change over time in ways that are both hard to predict and induce further changes in other types of wealth. Even in cases where the relevant institutional features are reasonably fixed, individuals may be unable to report the details needed to estimate the present value of a given type of entitlement. Because some entitlements are contingent in nature, it may be difficult or impossible to estimate the relevant probabilities at the level of individuals, even when the overall distribution of probabilities needed to understand aggregate outcomes is known. Great care should be taken in international comparisons involving countries with different pension systems. Other institutional systems, such as tax-deferred savings accounts or real estate financing arrangements, may also differ substantially across countries, and the implications of such factors for comparisons of wealth data should always be considered carefully.

There should be similar concern about comparisons over time or between countries that have very different ratios of private to total wealth. The amount of household wealth may be influenced by that of public wealth (or debt). At the same time, the imputation of public assets and liabilities to single households is, at best, a complex operation.

9.1.5. Coherence

The *coherence* of survey data concerns their adequacy to be reliably combined in different ways and for various uses. Coherence may be divided into internal and external coherence. The former refers to the coherence between different economic variables collected in the same cross-section or inferable from the longitudinal component of the survey. The latter is related to the coherence with external sources of information, such as the national accounts or population census.

The comparison of information on income, wealth and expenditure offers a first and valuable possibility for checking the internal coherence of the collected micro data. Anomalous relationships between consumption, income and wealth can in fact immediately reveal data problems. Moreover, the information collected over time on the same units allows constructing a household balance sheet verifying the accounting identities between these economic variables. Panel data also allow measuring the time consistency of the time-invariant variables. In case of time-varying variables, the evaluation of the data reliability requires the adoption of models for disentangling the true dynamics from the measurement error.

The editing and imputation procedures are standard practices to check and restore the internal consistency of the collected or produced data. Even if there is a common agreement that invalid or self-contradictory entries should be automatically removed, the

excessive use of data processing can itself affect the quality. In fact, researchers may edit data more than necessary, because of a low capability of identifying "true" errors. High percentages of acceptable data erroneously classified as unacceptable affects the effectiveness of the editing process, by introducing a slippery non-sampling error. Therefore, it is recommended that edit and imputation procedures lead to the amount of data processing strictly necessary.

In some cases, useful information on the internal coherence can be obtained by the comparison of estimates of the same phenomenon constructed in two different ways. For example, in a wealth household survey the estimate of the total number of houses owned by households and rented to others can be compared with the corresponding estimate drawn from the number of households living in dwellings rented from other households.

As noted in Chapter 2, detailed comparison of macro and micro statistics of household wealth can improve the understanding of the quality of both data sets, including their strengths and weaknesses. For example, it can help to identify items that are under-reported in the micro statistics as well as items that are under-estimated by the sources and methods used in the macro statistics. This can lead, in turn, to improvements in the accuracy and coherence of both sets of statistics.

In many countries, common sources for comparing sample estimates on the number of dwellings are the census and administrative registers. Financial Accounts, constructed following international standards, provide more general and harmonised sources for the micro-macro comparisons of financial assets and liabilities. However, some definitions or conventions used in the Financial Accounts do not always favour a precise comparison. For example, non-profit institutions serving households (NPISH), such as charities and trade unions, are often grouped together with households; their economic weight is limited but not negligible. The regular confrontation between micro and macro statistics can be helpful in explaining the differences between them to users, thereby improving interpretability.

The classification of the assets held by households may sometimes be ambiguous. For instance, if a household owns a company that in turn holds a dwelling, it is not obvious *a priori* whether the asset should be classified as a real estate holding, a personal business or a financial asset. Although the SNA conventions clearly define the accounting rules for such situations, differences in legal and/or accounting conventions across countries may lead to different answers. Careful consideration of such differences is particularly important for comparisons across countries. Moreover in principle and in practice, constraints on data collection may lead to further qualifications. In sample surveys the availability of additional information can be used to give a statistical representation that better fits the actual situation.

There are some asset categories that include varying types of assets, whose treatment may have substantial effects on the external coherence of survey data with other measurement frameworks. For example, in some countries managed accounts are not uncommon, and such accounts may be invested in a variety of more specific asset types. If a survey respondent is not heavily engaged in monitoring such an account, that person may not know the more detailed portfolio composition, or have only a general idea about it. Some types of trust accounts, annuities or insurance contracts, and tax-preferred accounts may have similar characteristics. To the extent that it is feasible to learn more from respondents about portfolio composition, it may be possible to increase the measured coherence of survey and external data.

9.1.6. Timeliness

Timeliness refers to the interval of time between publication and the period to which the data refer. It is important that data and the corresponding estimates be made available as soon as possible, so that policy decisions can be made on reasonably up-to-date data.[1]

Aggregate statistics can usually be provided with higher (quarterly or yearly) frequency and can be used for business outlook analyses. In contrast, more time is usually required to collect and process micro statistics, which are therefore employed to study structural economic changes. For instance, the Household Finance and Consumption Network (ECB) recommends three years as the minimum frequency for gathering household financial budgets using sample surveys. A lower frequency would save costs but at the expense of significantly diminishing the utility of the survey data for policy purposes. However, in some circumstances, the lack of frequent data can be overcome by combining this data with more updated external sources of information (population distributions, aggregate variables, etc.), for instance through the use of microsimulation.

There is a clear trade-off between accuracy, cost and timeliness. A larger sample can reduce the random sampling error at the cost of increasing the time required to collect, clean and edit the data for analysis. In the same way, using a smaller and better-trained group of interviewers or increasing the intensity of the field activities in order to increase the response rate may have a direct effect on the length of the field period.

9.1.7. Accessibility

Accessibility refers to the degree to which users are able to use the data. The concept of accessibility spans the physical requirements for access, the structure of data files, the tools available for access, the restrictions placed on accessing the data, and the adequacy of supporting documentation.

Survey data on wealth and other such information collected for scientific purposes should be made available as broadly as possible for the intended purposes, to the extent that the confidentiality of the respondents can be protected adequately. There are trade-offs between the breadth of the data released and the ease of access, and between the disclosure risks and public benefits of the research. Although secure central data repositories can be used to allow access to sensitive information that cannot be released more generally without risking identification of the respondents, the requirement to be physically present in such facilities inevitably limits data access and the range of analysis. Data enclaves, in which users are given access to sensitive data securely via the Internet, can expand the range of uses of data that can be shared in this way, but the most sensitive information generally should not be included. The broadest audience is reached with data sets that are made more freely available to researchers, but such data sets must be scrupulously anonymised to fulfil the ethical and, generally, legal necessity to protecting respondent confidentiality. The anonymisation process involves editing the content of records to eliminate information that can be used to identify the respondents directly or indirectly. Direct keys to households' identity (e.g. name, codes) must be suppressed; in addition, actions must be taken to reduce the likelihood that other variables or combinations of variables might identify respondents. Suppression of variables such as geographic information is very common, as are collapsing of categorical values into broader

1. Another quality dimension is *punctuality*. This attribute refers to the time lag between the actual and the planned dates of publication.

categories, truncating some values at an upper and/or lower value, rounding off monetary amounts, and the constrained simulation of some values. In some extreme instances, certain household records may be eliminated from the public data set altogether, if the necessary amount of data suppression to allow release would render the survey observation useless for analytical purposes.

Accessibility is increased by offering data in a variety of formats (e.g. SAS, Stata, R, etc.). Because existing data formats may not persist forever, however, consideration should also be given to archival management of the data and supporting material. The construction of ASCII files, which embed a minimal amount of structure and are generically readable, is one common solution. Restricted versions of the data and supporting information should also be archived with care. In some cases, privacy constraints may be a function of the age of the data, and it is important to preserve access for future researchers. Consideration should also be given to providing users with software tools to address calculations that are specific to the data set.

For researchers to understand the data more fully, they should have as much access as feasible to the tools and other structures that led to the creation of the data they observe. At a minimum, such information should include a representation of the survey questionnaire; a set of auxiliary tools, such as illustration cards and other accompanying devices; and a full listing of codes used, including those entered directly during the interview and those coded subsequently. Ideally, users should also be provided with flag variables describing the status of each variable (e.g. originally missing and imputed in the final data) and methodological research into the reliability of the data, particularly when response rates are low.

9.2. Summary

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

- The quality of statistics can be considered in terms of seven criteria: institutional environment, relevance, accuracy, comparability, coherence, timeliness and accessibility. There are inevitably trade-offs between costs and quality, and between various aspects of quality.
- In a high-quality institutional environment, the statistical agency producing the data is impartial, objective, independent from political and other institutional pressures, and free of potential conflicts of interest. It is adequately resourced to produce the statistics of interest, and has a mandate to collect the relevant data.
- The relevance of data is the degree to which statistics meet actual and potential users' needs. Thus, relevance depends upon both the coverage of the required topics and the use of appropriate definitions or concepts. There may be a trade-off between relevance and other aspects of quality; for example, more comprehensive and more relevant data items may be less accurately measured than more narrowly defined data items that are easier to collect.
- Accuracy is related to the degree to which the data correctly allow estimation of the population characteristics they are designed to describe. Sampling error refers to an inaccuracy that arises because data is collected only from a sample that may not be fully representative of the total population of interest. There are several distinct categories of non-sampling error.
  - Specification error occurs when the collected data do not include relevant economic variables for the objectives of the survey, where the relevant variables can only be approximated, or where the elaboration of questions and instructions is ambiguous.

- Frame error, or coverage error, exists when some statistical units belonging to the reference population are not included in the sampling frame or where the density of the sampled population differs in some other way from the reference population.
- Non-response error occurs because some households do not participate in the survey at all or they decline to answer or cannot answer individual questions in the survey.
- Measurement error arises during the data collection process and includes errors made by the interviewer or by the respondent, and errors in the survey instrument or other measurement protocols.
- Processing error includes errors emerging from data entry, data editing, or other computer programs or processes that affect the data after they are collected.

- Comparability refers to the degree to which data can be compared over domains, across countries, and over time. Comparability aims to eliminate the effects on statistical comparisons flowing from differences in definitions, survey instruments and measurement procedures, sampling frames, and institutional structures. Where these differences cannot be avoided, attempts should be made to measure the impact.
- The coherence of data refers to their adequacy to be reliably combined in different ways and for various uses. Internal coherence refers to the coherence between different economic variables collected in the same cross-section or inferable from the longitudinal component of the survey. External coherence is related to the coherence with external sources of information, such as the national accounts or population census.
- Timeliness refers to the interval of time between publication and the period to which the data refer. It is important that data and the corresponding estimates be made available as soon as possible, so that policy decisions can be based on reasonably up-to-date data.
- Accessibility refers to the degree to which users are able to use the data. The concept of accessibility spans the physical requirements for access, the structure of data files, the tools available for access, any restrictions placed on accessing the data, and the adequacy of supporting documentation.

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ANNEX A

Eurosystem household finance and consumption survey

In 2008, the Governing Council of the European Central Bank[1] decided to conduct a household finance and consumption survey (HFCS) in all euro area countries. The HFCS provides the Eurosystem with micro-level data on euro area households' wealth and consumption expenditure.

Why are central banks interested in micro information on household wealth and consumption?

In explaining the background behind this decision, it is important to note that there are policy questions for which the answer substantially depends on knowledge about distributional aspects that can only be assessed with micro-level data. For instance, the implications of steep increases in household indebtedness cannot be adequately judged from aggregate data alone. Information on the debt levels of detailed categories of households as well as their distribution across income and/or wealth classes obtained from surveys helps central banks to assess whether/to what extent the accumulation of household debt should give rise to concerns about households' financial soundness and, hence, may entail financial stability risks and/or other macroeconomic developments.

Due to the structural nature and low frequency of household finance and consumption surveys, their data are not meant to provide a direct input into high-frequency, day-to-day policy-making. However, results from research using the survey data inform policy-making and improve knowledge about economic structures and institutions, thereby providing important input into central bank policies. Looking beyond macroeconomic aggregates, information about the distribution of wealth, debt and income is important for better understanding the implications and transmission of macroeconomic shocks. Consequently, the HFCS data is a valuable input into a number of policy areas of the Eurosystem, *inter alia* monetary policy, macro-economic analysis and financial stability.

Prior to the decision to set up the HFCS, it was not possible to make an analysis of household wealth throughout the euro area because no household wealth surveys were conducted there. Furthermore, the surveys that existed in a few countries did not provide all the information needed on household assets and liabilities, and/or survey data were collected using largely incomparable methodologies. Given the large cross-country heterogeneity within the euro area in a number of relevant aspects (such as the importance of housing wealth, mortgage debt, etc., in household balance sheets), data from one country could not be used to infer the situation of others, thus impeding the possibility of reaching conclusions at the euro area level.

Consequently, in building up the foundations for the HFCS, one of the main priorities was the development and adoption of an *ex ante* agreed common methodology which would make it possible to undertake cross-country analyses based on comparable survey data as well as to calculate consistent indicators for the euro area.

General overview of the HFCS

The HFCS is a decentralised effort in which each participating institution (national central banks and, in a few countries, national statistical institutes) finances and conducts its own wealth survey.

The HFCS covers the whole euro area, with samples that provide representativeness both at the euro area aggregate level and at the individual country level.[2] This allows comparing the economic structure and the impact of different institutional features (e.g. banking system, pension schemes, household composition) on the transmission of economic shocks across individual countries.

Some countries conduct the survey every 2 years and others every 3 years.[3] The total euro area sample size is around 54 000 completed interviews (while country sample sizes vary from country to country, not necessarily in proportion to the country size). A longitudinal/panel component is available or planned in at least six country surveys.

The HFCS provides complete data sets for at least the basic components of household income, consumption and wealth. For information not collected due to item non-response, multiple-imputed values using correlations directly observed from the rest of the households are provided to users (see below). The significant effort applied in *ex post* fieldwork editing and imputation procedures entails a lapse between the end of the fieldwork and the time at which the data can be put at the disposal of final users.

For further details about specific features of the country surveys participating in the HFCS, see Table A.1.

Survey contents

General description

The Eurosystem HFCS questionnaire consists of two main parts: the first composed of questions referring to the household as a whole (answered only by the main respondent, namely the most financially knowledgeable household member) and the second targeted to individual household members (and answered by every household member aged 16 and over). The block covering household-level questions encompasses: real assets and their financing; liabilities and credit constraints; private businesses and financial assets; intergenerational transfers and gifts; and consumption/savings. Questions to individuals cover the following areas: demographics; employment, future pension entitlements; and labour-related income (other income sources being covered at the household level).

Given the focus of the survey on household wealth, priority is given to a detailed and accurate collection of survey information on household assets and liabilities. The objective of keeping the burden on respondents within reasonable limits implies that information on other items (such as on income or consumption) cannot be collected at the level of detail as in stand-alone surveys exclusively focusing on these themes. Nonetheless, the income information collected in the HFCS covers all household income sources, while information on consumption focuses mostly on specific recall questions which, according to the

Table A.1. **Main features of country surveys participating in the Eurosystem Household Finance and Consumption Survey**

	Responsible institution	Reference year	Frequency (years)	Panel component	Oversampling of wealthy households/criterion
Austria	Oesterreichische Nationalbank	2010/2011[1]	Three	No	No
Belgium	Banque Nationale de Belgique	2010	Three	Yes	Yes/income
Cyprus[12, 13]	Central Bank of Cyprus	2010[2]	Three	No	Yes/electricity bills
Estonia	Bank of Estonia	2013[3]	Three	Tbd	Tbd
Finland	Statistics Finland	2010[4]	Three	No	Yes[11]
France	Insee	2009/2010[5]	Tbd	No	Yes/taxable wealth
Germany	Deutsche Bundesbank	2010/2011	Two	Yes	Yes/certain areas
Greece	Bank of Greece	2009[6]	Three	No	Yes/certain areas
Ireland	Central Bank of Ireland	2011	Three	Tbd	Tbd
Italy	Banca d'Italia	2010[7]	Two	Yes	Yes/banking wealth
Luxembourg	Banque centrale du Luxembourg	2010/2011	Three	Yes	Yes/income
Malta	Central Bank of Malta	2010/2011	Three	No	No
Netherlands	De Nederlandsche Bank	2010[8]	Three	Yes	No
Portugal	INE Portugal/Banco de Portugal	2010[9]	Three	Tbd	Yes/certain areas
Slovenia	Banka Slovenije	2010	Three	No	No
Slovakia	Národná banka Slovenska	2010	Three	No	Yes/certain areas
Spain	Banco de España	2008/2009[10]	Three	Yes	Yes/taxable wealth

1. Data also available for the Survey on Household Financial Wealth in 2004 and the Household Survey on Housing Wealth in 2008.
2. Data also available for the Cyprus Survey of Consumer Finances in 1999 and 2002.
3. Since Estonia joined the euro area only in 2011, the Bank of Estonia will participate in the HFCS only as of the second wave.
4. Data also available for the Saving and Indebtedness Survey in 1987 and 1988, the Wealth Survey in 1994 and 1998 and the Housing and Wealth Survey in 2004.
5. High-income employees, self-employed and farmers.
6. Data also available for the Enquête Patrimoine in 1986, 1992, 1998 and 2004.
7. Data also available (not publicly though) for the Bank of Greece *Household Indebtedness Survey* in 2002 and 2005.
8. Data also available for the Survey on Household Income and Wealth starting in 1977 (and every two years since).
9. Annual panel data also available for the DNB Household Survey since 1993.
10. Data also available for the *Inquérito ao Património e Endividamento da Famílias: 2006* (for which cross-sections of 2000 and 1994 are also available).
11. High-income employees, self-employed and farmers.
12. *Footnote by Turkey:* The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus" issue.
13. *Footnote by all the European Union member states of the OECD and the European Commission:* The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

literature, provide information needed to accurately impute non-durable consumption in general purpose surveys (Browning, Crossley and Weber, 2002).[4]

When designing the HFCS contents, a large number of consistency checks were carried out between wealth and income survey variables and national accounts definitions. Although a large degree of consistency with national accounts definitions was a clear objective, some approximation is inevitable, given that survey categories must be translated into terms understandable to a broad population of respondent households.

Contents

The next two boxes summarise the contents of the HFCS (Figure A1) and the structure of the Eurosystem blueprint questionnaire (Figure A2).

Figure A1. **Contents of the HFCS**

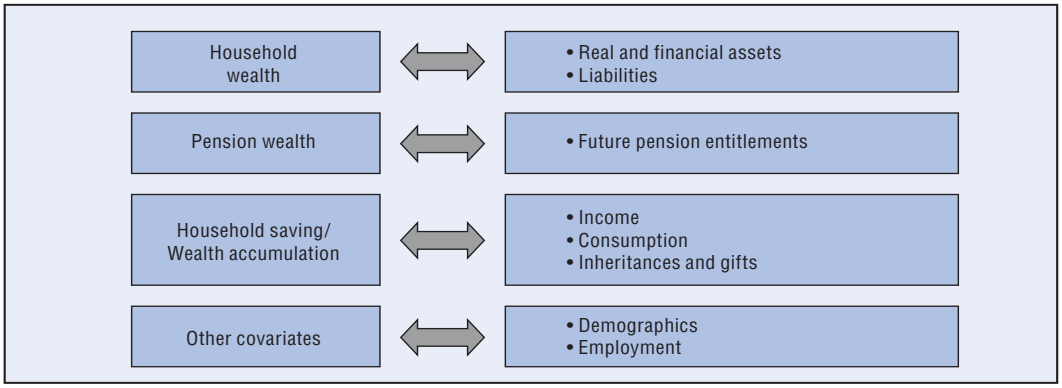
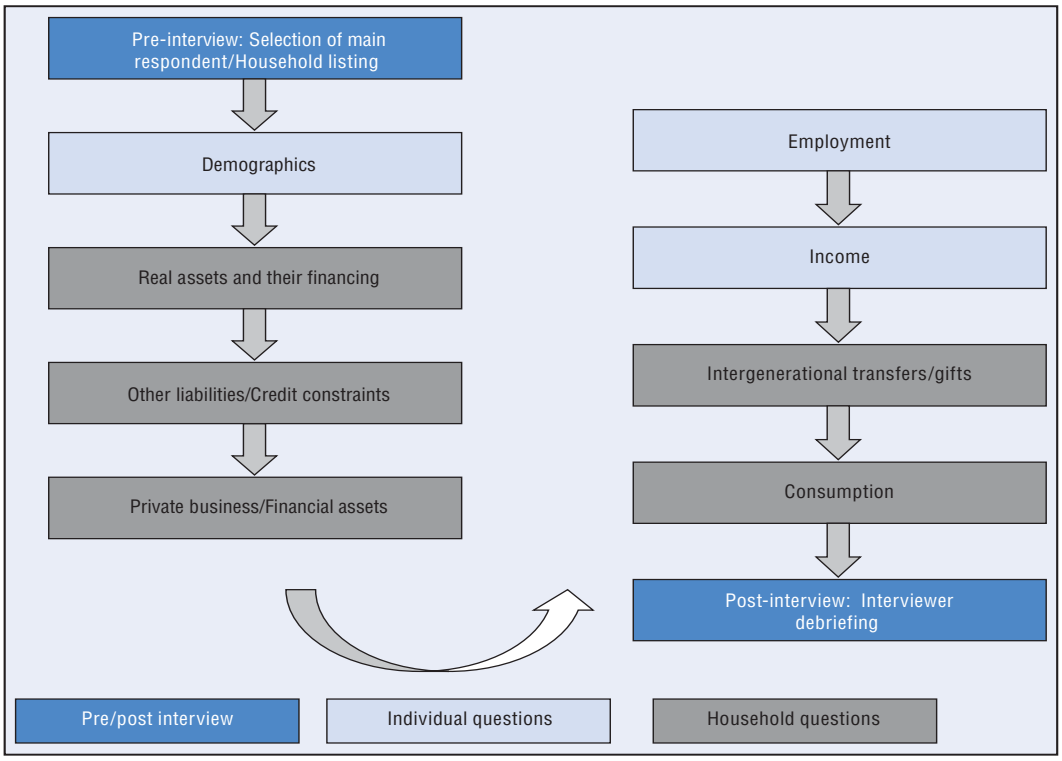


Figure A2. **The HFCS Blueprint questionnaire**



Methodological features of the HFCS

Ex ante *comparability through an output-oriented approach*

Substantial cross-country differences within the euro area imply that obtaining comparable information sometimes requires different questions in each country as well as a considerable amount of country-level expertise. For this reason, the HFCS follows an output-oriented approach, i.e. all participating countries report core output variables based on a common set of *ex ante*-agreed definitions and descriptive features.[5] While questions in country surveys may be adapted to the specific circumstances, financial markets and products of each country, a common Eurosystem blueprint questionnaire is the starting

point for all country questionnaires. Some examples of the type of information collected within each category of the HFCS questionnaire are provided below:

- Demographics: age, gender, education, country of birth, marital status, relationship in household, etc.
- Real assets and their financing: tenure status; rent; different features of the household main residence (size, current value, year and price of acquisition, home equity withdrawal, etc.); features of other properties; vehicles; valuables; etc. Features of loans/mortgages collateralised by real assets: collateral, purpose, outstanding balance; maturity, monthly payments, year when loan was taken or refinanced; initial amount borrowed; loan refinancing, fixed/adjustable interest rates, etc.
- Other liabilities/financial constrains: overdrafts; credit lines; credit-card borrowing; leases; consumer/instalment loans; etc. For the most important loans: purpose, outstanding balance; maturity; monthly payments; initial length; initial amount borrowed; etc. For remaining loans: outstanding balance and monthly payments.
- Private businesses: self-employment businesses; passive investments; activity; legal form; employees; value; etc.
- Financial assets: sight accounts; savings accounts; mutual funds; bonds; publicly traded shares; shares in foreign companies; managed accounts; informal loans to relatives or friends; investment attitudes; etc.
- Employment: employment status; main employment; employment history; expected age of retirement; etc.
- Future pension entitlements:[6] features of government-sponsored, occupational and private pension schemes, life insurance, etc.
- Income: 12-month gross income by individual sources; comparison with average; next-year expectations; etc.
- Intergenerational transfers/gifts: for the most important ones: when they were received; how much; from whom; expected inheritance; etc.
- Consumption: food in and out of the home; regular household transfers (alimony, assistance, etc.); comparison with average and with income; saving motives; emergency assistance.

Specific features of the common HFCS methodology

Probability sampling

All HFCS country surveys should have a probabilistic sample design, i.e. each household in the target population should have a non-zero probability of being selected and that probability should be known *ex ante* for all households.

Oversampling of the wealthy

Representing the behaviour of the typical (average) individual household can be achieved through standard proportional sampling methods. However, a purely random selection of units would yield a statistically inefficient estimate of the distribution of wealth. On the one hand, wealth is highly unevenly distributed, i.e. a small share of households holds a disproportionately high share of total wealth. On the other hand, portfolio sophistication also increases with wealth, such that certain financial instruments are almost exclusively held (and in large quantities) by the wealthiest households. If such

households are not well represented in the final sample the results may likely not provide a reliable picture of the distribution and composition of household portfolios. A given level of precision would either require a rather large (and costly) sample or, if efficiently designed, a sample that should include a higher-than-proportional number of wealthy households (Muñoz, 2011).

Achieving an adequate portion of wealthy respondents is challenging: first, establishing contact with wealthy respondents may be more difficult as they are usually surrounded by additional security measures, may be absent from their principal residence during prolonged periods of time and usually possess more than one residence. Second, both available time as well as the self-perceived value/time ratio often pre-dispose wealthy households to refuse more frequently to participate in surveys.

Consequently, representing the total mass of wealth requires sophisticated sample designs and contact strategies. All in all, while oversampling the wealthy may add to total survey costs, it increases precision and reduces non-response bias. In addition, oversampling also improves efficiency in the estimation of variables positively correlated with wealth. For that reason, wealthy households are oversampled in most euro area countries, using country-specific techniques (see details in Table A.1).

Survey mode

Survey information is collected through Computer-Assisted Personal Interviews (CAPI),[7] i.e. face-to-face interviews administered by an interviewer using a computer to record the replies provided by respondents. The use of a computer allows a smooth and error-free administration of the routing of the questions (which is quite complex in the HFCS questionnaire), the application of consistency checks during the interview and the automatic storage of the data. Eliminating errors at the interview stage improves the quality of the survey data and may save considerable resources in the subsequent data-editing and cleaning phase.

In addition, interviewers play an important role in the collection of high-quality income and wealth information, namely in terms of: *i)* persuading respondents to participate in the survey/increasing response rates and reducing the risk of response bias; *ii)* building up trust *vis-à-vis* respondents, thus lowering the likelihood that a respondent drops out in the middle of the interview; *iii)* minimising levels of item non-response by personally assisting (i.e. offering pre-designed prompts) – if required – during the interview; *iv)* avoiding incomplete responses; and *v)* providing additional information (interviewers' observations/*paradata*); etc.

Multiple imputation

Imputation assigns a value to a variable when it was not collected or not correctly collected. Standard econometric tools can only deal with complete data sets. Consequently, it is difficult (although possible) to use the data without imputing missing values. Leaving the imputation to the users of survey data is one option, but this is dangerous in terms of quality of the results, ease of use of the data, and potential misuse. Because data producers have access to confidential information about the reasons for non-response and other information not released for public use, they are in a better position to impute than general users of the data. At the same time, as long as imputed variables are appropriately flagged, it remains the users' choice to work with imputed or not imputed data.

The HFCS provides multiply-imputed values to cover for item non-response for at least the basic components of household income, consumption and wealth. To that end, stochastic imputation is applied, meaning estimating missing observations conditional upon observed variables that can plausibly explain missingness. For each missing value, five imputed values are estimated (thus giving rise to the same number of complete data sets). The reason why missing values are multiply imputed is that if the procedure were run just once (single imputation), without adding the appropriate random term, it could yield information that does not take into account uncertainty (the resulting variance could be underestimated). This would be a particular problem in cases of significant item non-response.

Construction of survey weights

To improve the quality and comparability of the analysis, it is essential that initial sample weights are adjusted to compensate for various features and/or imperfections in the sampling design and in the final sample. The standard procedure for computing and adjusting survey weights entails weighting factors to take into account: *i)* the unit's probability of selection (design weights); *ii)* unit non-response (non-response-adjusted weights); and *iii)* adjustment of the weights to external data (calibration, post-stratification, etc.) to approximate the sample to the distribution of households and persons in the target population (final weights).

For the HFCS, weights are calculated based on the following sequence: design weights – coverage adjustment – non-response adjustment; adjustment to external sources and replicate weights. As mentioned, HFCS design weights are calculated for all units selected in the initial sample as the inverse of the selection probability of each unit (probability-sampling).

As for coverage adjustments, the definition of the target population is adjusted in cases where some groups of households cannot be covered by the sampling frame (instead of introducing adjustments to the weights). Weights are also adjusted for over-coverage, multiple-selection probabilities, for non-response (via estimated response probabilities of homogenous response groups).

Weights are then adjusted to external data sources with calibration to margins to match the corresponding population totals and category frequencies. The choice of calibration variables should be such that control variables are strictly comparable to the corresponding survey variables, correlated with the study variables, but not too correlated with each other. Although the selection of calibration variables is country-specific, the weighted distribution of the sample by gender, age and household size should be equal (or close) to the corresponding distributions in the population. The sum of the final weights in the sample must also be equal to the number of households in the population.

After the calculation of final weights, replicate weights should be calculated to estimate the variance of the estimates (see below). Replicate weights are adjusted for non-response and calibrated according to the same procedures used to adjust final weights.

Variance estimation

Variance estimation is an essential element in the use of survey data, as it allows researchers to distinguish between a statistically significant phenomenon and a spurious result caused by the random nature of the sample. Variance needs to be estimated, since the true value of an estimator can only be known with certainty if the whole population is observed. Underestimating the variance of an estimate may lead to incorrect conclusions,

while overestimating the variance decreases the usefulness of the data, as fewer outcomes are statistically significant. Complex sampling designs require variance estimation procedures that are more complex than the standard ones utilised in surveys with simple random samples from a large population.

In order to allow users to estimate variance for the HFCS, countries provide 1 000[8] replicate weights using a bootstrap replication method.[9] The variant of bootstrap for the HFCS is the rescaling bootstrap of Rao and Wu (1988), as further specified by Rao, Wu, and Yue (1992). It is applicable for one-stage samples and can be used as well in the case of multi-stage samples drawn with a low sampling fraction in the first stage.[10] While – as with all bootstrap methods – the rescaling bootstrap is computationally intensive, and the resulting variance estimates may be less stable than with other methods (such as Jackknife and linearisation), the method provides consistent variance estimates in case of non-smooth statistics such as quantiles.

Since the final weights are adjusted for non-response, post-stratified or calibrated (the specific technique not being important), the replicate weights are adjusted as well according to the same procedure (e.g. by running CALMAR with the same margins on each of the replicate weights). This can be considered as an additional rescaling factor. For instance, after drawing the sample and rescaling the weights, the weights are further rescaled to satisfy post-stratification or calibration constraints for each replicate. This ensures that the replicate estimates are close to unbiased in each replicate sample.

Survey evaluation of the HFCS

Following the completion of each HFCS wave, a comprehensive evaluation of the survey will be carried out. This evaluation shall encompass an exhaustive quality assessment of the survey results (with special focus on cross-country comparability) summarised in a quality report intended for public release. A review of user requests and a critical evaluation of the extent to which survey questions meet the HFCS objectives will also be conducted; such a review should lead to a regular update of the common blueprint Eurosystem questionnaire with a view to subsequent waves of the HFCS.

Intended outputs

The first dissemination of the HFCS research data set is planned for early 2013. Anonymised micro data will be made available to the research community. Access to the data will be granted upon successful evaluation of individual research proposals guaranteeing non-commercial use of the data and also on the condition that researchers fulfil safety conditions on data storage, sign a confidentiality commitment, etc.

In addition, a set of euro area aggregate indicators (on portfolio and debt composition; the debt burden of indebted households; saving, consumption and access to finance; distribution of wealth; etc.) will be released alongside the HFCS micro data set.

Further information on the HFCS can be obtained on the HFCS website: *www.ecb.europa.eu/home/html/researcher_hfcn.en.html*.

Notes

1. The ECB Governing Council is the body governing the Eurosystem, i.e. the ECB and the National Central Banks of the 17 countries that have adopted the euro.

2. The target reference population for national surveys is all private households and their current members residing in the national territory at the time of data collection. Persons living in collective households and in institutions are generally excluded from the target population.
3. Some countries chose a higher two-year frequency because their surveys have a panel component (meaning that the households participating in the panel are interviewed again in subsequent waves). Every three years is deemed too low a frequency to keep track of and properly follow panel households.
4. Browning, M., T.F. Crossley and G. Weber (2002), "Asking Consumption Questions in General Purpose Surveys", *SEDAP Research Paper,* No. 77.
5. In addition, a set of standardised non-core extensions are included in some (but not all) country questionnaires.
6. For current pension entitlements, in the following section information is collected on the amount of pension income collected in the last 12 months.
7. The only exception is the Netherlands (survey conducted by the Nederlandsche Bank), where a CAWI mode (computer assisted web-based interviewing) is in place.
8. 1 000 is a commonly used compromise between computational efficiency and stability of the variance estimates.
9. Bootstrap was selected over other methods (e.g. Jack-knife or balance repeated replication) because it allows analysts to select the number of replicates (in other methods the number of replicates is determined by the number of strata and/or number of primary sampling units, PSUs). Besides, bootstrap samples are independently drawn across strata, so the replicate weights of different countries can be stacked and analysed as if they came from a single bootstrap procedure, thus allowing users to calculate a variance in the combined euro area data set in a standard way.
10. This is the case in several popular setups of stratified sampling. In addition, other sampling designs can be approximated by this setup.

ANNEX B

Luxembourg Wealth Study – A case for increased ex ante *comparability of data sources*

This Annex describes the *Luxembourg Wealth Study (LWS) Database* in terms of experience in the process of *ex post* harmonisation. It presents the basic concepts and general principles applied by the LWS on household wealth, and it specifies the key definitions, standard components and standard classifications for wealth components. It also gives brief descriptions of the definitions of supplemental variables available in the LWS database, namely household income and consumption, labour market information and behavioural attitudes toward finance. It highlights the need for internationally agreed definitions of various household wealth components.

The *Luxembourg Wealth Study Database*

The LIS Cross-National Data Center in Luxembourg (LIS) harmonises income and wealth micro data from existing country-level surveys over a period of decades to create a database containing comparable cross-country data. The *Luxembourg Wealth Study Database*, launched in 2007, has been developed using the LIS framework and principles of data harmonisation that have been successfully advanced and internationally recognised for over 25 years. The LWS is the first cross-national database of harmonised wealth micro data that enables entirely new lines of research about wealth across countries and, to some extent, over time. The *LWS* provides opportunities for scholarly research on wealth and for the development of improved standardised wealth data collection practices. This database includes information on both wealth and non-wealth variables, including information about households' assets and liabilities, indicators on income, expenditures, behaviour, and a range of demographic and economic characteristics of the household. At the time of writing this Annex, the LWS has 20 data sets from 12 countries. These include Austria (2004), Canada (1999), Cyprus (2002), Finland (1994, 1998), Germany (2001, 2006), Italy (2002, 2004), Japan (2003), Luxembourg (2007), Norway (2002), Sweden (2002), the United Kingdom (2000), and the United States (1994, 1997, 2000, 2003, 2006). The main goals of the LWS are fourfold: to improve standardised practices for the collection of wealth data; to construct data sets that enable comparative research on household net worth, portfolio composition, and wealth distributions; to provide guidelines for data producers (similar to what has been done for income distribution statistics through the LIS with the final Report of the Canberra Group); and to establish a network of experts who can share knowledge and practices about wealth analysis.

The *LWS Database* group of variables

Wealth variables: Definitions and components

The LWS standard components of wealth include assets, liabilities and net worth. An asset is defined as an economic resource, reported at its current value, possessed or owned by the household at a specific point in time, usually on the date of the survey. Assets are usually expected to generate profit in the future. Having an economic value, assets can be turned into cash or exchanged for other goods and assets. A liability is defined as an obligation to make financial payments – i.e. what a household owes to a financial institution or other household(s). Net worth is defined as assets *minus* liabilities. The list of LWS components of household wealth is presented in Table B.1.

Table B.1. **List of LWS components of the household balance sheet**

Assets		Liabilities (by purpose)	
1.	Non-financial assets		Not applicable
1.1.	Real estate assets	3.1.	Real estate liabilities
1.1.1.	Principal residence	3.1.1.	Principal residence loans
1.1.2.	Other real estate assets	3.1.2.	Other real estate loans
1.2.	Non-housing assets	3.2.	Non-housing liabilities
1.2.1.	Business equity		Not applicable
1.2.2.	Consumer goods	3.2.1.	Consumer goods loans
1.2.2.1.	Vehicles	3.2.1.1.	Vehicles
1.2.2.2.	Other durables and valuables	3.2.1.2.	Other loans for durable and non-durable goods and consumption
1.2.3.	Other non-financial assets	3.2.2.	Other non-financial asset loans
2.	Financial assets	3.3.	Financial asset loans
2.1.	Deposit accounts and cash		
2.2.	Financial investments		
2.2.1.	Bonds and other debt securities		
2.2.2.	Stocks and other equity		
2.2.3.	Mutual funds and other investment funds		
2.3.	Other financial assets		
	Complementary financial assets		
2.4.	Long-term voluntary investment plans		
2.4.1.	Life insurance funds		
2.4.2.	Voluntary individual pensions funds		
2.5.	Pension entitlements other than voluntary pension funds		
	Not applicable	3.4.	Education loans

LWS net worth: Net worth = (Real estate assets – Real estate liabilities) + (Non-housing assets – Non-housing liabilities) + (Financial assets – Complementary financial assets – Financial assets loans) – Education loans.

Non-financial assets

The LWS divides assets into non-financial assets and financial assets. The non-financial assets include two major categories, namely real estate and non-housing assets. The former includes the current value of the principal residence as well as other real estate owned by households. While the principal residence contains the current value of owner-occupied dwellings, the other real estate assets category records the current value of residential and non-residential buildings and land other then the principal residence. In other words, the current value of any dwelling or land associated with the primary residence is included in the first category, whereas the current value of any dwelling or land not associated with the primary dwelling is included in the second category. Real estate associated with business assets is excluded from this category.

The second major category of assets is non-housing assets, which includes business equity, consumer goods and other non-financial assets. Surveys usually ask households to evaluate the business on the basis of how much it could be sold for (i.e. what the business is worth), rather than asking separately about the assets and liabilities associated with the business. Therefore, the LWS records under non-financial assets the value of business equity. This corresponds to the current value of tangible and intangible assets such as property, plant and equipment, inventories, patents and trademarks, less the liabilities taken for these assets. This category also includes the financial instruments held by the business, such as cash, accounts receivable, loans receivable and shares. The financial liabilities such as accounts payable, loans payable and bank overdrafts are subtracted from business financial instruments.

Within the category consumer goods, the LWS distinguishes between vehicles and other consumer durables and valuables. The category of vehicles includes the current value of cars, motorcycles, boats, airplanes, and other vehicles excluding mobile homes. The current value of furniture, appliances, and other contents of the household's belongings as well as the value of precious metals and stones, jewellery, antiques, coins, paintings, other works of art, and other goods that store worth is recorded under the category of other durables and valuables. Other non-financial assets include copyrights, patents, royalties and other miscellaneous assets.

Financial assets

The standard components of financial assets include cash and deposit accounts, financial investments and other financial assets. The deposits in financial institutions include current (transaction/checking) accounts and various types of saving accounts, such as traditional saving accounts, certificates of deposits that are held-to-maturity, special saving accounts that allow income taxes on funds deposited into the plan to be deferred until money is withdrawn, etc. The category of financial investments includes bonds such as government saving bonds, corporate bonds, commercial papers, state or municipal non-saving bonds, foreign bonds and other non-saving bonds as well as mortgage-backed securities and treasury bills; publicly traded stocks that include accounts for the purchase and sale of stocks and other securities; mutual funds, investment funds, hedge funds and income trusts; and held-to-maturity managed investment accounts other then special saving accounts. The miscellaneous financial assets include, but are not limited to, education and home saving plans.

The category "complementary financial assets" is composed of two major categories, the long-term voluntary investment plans as well as pension entitlements other than voluntary pension funds. The former includes cash-value life insurance (other than accident life insurance), as well as voluntary individual pensions, such as tax-deferred retirement accounts. The latter refers to any other pension scheme that cannot be classified as a voluntary pension, for instance government employee schemes, or social security schemes.

Liabilities

The LWS components of liabilities are broken down in a similar way to the left-side of the household balance sheet, namely assets. Table B.1 presents the components of liabilities by purpose, where all liabilities, except education loans, correspond to the left-side of the household balance sheet. Real estate liabilities contain the principal residence mortgage as

well as the mortgages on other properties not owned by the business. The other liabilities by purpose are defined by the LWS in terms of non-housing liabilities, which include financial asset loans, consumer goods loans, education loans and other liabilities. Financial asset loans include the debts for option contracts and loans for short- or long-term investment purposes. The category "consumer goods loans" includes vehicle loans (cars, motorcycles, boats, airplanes, etc.), loans used for the purchase of consumer durables (precious metals, jewellery, antiques, paintings, coins, computers, furniture, etc.) and non-durables (holidays, furs, etc.). The other instalment loans or available lines of credit from financial institutions (credit card purchases) are also included under consumer goods loans. Other debts included in the LWS are education loans and other miscellaneous loans.

Besides the purposes for which loans are taken out by the household, the LWS also groups liabilities by the securitisation status of the debt. This is of considerable value in analysing the nature of household debt and associated household behaviour. Ideally, each of the standard components for liabilities may be split to show those loans that are secured, including the type of asset against which they are secured, and those loans that are unsecured. Due to the limitations of collected survey data, the LWS provides only variables that show loans secured by the principal residence or secured by other real estate. Loans taken out for a variety of purposes (including purposes unrelated to the property concerned) but secured by the principal residence or other real estate are recorded under home-secured debts. These include collateral loans taken out to invest in financial assets, to set up or expand own unincorporated business operations, to purchase vehicles or other consumer durables, to meet education expenses, or to cover holiday costs. Additionally, the LWS provides variables that record non-home-secured loans and informal loans. The former are divided into loans guaranteed by other individuals and loans that are non-guaranteed. The informal loans record money borrowed from friends/relatives outside the household.

Net worth

The components of LWS net worth are presented in the bottom of Table B.1. All components of non-financial assets and the majority of the components of financial assets are used to construct household wealth. The financial assets that enter net worth are deposit accounts and cash, financial investments, bonds and other debt securities, stocks and other equity mutual funds and other investment funds, and other financial assets. All liabilities listed in Table B.1 are subtracted from the above categories of assets. To help overcome the shortcoming of wealth surveys and to bring an adequate level of comparability across countries, the category "complementary financial assets" are excluded from the calculations of LWS net worth. Unfortunately, long-term voluntary investments plans (life insurance funds and voluntary individual pension funds) as well as other pension entitlements are not readily available in many countries' existing surveys. In some data sets, researchers have an option to add pensions to the net worth aggregate. Until greater standardisation of wealth surveys is achieved *ex ante*, researchers will have to trade off higher comparability against a somewhat incomplete picture of national wealth. Even though there are differences in the coverage and aggregation of wealth items across the various surveys, the LWS provides researchers with the most complete measure of household net worth.

Wealth aggregates

In order to achieve acceptable cross-country comparability, the LWS provides other aggregates based on the subcomponents of wealth described above. On the assets side of

the household balance sheet, these include total non-financial assets and total financial assets. Within non-financial assets two other aggregates are created, namely real estate assets and non-housing assets. The major aggregate in the category of financial assets is financial investments. Under the heading of complementary financial assets, the LWS provides the aggregate for long-term voluntary investment plans. The aggregates for liabilities by purpose include total household debt, real estate liabilities, non-housing liabilities and its subcomponent consumer goods loans. The aggregates for liabilities by securitisation include home-secured loans and non-home-secured loans.

Non-wealth variables

In addition to the household wealth components, the LWS provides researchers with other variables, such as socio-demographics, labour market, income, expenditures, behavioural and other wealth-related variables. The list of these variables is presented in Table B.2.

Table B.2. **List of LWS non-wealth variables**

Household characteristics and socio-demographic variables	Household characteristics	Household and family composition
		Geographic characteristics
		Dwelling characteristics
	Socio-demographics	Demographics
		Immigration
		Health
		Education level
		Background information
Labour market information	Activity status	Labour force status
		Main activity status
	Employment intensity	Hours worked
		Weeks worked
	Job characteristics	Occupation
		Industry
		Employment status
Current income	Labour income	Paid employment income
		Self-employment income
	Capital income	Interest and dividends
		Rental income
		Private saving plans/voluntary individual pension plans
		Royalties
		Other capital income
	Transfer income	Social security transfers-related insurance transfers
		Universal benefits
		Assistance benefits
		Private transfers
Windfall income	Labour income	Windfall employee income
		Windfall self-employment income
	Capital income	Capital gains
		Insurance compensations
	Transfer income	Inheritance
		Lottery winnings
		Lump-sum retirement compensations

Table B.2. **List of LWS non-wealth variables** *(cont.)*

Consumption expenditure variables	Consumption	Food and non-alcoholic beverages
		Alcohol and tobacco
		Clothing and footwear
		Housing and utilities
		Actual rent
		Imputed rent
		Housing equipment
		Health
		Transport
		Communication
		Recreation and culture
		Education
		Restaurants and hotels
		Miscellaneous goods and services
	Non-monetary consumption	Home production for own use
		Consumption of goods and services received
Non-consumption expenditure variables	Taxes and social security contributions	Wealth taxes
		Income taxes
		Other direct taxes
		Social security contributions
	Other non-consumption expenditure	Voluntary contributions
		Inter-household transfers paid
		Interest paid on mortgage and other loans
Wealth-related variables	Assets and liabilities transactions	Proceeds from sales
		Inflows from loans
		Outflows from loans
		Purchases
	Inheritance and other variables	Inheritance received:
		Amount, year, type, and from whom
		Information on whether inheritance expected
		Year and purchase price of principal residence
Behavioural variables	Attitudes toward household finances	Saving priorities/motives/purposes/attitudes
		Financial risk-taking attitudes
		Financial planning
		Financial literacy
		Obtaining financial information
		Financial decisions
	Other behavioural variables	Number of loans
		Number and possession of credit cards
		Loan consolidation
		Credit constraints
		Possibility to withdraw from home equity line of credit and non-mortgage line of credit

Household characteristics and socio-demographic variables

The household characteristics variables provided by the LWS contain information about the composition of the household or family, the geographical characteristics of the household residence as well as information about the principal residence of the household and tenure (owned versus rented).

The socio-demographic variables are all person-level variables and report the major socio-demographic characteristics for all household members. The socio-demographic variables are split into major groups including demographics (age, gender, marital status, and race/ethnicity), immigration (country of birth, duration of stay in the country of survey,

immigration status), health (disability status, subjective health status), education level, and some background information on parents.

LWS labour market variables

Labour market variables are also available for all household members in most LWS data sets. In several data sets, the full labour market information is provided only for the household head and spouse due to the nature of the original survey data. The labour market variables are grouped into three major blocks.

- *First*, the activity status contains information about the labour force status and main activity status. The labour force status variable captures any employment during the reference or current period, depending on the country survey. The main activity status variable distinguishes those for whom work is the main activity as well as the type of activity for the non-working (pensioners, students and homemakers).
- *Second*, employment intensity includes information about hours and weeks worked at all jobs or the main job, depending on the country.
- *Third*, the variable job characteristic includes information on occupation, industry and employment status for household members.

LWS current and windfall income variables

The LWS income variables are available on the household level and are based on the conceptual framework of the *Luxembourg Income Study (LIS) Database* income variables. There are two major categories of income available in LWS data sets: current income and windfall income. Both categories are composed of labour income, capital income and transfer income. Current income covers all receipts available for current consumption from wages and salaries, self-employment income, interest and dividends, rental income, private saving plans, royalties, social security transfers (work-related insurance transfers, universal benefits and assistance benefits) and private transfers. Windfall income consists of all windfall gains, irregular and typically one-time receipts such as capital gains, insurance compensations, inheritances, lottery winnings, and other lump-sum retirement compensations. The LWS and LIS have the same concept of disposable income as well as of major income aggregates.

LWS expenditure variables

The consumption expenditure of households provided in the LWS database corresponds to Codes 1 to 12 of the COICOP classification. These include consumption expenditures on food and non-alcoholic beverages, alcohol and tobacco, clothing and footwear, housing and utilities, housing equipment, health, transport, communication recreation and culture, education, restaurants and hotels, and miscellaneous goods and services. In addition, the LWS provides (if available separately in the original survey) an additional breakdown of non-monetary consumption, namely home production for own use and consumption of goods and services received.

Based on the LIS concept of non-consumption expenditure variables, the LWS also provides variables that fall into this framework. These include income taxes, wealth and other taxes, social security contributions, voluntary contributions, inter-household transfers paid as well as interest paid on mortgage and other loans.

LWS wealth-related variables

The LWS also provides information on monetary flows resulting from the transaction of assets and liabilities. These consist in monetary inflows that do not constitute income (neither current nor windfall) and outflows that do not represent consumption, but rather reduce or increase the net worth of the household, through a reduction or increase of its cash, the disposal or acquisition of its other financial and non-financial assets or an increase or reduction in its liabilities.

The other wealth-related variable includes total value and year when inheritance was received, as well as from whom it was received and type of inheritance received. The LWS also provides information on whether or not an inheritance is expected in the future. Additionally, the year and purchase price of the principal residence is provided.

LWS behavioural variables

Behavioural variables available in the LWS database are classified under two sub-headings: attitudes toward household finances and other behavioural variables. The first group of variables includes information about the household attitudes toward saving, financial risk-taking, financial planning, financial literacy, financial decisions, and how financial information is obtained. The additional variables in this group include information on the possibility to withdraw money from a home equity line of credit as well as a non-mortgage line of credit. The other behavioural variables provide information on loan consolidation, credit constraints, number and possession of credit cards, and number of loans. Additionally, the LWS database provides detailed information about inheritance and gifts – the year the inheritance/gift was received, the type, the amount and from whom it was received.

Comparability issues: Lessons from the LWS project

The LWS experience shows that differences across surveys and country practices call for international standards and practices regarding the definitions, components, measurements and collection of household wealth statistics. These international standards would allow a consistent, coherent and comparable set of wealth measures to be produced and utilised by researchers to conduct cross-national analyses of household wealth. Since data for the LWS come from varying sources, there are several issues that make the harmonisation and comparability of wealth data across countries challenging. These issues relate to the collection of household wealth statistics as well as the availability of the components of wealth and their measurements, classifications and definitions.

Before turning to the most important issues of the *ex post* harmonisation of household wealth data, it is necessary to point out the various purposes and structures of the original surveys. Some countries conduct typical wealth surveys; others integrate a special wealth module into their income surveys. Several countries combine surveys with some supplemental information on wealth from administrative records. These general characteristics of the original survey have implications for what components of wealth are available as well as how they are measured and classified.

First, there are cross-national differences related to the availability of certain wealth components. Since some surveys provide more detailed information than others, there are also differences in variable availability and comparability between LWS data sets. The main sources of differences are the availability of certain wealth components and the level of aggregation of variables. Usually, typical wealth surveys provide more detailed information

on wealth subcomponents than the surveys that have only wealth modules. Differences due to the level of aggregation of original survey variables primarily affect the sub-components of summary wealth variables. In some surveys it is not possible to separate all the different sub-components of financial or non-financial assets. Some countries provide rather aggregated variables, e.g. all financial assets are included in one variable. Other countries provide aggregated non-housing debts. Also, omitting some components of debt is not a trivial issue in the process of assembling comparable wealth data. The comparability of the subcomponents of non-financial assets, financial assets or liabilities could be lacking, but the major components of wealth are mostly available. The non-availability of individual sub-components of wealth does not affect the creation of comparable net worth.

Second, there are issues related to the measurement of assets and liabilities. Several countries combine surveys with supplemental information on wealth from administrative records. Tax register information might provide less accurate estimates because of under-reporting due to tax evasion and tax exemptions. Further, the valuation criteria for tax the register (expressed in the administrative rules) differ from current value prices. The valuations of assets and debts expressed with current value or on a realisation basis (e.g. valuation of real estate based on taxable values versus market values) are also present across surveys that do not utilise administrative records. Additionally, the assets and liabilities are sometimes recoded in unconventional ways, such as brackets or point values. Also, the accounting period differs across surveys, such as end-of-year values versus at time of interview values. Despite considerable efforts to standardise wealth variables, there remain important differences in valuation criteria and survey quality that cannot be adjusted for by the LWS.

It sometimes happens that the definitions of wealth components differ across surveys, making comparability more difficult. Specifically, the LWS experience indicates that definitions relating to housing wealth, unincorporated businesses and pension wealth sometimes diverge from survey to survey. Further, the definitions of the unit of analysis are not the same across surveys (household vs. nuclear family), and as a consequence the household head definitions differ across surveys.

Other issues involve survey sampling and data quality (imputations, response rate). Specifically, some wealth surveys over-sample wealthy households (upper tail of the distribution is usually the focus) at the cost of higher non-response rates. In the case of income surveys with a special wealth module, the response rate is higher than in detailed wealth surveys. Sometimes data are simulated, as in the case of taxes in several developed countries. Further, in some wealth surveys, imputation is applied in the presence of item non-response as well as of many items that are collected with ranges. Finally, bottom- and top-coding are used differently across countries.

As outlined above, there is a variation across LWS data sets in terms of the availability and comparability of wealth variables. The issues related to the definitions, measurements and classifications of wealth components as well as the collection of wealth data could be resolved through internationally agreed guidelines that countries and data producers are willing to follow. The standards and guidelines presented in this publication have great potential to make this wish come true.

ANNEX C

Differences between micro and macro measures of household wealth

This Annex provides a comprehensive list of the differences between these guidelines for micro statistics on household wealth and those in the 2008 SNA for macro statistics on this subject. While the differences are identified and discussed throughout the document, they are gathered here, in one place, for the convenience of readers.

Table C.1 presents each of the differences, grouped according to the relevant chapter and topic in this manual. It also notes the adjustments needed to achieve alignment between the two frameworks.

The relationship between the macro statistics wealth components presented in the SNA and the micro statistics components recommended in Chapter 3 is shown in Table C.2. The macro and micro components are listed separately, and for each micro component the corresponding macro component is noted. For example, the Table C.2 shows that:

- The micro assets component "principal residence" corresponds to part of two macro components, "fixed assets" and "natural resources". This reflects both the SNA's separation of land from the buildings that stand on it, a distinction not made in the micro components, and the fact that the SNA does not separate buildings used as a household's principal residence from other fixed assets.
- The micro assets component "equity in own unincorporated enterprises" corresponds to part or all of eight macro assets components and two macro liabilities components. This arises because the SNA does not separately report the assets (or liabilities) associated with some such businesses from other assets (or liabilities) of a household, and the micro statistics report all such equity investments together; the SNA separately reports the net equity for any such enterprises classified as "quasi" corporations in Equity and investment fund shares/units.
- The micro assets components "vehicles (non-business)" and "other durable goods (non-business)" do not correspond with any macro components, as the SNA does not recognise these goods as assets.
- The micro assets component "deposits" corresponds to part of the macro component "currency and deposits". Currency is indistinguishably recorded in the residual micro component "other financial assets".
- The micro assets components "shares and other equity" and "mutual funds and other investment funds" each correspond to part of the same macro component "equity and

Table C.1. **Differences between micro and macro statistics on household wealth**

Definition of household	*Micro statistics* 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. Three categories of household are separately distinguished: private households, institutional households, and other households. Domestic staff that live in the same dwelling as their employer are treated as members of the same household as their employer if they are boarders. *Macro statistics* The SNA definition of household has a different specification for multi-person households who share the same living accommodation: the resources to be shared by members must include "some or all income and wealth" and the members must collectively consume "certain types of goods and services, mainly housing and food". Also, although the SNA defines institutional households in terms similar to the definition to be used in micro statistics, it does not separately recognise "private" households. Domestic staff that live in the same dwelling as their employer are treated as belonging to a separate household from their employer irrespective of whether or not they are boarders. *Adjustments for alignment* The differences in definitional detail preclude full alignment with statistics based on the SNA definition. Although the differences might be small in practice, they might be significant for certain types of wealth analysis.
Coverage of households	*Micro statistics* The statistical coverage of households is restricted to private households that reside in housing units and that are residents of the country to which the statistics relate. The statistics exclude institutional households, private households residing in collective living quarters, and non-resident households. *Macro statistics* The SNA covers all resident households in its household sector, including institutional households. *Adjustments for alignment* Full alignment with statistics compiled according to the SNA's coverage of households is not achievable, although approximate alignment might be possible in situations where SNA-based statistics contain separate details for institutional households.
Selection of household reference person	*Micro statistics* A set of ordered criteria for determining a household reference person (for purposes of classifying households) is suggested for consideration. The criteria are: one of the partners in a registered or *de facto* marriage, with dependent children; one of the partners in a registered or *de facto* marriage, without dependent children; ● a lone parent with dependent children; ● the person with the highest income; ● the oldest person. *Macro statistics* The SNA considers that the household reference person should normally be the person with the largest income, although the person could also be the one who makes the major decisions with regard to the household's consumption. *Adjustments for alignment* It is not possible to align statistics based on the SNA's approach with those based on the "ordered criteria" suggested in this chapter. It is also difficult to generalise about the significance of the difference.
Treatment of consumer durables	*Micro statistics* Consumer durables are treated as assets and included in measures of wealth. They should also be recorded separately from other types of assets. *Macro statistics* The SNA excludes consumer durables from the definition of assets in its central framework, although it suggests they should be recorded in a memorandum item in the household balance sheet. It recognises that these goods may be treated as assets in satellite accounts. *Adjustments for alignment* Alignment with statistics compiled according to the central SNA framework can be achieved by omitting consumer durables from the asset aggregates in micro statistics on household wealth. This can be readily done, as consumer durables are to be recorded as a separate component of household assets.
Classification of assets and liabilities	*Micro statistics* The standard components of household wealth are listed in Box 3.2 in Chapter 3. They are grouped into non-financial assets, financial assets and liabilities. *Macro statistics* The SNA balance sheet components are also grouped into non-financial assets, financial assets and liabilities. The definitions of each grouping are the same as those for micro statistics, with the exception of net equity in own unincorporated enterprises (some of the net equity position in the micro statistics for households may be reflected as component assets and liabilities in the macro accounts unless the enterprise has been classified as "quasi" corporate for macro statistics purposes). Within each grouping, the classification scheme differs in significant ways between the two sets of statistics. Table C.2 shows the relationship between the macro and micro components. While a number of micro statistics components correspond – either alone or combined – with a single macro statistics component, many do not. *Adjustments for alignment* While the asset and liability components for micro statistics can be aligned with the SNA's balance sheet components at a broad level, alignment at the component level would generally require additional data collection and/or the use of special estimation or modelling techniques. The more significant differences in classification relate to non-financial assets, but there are also differences for financial assets and liabilities.

Source: Chapter 3, "Standard concepts, definitions and classifications for household wealth statistics".

Table C.2. **Relationship between standard components in macro and micro household wealth statistics**

Category	Macro statistics SNA Asset and Liability Components for all sectors, including household sector (SNA, Table 13.1)	Micro statistics Standard asset and liability components for households (Chapter 3, Box 3.2)	Correspondence Macro statistics component (whole or part) to which micro statistics component corresponds
Non-financial assets	Produced:	Owner-occupied dwellings:	
	● Fixed assets	● Principal residence	Fixed assets (part)
	● Inventories	● Other owner-occupied dwellings	Natural resources (part)
	● Valuables	Other real estate	
	Non-produced:	Consumer durables	
	● Natural resources	● Vehicles (non-business)	Not included in assets
	● Contracts, leasing, licenses	● Other durable goods (non-business)	Not included in assets
	● Goodwill and marketing	Valuables	Valuables
		Other non-financial assets	Fixed assets (part)
			Natural resources (part)
			Contracts, etc. (part)
Financial assets	Monetary gold and SDRs[1]	Deposits	Currency and deposits (part)
	Currency and deposits	Bonds and other debt securities	Debt securities (whole)
	Debt securities	Equity in own unincorporated enterprise	Fixed assets (part)
	Loans		Inventories (whole)
	Equity and investment fund shares/units		Natural resources (part)
	Insurance, pension and standardised guarantee schemes		Contracts, etc. (part)
	Financial derivatives and stock options		Goodwill, etc. (whole)
	Other accounts receivable		Other accounts receivable (part)
			Equity and investment fund shares/units (part)
			Loan assets (part)
			Loan liabilities (part)
			Other accounts payable (part)
		Shares and other equity	Equity and investment fund, etc. (part)
		Mutual funds and other Investment funds	Equity and investment fund, etc. (part)
		Life insurance funds	Insurance, pension, etc. (part)
		Pension and superannuation funds	Insurance, pension, etc (part)
		Other financial assets	Loans (part)
			Currency and deposits (part)
			Financial derivatives, etc. (whole)
Liabilities	Monetary gold and SDRs[1]	Owner-occupied residence loans	Loans (part)
	Currency and deposits[1]	Other real estate loans	Loans (part)
	Debt securities[1]	Vehicle loans	Loans (part)
	Loans	Education loans	Loans (part)
	Equity and investment fund shares/units	Other liabilities	Loans (part)
	Insurance, pension and standardised guarantee schemes[1]		Equity, etc. (whole)
	Financial derivatives and stock options		Financial derivatives, etc. (whole)
	Other accounts payable		Other accounts payable (whole)

1. These SNA components are not relevant to households.

investment fund shares/units"; together the two micro components correspond to the whole macro component (excluding equity in "quasi" corporations in which the household works, which in the micro statistics are reported with all other such equity investments in own unincorporated enterprises).

- The micro assets components "life insurance funds" and "pension and superannuation funds" each correspond to part of the same macro component "insurance, pension and

standardised guarantee schemes"; together the two micro components correspond to the whole macro component.

- The micro liabilities component "principal residence loans" corresponds to part of the macro component "loans". Four other micro components also consist solely of loans, while residual loans (e.g. credit card debt) are classified indistinguishably in the micro component "other liabilities". Together the five micro components that separately identify loans could be expected to make up the bulk of the macro component "loans".

ANNEX D

Inventory of country methodologies for producing micro wealth statistics

This Annex presents the detailed results of a questionnaire designed by the Expert Group to compare and make an inventory of country methodologies for producing micro wealth statistics. Countries were asked to provide detailed information on their main wealth surveys, grouped under four main headings: *i)* main features; *ii)* wealth classification; *iii)* coverage and collection; and *iv)* dissemination practices.

The Questionnaire was addressed to the National Statistical Offices, the European Central Bank (which when necessary dispatches the questionnaire to National Central Banks) and to Eurostat in June 2011, with replies due by the beginning of July 2011. As of March 2012, 27 responses were received (26 from countries and 1 for the European Central Bank).[1] In general, respondents have provided most of the required information. The general results are described in Sections D.1 to D.4, while the characteristics of the wealth classifications used in each country are available in Section D.5. A brief summary of the key insights is provided below.

The information provided in these tables relate to the "main" wealth survey available in each country, with the choice of the most representative source left to each statistical office or central bank. The results are grouped in three categories: *i)* European countries adhering fully to the HFCS framework (Austria, Belgium, Greece, Luxembourg, Malta, Slovakia and Slovenia), *ii)* European countries adhering partially to the HFCS recommendations (France, Italy, Portugal and Spain); and *iii)* countries conducting independent surveys (Australia, Canada, Chile, Estonia, Finland, Germany, Israel, Japan, the Netherlands, Norway, New Zealand, Korea, Turkey, the United Kingdom and the United States).[2]

D.1. Overview of the main sources

Table D.1 summarises the general characteristics of the various data sources. For most countries, wealth distribution data are based on household surveys, although in the case of Canada, Finland, France and Malta, they are (at least partially) based on administrative data.

A majority of surveys are cross-sectional but include a panel component (consisting generally in half of the sample) in the case of Belgium, Estonia, Italia, Luxembourg, Portugal and Spain. While the case of the while for Netherlands, the United Kingdom and the United-States surveys are panel only.

Most surveys collect information not only about wealth but also about income and expenditure (Australia, Austria, Belgium, Canada, Chile, France, Germany, Greece, Italy,

Table D.1. **Overview**

Countries/ organisations	Survey name	Data producer	Data sources	Sample design	Data collection	Number of observations	Number of dataset comparable across time	Additional topic covered	Availability of a panel dimension and share of the original sample	Use of administrative records/ matching
European Central Bank	Household Finance and Consumption	ECB/National Central Bank's or National Statistics Instititute's of individual euro area countries	Survey	Country dependent	Face-to-face interviews, Web-based survey (only in the Netherlands)	n.a.	0	Primary: Expenditure, income Secondary: Housing, employment, pensions entitlements, inheritance, gifts	Country dependent: Cross-sectional data only, panel data only or panel on a sub-sample	Country dependent
Austria	As above	Österreichische Nationalbank	Survey using ECB framework	Stratified, clustered, multi-stage	Face-to-face interviews	2 600 households (estimated)	0	As above	No	No
Euro area	As above	Synovate		Stratified	Face-to-face interviews	2 360	0	Primary: Expenditure, income Secondary: Housing, other	Yes	No
Greece	As above	National Bank of Belgium		Stratified, clustered	Face-to-face interviews	6 601 individuals (aged 16 and over) 2 971 households	0	Primary: Expenditure, income Secondary: Housing, employment, pensions entitlements, inheritance, gifts	No	No
Luxembourg	As above	CEPS/INSTEAD under the supervision of BCL		Stratified	Face-to-face interviews	950 households	0	As above	Yes (exact fraction of panel households is still discussed)	No
Malta	As above	Central Bank of Malta		Stratified, single-stage	Face-to-face interviews	843 households	n.a.	As above	No	Yes/No
Slovak Rep.	As above	National Bank of Slovakia		Country quota sampling	Face-to-face interviews	2 000 (estimated)	n.a.	As above	No	No
Slovenia	As above	Bank of Slovenia		Multi-stage	Face-to-face interviews	344 (estimated)	n.a.	As above	No	No
France	Enquête Patrimoine	INSEE	As above	Stratified, multi-stage	Face-to-face interviews	29 442 individuals, 15 006 households , 35 729 individuals in total	Approximatively 5	Primary: Housing Secondary: Expenditure, income, gifts, inheritance, biographical and professional path, employment, risk aversion, symbolic and intangible wealth	No	Yes/Yes
Italy	Household Income and Wealth	Banca d'Italia		Multi-stage	Face-to-face interviews	19 907 individuals, 7 977 households	32 (1977)	Primary: Income, housing Secondary: Expenditure	Yes (around 50%)	No
Netherlands	Income Panel	Statistics Netherlands	Administrative data	n.a.	Administrative records	27 000 individuals, 93 000 households	5 (2006)	Primary: Income	Panel data only	n.a.
Portugal	Inquérito à Situação Financeira das Famílias	Statistics Portugal	Survey partially based on ECB framework	Multi-stage	Face-to-face interviews	9 761 Individuals, 4 437 households	0	Primary: Expenditure, income Secondary: Housing, employment, pensions entitlements, inheritance, gifts	Yes (% of the sample : "to be defined")	No
Spain	Encuesta Financiera de las Familias	Depending on the waves		Stratified, clustered	Face-to-face interviews	6 197 households	3	Primary: Expenditure, income Secondary: Housing	Yes (54% average of available waves)	No

Table D.1. **Overview** *(cont.)*

Countries/ organisations	Survey name	Data producer	Data sources	Sample design	Data collection	Number of observations	Number of dataset comparable across time	Additional topic covered	Availability of a panel dimension and share of the original sample	Use of administrative records/ matching
Australia	Survey of Income and Housing	Australian Bureau of Statistics	Survey	Stratified, clustered, multi-stage	Face-to-face interviews	19 212 individuals, 9 961 households	3 (2003)	Primary: Expenditure (only every 6 years), income, material deprivation, housing Secondary: Disability, child care arrangements, ethnicity	No	No
Canada	Survey of Financial Security	Statistics Canada	Survey	Stratified, clustered	Face-to-face, administrative records	12 821 individuals, 5 188 households, 5 282 families (total: 23 291)	2	Primary: Income Secondary: Expenditure, housing	No	Yes/Yes
Chile	Survey of Household Finances	Central Bank of Chile	Survey	Stratified, multi-stage	Face-to-face interviews	10 731 individuals, 3 819 households	1 (2007)	Primary: Income, housing Secondary: Expenditure, material deprivation	No	No
Estonia	Estonian Social Survey (EU-SILC EE)	Statistics Estonia	Survey	Stratified, stratified, systematic sampling	Face-to-face interviews	11 220 individuals, 4 965 households	6	Primary: Income, housing, poverty and social exclusion Secondary: Material deprivation	Yes (60-65%)	No
Finland	Household Wealth Survey Household's Assets	Statistics Finland	Administrative records and Survey	Stratified, two-phase	Face-to-face interviews, administrative records	10 989 households	6 (1987)	Primary: None Secondary: Income, housing, gifts, inheritances, liabilities	No	Yes/Yes
Germany	Sample Survey of Income and Expenditure	Federal Statistical Office	Survey	Quota sample	Self completion questionnaire	56 274 households (for assets and liabilities)	7 (1978)	Primary: Expenditure, income, housing, equipment of households with selected consumer durables Secondary: None	No	No
Israel	Household Expenditure Survey	Central Bureau of Statistics	Survey	Multi-stage	Face-to-face interviews, self completion questionnaire	6 270 households	13	Primary: Expenditure, income Secondary: Material deprivation housing	No	No
Japan	National Survey of Family Income and Expenditure	National Statistics Center	Survey	Stratified, clustered, multi-stage	Self completion questionnaire	56 800 households	n.a.	As above	No	No
Korea	Survey of Household Finances	Statistics Korea	Survey	Stratified, clustered, multi-stage	Face-to-face interviews	10 524 households	1	Primary: Housing Secondary: Expenditure, income	No	No
Norway	Income Statistics for Households	Statistics Norway	Administrative records	n.a.	Administrative records	2.1 million	23	Primary: Income Secondary: Housing	n.a.	n.a.
New Zealand	Household Savings Survey	Statistics New Zealand	Survey	Stratified, clustered, multi-stage	Face-to-face interviews	5 373 Economic units	1	As above	No	No

Table D.1. **Overview** *(cont.)*

Countries/ organisations	Survey name	Data producer	Data sources	Sample design	Data collection	Number of observations	Number of dataset comparable across time	Additional topic covered	Availability of a panel dimension and share of the original sample	Use of administrative records/ matching
Turkey	Household Budget Survey	Turkish Statistical Institute	Survey	Stratified, clustered, multi-stage	Face-to-face interviews	28 041 individuals, 10 046 households	9	Primary: Expenditure Secondary: Income, material deprivation, housing	No	No
United Kingdom	Wealth and Assets Survey	Office for National Statistics	Survey	Stratified, multi-stage	Face-to-face interviews	53 298 individuals, 30 595 households	2	Primary: None Secondary: Income, housing, attitudes, household debt, subjective wellbeing (from july 2011)	Yes (100%)	No
United States	Survey of Consumer Finances	Board of Governors of the Federal Reserve System	Survey	Stratified, clustered, multi-stage, dual frame	Face-to-face and telephone interview	6 513	8	Primary: Income, housing Secondary: Expenditure financial inst., used labor history, marital history, pension rights	Cross sectional data panel data (86-09)	No

Israel, Japan, Luxembourg, Malta, Portugal, Slovak Republic, Slovenia, Spain, Korea, Turkey and the United States), or income only (Estonia, Finland, Netherlands, Norway, New Zealand and the United Kingdom). Inheritance, non-monetary aspects of material deprivation and other topics are also collected as secondary items in most surveys.

D.2. Data collection properties

In all countries except the Netherlands, the information collected refers to the non-institutional population (Table D.2). As a result, and not surprisingly, the population groups excluded from the survey are often the same: non-private dwellings; people with a non-permanent address; and people living overseas and in small territories.

With respect to the usual standards for household-based surveys, overall response rates are quite high in most countries, generally around 50% or above, with the exception of Belgium, Chile, Luxembourg and Malta. Almost all the surveys propose a set of weights to ensure the sample's representativeness.

Most countries refer to the household and the individual as the main unit used to collect wealth information. In all countries, people are considered to be part of the same household when they share a common dwelling and budget. However, the selection of the person to be interviewed in a household differs across countries. Some countries select on the basis of an economic criterion (e.g. in Germany and Japan, the person with the highest income). Other countries rely on an assessment of who is most knowledgeable about the household financial situation, while in others all persons above a given age are interviewed.

Due to the high concentration of wealth, which is hard to capture in a survey using the usual sampling procedure, over-sampling of the wealthiest households is applied in most countries except Australia, Germany, Italy, Israel, Japan, Malta, Norway and Turkey. To preserve confidentiality at the top of the distribution, some countries apply top-coding to the data record disseminated to the public (Australia, France, Israel, Japan, Korea, Malta, New Zealand and Portugal).

D.3. Structure of wealth items recorded and their valuation

Most countries adhering (partially or fully) to the HFCS framework record holdings of different types of assets net of the liabilities pertaining to them (Table D.3). The exceptions are France and Italy, where assets of different types are recorded "gross" of the liabilities relating to them. Among countries conducting independent surveys, Australia, Canada, Chile, Estonia, Finland, Germany, Israel, Japan, Norway, Korea and Turkey rely on "gross" recording of asset holdings, while New Zealand and the United States record these on a "net" basis.

The time reference for valuation is usually at the time of interview for most countries, although Italy, Finland, Korea, Norway and the Netherlands consider the end of the year prior to the interview as the time reference. When administrative data are not used, the valuation method retained is usually the estimation declared by the respondent, though in some countries this is completed by respondent records. The resulting amounts are usually recorded using a mix of currency amounts and pre-defined ranges.

Table D.2. **Data collection properties**

Countries/ organisations	Overall response rate	Rules for response rate computation	Population out of the scope of the survey	Groups excluded who have the largest impact	Definition of the unit of observations	Person(s) interviewed	Time frame for data collection	Availability of weights	Imputation for item non-response/ methodology used	Oversampling	*Ex post* top coding	Mandatory survey
European Central Bank	50-60%	Missing data	Persons living in collective households and in institutions are generally excluded from the survey	n.a.	Individuals (for demographic, employment, pension and income variables)/ households	The one who is the most knowledgeable of the households' finances	Country dependent	Yes[1]	Yes Multiple imputation, five implicates (mandatory requirement for all household income, consumption and wealth components covered by the survey	Yes Oversampling of wealthy households applied in most countries according to different methods	No	No With the exception of some countries where the survey is conducted by National Statistical Institutes
Austria	50-60%	Missing data	Persons living in collective households and in institutions are generally excluded from the survey	n.a.	Individuals (for demographic, employment, pension and income variables)/ households	Yet to be defined as per tabulation of HFCS data. As per data collection, the reference person is the one who is at the centre of the household's finances	Sept.-June	Yes	As above	Yes Oversampling of households in Vienna because of expected higher no-response	No	No
Belgium	< 30% (available for 2 countries)	Multiple imputation	n.a.	n.a.	Person living alone or a group of people who live together in the same private dwelling and share expenditures, including the joint provision of the essentials of living	All persons above a given age	April-Sept.	Yes	As above	Yes Oversampling of wealthy households	No	No
Greece	30-50%	Missing data	People living in villages less than 400 inhabitants, people living in non-private dwellings, people without permanent address	n.a.	Individuals (for demographic, employment, pension and income variables)/ households	The one who is the most knowledgeable of the households' finances	Aug.-Sept.	Yes	Yes Multiple imputation for all wealth items	Yes Oversampling of wealthy residential areas in Athens and Thessaloniki	Not decided yet	No
Luxembourg	< 30% (available for 2 countries)	Missing data	Persons living in collective households and in institutions are generally excluded from the survey	2.6% of private households	Fiscal households	The one who is the most knowledgeable of the households's finances	Oct.-April	Yes	Yes Multiple imputation, five implicates (mandatory requirement for all household income, consumption and wealth components covered by the survey	Yes - Oversampling of wealthy households based in labour income documented in the social register Oversampling rate of 20% as suggested by ECB guidelines	No	No

Table D.2. **Data collection properties** *(cont.)*

Countries/ organisations	Overall response rate	Rules for response rate computation	Population out of the scope of the survey	Groups excluded who have the largest impact	Definition of the unit of observations	Person(s) interviewed	Time frame for data collection	Availability of weights	Imputation for item non-response/ methodology used	Oversampling	*Ex post* top coding	Mandatory survey
Malta	30-50%	Missing data	Persons living in collective households and in institutions are generally excluded from the survey	n.a.	Individuals (for demographic, employment, pension and income variables)/ households	The one who is the most knowledgeable of the households's finances	Oct.-Feb.	Yes	As above	No	No	Yes
Slovak Rep.	n.a.	Missing data	Persons living in collective households and in institutions are generally excluded from the survey	n.a.	Individuals (for demographic, employment, pension and income variables)/ households	Yet to be defined as per tabulation of HFCS data. As per data collection, the reference person is the one who is at the centre of the household's finances	4th quarter 2010	N.a	Yes Multiple imputation, five implicates (for all household income, consumption and wealth components)	n.a.	No	No
Slovenia	30-50%	Missing data	Persons living in collective households and in institutions are generally excluded from the survey	n.a.	Individuals (for demographic, employment, pension and income variables)/ households	All person above a given age	Nov.-Dec.	Yes	As above	Yes Oversampling of people who live in Ljubljana and Maribor	No	No
France	60-70%	Missing data	People living in non-private dwelling People without permanent address (2.4%)	n.a.	Individuals and households	All person above a given age	Oct.-Feb.	Yes	Yes Only holding variables are concerned: Balanced imputation by stratified hotdeck	Yes Wealth and CSP crossed by age oversampling rate: sample size in defined *ex ante*. Neyman's allocation is used to calculate the size of each strata	No	Yes
Italy	50-60%	Missing data	Institutionalised persons (people living in hospitals, prisons, etc.) (0.5%)	n.a.	Individuals and households (people living in the same dwelling and having a common budget)	The person who is the most knowledgeable about the finances of this households	Jan.-June	Yes	Yes Single stochastic imputation	No	No	No
Netherlands	> 80%	n.a.	None	n.a.	Individuals and households (people living in the same dwelling and having a common budget)	n.a.	n.a. (tax records)	Yes	n.a.	n.a.	No	n.a.

Table D.2. **Data collection properties** *(cont.)*

Countries/ organisations	Overall response rate	Rules for response rate computation	Population out of the scope of the survey	Groups excluded who have the largest impact	Definition of the unit of observations	Person(s) interviewed	Time frame for data collection	Availability of weights	Imputation for item non-response/ methodology used	Oversampling	*Ex post* top coding	Mandatory survey
Portugal	n.a.	Missing data	People living in non private dwellings/ n.a.	n.a.	Households People living in the same dwelling and having a common budget	Household member chosen by other household members	April-July	Yes	Yes Multiple imputation, five implicates (for all household income, consumption and wealth components)	Yes	No	Yes
Spain	n.a.	Missing data	Persons living in collective households and in institutions are generally excluded from the survey	n.a.	Households	Person most knowledgeable about the finance of the household	Oct.-July	Yes	Yes All variables/questions are imputed. Stochastic regression methods mostly and multiple imputations provided	Yes By wealth strata using wealth tax records	No	No
Australia	> 80%	Missing data	People in sparsely populated areas People living in non-private dwelling People without permanent address (2-3%)	Elderly	People usually living in the same dwelling	See annex sheet	Continuously throughout the year	Yes	Yes Donor records from fully responding households with matching characteristics	No	No	Yes
Canada	60-70%	Missing data	3 territories (Yukon, North West, Nuvanut) Indian reserves Official representative of other countries Members of military camp or retreat houses (2%)	n.a.	Economic family	Reference person	April-June	Yes	Yes	Yes High income group defined by USD 200 000 of total family income or investment income of USD 50 000	n.a.	n.a.
Chile	30-50%	Missing data	People in overseas territory People in sparsely populated areas People living in non-private dwellings People without permanent address	n.a.	Individuals Households (people living in the same dwelling and having a common budget)	Person who most contributes to household income	Oct.-Dec.	Yes	Yes Multivariate method applicated to income, assets and liabilities at household level	Yes Oversampling of households living in high income areas (areas where 80% of the population or more belongs to the two deciles of income)	No	No

Table D.2. **Data collection properties** *(cont.)*

Countries/ organisations	Overall response rate	Rules for response rate computation	Population out of the scope of the survey	Groups excluded who have the largest impact	Definition of the unit of observations	Person(s) interviewed	Time frame for data collection	Availability of weights	Imputation for item non-response/ methodology used	Oversampling	*Ex post* top coding	Mandatory survey
Estonia	70-80%	Missing data	People living in non-private dwelling People without permanent address (1%)	Youth/ Elderly	Individuals Households (people living in the same dwelling and having a common budget)	Person who owns or rents the housing unit	Feb.-June	Yes	Yes. All missing values of income variables and exact amounts of foodstuffs produced for own consumption are imputed. No wealth items are imputed	Yes	No	No
Finland	70-80%	Missing data	Institutional households are excluded	n.a.	Households People having a common budget for essential items	Person with the highest income	Feb.-May	Yes	No	Yes High income households	Yes	No
Germany	Inapplicable (quota sampling)	Missing data	People in overseas territories. People without permanent address. People living in communal establishments and institutions. Household with a monthly net income of EUR 18 000 or more	n.a.	Household People living in the same dwelling and having a common budget	Person with the highest income	Jan.	Yes	No	No	No	No
Israel	> 80%	Missing data	People in overseas territory. People living in non-private dwellings/5%	n.a.	Households People living in the same dwelling and having a common budget	The first adult who answer the questionnaire	Continuously throughout the year	Yes	Yes Using the average of the responders, using price list files	No	No	Yes
Japan	> 80%	Missing data	People in overseas territories. People without permanent address	Groups defined by nationality or ethnic group	Households	Person with the highest income	Sept.-Nov.	Yes	No	No	Yes	Yes
Korea	> 80%	Missing data	People without permanent address. Students living alone under 15 year old. People living in dwelling in a social welfare facility. Households composed of non family members and foreigners	n.a.	Households People living in the same dwelling and having a common budget	Person taking responsibility for household's living	20 days from April-May	Yes	No	Yes Oversampling for people having an apartment whose area is over 132 m^2	No	Yes

Table D.2. **Data collection properties** *(cont.)*

Countries/ organisations	Overall response rate	Rules for response rate computation	Population out of the scope of the survey	Groups excluded who have the largest impact	Definition of the unit of observations	Person(s) interviewed	Time frame for data collection	Availability of weights	Imputation for item non-response/ methodology used	Oversampling	*Ex post* top coding	Mandatory survey
New Zealand	70-80%	Missing data	People in overseas territories/People in sparsely populated areas/People living in non private dwelling/People without permanent address	Youth/ Elderly	Economic unit	Randomly selected in the household member aged 18+	Aug.-Nov.	Yes	Yes Deterministic	Yes Maori ethnic group/ Maori booster sample/ Extra sample selected and a screening questionnaire was used to select respondents who identified as Maori	No	Yes
Norway	n.a.	Missing data	People living in non-private dwelling People in illegal situation (< 2%)	Elderly	Individuals and households	n.a.	Oct.-March	No	No	No	No	n.a.
Turkey	70-80%	Missing data	People living in non private dwellings/ n.a.	Person with the highest income	Households People living in the same dwelling and meeting their own basic needs together	Person with the highest income	Continuously throughout the year	Yes	No	No	No	No
United Kingdom	50-60% and above for some waves	Missing data	People in overseas territories People in sparsely populated areas People living in non private dwelling People without permanent address Northern Island (< 1%)	n.a.	Individuals and households	All person above a given age	Continuously throughout the year	Yes	Yes Nearest neighbor On a wide range of wealth variables	Yes Estimated high wealth households See Annex sheet for more details	Yes	No
United States	69%	Missing data	People in overseas territ. People in non-private dwell	n.a.	Economic family	Reference person	Families and individuals	Yes	Multiple imputation of all missing data	Oversampling of wealthy people	No	n.a.

Table D.3. **Structure**

Countries/ organisations	Gross or net basis	Time referring Currency amount	Valuation method	Coherence with external sources	Reference to written records	Information collected on other wealth variables and data related to transactions
European Central Bank	Net worth on business collected and classified as households assets	Dependent on the country (most of the time: at the time of interview) Currency amount and ranges	Estimated by respondent Direct valuation from respondent records (financial assets and liabilities only)	Countries carry out regular checks with external sources Additional coherence checks with external sources are also performed by the ECB	Information received from banks and other financial institutions	Investments attitudes Risk aversion Saving attitudes Comparison of last 12 months expenses to average income Ability to get financial assistance Financial constrains Retirement plans Income and inheritance expectations Purchases Sales of assets Capital
Austria	As above	At the time of interview Currency amount and in ranges	As above	n.a.	Information received from banks and other financial institutions	
Belgium	As above	At the time of interview Currency amount and in ranges	As above	Yes	Information received from banks and other financial institutions	
Greece	As above	At the time of interview Currency amount and in ranges	Estimated by respondent	No	Bank statements, salary and pension statements	
Luxembourg	Net worth on business	At the end of previous year Currency amount (if variable was not given as an exact amount, brackets are collected)	Estimated by respondent Direct valuation from respondent records (financial assets only)	Coherence available external sources will be carried out Additional coherence checks with external sources are also performed by the ECB	Information received from banks and other financial institutions	
Malta	Net worth on business collected and classified as households assets	At the time of interview Currency amount	Estimated by respondent Direct valuation from respondent records (financial assets and liabilities only)	n.a.	Information received from banks and other financial institutions	
Slovak Rep.	As above	At the time of interview Currency amount	Estimated by respondent Direct valuation from respondent records (financial assets only)	No	Information received from banks and other financial institutions	
Slovenia	Net worth on business	At the time of interview Currency amount	As above	Coherence available external sources will be carried out Additional coherence checks with external sources are also performed by the ECB	Information received from banks and other financial institutions	
France	Gross	At the time of interview Currency amount Respondent reported ranges	Estimated for respondent Direct valuations from respondent records	Yes With National Accounts Sheets It leads to an adjustment of the data	Amortisation table, bank, insurance statements, any other records the respondent might consider helpful	Risk aversion Saving attitudes
Italy	Gross	At the end of the previous year Currency amount (and in defined ranges for Financial Assets)	Estimated by respondent	Yes (except for Business Loans and Informal loans) The data has not been adjusted	Pay receipts, accounts statements, bank statements, bank or postal documents	None
Netherlands	Gross, except for business wealth	At the end of the previous year Currency amount	Information from tax authorities	Global check with National Accounts No adjustment	n.a.	n.a.

Table D.3. **Structure** *(cont.)*

Countries/ organisations	Gross or net basis	Time referring Currency amount	Valuation method	Coherence with external sources	Reference to written records	Information collected on other wealth variables and data related to transactions
Portugal	As above	At the time of interview Currency amount or self-reported Pre-defined ranges	Estimated by respondent Direct valuation from respondent records (financial assets and liabilities only)	n.a.	Information received from banks and other financial institutions	Comparison of last 12 months expenses to average income Ability to get financial assistance Financial constrains Retirement plans Income and inheritance expectations Rebalancing of portofolio Purchases Sales of assets Capital gains-losses Unrealised gains-losses Substantial gifts-inheritance received by type
Spain	Net worth on business collected	At the time of interview Currency amount	As above	Yes With other data not described The data has not been adjusted	Information received from banks and other financial institutions	Investment attitudes Future expenses compared to current Direction of change expected in savings. **From 2011:** House value expectations Probability of losing job Probability of finding job Purchases-sales of assets (available for real estate assets) Capital gains and losses Unrealised gains-losses Inheritances Gifts
Australia	Gross except for unincorporated business (net of liabilities)	At the time of interview Currency amount	Estimated by respondent Direct valuations from respondent records	Yes With National Account Balance Sheet data except for Mutual and Investments Funds, other financial assets, collectibles, other non-financial assets business loans, instalment debt, informal debt but it does not lead to an adjustment	Loans statements Credit card statement Charge account statement Bank statement Bank books Superannuation statements Shares certificate	No
Canada	Gross	At the time of interview Currency amount	As above	No	Bank records Debt Any financial statement	Purchases-sales of assets Capital Gains-losses
Chile	Gross	At the time of interview Currency amount and predefined ranges	Estimated by respondent	No	No	Payment Behavior Use of online banking Capital gains-losses

Table D.3. **Structure** *(cont.)*

Countries/ organisations	Gross or net basis	Time referring Currency amount	Valuation method	Coherence with external sources	Reference to written records	Information collected on other wealth variables and data related to transactions
Estonia	Gross	Value not available Total value not available for all assets except principal residence mortgage: Amount at the year of conclusion (interest term and terms of loans are also known) Currency amount	Valuation not used Principal residence mortgage: Estimated by respondent	No	Principal dwelling loan's contract	No
Finland	Gross	At the end of the previous year (except for transaction and saving accounts: Time of interview) Currency amount	Register, 2009 (except for saving accounts: Modelled) + price statistic	n.a.	n.a.	Purchases Sales of assets Buying and selling of securities
Germany	Gross	Survey year Currency amount	Estimated for respondent (only for real estate) Direct valuations from respondent records	No	No	No
Israel	Gross	At the time of interview Currency amount	Direct valuations from respondent records (for vehicles: Imputed from accepted and popular car price list	Yes Only for life insurance and pensions assets with tax records but the data have not been adjusted	No	Purchases Sales of assets
Japan	Gross	At the time of interview Currency amount for Financial Assets and liabilities In defined ranges for Non Financial Assets	Direct valuation from respondent records Modelled	No	No	No
Korea	Gross	At the end of previous year Currency amount	Direct valuation from respondent records	No Except for principal residence with the transaction value data and the data has been occasionally modified	Bankbook Insurance contract Housekeeping book, etc.	Capital Gains-losses
New Zealand	Business Assets were reported in a net basis	At the time of interview Currency amount	Estimated by respondent Valuation by trained person or professional (pension assets) Direct valuation from respondent records	No Except for transaction accounts, saving accounts, residence mortgage, credit card debt: Coherence with Central Bank data, educational loan with Tax Data. No adjustment has been made	Bank statements Superannuation statements Loan agreements Hire purchase agreements Anything that may relate to assets-liabilities	No
Norway	Gross	At the end of previous year Currency amount	Tax data	n.a.	n.a.	Capital Gains-losses

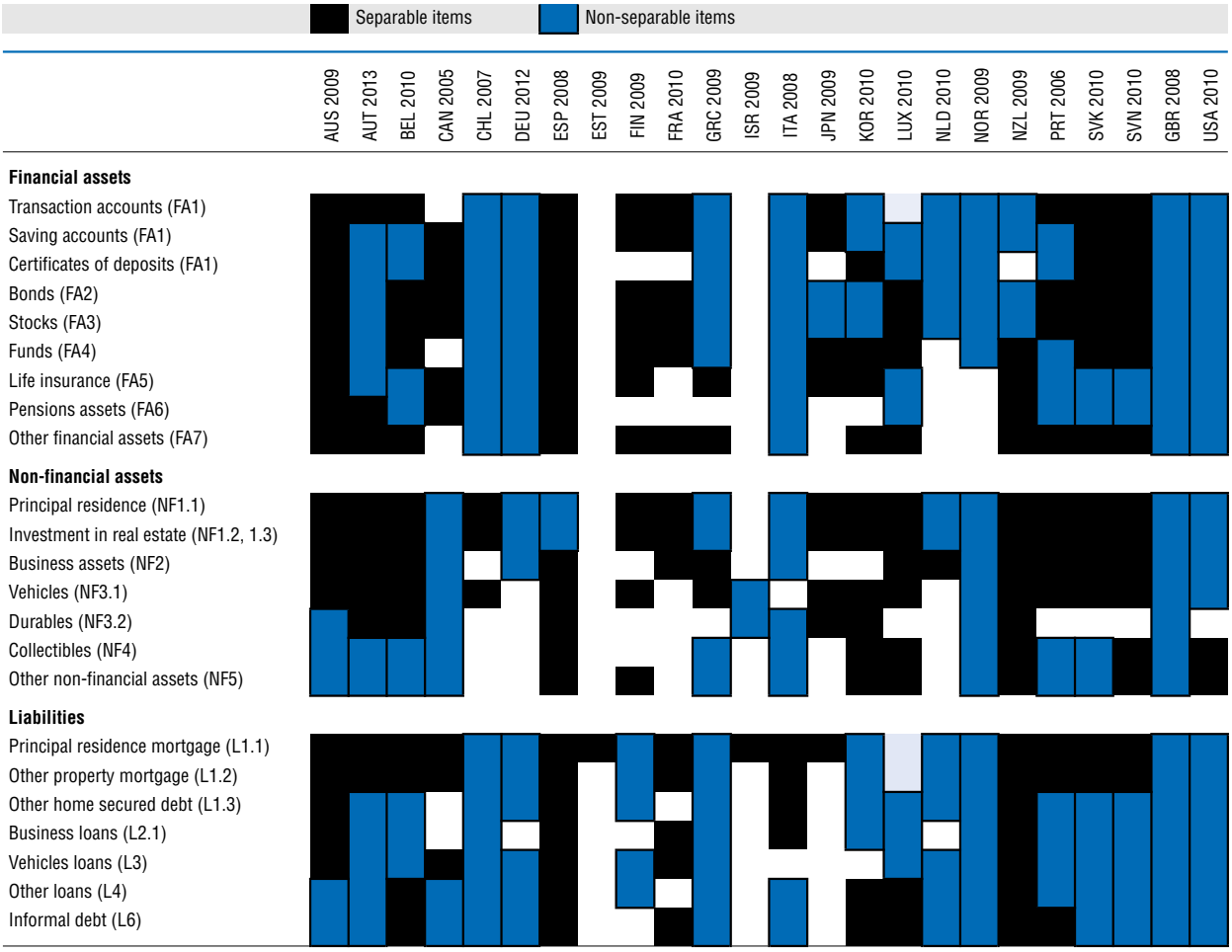
Table D.3. **Structure** *(cont.)*

Countries/ organisations	Gross or net basis	Time referring Currency amount	Valuation method	Coherence with external sources	Reference to written records	Information collected on other wealth variables and data related to transactions
Turkey	Gross	At the time of interview Only the number of real-estates, vehicles, durables belonging to the household. The value of principal residence is not asked in the survey whether household tenant or owner is asked	Direct valuation from respondent records	No	No	None
United Kingdom	Gross	At the time of interview	Estimated by respondent	No	Any that gave details of the assets they were reporting on	Changes in assets and liabilities in longitudinal data of changes in value
United States	Net, liabilities collected separately	Time of interview Currency amount or ranges	Estimated by respondent Direct valuation from respondent	Yes But it doesn't lead to an adjustment	Tax returns Account statements Business records etc.	Capital gains-losses Unrealised gains-losses

D.4. Wealth items inventory

Table D.4 summarises the availability of wealth items according to a common classification. A black cell indicates that the item is available and separable from others, a blue cell indicates that the item is available but not separable, while a white cell indicates that the item is missing.

Table D.4. **Inventory**



With the exception of Estonia, Greece, Israel and Turkey, the three main wealth aggregates (financial assets, non-financial assets and liabilities) can be computed for all countries. This does not imply that their definition will be fully comparable, as some sub-items will be missing, but broad comparability can be achieved. For financial assets, saving accounts are almost always available, as are principal residence and investment in real estate for non-financial assets. Regarding liabilities, only those attached to the principal residence are widely available.

Notes

1. Switzerland answered the survey indicating that no micro data on household wealth are currently available.
2. Countries pertaining to the second group already conducted their own survey and so were not able to comply completely with the HFCS framework, but convergence is planned. In practice, partial compliance means that a set of core variables are to be delivered by all participating countries, while a set of non-core variables can be collected on a non-mandatory basis when the HFCS questionnaire is partially used.

D.5. Wealth classifications and items: Main characteristics by country

Australia

Classification tree				Definition
Assets	Financial assets	Accounts with financial institutions		Current balances.
		Shares		Contract between the issuing company and the owner of the share giving the latter an interest in the management and the right to participate in profits.
		Trusts		A pooling of investors' money with administration by a trustee or professional manager. Includes private and public unit trusts.
		Debentures and bonds		Debenture: A formal acknowledgement of indebtedness by a company.
				Bond: Certificate of ownership of a specified portion of a debt, usually bearing a fixed rate of return.
		Incorporated business		Company registered with the Australian Securities and Investment Commission which therefore has a separate legal status to the individual owners.
		Superannuation (pension funds)	Accounts with government superannuation funds	Long-term savings arrangement which operates primarily to provide income for retirement.
			Accounts with non-government superannuation funds	
		Other financial assets		Other assets whose value arises from a contractual relationship rather than physical existence.
	Non-financial assets	Property	Owner-occupied dwelling	Residential and non-residential properties excluding those owned by the respondent's business.
			Other property	
		Unincorporated business		Owner(s) and the business are the same legal entity.
		Contents of dwellings		Estimated value of household contents.
		Vehicles		Vehicle used for private purpose.
		Assets not elsewhere specified		n.a.
Liabilities	Property loans	Principal outstanding on loans for owner-occupied dwelling		Loans taken out for the purchase, construction, or alterations and additions to property, excluding those owned by the respondent's business. Also excludes property mortgages that are used for other purposes such as to purchase a car.
		Principal outstanding on other property loans		
	Other liabilities	Debt outstanding on study loans		Debts incurred in government higher education loan schemes.
		Amount owing on credit card		Amount owing on the respondent's latest credit card account statement irrespective of whether it was paid off by the due date.
		Principal outstanding on loans for vehicle purchases		Motor vehicles only.
		Principal outstanding on investment loans		Loans for investments excluding business purposes and rental property.
		Principal outstanding on loans for other purpose		n.a.

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Complete – Components of value of accounts held with financial institutions	< 10%	Individuals
Saving accounts			Individuals
Certificates of deposit			Individuals
Total bonds	Complete – Component of value of debentures and bonds		Individuals
Stocks	Complete – Value of shares, value of trusts		Individuals
Mutual funds	Complete – Collected in a catch-all question "Any other financial investments" (excluding superannuation)		Individuals
Investment funds			Individuals
Life insurance			Individuals
Pensions assets	Incomplete – Collect balance of accounts with superannuation funds – Unfunded superannuation assets are not collected		Individuals
Other financial assets	Complete – Collect children assets – Loans to persons not in the same household – Any other financial investments		Individuals
Principal residence	Complete – Estimated sale price of own dwelling		Households
Investment in real estate	Complete – Comprises value of residential property (excl. selected dwelling) and value of non-residential property		Households
Business assets	Complete – Value of own unincorporated business (net of liabilities), including silent partner assets		Individuals
Vehicles	Complete – Value of vehicles		Households
Durables	Complete – Value of contents of selected dwelling	< 10%	Households
Collectibles	Complete – Collected in a catch-all question "value of other assets"		Individuals
Other non-financial assets	Complete – Any saleable asset which has not already been reported by respondents		Individuals
Principal residence mortgage	Complete – Principal outstanding on loans for selected dwelling (excl. business loans and loans on the property that are used for other purposes)		Households
Other property mortgage	Complete – Principal outstanding on loans for rental and other property (excl. business loans and loans on the property that are used for other purposes)		Households
Other home-secured debt	Complete – Component of principal outstanding on loans for other purposes (excl. business and investment loans)		Households
Business loans	Not separately collected – Included in the asset "value of unincorporated business (net of liabilities)"		n.a.
Vehicle loans	Complete – Principal outstanding on loans for vehicle purposes (excl. business and investment loans)		Households
Instalment debt	Complete – Collected in a catch-all question "other purpose for loan"		Individuals
Education loans	Complete – Amount outstanding on government provided loans for higher education fees and any student financial supplement liabilities		Households
Other loans from financial institutions	Complete – Amount of credit card debt, principal outstanding on investment loans (excl. business and rental property loans)		Households
Informal debt	Complete – Collected in a catch-all question on "other loans"		Households

Austria[1]

Assets	Description	Collection unit
Transaction accounts	Available.	Households
Saving accounts	Saving accounts, time deposits certificate of deposits and other such deposits are covered altogether.	
Certificate of deposits		
Total bonds	Available.	
Stocks		
Mutual funds		
Investment funds		
Life insurance		Individuals
Pensions assets	Private pensions plans and life insurance policies. Additional information collected that can also be used to estimate entitlements to occupational and public pension plans (although some assumptions will be needed and items non-response is high).	
Other financial assets	Managed accounts, unlisted shares, informal loans to friends and relatives, other types of assets.	Households
Principal residence	Separate questions on household main residence and other properties (with individual questions on additional details for the HMR and the three main properties).	
Investment in real estate		
Business assets	Business equity self-employment not publicly traded business. Passive investments in non-publicly traded stocks are considered as financials assets (see above).	
Vehicles	Cars and others vehicles.	
Durables		
Collectibles	Classified as other valuables, such as jewellery, works of art, antiques.	
Other non-financial assets	Precious metals, oil and gas leases, future proceeds from a lawsuit or estate that is being settled, royalties, etc. (note: the distinction financial/non-financial is not straightforward).	
Principal residence mortgage	Debt questions asked separately for loans using main residence as collateral, other property as collateral, and for non-collateralised loans.	
Other property mortgage		
Other home-secured debt	There is a loop of questions on the three main loans in each category, asking among others about loan purpose, monthly payments, initial value of the loan, original maturity; and for property loans, also about interest rates, loan refinancing/renegotiations, etc.	
Business loans		
Vehicle loans		
Instalment debt	Available.	
Education loans		
Other loans from financial instit.		
Informal debt	Informal, vehicle, educational and instalment loans included in non-collateralised loans.	

Note: Items main characteristics. Non-response rate per item not available.

1. Classification used not available.

Belgium[1]

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Yes.	n.a.	Households
Saving accounts	Saving accounts, time deposits, certificate of deposits and other such deposits are covered altogether.		
Certificate of deposits			
Total bonds	Ownership of four types of bonds (state/other general government, banks/other financial intermediaries, non-financial corporation and others) collected separately.		
Stocks	Yes.		
Mutual funds	Value of six types of investments/mutual funds collected separately.		
Investment funds			
Life insurance	Yes.		Individuals
Pensions assets			
Other financial assets	Managed accounts, unlisted shares, informal loans to friends and relatives, other types of assets.		Households
Principal residence	Separate questions on household main residence and other properties.		
Investment in real estate	Yes.		
Business assets	Self-employment not publicly traded business. Passive investments in non-publicly traded stocks are considered as financials assets (see above).	n.a.	
Vehicles	Cars and others vehicles.		
Durables	Yes.		
Collectibles	Classified as other valuables, such as jewellery, works of art, antiques.		
Other non-financial assets	Precious metals, oil and gas leases, future proceeds from a lawsuit or estate that is being settled, royalties, etc. (note: the distinction financial/ non-financial is not straightforward).		
Principal residence mortgage	Debt questions asked separately for loans using main residence as collateral, other property as collateral, and for non-collateralised loans.		
Other property mortgage			
Other home-secured debt	Question on loan purpose includes nine categories: to purchase main residence, to purchase other real estate asset, to refurbish or renovate the residence, to buy a vehicle or other means of transport, to finance business or professional activity, to consolidate other consumption debts, for education purposes, to cover living expenses/other purchases and for other purposes.		
Business loans		Not asked (only net value of business assets available)	
Vehicle loans		n.a.	Households
Instalment debt			
Education loans	Yes.		
Other loans from financial institutions			
Informal debt	Informal, vehicles and instalment loans included in non-collateralised loans.		
Other wealth items	Separate questions on credit card debt, leasing contracts, credit lines, accounts with overdraft facilities, pension assets (private ones available and some information that could be used to estimate entitlement to public ones but assumptions needed).	n.a.	

Note: Items main characteristics. For future publications, intention is to be as consistent as possible with SNA.

1. Classification used not available.

Canada

Classification tree				Definition
Assets	Financial assets	Deposits in financial institutions, mutual funds and investment funds, stocks, bonds, other financial assets		n.a.
		Private pension assets	RRSP/LIRAs/RRIFs	
			EPPs	
			Other private pensions assets	
	Non-financial assets	Principal residence, other real estate, vehicles, other non-financial assets		
		Equity in business		
Liabilities	Mortgage on principal residence			
	Mortgage on other real estate			
	Line of credit			
	Credit card			
	Instalment debt			
	Student loans			
	Vehicles loans			
	Other debt			

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	No	n.a.	
Saving accounts	Yes	10-20%	Families
Certificate of deposits			
Total bonds			
Stocks			
Mutual funds			
Investment funds	No	n.a.	
Life insurance	Yes	n.a.	Families
Pensions assets		< 10%	
Other financial assets	No	n.a.	
Principal residence	Yes	< 10%	Families
Investment in real estate			
Business assets		10-20%	
Vehicles		< 10%	
Durables		n.a.	
Collectibles			
Other non-financial assets	No	n.a.	
Principal residence mortgage	Yes	< 10%	Families

Chile

Classification tree				Definition
Assets	Financial assets	Variable return assets		n.a.
		Fixed return assets		
	Non-financial assets	Principal residence		
		Investment in real estate		
		Vehicles		
Liabilities	Formal debt	Mortgage, consumption debt	Banking, department stores, vehicles and education	
	Informal debt			

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Yes	Cannot be calculated (item only available in a catch-all question)	Household's head
Saving accounts		> 20%	Household
Certificate of deposits			
Total bonds	No	n.a.	
Stocks	Yes	> 20%	Household
Mutual funds			
Investment funds			
Life insurance			
Pensions assets			Household's head
Other financial assets			Household
Principal residence	Yes		
Investment in real estate			
Business assets	No	n.a.	
Vehicles	Yes	< 10%	Household
Durables		10-20%	
Collectibles	No	n.a.	
Other non-financial assets			
Principal residence mortgage	Yes	> 20%	Household
Other property mortgage			
Other home-secured debt	No	n.a.	
Business loans			
Vehicle loans	Yes	< 10%	Household
Instalment debt	No	n.a.	
Education loans	Yes	< 10%	Household
Other loans from financial institutions			
Informal debt			

Estonia[1]

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Available only on 2008, total value not available, only number of households having this item can be estimated	< 10%	Households
Saving accounts	Not available	n.a.	
Certificate of deposits	Not available		
Total bonds	Only persons who received income from bonds on the previous calendar year, total value not available	< 10%	Indviiduals
Stocks	Only persons who received income from securities on the previous calendar year, total value not available	< 10%	Individuals
Mutual funds	Not available	n.a.	
Investment funds	Not available		
Life insurance	Total value not available	< 10%	Individuals
Pensions assets	Total value not available	< 10%	Individuals
Other financial assets	Total value not available	< 10%	Individuals
Principal residence	Value not estimated, only number of households having this item can be estimated	< 10%	Households
Investment in real estate	Not available	n.a.	
Business assets	Not available		
Vehicles	Value not estimated, only number of households having this item can be estimated	< 10%	Households
Durables	Value not estimated, only number of households having this item can be estimated	< 10%	Households
Collectibles	No	n.a.	
Other non-financial assets	No	n.a.	
Principal residence mortgage	Available	< 10%	Households
Other property mortgage	No	n.a.	
Other home-secured debt	No		
Business loans	No		
Vehicle loans	No		
Instalment debt	No		
Education loans	No		
Other loans from financial institutions	No		
Informal debt	No		

Note: Items main characteristics.
1. Classification used not available.

European Central Bank[1]

Assets	Description	Collection unit
Transaction accounts		Households
Saving accounts	Saving accounts, time deposits, certificates of deposit and other such deposits are covered altogether	
Certificate of deposits		
Total bonds	Available	
Stocks		
Mutual funds		
Investment funds		
Life insurance		Individuals
Pensions assets	Private pension plans and life insurance policies. Additional information collected that can also be used to estimate entitlements to occupational and public pension plans (although some assumptions will be needed and item non-response is high)	
Other financial assets	managed accounts, unlisted shares, informal loans to friends and relatives, other types of assets	Households
Principal residence	Separate questions on household main residence and other properties (with individual questions on additional details for the HMR and the three main properties)	
Investment in real estate		
Business assets	Business equity, self-employment, not publicly traded business. Passive investments in non-publicly traded stocks are considered as financial assets (see above)	
Vehicles	Cars and other vehicles	
Durables	Only available for some countries	
Collectibles	Classified as other valuables, such as jewellery, works of art, antiques	
Other non-financial assets	Precious metals, oil and gas leases, future proceeds from a lawsuit or estate that is being settled, royalties, etc. (note: the distinction financial/non-financial is not straightforward)	
Principal residence mortgage	Debt questions asked separately for loans using main residence as collateral, other property as collateral, and for non-collateralised loans	
Other property mortgage		
Other home-secured debt	There is a loop of questions on the three main loans in each category, asking among others about loan purpose, monthly payments, initial value of the loan, original maturity; and for property loans, also about interest rates, loan refinancing/renegotiations, etc.	
Business loans		
Vehicle loans		
Instalment debt	Available	
Education loans		
Other loans from financial institutions		
Informal debt	Informal, vehicle, educational and instalment loans included in non-collateralised loans	

Note: Items main characteristics.
1. Classification used not available.

Germany

Classification tree			Definition
Assets	Financial assets	Gross monetary assets	n.a.
	Non-financial assets	Market value for immovable property	
Liabilities	Consumer credits debts		
	Educational credit debts		
	Mortgage debt		

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	No	n.a.	
Saving accounts	Yes	Germany does not make any imputation in the case of assets and liabilities	Households
Certificate of deposits			
Total bonds			
Stocks			
Mutual funds			
Investment funds			
Life insurance			
Pensions assets	No	n.a.	
Other financial assets	Building savings accounts, other securities and equity holdings	Germany does not make any imputation in the case of assets and liabilities	n.a.
Principal residence	Germany does not differentiate principal residence and real estate		Households
Investment in real estate			
Business assets	No	n.a.	
Vehicles			
Durables			
Collectibles			
Other non-financial assets			
Principal residence mortgage	Germany does not differentiate principal residence mortgage, other property mortgage and other home-secured debt	Germany does not make any imputation in the case of assets and liabilities	Households
Other property mortgage			
Other home-secured debt			
Business loans	No	n.a.	
Vehicle loans			
Instalment debt	Includes vehicles loans	Germany does not make any imputation in the case of assets and liabilities	Households
Education loans	Yes		
Other loans from financial institutions	Yes, overdrafts		
Informal debt	From private pensions		

Finland[1]

Classification tree			Definition
Assets	Financial assets	n.a.	n.a.
	Non-financial assets	n.a.	
Liabilities	n.a.		

Main characteristics of different items[1]

Assets	Availability	Collection unit
Transaction accounts	Yes	Households
Saving accounts	Savings total	
Certificate of deposits	No	n.a.
Total bonds	Yes	Households
Stocks	Yes	
Mutual funds	Yes	
Investment funds	No	n.a.
Life insurance	Yes	Households
Pensions assets	No	n.a.
Other financial assets	Cash funds, loan receivables, voluntary persons insurance savings	Households
Principal residence	Yes	
Investment in real estate		
Business assets	No	n.a.
Vehicles	Yes	Households
Durables	1998 and 2004	
Collectibles		
Other non-financial assets	Forest property (taxable value)	
Principal residence mortgage	Yes	
Other property mortgage		
Other home-secured debt		
Business loans	No	n.a.
Vehicle loans	Yes	Households
Instalment debt	No	n.a.
Education loans	Yes	Households
Other loans from financial institutions		
Informal debt	No	n.a.

Note: Non-response rate per item not available.
1. Classification used.

France

Classification tree				Definition
Assets	Financial assets	Non-taxable savings		n.a.
		Taxable savings accounts		
		Home savings plan		
		Transferable securities		
		Life insurance		
	Non-financial assets	Other housing assets	Principal residence	
			Other housing	
		Business assets		
Liabilities	n.a.			

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Complete	< 10%	Individuals
Saving accounts		< 10%	
Certificate of deposits	n.a.		
Total bonds	Complete	< 10%	Individuals
Stocks		< 10%	
Mutual funds		< 10%	
Investment funds	n.a.		
Life insurance	Households are just asked whether they hold or not insurance for death. Concerning insurance for life, they collect info on holding and amounts	< 10%	Individuals
Pensions assets	Incomplete: We don't have information on pension rights in public pension scheme	< 10%	
Other financial assets	Home savings plan, profit sharing plan, treasury bill, time deposit	< 10%	
Principal residence	Complete	< 10%	Households
Investment in real estate		< 10%	
Business assets		< 10%	
Vehicles	n.a.		
Durables			
Collectibles			
Other non-financial assets			
Principal residence mortgage	complete	< 10%	Households
Other property mortgage			
Other home-secured debt	n.a.		
Business loans	Complete	< 10%	Households
Vehicle loans			
Instalment debt			
Education loans			
Other loans from financial institutions	n.a.		
Informal debt	Complete	< 10%	Households

Greece[1]

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Question on transaction accounts, saving accounts, deposits do not exactly correspond to this categorisation	> 20% (sight accounts)	Households
Saving accounts		10-20%	
Certificate of deposits			
Total bonds	Very sparse response on these items, and they may be disseminated as a single item	< 10%	
Stocks			
Mutual funds			
Investment funds			
Life insurance	Yes	> 20% (voluntary pension/ insurance plans)	Individuals
Pensions assets	Incomplete. There is no question on public defined-contribution plans (not common in Greece yet). Only indicative questions on future entitlements of state pension plans	Participation in some public pension plan: < 10% Contribution as % of salary: > 20%	
Other financial assets	Managed accounts, unlisted shares, informal loans to other households, which due to sparse response, may be disseminated as a single item with bonds, stocks, etc.	Cannot be calculated	n.a.
Principal residence	Yes	< 10%	Households
Investment in real estate			
Business assets	Self-employment non-publicly traded businesses. Passive investments in non-publicly traded stocks are considered as financial assets	10-20%	
Vehicles	Yes	< 10%	
Durables	n.a.	n.a.	
Collectibles	Question on "other valuables", such as jewellery, works of art, antiques	< 10%	Households
Other non-financial assets	n.a.	n.a.	
Principal residence mortgage	Debt questions are asked separately for loans using main residence as collateral, for loans using other property as collateral, and for non-collateralised loans	10-20% (based on non-response of outstanding amount of the first three such-mortgages)	Households
Other property mortgage		< 10% (based on non-response of outstanding amount of the first three such-mortgages)	
Other home-secured debt		n.a.	
Business loans	For the three main loans of each category (depending on the collateral, see above), there are questions on the loan purpose, monthly payments, initial value of loan, original maturity. Thus, the loan purpose may be used to allocate loans to some of these categories. Vehicle loans, instalment debt, education loans, informal debt are included in non-collateralised loans	Cannot be calculated	
Vehicle loans			
Instalment debt			
Education loans			
Other loans from financial institutions			
Informal debt			

Note: For all items: Responses in brackets are considered "response" for the purposes of this table, but a precise value may still be imputed.

1. Items main characteristics.

Israel

Classification: Only owned dwelling houses available

Items main characteristics			
Assets	Availability	Item non-response	Collection unit
Transaction accounts	n.a.		
Saving accounts			
Certificate of deposits			
Total bonds			
Stocks			
Mutual funds			
Investment funds			
Life insurance	Incomplete, cover of the monthly payment only	10-20%	Individuals households
Pensions assets			
Other financial assets	n.a.		
Principal residence			
Investment in real estate			
Business assets			
Vehicles	Complete	< 10%	Households
Durables			
Collectibles	n.a.		
Other non-financial assets			
Principal residence mortgage	Complete	< 10%	Households
Other property mortgage	Incomplete, the value isn't asked		
Other home-secured debt	n.a.		
Business loans			
Vehicle loans			
Instalment debt			
Education loans			
Other loans from financial institutions			
Informal debt			

Italy

Classification tree			Definition
Assets	Financial assets	Deposits, Government securities, Other securities, Trade credit or credit due from other households	n.a.
	Non-financial assets	Real estate, Business Equity, Valuables	
Liabilities	Financial liabilities	Liabilities to bank and financial companies, Trade debt, Liabilities to other households	

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Yes	< 10%	Households
Saving accounts			
Certificate of deposits			
Total bonds			
Stocks			
Mutual funds			
Investment funds			
Life insurance			
Pensions assets			
Other financial assets			
Principal residence			
Investment in real estate			
Business assets			
Vehicles	No	n.a.	
Durables	Yes	< 10%	Households
Collectibles			
Other non-financial assets			
Principal residence mortgage			
Other property mortgage			
Other home-secured debt			
Business loans			
Vehicle loans	No	n.a.	
Instalment debt	Yes	< 10%	Households
Education loans	No	n.a.	
Other loans from financial institutioons	Yes	< 10%	Households
Informal debt			

Japan

Classification tree				Definition
Assets	Financial assets	Demand deposits		n.a.
		Time deposits		
		Life insurance, etc.		
		Securities	Stocks	
			Bonds	
			Loan trust and money in trust	
		Others		
	Non-financial assets	Estimated value of house and residential land	Present residence (residential land/house)	
		Expected present residence		
		Estimated value of major durable goods		
		Estimated value of membership entitlement, etc.		
Liabilities	Liabilities for purchases houses and land			
	Other liabilities			
	Monthly and yearly agreement			

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Given as demand deposits	< 10%	Households
Saving accounts	Given as time deposits		
Certificate of deposits	No	n.a.	
Total bonds	Yes	< 10%	Households
Stocks			
Mutual funds	Mutual funds and investment funds are classified into stocks and bonds according to their origination		
Investment funds			
Life insurance	Yes		
Pensions assets	No	n.a.	
Other financial assets			
Principal residence	Given as houses and residential land	< 10%	Households
Investment in real estate	Given as rented land		
Business assets	No	n.a.	
Vehicles	Yes	< 10%	Households
Durables	Only major durables		
Collectibles	No	n.a.	
Other non-financial assets			
Principal residence mortgage	Yes	< 10%	Households
Other property mortgage	No	n.a.	
Other home-secured debt			
Business loans			
Vehicle loans			
Instalment debt	Given as monthly and yearly instalment	< 10%	Households
Education loans	No	n.a.	
Other loans from financial institutions			

Korea

Classification tree					Definition
Assets	Financial assets	Savings	Time and instalments savings:	Transaction accounts	n.a.
				Instalment savings and fund	
				Insurance with savings features	
				Cash	
			Property formation securities:	Time savings and fund	
				Stocks	
				Bonds	
				Trading futures	
				Option and so on	
		Deposit for lease	Deposit for lease		
			Deposit for monthly rent		
	Non-financial assets	Real estate (including primary residence, other than primary residence and down-middle payment)			
		Others: Including vehicles and other than vehicles			
Liabilities	Holdings of debts	Holdings of loans (including secured and credit loans owing loans on credit cards and credit and instalment			
		Others (unpaid money to a private fund)			
	Receipts from lease				
Income and non-consumption expenditure					

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Available	< 10%	Individuals
Saving accounts		< 10%	
Certificate of deposits	Given as saving deposits	n.a.	n.a.
Total bonds	Available	< 10%	Individuals
Stocks		< 10%	
Mutual funds	Mutual funds and Investment funds are classified into stocks and bonds according to their organisation	n.a.	n.a.
Investment funds			
Life insurance	Classified into insurance with savings		
Pensions assets	n.a.		
Other financial assets	Deposit for lease	< 10%	Individuals
Principal residence	Available	< 10%	Households
Investment in real estate	Given as down-middle payment	< 10%	
Business assets	n.a.	n.a.	n.a.
Vehicles	Available	< 10%	Households
Durables	Only major durable (not described)	< 10%	
Collectibles	Available	< 10%	
Other non-financial assets	Membership, intangible assets, etc.	< 10%	
Principal residence mortgage	Available	< 10%	Individuals
Other property mortgage		< 10%	
Other home-secured debt		< 10%	n.a.
Business loans		< 10%	Individuals
Vehicle loans	n.a.	n.a.	n.a.
Instalment debt	Given as monthly and yearly instalment	< 10%	Individuals
Education loans	n.a.	n.a.	n.a.
Other loans from financial institutions	Available	< 10%	Individuals
Informal debt	Unpaid money to a private fund	< 10%	

Luxembourg[1]

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Yes	10-20%	Households
Saving accounts	Saving accounts, time deposits, certificates of deposits and other such deposits are covered altogether	10-20%	
Certificate of deposits		10-20%	
Total bonds	Ownership of four types of bonds (state/other general government, banks/other financial intermediaries, non-financial corporation and others) collected separately	> 20%	
Stocks	Yes	10-20%	
Mutual funds	Value of six types of investments/mutual funds collected separately	> 20%	
Investment funds		> 20%	
Life insurance	Yes	> 20%	Individuals
Pensions assets		> 20%	
Other financial assets	Managed accounts, unlisted shares, informal loans to friends and relatives, other types of assets	> 20%	Households
Principal residence	Separate questions on household main residence and other properties	< 10%	
Investment in real estate	Yes	< 10%	
Business assets	Self-employment, not publicly traded business. Passive investments in non-publicly traded stocks are considered as financials assets (see above)	>20%	
Vehicles	Cars and others vehicles	< 10%	
Durables	n.a.	n.a.	
Collectibles	Classified as other valuables, such as jewellery, works of art, antiques	> 20%	
Other non-financial assets	Precious metals, oil and gas leases, future proceeds from a lawsuit or estate that is being settled, royalties, etc. (note: the distinction financial/non-financial is not straightforward)	> 20%	
Principal residence mortgage	Debt questions asked separately for loans using main residence as collateral, other property as collateral, and for non-collateralised loans	< 10%	
Other property mortgage		< 10%	
Other home-secured debt	Question on loan purpose includes nine categories: To purchase main residence, to purchase other real estate asset, to refurbish or renovate the residence, to buy a vehicle or other means of transport, to finance business or professional activity, to consolidate other consumption debts, for education purposes, to cover living expenses/other purchases and for other purposes	> 20%	
Business loans		Not asked (only net value of business assets available)	
Vehicle loans		> 20%	Households
Instalment debt		> 20%	
Education loans	Yes	> 20%	
Other loans from financial institutions		Depending on the questions	
Informal debt	Informal, vehicles and instalment loans included in non-collateralised loans	< 10%	
Other wealth items	Separate questions on credit card debt, leasing contracts, credit lines, accounts with overdraft facilities, pension assets (private ones available and some information that could be used to estimate entitlement to public ones but assumptions needed)	> 20%	

1. Classification used not available.

Netherlands

Classification tree				Definition
Assets	Financial assets	Banks accounts, saving accounts		n.a.
		Bonds		
		Shares		
	Non-financial assets	Property	Owner-Occupied dwelling	
			Other property	
		Entrepreneurial property		
		Other real estate property		
		Moveable property		
Liabilities	Property loans			
	Other liabilities			

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Yes (not all separable)	< 10%	Households
Saving accounts			
Certificate of deposits			
Total bonds			
Stocks			
Mutual funds	No		
Investment funds			
Life insurance			
Pensions assets	No		
Other financial assets			
Principal residence	Yes	< 10%	Households
Investment in real estate			
Business assets			
Vehicles	No		
Durables			
Collectibles			
Other non-financial assets			
Principal residence mortgage	Yes	< 10%	Households
Other property mortgage			
Other home-secured debt			
Business loans	No (not separable from entrepreneurship wealth)		
Vehicle loans	Yes	< 10%	Households
Instalment debt			
Education loans			
Other loans from financial institutions			
Informal debt			

New Zealand[1]

Classification tree			Definition
Assets	Financial assets	Superannuation	n.a.
		Bank deposits	
		Investments with other financial institutions	
		Trusts	
	Non-financial assets	Property	
		Maori Assets	
		Business	
Liabilities	Mortgages		
	Bank liabilities		
	Credit card		
	Student loans		
	Hire purchase		
	Other debt		

1. Note to come.

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Overlapping with saving accounts	< 10%	Economic unit
Saving accounts	Yes		
Certificate of deposits	No	N.a	
Total bonds	Collected as part of another financial assets group	< 10%	Economic unit
Stocks	Collected separately		
Mutual funds	Collected separately		
Investment funds	Included with mutual funds		
Life insurance	Collected separately		
Pensions assets	Collected separately		Individuals and economic unit
Other financial assets	Cash values were collected separately	10-20%	Economic unit
Principal residence	Yes	< 10%	
Investment in real estate	Includes rental property, holiday homes, other property, timeshares	10-20%	
Business assets	Business equity	< 10%	
Vehicles	Split into motorcycle/scooters and other vehicles		
Durables	Consumer durables such as furniture, appliances and clothing were NOT collected	N.a	N.a
Collectibles	If combined value was NZD 1 000 or more	< 10%	Economic unit
Other non-financial assets	Value of commercial property owned in NZ or overseas, other assets if value of NZD 1 000 or more		
Principal residence mortgage	Mortgages were collected for all types of property the respondent owned		
Other property mortgage	Mortgages were collected for all the types of property the respondent owned		
Other home-secured debt	Not collected separately	N.a	
Business loans	Possibly captured with other mortgage or loans		N.a
Vehicle loans	Included with loans from financial institutions		Economic unit
Instalment debt	Yes	< 10%	N.a
Education loans	Only government-provided students loans collected separately, others were collected from financial institutions		Individuals economic unit
Other loans from financial institutions	Loans with financial institutions were collected but not separated by purpose (unless it was for property)		Economic unit
Informal debt	includes credit card, money owed to others if NZD 1 000 or more		
Other wealth items	Trusts – Value of assets or liabilities held in a trust if a member of the household was a settler of the trust. Also collected but not included in the definition of wealth was the value of Maori assets. Maori assets are held at a collective level either by an *iwi* (tribe) or *hapu* (extended family). Respondents were asked if they were owner of or shareholder in a Maori asset, and if they were, their share of the asset	N.a	Individuals economic unit

Note: Full list of assets are: Maori assets; trusts; farms; businesses; house living in; time share; holiday home; rental property; overseas property; commercial property; other property; superannuation; life insurance; credit cards; bank deposits; shares; managed funds; other financial assets; money owed to respondent; motor vehicles; cash; collectibles; other assets.

Norway[1]

Classification tree			Definition
Assets	Financial assets	Bank deposits	Taxable gross financial capital
		Share of unit trusts	
		Bond and money market fund	
		Foreign taxable wealth	
		Securities registered in Verdipapirsentralen (VPS)[1]	
		Securities not registered in VPS	
	Non-financial assets	Real properties	Taxable real capital
		Production capital and other properties	
		House contents and movables	
Liabilities	Taxable gross wealth		n.a.
	Debt		
	Taxable net wealth		
	Property taxes		

Note: Item non-response non-available as the data are register-based.

1. VPS is a Norwegian public limited company authorised to register rights to financial instruments with the legal effects stipulated by the Securities Register Act.

Main characteristics of different items

Assets	Availability	Collection unit
Transaction accounts	Yes	Individuals and households
Saving accounts		
Certificate of deposits		
Total bonds		
Stocks		
Mutual funds		
Investment funds		
Life insurance	n.a.	
Pensions assets		
Other financial assets	Yes	
Principal residence		
Investment in real estate		
Business assets		
Vehicles		
Durables		
Collectibles		
Other non-financial assets		
Principal residence mortgage	No	
Other property mortgage		
Other home-secured debt		
Business loans		
Vehicle loans		
Instalment debt		
Education loans		
Other loans from financial institutions		
Informal debt		

Portugal[1]

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Available	n.a.	Households
Saving accounts	Saving accounts, time deposits, certificates of deposit and other such deposits are covered altogether		
Certificate of deposits			
Total bonds	Ownership of four types of bonds (state/other general government, banks/other financial intermediaries, non-financial corporations and others) collected separately		
Stocks	Available		
Mutual funds	Value of six types of mutual and investment funds collected separately		
Investment funds	Available		
Life insurance			Individuals
Pensions assets			
Other financial assets	Managed accounts, unlisted shares, informal loans to friends and relatives, other types of assets (options, futures, index certificates, etc.)		Households
Principal residence	Separate questions on household main residence and other properties (with individual questions on additional details for the HMR and the three main properties)		
Investment in real estate			
Business assets	Business equity self-employment, not publicly traded business. Passive investments in non-publicly traded stocks are considered as financial assets – Collected individual data on the three main business		
Vehicles	Cars and other vehicles		
Durables	n.a.		
Collectibles	Classified as other valuables, such as jewellery, works of art, antiques, precious metals, oil and gas leases, future proceeds from a lawsuit or estate being settled, royalties, etc. (note: the distinction financial/non-financial is not straightforward)		
Other non-financial assets	Available but not specified		
Principal residence mortgage	Debt questions asked separately for loans using main residence as collateral, other property as collateral, and for non-collateralised loans		
Other property mortgage	Question on loan purpose includes nine categories: to purchase main residence, to purchase other real estate asset, to refurbish or renovate the residence, to buy a vehicle or other means of transport, to finance business or professional activity, to consolidate other consumption debts, for education purposes, to cover living expenses/other purchases and for other purposes		
Other home-secured debt	Available		
Business loans			
Vehicle loans			
Instalment debt			
Education loans			
Other loans from financial institutions			
Informal debt	Informal, vehicle, educational and instalment loans included in non-collateralised loans		

1. Classification used not available.

Slovak Republic[1]

Main characteristics of different items

Assets	Availability	Item non-response	Collection Unit
Transaction accounts	Yes	n.a.	Households
Saving accounts	Saving accounts, time deposits, certificates of deposit and other such deposits are covered altogether		
Certificate of deposits	Yes		
Total bonds	Ownership of four types of bonds (state/other general government, banks/other financial intermediaries, non-financial corporation and others) collected separately		
Stocks	Yes		
Mutual funds	Value of six types of investment/mutual funds collected separately		
Investment funds			
Life insurance	Yes		
Pensions assets			Individuals
Other financial assets	Managed accounts, unlisted shares, informal loans to friends or relatives, other types of assets (options, futures, index certificates, etc.)		
Principal residence	Separate questions on household main residence and other properties		Households
Investment in real estate	Yes		
Business assets	Self-employment, not publicly traded businesses. Passive investments in non-publicly traded stocks are considered as financial assets (see above)		
Vehicles	Cars and other vehicles		
Durables	No	n.a.	
Collectibles	Classified as other valuables, such as jewellery, works of art, antiques, etc.	n.a.	Households
Other non-financial assets	Precious metals, oil and gas leases, future proceeds from a lawsuit or estate that is being settled, royalties, etc. (Note: The distinction financial/non-financial is not 100% straightforward for some of these components)		
Principal residence mortgage	Debt questions asked separately for loans using main residence as collateral, other property as collateral, and for non-collateralised loans		
Other property mortgage			
Other home-secured debt	Question on loan purpose includes nine categories: to purchase main residence, to purchase other real estate asset, to refurbish or renovate the residence, to buy a vehicle or other means of transport, to finance business or professional activity, to consolidate other consumption debts, for education purposes, to cover living expenses/other purchases and for other purpose		
Business loans			
Vehicle loans			
Instalment debt			
Education loans			
Other loans from financial institutions			
Informal debt	Informal, vehicle and instalment loans included in non-collateralised loans		
Other wealth items	Separate questions on credit card debt, leasing contracts, credit lines, accounts with overdraft facilities, social security plans		

1. Classification used not available.

Slovenia[1]

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Yes	> 20%	Households
Saving accounts	Saving accounts, time deposits, certificates of deposit and other such deposits are covered altogether		
Certificate of deposits	Yes	Cannot be calculated Item only available in a catch-all question	
Total bonds	Ownership of four types of bonds (state/other general government, banks/other financial intermediaries, non-financial corporation and others) collected separately	> 20%	
Stocks	Yes	10-20%	
Mutual funds	Value of six types of investment/mutual funds collected separately	> 20%	
Investment funds			
Life insurance	Yes		
Pensions assets			Individuals
Other financial assets	Managed accounts, unlisted shares, informal loans to friends or relatives, other types of assets (options, futures, index certificates, etc.)	< 10%	
Principal residence	Separate questions on household main residence and other properties	10-20%	Households
Investment in real estate	Yes		
Business assets	Self-employment, not publicly traded businesses. Passive investments in non-publicly traded stocks are considered as financial assets (see above)	> 20%	
Vehicles	Cars and other vehicles	< 10%	
Durables	No	n.a.	
Collectibles	Classified as other valuables, such as jewellery, works of art, antiques, etc.	Cannot be calculated Item only available in a catch-all question	Households
Other non-financial assets	Precious metals, oil and gas leases, future proceeds from a lawsuit or estate that is being settled, royalties, etc. (Note: The distinction financial/non-financial is not 100% straightforward for some of these components)		
Principal residence mortgage	Debt questions asked separately for loans using main residence as collateral, other property as collateral, and for non-collateralised loans	10-20%	
Other property mortgage		< 10%	
Other home-secured debt	Question on loan purpose includes nine categories: to purchase main residence, to purchase other real estate asset, to refurbish or renovate the residence, to buy a vehicle or other means of transport, to finance business or professional activity, to consolidate other consumption debts, for education purposes, to cover living expenses/other purchases and for other purposes		
Business loans			
Vehicle loans			
Instalment debt			
Education loans			
Other loans from financial institutions			
Informal debt	Informal, vehicle and instalment loans included in non-collateralised loans		
Other wealth items	Separate questions on credit card debt, leasing contracts, credit lines, accounts with overdraft facilities, social security plans	Cannot be calculated Item only available in a catch-all question	

1. Classification used not available.

Spain

Classification tree			Definition
Assets	Financial assets	Accounts and deposits usable for payments	n.a.
		Accounts not usable for payments and house-purchase saving accounts	
		Listed shares	
		Fixed-income securities	
		Pension schemes and unit-linked or mixed with life insurance	
		Unlisted shares and other equities	
		Other financial assets	
	Non-financial assets	Main residence	
		Business related to self-employment	
		Jewellery, works of art, antiques	
Liabilities	Purchase of main residence	Total	
		With mortgage guarantee	
	Purchase of other real estate properties		
	Other outstanding debts	With real guarantee	
		Personal loans	
		Other debts	
		Credit card balances (since 2005)	

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Pension assets: private ones available (with details for each one up to 10) and some information that could be used to estimate entitlement but assumptions needed	10-20%	Households
Saving accounts		10-20%	
Certificate of deposits	Yes	n.a.	
Total bonds		10-20%	
Stocks		10-20%	
Mutual funds	Mutual funds: details for each one up to 10	< 10%	
Investment funds	Yes	< 10%	
Life insurance	Details for each one up to 6	> 20%	Individuals
Pensions assets	Yes	10-20%	
Other financial assets	Managed accounts, unlisted shares, informal loans, other types (options, futures)	n.a.	Households
Principal residence	Details on up to 3 real estate properties (aside from main residence) and some info for 4th and over	< 10%	
Investment in real estate	Yes	10-20%	
Business assets	Details on up to 6	> 20%	
Vehicles	Yes	< 10%	
Durables		10-20%	
Collectibles		10-20%	
Other non-financial assets	Jewellery, art, antiques	n.a.	
Principal residence mortgage	Details on up to 4 loans used to purchase the main residence, up to 3 for each other real estate property and up to 9 for other purposes	< 10%	
Other property mortgage		< 10%	
Other home-secured debt	Yes	< 10%	
Business loans		< 10%	
Vehicle loans		< 10%	
Instalment debt		n.a.	
Education loans		< 10%	
Other loans from financial institutions		n.a.	
Informal debt			
Other wealth items	Credit card debt, credit lines		

Turkey[1]

Main characteristics of different items

Assets	Availability	Item non-response	Collection Unit
Transaction accounts	n.a.		
Saving accounts			
Certificate of deposits			
Total bonds			
Stocks			
Mutual funds			
Investment funds			
Life insurance			
Pensions assets			
Other financial assets			
Principal residence	Household are asked if they are tenant or owner	< 10%	Households
Investment in real estate	Household are asked if they own real estate or not. There is no information about real estate values	< 10%	
Business assets	n.a.		
Vehicles	Only the number is collected	< 10%	Households
Durables	Only the number is collected	< 10%	
Collectibles	n.a.		
Other non-financial assets			
Principal residence mortgage			
Other property mortgage			
Other home-secured debt			
Business loans			
Vehicle loans			
Instalment debt			
Education loans			
Other loans from financial institutions			
Informal debt			

1. Classification used not available.

United Kingdom

Classification tree				Definition
Assets	Financial assets	Gross financial wealth	Formal assets	Money held in bank accounts or financial investments
			Informal assets	Money saved in cash at home, money given to someone to look after or money paid into a savings and loan club
		Private pension wealth		Value of memberships of private pension schemes and also schemes which members expect to receive an income from in the future. Excludes state basic retirement or state earnings related pensions
	Non-financial assets	Gross property wealth	Main residence	Value of the households main residence if owned in full or in part or being purchased with the help of a mortgage or loan
			Additional property or properties	This covers land and property other than the main residence and includes houses, buildings or land in the UK or abroad and time-shares. Questions are asked of all adults, rather than the HRP in order to ensure that we record cases where different members of the household own property independently
		Physical wealth		Comprises the contents of the main residence and any other property that the household owns. Includes collectables and valuables (such as antiques, artworks or stamps), vehicles and personalised number plates
Liabilities	Property liabilities	Mortgage on property		Value of any mortgages or loans secured on a households main residence or on any additional property or properties owned by members of the household
	Financial liabilities	Household borrowing and arrears		Value of non-mortgage borrowing and arrears on household bills. Non-mortgage borrowing includes credit and store cards that are not settled each month, overdrafts and all forms of fixed terms loans

Main characteristics of different items

Assets	Availability	Item non-response	Collection unit
Transaction accounts	Yes	5.90%	Individuals
Saving accounts		5.10%	
Certificate of deposits		n.a.	
Total bonds		1.5%	
Stocks		2.30%	
Mutual funds	Not covered separately	0.10%	
Investment funds	Yes	3.40%	
Life insurance		1.30%	
Pensions assets		4.10%	
Other financial assets		0.10%	
Principal residence		4.90%	Households
Investment in real estate		0.80%	Individuals
Business assets		0.20%	
Vehicles		0.70%	Households
Durables		0.90%	
Collectibles		1.30%	
Other non-financial assets		n.a.	n.a.
Principal residence mortgage		2.10%	Households
Other property mortgage		0.20%	Individuals
Other home-secured debt		n.a.	Households
Business loans			
Vehicle loans	Not covered separately but within other loans from financial institutions		
Instalment debt	Yes	0.20%	
Education loans		0.10%	
Other loans from financial institutions		n.a.	
Informal debt			

United States[1]

Main characteristics of different items			
Assets	Availability	Item non-response	Collection unit
Transaction accounts	Yes	n.a.	Individuals
Saving accounts			
Certificate of deposits			
Total bonds			Families
Stocks			
Mutual funds			
Investment funds			
Life insurance			
Pensions assets			Individuals
Other financial assets	Yes, several, including loans made to others		Families
Principal residence	Yes		
Investment in real estate			
Business assets			Individuals and families
Vehicles			Families
Durables	n.a.		n.a.
Collectibles	Yes		Families
Other non-financial assets	Yes, miscellaneous		
Principal residence mortgage	Yes		
Other property mortgage			
Other home-secured debt			
Business loans			Individuals and families
Vehicle loans			Families
Instalment debt			
Education loans			
Other loans from financial institutions			
Informal debt			
Other wealth items	Trusts, annuities		

1. Classification used not unique.

ANNEX E

Household definitions in other statistical standards

This Annex discusses the household concepts and definitions provided in several other statistical standards used in measuring the economic circumstances of households. These standards, which are referred to in Chapter 3, are:

- *Principles and Recommendations for Population and Housing Censuses*, Revision 2, published by the United Nations in 2008.
- *Conference of European Statisticians Recommendations for the 2010 Censuses of Population and Housing*, published by the United Nations Economic Commission for Europe (UNECE) in 2006.
- *Household Income and Expenditure Statistics, Report II* of the 17th International Conference of Labour Statisticians in 2003, published by the International Labour Office.
- *Canberra Group Handbook on Household Income Statistics* 2011, published by the UNECE.
- European Central Bank Household Finance and Consumption Network *Core Output Variables*, March 2011.
- System of National Accounts 2008.

Table E.1. **Comparison of household concepts and definitions in other standards**

UN World Population Census	The world standard for population censuses identifies individuals within two general frameworks: *a)* households; and *b)* institutions (as a sub-set of collective living quarters). Institutions include military institutions, correctional and penal institutions, dormitories of schools and universities, religious institutions, hospitals, retirement homes for the elderly, and orphanages. Persons living in dormitories or similar accommodation in institutions constitute the "institutional population" and are not members of a household. Persons living in other collective living quarters (e.g. hotels, lodging houses, camps and workers' quarters) are identified within households.
	Its concept of a household – referred to as the "housekeeping concept" – is based on the arrangements made by persons, individually or in groups, for providing themselves with food and other essentials for living. Under this concept, a household is defined as either: *a)* a one-person household, that is to say, a person who makes provision for his or her own food and other essentials of living without combining with any other person to form a multi-person household; or *b)* a multi-person household, that is to say, a group of two or more persons living together who make common provision for food and other essentials for living. The persons in the group may pool their resources and have a common budget; they may be related or unrelated persons or constitute a combination of persons both related and unrelated. Households usually occupy the whole, or part of, or more than one housing unit but they may also be found in camps, boarding houses or hotels or as administrative personnel in institutions, or they may be homeless.
	This concept of a household does not assume that the number of households and housing units are or should be equal. A housing unit is defined as a separate and independent place of abode that is intended for habitation by one household but may be occupied by more than one household or by part of a household. Under a different household concept, the "household-dwelling concept", all persons living in a housing unit would be treated as belonging to the same household and there would be one household per occupied dwelling unit. However, the UN standard does not recommend this alternative concept on the grounds that it can obscure information on living arrangements.
	Each person has one and only one place of usual residence, defined as the place where the person lives at the time of the census and has been there for some time and intends to stay there for some time. A threshold of 12 months is recommended in applying the usual residence definition and 2 alternative criteria are provided for implementing this threshold: either, the place at which the person has lived continuously for most of the last 12 months (not including temporary absences) or intends to live for at least 6 months; or, the place at which the person has lived for at least the last 12 months (not including temporary absences) or intends to live for at least 12 months.
	(*Principles and Recommendations for Population and Housing Censuses, Revision 2*, published by the United Nations in 2008, paragraphs 1.442, 1.448-1.455, 1.461-1.468)

Table E.1. **Comparison of household concepts and definitions in other standards** *(cont.)*

UNECE/CES Population Census	The concept of a household is defined differently in the 2006 UNECE/CES population census standard. The UNECE identifies "private households" (defined using a different specification of the housekeeping concept from that in the UN world standard) and "institutional households". Some persons who do not live in private or institutional households are also recognised, specifically the homeless with no place of usual residence. These persons are implicitly covered in "other households".
	A private household is defined as either *a)* a one-person household, that is 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 any of the other occupants of the housing unit to form part of a multi-person household; or *b)* a multi-person household, that is 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 pool their incomes to a greater or lesser extent. While this definition relates explicitly to persons occupying a "housing unit", the UNECE/CES standard also recognises that there may be persons who are part of private households within "collective living quarters".
	Boarders are distinguished from lodgers in delineating private households within housing units. Boarders take meals with the household and are generally allowed to use the household facilities. They 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.
	An institutional household comprises persons whose need for shelter and subsistence is being provided by an institution. An institution is understood to be a legal body for the purpose of long-term inhabitation and provision of services to a group of persons. The great majority of institutional households are considered to fall into the following categories: residences for students; hospitals, convalescent homes, old people's homes, etc.; assisted-living facilities and welfare institutions; military barracks; correctional and penal institutions; religious institutions; and worker dormitories.
	The UNECE/CES standard notes that some countries may be unable to collect data on private households based on the housekeeping concept and may therefore use the household-dwelling concept. It also notes that differences can be large for certain household types (e.g. one-person households), and this can affect international comparability.
	"Place of usual residence" is used as the basis of household membership. It is defined as the geographic place where the enumerated person usually resides, that is, the place at which he or she spends most of his/her daily night rest. Each person has one, and only one, place of usual residence. A person's country of usual residence is the country in which the place of usual residence is located. Recommendations are provided for special cases where problems might be encountered, including: persons who work away from home and return at weekends (usual residence is the family home); school students who are away from home during school term (usual residence is the family home); tertiary students who are away from home while at college or university (usual residence is their term-time address, although as an exceptional measure where the place of education is within the country the usual residence may be considered to be the family home); 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 (usual residence is the institution); and a person – including a child – regularly living in more than one residence during the year (usual residence is the one where he/she spends the majority of the year).
	(*Conference of European Statisticians Recommendations for the 2010 Censuses of Population and Housing*, published by the United Nations Economic Commission for Europe in 2006, paragraphs 158-170, 478-492, 592-595).
ICLS	The ICLS recommendations for household income and expenditure statistics state that the concept of the household should be consistent with the one adopted in the latest version of the UN *Principles and Recommendations for Population and Housing Censuses*. A household is defined using the housekeeper concept described in that UN standard, with a small modification: "some common provision for food or other essentials of living" replaces "common provision for food and other essentials for living". Two additional concepts are also introduced: "private households" and "collective households". All private households (implicitly those living in housing units, not collective quarters) are to be covered in the statistics, and some collective households may be included provided the members are involved in decision-making about their consumption, including consumption of housing services. Other collective households (e.g. boarding houses, hotels, etc.) and institutions are to be excluded. However, identifiable households within institutions may be included.
	(*Household Income and Expenditure Statistics, Report II* of the 17th International Conference of Labour Statisticians in 2003, published by the International Labour Office, paragraphs 181-185, 193-195, resolutions 54-58).
Canberra Group	The Canberra Group recommendations provide a definition of "private household" based on the UNECE/CES definition for use in population censuses. That definition is regarded as the benchmark for household income surveys. A private household is defined as either: *a)* a person living 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 any of the other occupants of the housing unit to form part of a multi-person household; or *b)* 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. The group may be composed of related persons only or of unrelated persons or of a combination of both. The group may also pool their income. It is noted that this definition of a private household excludes collective ones such as prisons, boarding schools, military barracks, hospitals, etc.).
	(*Canberra Group Handbook on Household Income Statistics*, 2011 version, Boxes 3.2 and 6.1 and Section 3.3.1).

Table E.1. **Comparison of household concepts and definitions in other standards** *(cont.)*

Euro area HFCS	The household definition adopted in the euro area Household Finance and Consumption Survey is similar in many instances to the above definitions. However, it is adjusted to the specificities of the main theme of the survey, namely household wealth. Besides the usual condition of sharing expenditures inherent in the housekeeping concept, the HFCS definition also considers financial interdependence as an additional criterion to decide on household membership for specific borderline cases. Sharing household expenses includes benefiting from expenses (e.g. children, persons with no income) as well as contributing to expenses.
	The target reference population is all private households and their current members residing in the national territory at the time of data collection. Persons living in collective households and in institutions are generally excluded. A (private) household is defined as a person living alone or a group of people who live together in the same private dwelling and share expenditures, including the joint provision of the essentials of living. Employees of other residents (i.e. live-in domestic servants, au pairs, etc.) and roommates without family or partnership attachments to household members (e.g. resident boarders, lodgers, tenants, visitors, etc.) are considered to be separate households.
	The following persons, if they share expenses, are regarded as household members (if expenses are not shared then the person constitutes a separate household at the same address): persons usually resident but temporarily absent from the dwelling for reasons of holiday travel, work, education, etc., if they have no private address elsewhere and the actual or intended duration of absence is less than 6 months; partners and children of household members (such as financially dependent children being educated away from home and persons working away from home) irrespective of the actual or intended duration of absence if they continue to retain close ties with the household, regularly return to the household address and consider it to be their main residence; and persons temporarily absent but having household ties, such as persons in a hospital, nursing home, boarding school or other institution if they have clear financial ties to the household and the actual or expected duration of absence is less than 6 months.
	(European Central Bank Household Finance and Consumption Network *Core Output Variables*, March 2011).
SNA	The SNA defines "households" as institutional units consisting of one individual or a group of individuals. All physical persons in an economy must belong to one and only one household. A multi-person household is defined as a group of persons who share the same living accommodation, who pool some, or all, of their income and wealth, and who consume certain types of goods and services collectively, mainly housing and food. In general each member of a household should have some claim on the collective resources of the household. At least some decisions affecting consumption or other economic activities must be taken for the household as a whole. Unincorporated enterprises owned by households are treated as an integral part of the household to which they belong except under specific conditions.
	Domestic staff who live on the same premises as their employer do not form part of their employer's household even though they may be provided with accommodation and meals as remuneration in kind. They should be treated as belonging to separate households from their employers.
	Persons living permanently in an institution, or who may be expected to reside in an institution for a very long, or indefinite, period of time are treated as belonging to a single institutional household when they have little or no autonomy of action or decision in economic matters. Examples of persons belonging to institutional households are: members of religious orders living in monasteries, convents or similar institutions; long-term patients in hospitals; prisoners serving long sentences; and old persons living permanently in retirement homes. Persons who enter institutions for short periods should be treated as members of the individual households to which they belong.
	Resident households are distinguished separately from non-resident households. The SNA's household sector consists of all resident households. A household is resident in the economic territory in which its members maintain or intend to maintain a dwelling or dwellings treated and used by them as their principal dwelling. If there is uncertainty about which dwelling is the principal dwelling, 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 sufficient to qualify as having a principal residence there. The residence of individual persons is determined by that of the household of which they form a part and not by their place of work. All members of the same household have the same residence as the household itself, even though they may cross borders to work or otherwise 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 households. Additional guidance is provided for a number of specific cases, including students, patients, crews of ships, diplomats, military personnel, cross-border workers, refugees and highly mobile individuals having no principal dwelling or two or more principal dwellings.
	(*System of National Accounts 2008*, paragraphs 1.48, 2.17-2.20, 4.10-4.37, 4.149-4.159, 4.172, 24.12-24.17, 26.29, 26.37-26.39).

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