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A cross-country comparison of household income, consumption and wealth between micro sources and national accounts aggregates

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A CROSS-COUNTRY COMPARISON OF HOUSEHOLD INCOME, CONSUMPTION AND WEALTH BETWEEN MICRO SOURCES AND NATIONAL ACCOUNTS AGGREGATES

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ABSTRACT

Much valuable information exists already on household economic resources (i.e. income, consumption and wealth). Indeed, the national accounts provide aggregate measures and micro sources (surveys, administrative records, and censuses) can be used to derive measures of the distribution across household groups. Over the years, however, macro and micro statisticians have tended to work separately leading to sometimes divergent results which can cause problem to users. In 2011, the OECD and Eurostat launched a joint Expert Group to carry out a study on the feasibility of compiling measures of the distribution of income, consumption and wealth across household groups that are consistent with national accounts definitions and totals. The first challenge of the Expert Group was to draw a detailed picture of the extent to which statistical information derived from micro sources can be aligned to three national accounts aggregates; 20 countries studied all (or part) of the components of adjusted disposable income, 21 all (or part) of the components of actual final consumption and 7 studied all (or part) of the components of household net worth. Results show that there are a number of identified reasons that can explain differences between micro and macro sources. Some of them were quantified and isolated showing finally that for most countries micro sources provide distributive information for most of the national accounts components but for some of them with quite significant gaps in total amounts. Overall, micro and macro totals are closer to each other for income components than for consumption and wealth components. The results also show that there is greater heterogeneity in results across countries for consumption components.

Keywords: National accounts, Household, Survey, Income, Consumption, Wealth

RESUME

Plusieurs types de sources fournissent des informations sur les ressources économiques des ménages. Les données macro-économiques des comptes nationaux fournissent des données agrégées sur le revenu, la consommation et le patrimoine de l'ensemble des ménages. Les sources microéconomiques (enquêtes, données administratives et recensement) informent sur la manière dont ces ressources économiques sont réparties entre les ménages. Au fil des années les statisticiens micro et macro ont eu tendance à travailler séparément conduisant parfois à des résultats divergents. En 2011, l'OCDE et Eurostat ont lancé un groupe de travail conjoint afin d'étudier la possibilité de produire des indicateurs sur la distribution du revenu, de la consommation et du patrimoine qui soient cohérents avec les totaux et les définitions des comptes nationaux. Le premier challenge du groupe de travail a été de définir dans quelle mesure l'information statistique issue des données micro est compatible avec trois des principaux agrégats des comptes nationaux. Ainsi, 20 pays ont étudiés tout ou partie des composantes du revenu disponible ajusté, 21 pays tout ou partie des composantes de la consommation finale et 7 pays tout ou partie des composantes du patrimoine net des ménages. Les résultats montrent qu'il existe un certain nombre de raisons bien identifiées qui expliquent les différences entre les données micro et macro. Certaines d'entre elles ont pu être quantifiées par les membres du groupe d'experts. L'analyse réalisée montre que dans la plupart des pays les sources micro fournissent de l'information pour la plupart des composantes des comptes nationaux mais que pour certaines composantes les totaux issus des deux sources sont très différents. Dans l'ensemble, les totaux apparaissent plus proches pour les composantes de revenu que pour les composantes de la consommation et du patrimoine. Une plus grande hétérogénéité des résultats entre pays est constatée sur les données de consommation.

Mots clés: Comptes nationaux, Ménage, Enquête, Revenu, Consommation, Patrimoine

TABLE OF CONTENTS

I. Introduction 6
II. Sources and methodology 8
A. Micro and macro data sources 8
B. Explaining gaps between micro and macro totals 13
C. Quantifying micro-macro gaps 14
III. Detailed results for income components 19
A. General overview 19
B. Focus on the main gaps 21
C. A more detailed description of imputed rents and STiK 24
D. Main conclusions 26
IV. Detailed results for consumption components 27
A. General overview 27
B. Focus on the main gaps 29
C. A more detailed description of the impact of the territorial adjustment 31
D. Main conclusions 34
V. Detailed results for wealth components: general overview 34
VI. Summary of results at the aggregate level 37
VII. Conclusions and recommendations 42
Bibliography 44
Annex 1 – National accounts aggregates: list of components included 45
Annex 2 – Reasons for gaps quantified by national experts 48
Annex 3 – Comparison with the A minima exercise 64
Annex 4 – Country comments 75

See also:

Micro sources used: main characteristics, available at
http://www.oecd.org/std/WP-STD-2013-3-1.xlsx

Households' current accounts: compilation practices, available at
http://www.oecd.org/std/WP-STD-2013-3-2.pdf

Detailed results for income components by country, available at
http://www.oecd.org/std/WP-STD-2013-3-3.xlsx

Detailed results for consumption components by country, available at
http://www.oecd.org/std/WP-STD-2013-3-4.xlsx

Detailed results for wealth components by country, available at
http://www.oecd.org/std/WP-STD-2013-3-5.xlsx

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I. Introduction

1. It has long been recognised that Gross Domestic Product (GDP) and other macro-economic statistics, while useful in their own right, are not the most suitable measures of people's material conditions. The focus on GDP as the single most important measure of economic performance and social progress may have driven a wedge between headline statistics and ordinary people's perceptions of their economic conditions. The financial and economic crisis has further amplified these concerns, potentially having a negative impact on the credibility of official statistics. A consensus has emerged on the need to put forward measures that capture better the well-being of households as such.

2. Much valuable information exists already on household material conditions. Indeed, the national accounts provide aggregate (macro) measures of household disposable income, Social Transfers in Kind (STiK), consumption expenditure and investment, assets and liabilities. Micro sources (surveys, administrative records, and censuses), on the other hand, can be used to derive measures of the distribution of income, consumption and wealth across household groups.

3. Over the years, however, macro and micro statisticians have tended to work separately on household income, consumption and wealth statistics, which in some cases have led to divergent results between these sets of statistics. This separation has its roots in different analytical perspectives and focuses of analysis: the aim of macro statisticians is to provide a complete and coherent picture for the economic system as a whole whereas micro statisticians tend to concentrate on distributional aspects and analysis on subsets of households or individuals grouped by various characteristics. These inconsistencies, however, are becoming less and less tenable because they cause significant problems for users, who have difficulty in interpreting sometimes conflicting results.

4. In order to address the inconsistencies between micro data and national accounts estimates, the OECD and Eurostat launched a joint Expert Group in 2011 to carry out a study on the feasibility of compiling measures of the distribution of income, consumption and wealth across household groups that are consistent with national accounts totals. The final goal of the Expert Group is to assess whether it is possible to devise an internationally comparable methodology to break down national accounts aggregates for the household sector using distributional information available from micro-sources, by making use of all the detailed information available at the national level. In parallel with the Expert Group work, Eurostat launched a similar study, the a-minima exercise, to be carried out at the centralized level by making use of the information available at the harmonized European level.

5. The first challenge of the Expert Group was to draw a detailed picture of the extent to which statistical information derived from micro sources can be aligned to three national accounts aggregates[1]:

- *Household adjusted disposable income:* this includes what accrues to households as a consequence of their involvement in processes of production or ownership of assets that may be needed for purpose of production (i.e. compensation of employees, operating surplus generated by unincorporated enterprises owned by households and property income received minus paid). It includes net current transfers (i.e. social benefits in cash minus social contributions and taxes paid) and Social Transfers in Kind (STiK). STiK are expenditures on individual goods and services of general government and Non-Profit Institutions Serving Households that directly benefit households, such as, healthcare and education. The adjusted disposable income is available to households for consumption and saving.

- *Household actual final consumption:* this covers all purchases made by resident households (at home or abroad) to meet their everyday needs: food, clothing, housing services (for example rents), energy, transport, spending on health, on leisure and miscellaneous services. It also includes expenditure on individual goods and services of general government and Non-Profit Institutions Serving Households that directly benefit households, such as, healthcare and education.

- *Household net worth*: this corresponds to the value of all the financial and non-financial assets owned by resident households (such as dwellings, currency and deposits, provision on life-insurance and pensions) less the value of all their outstanding liabilities (e.g. mortgage loans and non-housing loans).

6. Research conducted at both national and international levels have indicated that differences between macro and micro statistics can be large and that identifying and quantifying the many factors that contribute to these differences is challenging. Such research proved, however, to be useful to improve understanding of the quality and consistency of both sets of data, including their strengths and weaknesses. They can also open-up possibilities for greater use of micro data for national accounts compilation or vice versa. In this context, the analysis conducted by the Expert Group may be seen as a new attempt to study differences between micro and macro estimates in a cross country context, with a particular focus on the income, consumption and wealth components that are part of the national accounts aggregates.

7. As part of the Expert Group work, national experts from 21 countries (Australia, Austria, Canada, Denmark, France, Germany, Israel, Italy, Japan, Korea, Mexico, the Netherlands, New Zealand, Poland, Portugal, Slovenia, Sweden, Switzerland, Turkey, the United Kingdom and the United States) explored the differences between the national accounts and the micro sources available in their own country for a given year. For the various components of household income, consumption and wealth (e.g. wages and salaries, housing expenditures, dwellings owned) they compared the macro and micro sources in terms of definition and total amounts[2].

8. 20 countries studied all (or part) of the components of adjusted disposable income, 21 all (or part) of the components of actual final consumption and 7 studied all (or part) of the components of household net worth. The comparison of wealth amounts shown in this paper is not analyzed in detail. Results on wealth are then illustrative rather than conclusive. For the a-minima exercise, the comparison was limited to the various components of income and carried out at both the level of the EU27 aggregate and of each

[1] See detailed composition of the national accounts aggregates Annex 1.

[2] For a given component, for example wages and salaries, the total value is the sum of wages and salaries received by all households in the country. In micro statistics, the total value of each component is the weighted sum of the component across households.

EU27 member country[3] plus Switzerland and Norway. 12 European countries were included in both projects.[4]

9. This paper presents a detailed picture of the extent to which existing micro sources can be aligned to national accounts aggregates, based on the information provided by national experts as part of the Expert Group's work. Results show that although micro data sources do not provide information for all components of household economic resources (i.e. household income, consumption and wealth) as defined in the national accounts, they provide information for most of the major components of the national accounts aggregates. Once the identified reasons for the differences that could be quantified are isolated, income components from micro sources are relatively well aligned with the total amounts recorded in the national accounts as compared with consumption and wealth.

10. This paper is organised as follows. Section 2 describes the sources used and the process applied by national experts to compare micro and macro estimates in terms of definitions and total amounts recorded. In sections 3 through 5, the results for the detailed components of household income, consumption and wealth are set out. Section 6 presents a summary of the results at the aggregate level, for income, consumption and wealth. Section 7 summarizes the main conclusions and recommendations that can be drawn from this work.

II. Sources and methodology

11. This section explains how national experts compared micro and macro estimates. The first sub-section describes the data sources used; the second sub-section provides information on the main differences; and the third sub-section explains how experts quantified some of the identified differences and provides some caveats regarding the interpretation of the results.

A. Micro and macro data sources

At the micro level, mainly household surveys

12. Micro-level data on household income, consumption and wealth can be obtained from a number of sources. These mainly consist of household surveys (focusing on one or more dimensions of household economic resources) and administrative records. Household surveys are the most commonly-available source of comprehensive micro data. They typically collect information on a core set of demographic and socio-economic variables that can be used to classify households into groups of particular interest. Empirical evidence has shown that surveys are, however, subject to sampling bias and bias from household non-reporting or under-reporting. Furthermore, they exclude parts of the population such as persons who live in communal establishments. Administrative records on the other hand may cover the whole population while minimizing response burden on households. Administrative sources also have limits, for example they are not typically designed with statistical purposes in mind, they may use different income concepts, they may exclude some groups of the population (including those who do not submit tax declarations), they typically refer to individuals who are then re-aggregated into households based on whatever information is available, access may be restricted by privacy laws and so on. Data from surveys and administrative records are sometimes combined using data matching techniques.

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3 The 'a minima' exercise does not cover Bulgaria, Malta and Romania because of missing or incomplete national accounts data. National accounts data for the EU27 aggregate are, however, compiled and published by Eurostat.

4 Austria, Denmark, France, Germany, Italy, the Netherlands, Poland, Portugal, Slovenia, Sweden, Switzerland and the United Kingdom.

13. As part of the Expert Group work, national experts selected the most relevant micro sources available at the national level taking into account the final goals of the Expert Group. Experts focused on micro sources that were likely to provide the closest match to the scope and definitions used by the national accounts. Priority was given to the most recent year available, or to the most recent year for which information was available for all three aspects of household economic resources (i.e., income, consumption and wealth). That year may differ across countries because of micro data availability.

14. National experts predominantly relied on household surveys, possibly combined with administrative records, conducted in 2008, 2009 or 2010 and focusing on a particular dimension of household economic resources. However, the Netherlands, Sweden, and the United States, also used administrative data from registers[5]. In order to cover a maximum number of individual components of the national accounts aggregates for all three dimensions income, consumption and wealth, national experts generally used several micro sources. The number of micro data sources used by countries ranges from one to six (Table 1). More details on the micro sources used in the comparison are available at http://www.oecd.org/std/WP-STD-2013-3-1.xlsx.

[5] The United States used tax data compiled from registers, but did not have access to individual records from tax registers. The data used were compiled from an Internal Revenue Service sample of tax records not available to the public (including BEA).

Table 1 –Micro data sources used by country

Country	Name of the data source	Year of collection*	Nature**	Type of components ***
AUSTRALIA	Survey of Income and Housing	2010	S	I, W
	Household Expenditure Survey	2010	S	C
AUSTRIA	European Union Statistics on Income and Living Conditions (EU-SILC)	2010	S	I
	Household Budget Survey	2010	S	C
CANADA	Survey of Labour and Income Dynamics (SLID)	2009	S	I
	Survey of Household Spending (SHS)	2009	S	C
	Survey of Financial Security (SFS)	2005	S	W
DENMARK	Household budget survey	2008	M	I,C
FRANCE	Fiscal and social income survey (ERFS)	2008	M	I
	European Union Statistics on Income and Living Conditions (EU-SILC)	2008	S	I,C
	Household Budget Survey (BDF)	2006	S	C
	Health data set	2003	M	I,C
	Housing survey	2006	S	C
	Wealth Survey	2004	S	I,W
GERMANY	Household Budget Survey	2008	S	I,C
ISRAEL	Income Survey	2009	S	I,W
	Houshold Expenditure survey	2009	S	C,W
ITALY	European Union Statistics on Income and Living Conditions (EU-SILC)	2009	M	I
	Bank of Italy survey on household income and wealth (SHIW)	2009	S	I
	Istat survey on household budget (HBS)	2010	S	C
JAPAN	The National Survey on Family Income and Expenditure	2009	S	I,C,W
KOREA	Household Income and Expenditure Survey	2009	S	I,C
	Farm Household Economy Survey	2009	S	I,C
	Fishery Household Economy Survey	2009	S	I,C
MEXICO	Household Income and Expenditure National Survey (ENIGH)	2010	S	I,C
NETHERLANDS	Income Panel Survey	2008	A	I, W
	Household Budget Survey	2008	S	C
NEW ZELAND	Household Economic Survey (Income)	2008	S	I,C
	Household Economic Survey	2008	S	I,C
POLAND	European Union Statistics on Income and Living Conditions (EU-SILC)	2010	S	I
	Household budget survey	2010	S	C
PORTUGAL	European Union Statistics on Income and Living Conditions (EU-SILC)	2009	S	I
	Household budget survey (HBS)	2006	S	C
SLOVENIA	European Union Statistics on Income and Living Conditions (EU-SILC)	2009	M	I
	Household Budget Survey	2009	S	C
SWEDEN	Income and taxation register (STAR)	2009	A	I, C
	Household budget survey	2009	S	C
	Income and taxation register	2009	M	I
SWITZERLAND	European Union Statistics on Income and Living Conditions (EU-SILC)	2009	M	I
	Household Budget Survey	2008	S	C
TURKEY	Household Budget Survey	2009	S	C
UNITED KINGDOM	Living Costs and Food Survey (Including Redistribution of Income variables)	2009	S	I,C
	Wealth and Assets Survey	2008	S	I,W
	European Union Statistics on Income and Living Conditions (EU-SILC - GLF)	2009	S	I
UNITED STATES	Annual Socio-Economic Supplement to the Current Population Survey	2011	S	I
	Consumer Expenditure Survey (CEX)	2011	S	I,C
	Statistics of Income (SOI), Individual Income Tax Returns, Preliminary Data	2011	A	I

* The period of collection may span several years. The year mentioned in the table is the year corresponding to the end of the collection period.

** Nature of micro source: S: survey (cross-sectional and panel); M: combination of survey and administrative records; A: administrative records from register(s).

*** Type of component for which the micro source is used: I: income; C: consumption; W: wealth.

At the macro level, households in the national accounts

15. The System of National Accounts (SNA) and the European System of Accounts (ESA) are the international standards used as a reference when compiling measures of economic activity: they set out the concepts, definitions, classifications and accounting rules for compiling the national accounts for countries around the globe[6]. The ESA is almost fully consistent with the SNA, including specificities that are more in line with the use in the European Union. For brevity, when referring to these standards, this report simply uses the term SNA. The SNA presents integrated accounts by institutional sectors that are a statistical tool for monitoring the economic interactions between different sectors of the economy, e.g. Households, Financial and Non-Financial Corporations, Non-Profit Institutions Serving Households (NPISH, e.g. political parties, trade unions, sport clubs, etc.), and General Government. In this report, the subsets of accounts that refer solely to the household sector are termed the "household accounts" for short (and likewise for other sectors). The household accounts describe the behavior of households and the activities in which they engage, such as production, consumption and accumulation of assets, to understand how they act as participants in the production process, as consumers and as holders of assets. As part of the national accounts, the household accounts have the advantage of being fully consistent with economy-wide measures such as GDP, but they only provide aggregate information for the household sector as a whole. Furthermore, since household accounts are presented in a way that is consistent with other sectors of the economy, the definitions for income, consumption and wealth aggregates may depart from how households perceive their economic resources.

16. In order to describe the wide variety of transactions for different sectors of the economy in an integrated and comprehensive way, the compilation of the national accounts is itself complex and complicated. Data from different sources are put together, cross checked against one another, and then adjusted and balanced. A number of models and in some cases extrapolation may be used too. The practical compilation of the accounts can differ across countries. Regarding income and consumption, a large number of countries use administrative sources and household surveys either in the compilation process or during the validation process (Box 1). Household surveys are mainly used for the computation of consumption components.

17. The availability of a detailed set of national accounts covering household income, consumption and wealth components varies across country. All 21 countries involved in the comparison produce accounts providing information on income and consumption, except Turkey.[7] Some countries, however, only produce the relevant accounts for a combined sector including both households and NPISH. This is the case of eight countries with respect to the income accounts (Australia, Austria, Canada, Denmark, Germany, Korea, Switzerland, and the United Kingdom), and of one country (Australia) with respect to consumption. The production of a consistent and complete balance sheet for the household sector including non-financial and financial assets and liabilities is much less developed. Only 3 out of the 21 countries (France, Italy, Japan) involved compile full household balance sheets that do not also include NPISH. A further nine countries (Australia, Canada, Denmark, Germany, the Netherlands[8], Switzerland, the United Kingdom and the United States) produce such balance sheets, but for the household and NPISH sector combined.

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6 The most recent versions of these international standards are the 2008 SNA and the corresponding 2010 ESA. Most countries, however, do not compile their national accounts following these new standards yet.

7 Turkey compiles detailed estimates on household final consumption but does not yet produce estimates of adjusted disposable income for the household sector. Israel also produces detailed estimates for household final consumption but compiles only partially the SNA set of income accounts for households.

8 The Netherlands exclude the NPISH for the non-financial wealth but include them for financial wealth.

Box 1 – Household accounts compilation – focus on income and consumption

To know more about the compilation practices used by national statistical institutes (NSIs) for their annual households' current accounts (i.e. the accounts covering income and consumption) a meta-survey was launched as part of the Expert Group's work. The meta-survey covered 42 countries, with detailed results available at http://www.oecd.org/std/WP-STD-2013-3-2.pdf

For the purpose of this meta-survey a distinction was made between direct and indirect estimations. In the direct approach, data on households are obtained through household surveys, censuses and/or administrative records. In the indirect approach, the estimates are derived by using information from statistics collected for other institutional sectors, such as general government or corporations; or they are derived as a residual from the rest of the economy (as the difference between the whole economy and the other sectors).

Income - The meta-survey showed that NSIs use both direct and indirect methods to compile the household income accounts. The choice of method depends on the transaction(s) considered. For example, income from the participation in the production process (income from unincorporated enterprises[9], income from dwelling services, production for own final use, and compensation of employees) is generally measured using direct methods, whereas redistributive transactions (taxes, contributions, benefits, transfers) are typically based on information from other institutional sectors. Estimating the amount of a transaction as a residual from all the other sectors in the economy is rarely used. The transactions most often estimated as a residual are dividends and rents on land. When using information from statistics collected for the other institutional sectors to estimate redistributive transactions, the most frequently-used data sources are administrative records. A large majority of countries uses administrative records to estimate current taxes paid and social contributions/benefits paid/received by households. Household surveys are rarely used, except in the case of income from production of dwelling services (owner-occupied dwellings and leased dwellings).

Consumption – The meta-survey showed that most countries use a direct method to measure household consumption expenditure. The method used tends to be similar across transactions and across countries. The types of data sources used, however, differ across countries. The most frequently-used data sources are either household surveys or household surveys combined with administrative records.

Income and consumption: The meta-survey showed that different types of adjustments are made when compiling household current accounts: some adjustments are conceptual, others aim to ensure exhaustiveness (for example illegal activities, underground production); and other adjustments are made to ensure full consistency with data for other sectors and the whole economy.

[9] An unincorporated enterprise is defined in the SNA as a producer unit which is not incorporated as a legal entity separate from the owner (household, government or foreign resident). This implies that the fixed and other assets used in unincorporated enterprises do not belong to the enterprises but to their owners, that the enterprises as such cannot engage in transactions with other economic units nor can they enter into contractual relationships with other units nor incur liabilities on their own behalf; in addition, their owners are personally liable, without limit, for any debts or obligations incurred in the course of production. In the SNA to the extent possible, the production activities undertaken by unincorporated enterprises owned by households should "be treated as quasi corporations, included in one of the corporations sectors separated from the rest of the household. However, […] a quasi-corporation can only be created when a full set of accounts, including balance sheet entries and information about withdrawals of income from the quasi-corporation, is available." (SNA2008 §24.6)

B. Explaining gaps between micro and macro totals

18. The first step taken by national experts when comparing the total amounts from micro and macro sources was to determine whether information on the components of adjusted disposable income, of actual final consumption and of net worth as defined in the SNA was available in micro sources. This analysis of the detailed content of the micro variables and the related SNA transactions provided information on possible reasons for differences between the two estimates.

The national accounts as a starting point

19. National experts studied as far possible, given time and other resource constraints, the various components of adjusted disposable income, actual final consumption and net worth as defined in the SNA (Annex 1). For each component of the three aggregates (such as, wages and salaries, income taxes, housing expenditures, dwellings owned), experts selected the micro variables providing similar information, and compared in detail the definition and scope to identify possible reasons for differences in the estimates for the totals. Several types of micro variables were used in the comparison: variables collected in surveys and variables imputed by National Statistical Institutes (NSI).

20. The components of the national accounts aggregates were taken as a starting point, because the Expert Group's mandate was to work within the national accounts framework. Taking the national accounts definitions as a reference for the Expert Group work was justified by the fact that the SNA framework is currently the only framework that covers household income, consumption and wealth and that is harmonized across countries; and because it offers consistent measures with GDP. Studying gaps between micro and macro sources from a national accounts point of view does not mean that it is assumed that micro data sets should follow the national accounts definitions and provide similar level of income, consumption and wealth aggregates.

21. In this respect, it should be underlined that, recently, an internationally-agreed framework for micro statistics on the distribution of household income, consumption and wealth, the ICW Framework, has been developed (OECD (2013)). This micro framework has much in common with the SNA. However, while trying to maintain consistency with the definitions in the SNA, the micro data framework also differs from the SNA in several respects.

The reasons for gaps

22. The main factors underlying the divergences between the total amounts from the two sources identified by national experts are listed below, grouped into four categories. These reasons for gaps are described in more detail in Annex 2.

- ***Population scope***:
  - Micro sources do not generally provide comprehensive information on some groups of the population which are outside their scope such as households living in non-private dwellings (i.e. prisons, boarding schools, retirement homes, hospitals and nursing homes, religious institutions, hotels, etc.), and those living in territories overseas or in sparsely populated areas;
  - National accounts estimates for some countries may include NPISH as part of the 'household' sector;

- ***Missing components***: micro sources do not usually provide information for a number of national accounts components[10]. This is the case in:
  - All countries for employers' imputed social contributions, Financial Intermediation Services Indirectly Measured (FISIM), reinvested earnings on foreign direct investment;
  - Most countries for property income attributed to insurance policy holders and Social Transfers in Kind;
  - Several countries for imputed rents for owners-occupied housing[11], own-account production of goods, wages and salaries in kind, social contributions to (and benefits from) employer related insurance schemes, interest paid on consumption loans, income from family trusts[12], non-life insurance premiums and claims, and gambling.

  The above components can be missing in micro sources for both conceptual and practical reasons. For example, the compilers of micro statistics may consider that some national accounts components that are useful for describing the economy as a whole are not relevant when the focus is the economic behaviour of households. As a consequence, they may omit these components in micro sources (e.g., FISIM). On the other hand, some components of national accounts aggregates may be missing for practical reasons, in particular because the information is difficult to collect or impute.

- ***Classification***: differences in how the information is classified and/or recorded in the relevant sources. This is the case for wages and salaries paid while the employee is on sick leave or maternity leave, income from self-employment activities, profits or losses from partners who do not work in these enterprises ("silent" or "sleeping" partners), royalties, income from intellectual property products, income from renting dwellings and land, territorial adjustments, package holiday expenditures, expenditures on the maintenance and repair of dwellings. Even if the information is available in micro and macro sources, these differences in classification tend to generate gaps.
- ***Other***: differences in valuation of transactions and balance sheet positions (e.g. capital depreciation, dwellings and land underlying buildings and structures, imputed rental for owner-occupied housing), limitation of sources and associated statistical adjustments (e.g. non-response, sampling error, underreporting, time recording).

C. Quantifying micro-macro gaps

23. Once all the factors that could potentially account for the divergences were identified, experts measured the quantifiable reasons for gaps. A *coverage rate* was then calculated, component by

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10 The components studied in this paper are those part of the national accounts aggregates. It should be mentioned, however, that micro aggregates may also include components that are not part of the national account definitions and as such that are not discussed in the paper. This is the case for instance of pensions received from private schemes. These pensions are included in the micro income aggregate in most countries. In the SNA, there are recorded as a running down of the household asset.

11 This report uses the term "imputed rents" to name "imputed rentals" as defined in the SNA. The terms "rents" and "rentals" are distinguished in the SNA (§7.153 in the 2008SNA) but the term "imputed rents" is most commonly used to refer to dwelling services for owner-occupied.

12 Family trust refers to a discretionary trusts set up to hold a family's asset or to conduct a family business. Generally, they are established for asset protection or tax purposes.

component using the adjusted totals. Finally an *average gap* indicator was calculated to give a synthetic measure of the difference between micro and macro estimates.

Adjusting for the quantifiable reasons for gaps

24. National experts applied adjustments and reclassifications to separate that part of the gap that could be quantified. The **adjustments** typically consisted of excluding some elements from the micro and macro totals. In practice, when no information was available on a given item of national accounts household resources from a micro source, that part was excluded from the national account total. The national accounts components that were excluded from the comparisons were sometimes easy to estimate when the relevant totals were readily available as specific (sub-) transactions (e.g. employers' imputed social contributions, FISIM, property income attributed to insurance policy holders, Social Transfers in Kind). But in other cases adjustments reflect assumptions made by experts (for example population not covered by micro sources, NPISH).

25. An example of an adjustment, reflecting experts' assumptions, was made on the case when part of the population is not covered by micro sources. People falling outside the scope of micro data sources are mainly people without permanent addresses, those living in non-private dwellings (such as prisons, boarding schools, retirement homes, hospitals and nursing homes, religious institutions, hotels, and so on.), and those living in territories overseas or in sparsely-populated areas. Some national experts made adjustments to the national accounts totals, mainly by using a percentage of the population derived from demographic statistics. In these cases, experts also considered some specific items of household income or expenditure to be zero for the missing population (Annex 2). In general, the population excluded by micro sources represents significantly less than 5% of the whole resident population. The impact of this adjustment was generally minor in respect to totals, but more important in the case of Social Transfers in Kind (see section III.C).

26. The **reclassifications** consisted of aggregating or disaggregating the available micro variables and national accounts transactions to adjust for differences in classification. For this purpose, national experts used the detailed information available at national level.

27. One example of reclassification relates to rents received on lands. In the SNA, rents on lands should be recorded as property income, separately from income from renting dwellings and mixed income from unincorporated enterprises. Conversely, in most micro sources, income from leased dwellings and rents are grouped together, and recorded separately from self-employment income. Among the 14 countries where experts identified 'rents on land' as a classification issue, 12 rearranged the micro and macro variables for the comparison purpose, most of them by adding the macro total for rents on land to the income from renting dwellings. For some countries, this reclassification of rents on land with income from renting dwellings was further complicated, as income from renting dwellings is combined with mixed income.

28. Adjustments and reclassifications aimed at making the micro and macro components closer in definition and scope. They were not, however, feasible and relevant in all countries. Also, even after these treatments applied it cannot be assumed even in the perfect case that the definition and the population in the two sources are strictly identical. Regarding adjustments, almost all national experts were able to quantify and isolate the components that were deemed to be missing in the micro or macro sources due to conceptual differences; also, a few of them corrected totals for differences in population scope. Regarding reclassifications, some experts reclassified non-resident households' expenditures on the territory and resident households' expenditures abroad (see section IV.C); some experts reclassified part of property income by adding it to mixed income in order to perform a relevant comparison with micro sources on self-employment income (see section III.B); some experts reclassified property income by adding it to

income from leased dwellings (see above). The list of the main adjustments and reclassifications applied by country is provided Annex 2.

A coverage rate measured by component

29. After making several adjustments and reclassifications, national experts calculated a coverage rate by income component, consumption component and wealth component. The coverage rate shows the extent to which the total amounts from the micro source and the national accounts match with each other, when using similar definitions (to the extent possible) and after having accounted for the impact of quantifiable gaps. For component 'x' (e.g., wages and salaries received, housing expenditures, income from owner-occupied dwellings) the coverage rate is calculated as the adjusted micro total, grossed up to the total population ($Micro_x$), divided by the relevant national accounts total (NA_x), as follows:

$$CR_x = \frac{Micro_x}{NA_x} \times 100$$

An average gap indicator measured at the aggregate level

30. From a lay user's perspective, an aggregate indicator measuring the extent to which micro and macro data match with each other may also be useful. In this paper, the global alignment of micro and macro data is measured using an 'average gap indicator', which is computed as a weighted average of the differences between the micro and macro amounts across the different components of, respectively, household income, consumption and wealth (see also Box 2).

31. Based on the same notation used above for the coverage rate, and considering that each aggregate (adjusted disposable income, actual final consumption, net worth) is made up of a given number of components 'k', the average gap indicator is calculated as follows:

$$GI = \sum_{x=1}^{k} w_k \times D_x = \sum_{x=1}^{k} \frac{|NA_x|}{\sum_{x=1}^{k} |NA_x|} \times D_x \times 100$$

With: $D_x = Min\left\{\left|1 - \frac{CR_x}{100}\right| ; 1\right\} = Min\left\{\frac{|NA_x - Micro_x|}{|NA_x|} ; 1\right\}$

32. This average gap indicator differs from a simple coverage rate computed for the total of household income, consumption and wealth, as it reflects the differences between micro and macro sources at the level of each detailed components better, i.e. these differences are not allowed to offset each other and to cancel out at the aggregate level. To that end, the micro-macro differences at the component level (D_x) is measured as an absolute value, so as to give the same importance to under- and over-coverage. The value of D_x is zero when micro and macro amounts are equal to each other. The maximum value of D_x is one when no micro information is available or when the micro total is much higher than the national accounts amount (e.g. more than twice the size of the national accounts total).

33. The weights used in computing the average gap indicator correspond to the shares of the various items in the relevant national accounts aggregate, where the national accounts totals used to calculate these weights are expressed in absolute values to avoid that differences between components with a positive sign (e.g., in case of resources, wages and salaries received) and those that have a negative sign (e.g., in case of uses, income taxes paid) could cancel out in the aggregate.

34. Based on this approach, a 0% value for the average gap indicator implies a perfect match for all the components of the national accounts aggregate that is considered, while a 100% value either implies that no micro-information is available for any national accounts components, or that the totals from the micro sources are much higher than the amounts recorded in the macro sources (e.g. more than twice the

size of the national accounts totals) for all components. For example, a value of the average gap indicator of 50% would imply that, across all components, the total amounts recorded by the micro data are around half of the amount recorded by the national accounts. Note that the closer the coverage rates by component, the lower the average gap.

35. The average gap indicator was calculated for three different aggregations of national accounts components:

i) *Option 1*: the indicator is computed on the components of the national accounts aggregates for which coverage rates were calculated. The comparison is limited to those national accounts items for which micro sources provide similar information. To compute this variant of the average gap indicator, the weights of the (part of) national accounts components not covered by micro sources and that national experts could quantify are put to zero $(w_x = 0)$.

ii) *Option 2*: the indicator is computed on all the components of the national accounts aggregates namely adjusted disposable income, actual final consumption and household net worth. The comparison includes all the items that are included in the definition of the national accounts aggregates. To compute this variant of the average gap indicator, the coverage rate associated with the (part of) national accounts components not covered by micro sources and that national accounts could quantify are put to zero $(CR_x = 0)$. Compared to option 1, this measure shows the impact of the reasons for differences that experts could quantify.

iii) *Option 3*: for the income and consumption aggregates, the indicator is computed on all the components of the national accounts aggregates excluding STiK if not covered by micro sources. This variant enables to separately identify the role of STiK in the quantified reasons for gaps.

A few words of caution for compilers and users

36. Coverage rates and the average gap indicator provide useful information for both data compilers and users. However, when micro and macro totals are very far from each other, the accuracy of both the micro and the macro estimates should be further verified, and users should be aware of those differences. In order to facilitate such analysis, an arbitrary interval is used in this paper: as a very first approximation, coverage rates within 80% and 120% for the various components are considered as indicating that the amounts recorded by the two sources are relatively close to each other. This interval places the same importance to under- and over-coverage. Similarly, an average gap indicator above 20% is considered as providing evidence of large gaps between the two sources.

37. The coverage rate is not a measure of the quality of micro estimates. The compilation methods followed by macro data producers, depending on the component considered, may have different degrees of reliability, as they are subject to statistical adjustments whose accuracy is difficult to assess (e.g., correction for under-reporting, or sometimes values estimated through a residual method). Moreover, macro estimates are often subject to revisions that might have a significant impact on the coverage rates. In addition, the comparison refers to totals, and does not necessarily have an affect the quality of the distributional information.

38. Also, coverage rates and the average gap indicator are not exhaustive measures of the quality of the match between micro and macro totals. Indeed, as both micro and macro estimates have measurement errors associated with them, the difference between the two estimates may be affected by various measurement errors. However, the calculation of a joint confidence interval is difficult; such an interval is not defined in national accounts as they are derived from many data sources. Another problem is related to

the quantification of measurement errors, as opposed to sampling errors. As a consequence, it is not possible to provide a single and comprehensive measure of the extent of alignment.

39. Finally, it should be noted that the comparisons shown below refers to a single year and to a specific survey. The use of other surveys and/or other years could lead to quite different results.

Box 2 – The computation of coverage rates and of the average gap indicator: a practical example

This box shows how the coverage rate and the average gap indicator are calculated, using simple, illustrative numbers. Also, the box explains why the average gap indicator is preferred to the coverage rate measured at the aggregate level. In this box, the considered national accounts aggregate (e.g. adjusted household disposable income) is assumed to be made up of two components (k=2). Micro and macro totals are available for these two components in three countries (A, B and C). The coverage rate is computed for each of the two components (CR_1, CR_2) and then for the aggregate (TCR). The average gap indicator (GI) is finally calculated for the national account aggregate that is being considered.

Country A	Macro total	Micro total
Component 1	20	30
Component 2	80	65
Aggregate = 1 + 2	100	95

$$CR_1 = \frac{30}{20} = 150\% \; ; \; CR_2 = \frac{65}{80} = 81\% \; ; \; \text{TCR} = \frac{95}{100} = 95\%$$

$$GI = [\frac{1}{|20|+|80|} * (|20| \times |1 - 1.5| + |80| \times |1 - 0.81|)]*100 = 25\%$$

Country B	Macro total	Micro total
Component 1	80	60
Component 2	-20	-10
Aggregate = 1 + 2	60	50

$$CR_1 = \frac{60}{80} = 75\% \; ; \; CR_2 = \frac{-10}{-20} = 50\% \; ; \; \text{TCR} = \frac{50}{60} = 83\%$$

$$GI = [\frac{1}{|80|+|-20|} * (|80| \times |1 - 0.75| + |-20| \times |1 - 0.5|)]*100 = 30\%$$

Country C	Macro total	Micro total
Component 1	80	60
Component 2	-20	-20
Aggregate = 1 + 2	60	40

$$CR_1 = \frac{60}{80} = 75\% \; ; \; CR_2 = \frac{-20}{-20} = 100\% \; ; \; \text{TCR} = \frac{40}{60} = 67\%$$

$$GI = [\frac{1}{|80|+|-20|} * (|80| \times |1 - 0.75| + |-20| \times |1 - 1|)]*100 = 20\%$$

In this example, the total coverage rate and the average gap indicator provide contrasting conclusions: the total coverage rate is lowest in country C (67%), whereas this country also presents the lowest value for the average gap indicator (20%). The reason for the difference lies in the level of aggregation when calculating the total coverage rate, i.e. that of substitutability across components. The CR indicator for the national accounts components compares totals and neglects their individual components. Thus, for example, one euro 'missing' in the micro estimates for wages compared to the macro total could be offset by an excess of one euro in social benefits received. Also, for a given value of the coverage rate on, say, wages (resources-positive amount), the country that does not cover taxes paid in its micro sources (uses – negative amount) will show a higher total coverage rate than the country whose micro source covers part of taxes. This offsetting can be very misleading, if the total coverage rate is interpreted as a measure of alignment between the sources. For these reasons, the preferred measure for analysing the match between micro and macro totals at a global level used in this paper is the average gap indicator.

III. Detailed results for income components

40. This section presents the main patterns when looking at coverage rates for the detailed components of income. The first sub-section presents an overview of coverage rates for the individual income components. The second sub-section explains the main reasons for divergences for two national accounts components showing high gaps in totals in most countries: income from self-employment and interests and dividends received. The third sub-section provides more details for two imputed national accounts components: imputed rents and STiK. The fourth sub-section concludes.

A. General overview

41. Table 2 summarizes results on coverage rates, as calculated by national experts, by income component, showing:

- the number of countries that undertook a comparison;
- the average, minimum and maximum coverage rates across countries;
- the proportion of countries that show a good alignment between the two sources (i.e., coverage rate between 80% and 120%); and
- the average, minimum and maximum share of each component in total (gross) adjusted disposable income across countries[13].

42. At the level of detailed components, results show considerable differences across components but some similarities across countries for the same component. The micro and macro estimates for most of the major components of household's income are generally relatively well aligned in most countries (Table 2 and Figure 1). For more than four fifths of countries, the match between micro and macro totals for "wages and salaries" and "actual employers' social contributions" (received) is considered good. The match is considered good for two thirds of countries for taxes on income and for receipts of social benefits in cash. Conversely, in most countries the alignment between micro and macro estimates is much lower for some important components: the match is considered good for only one third of the countries considered for "interest and other property income from corporations" received; and only one quarter of countries or less for "income from self-employment" and for "income from leased dwellings". For "interest and other property income from corporations" and "income from self-employment" coverage rates differ significantly across countries.

[13] The weight of the component in total aggregate may not appear consistent with the published national accounts estimates because the share is calculated using the adjusted national accounts total for each component, i.e. the national accounts totals after reclassifications and adjustments.

Table 2: Micro and macro comparison by household income component: coverage rates and weights in national accounts total adjusted disposable income

Income items compared [1]	*Number of countries*	Coverage rates				Weights in total adjusted disposable income		
		Average	Minimum	Maximum	% of countries in the 80%-120% interval	Average	Minimum	Maximum
. Macro resources (received)								
Income from owner-occupied dwellings	9	90%	41%	128%	56%	8%	6%	13%
Income from leased dwellings [2]	7	90%	36%	170%	14%	2%	0%	3%
Income from self-employment [2]	12	67%	14%	127%	25%	13%	2%	27%
Wages and salaries	17	93%	71%	107%	88%	53%	32%	67%
Employers' actual social contributions [3]	10	83%	3%	110%	80%	10%	4%	14%
Interests and distributed income by corporations, no Fisim [2, 4]	19	53%	4%	101%	21%	7%	1%	25%
Social benefits other than social transfers in kind	20	81%	40%	99%	65%	19%	4%	28%
Other current transfers	11	58%	13%	117%	36%	4%	1%	9%
Social transfers in kind	6	87%	62%	108%	83%	16%	5%	26%
. Macro uses (paid)								
Interests, no Fisim allocation [4]	14	59%	0%	100%	36%	-5%	-10%	-1%
Current taxes on income and wealth	17	87%	35%	110%	71%	-13%	-39%	-1%
Employers' actual social contributions [3]	9	86%	3%	117%	78%	-9%	-14%	-3%
Employees' social contributions	6	94%	31%	170%	50%	-8%	-18%	-3%
Other current transfers	12	77%	14%	177%	33%	-3%	-6%	-2%
Total adjusted disposable income covered (resources minus uses)	**20**	**85%**	**48%**	**126%**	**70%**	**79%**	**61%**	**95%**
Total adjusted disposable income not covered (resources minus uses)						**21%**	**5%**	**39%**
...among which social transfers in kind not covered						*13%*	*0%*	*26%*
Gross adjusted disposable income	**20**	**68%**	**36%**	**87%**		**100%**	**100%**	**100%**

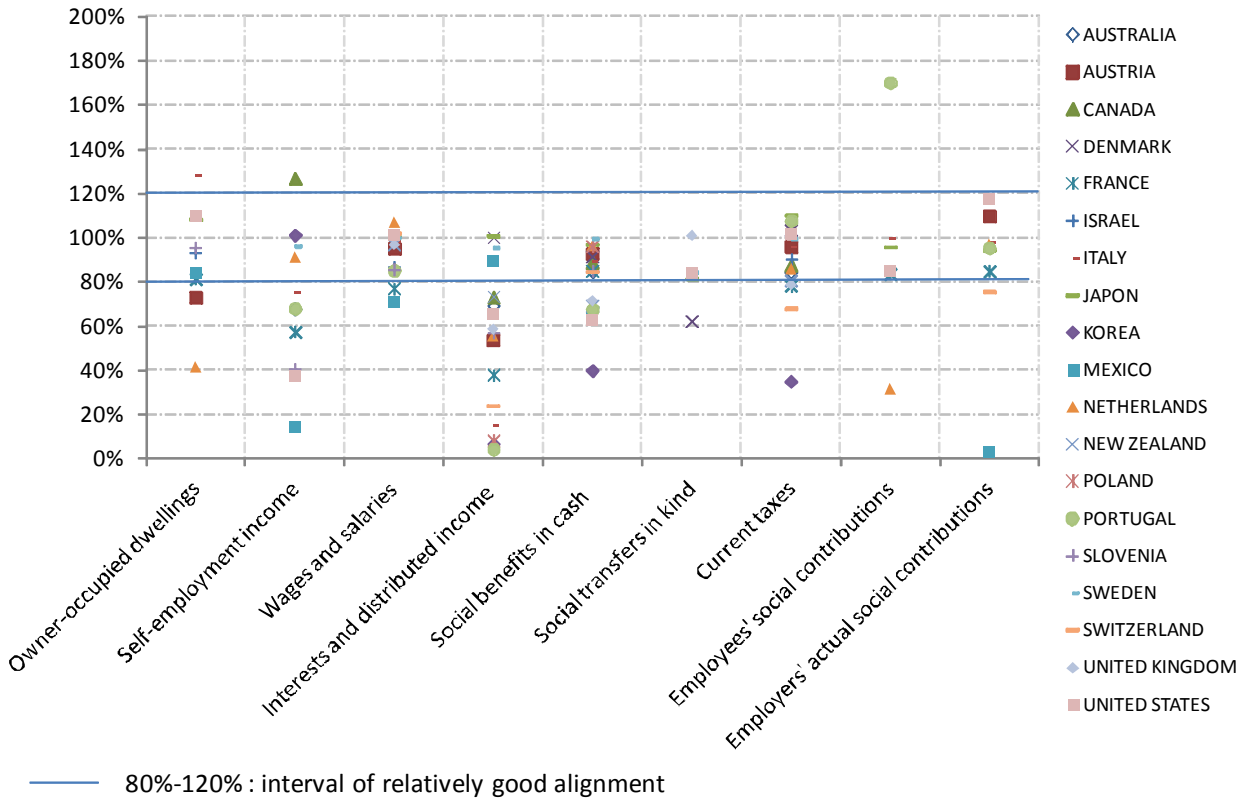
(1) The reported detail corresponds to the level at which most experts did the comparison and for which five or more countries performed a comparison. For the few countries that produced comparisons at a more aggregated level the coverage rate is not shown in the Table. Full detailed results by country are available at http://www.oecd.org/std/WP-STD-2013-3-3.xlsx. To obtain a relevant comparison, national experts might have used macro totals that did not strictly correspond to the national accounts transactions as shown in the SNA sequence of accounts. Therefore, the weight of the compared item does not necessarily correspond to the weight of the national accounts transaction as published.

(2) These items might include part of property income received / paid and income from own-account production when experts found it relevant for the micro-macro comparison – see Annex 2.

(3) The comparisons for employers' social contributions as income resources and as income uses do not show strictly identical results because the national accounts data for these two items diverges in contents and totals in a few countries.

(4) Except for a few countries that did not adjust totals for FISIM before calculating the coverage rate – see Annex 2.

Figure 1. Coverage rates by country for the main income components[14]



B. Focus on the main gaps

43. The two main income components for which the alignment between micro and macro sources was the least good in most countries are "self-employment income" and "interest and distributed income received from corporations". In most countries these components show coverage rates lower than 80%. The (practical) reasons for these gaps are known but difficult to quantify.

Income from self-employment

44. In the national accounts, the item that most closely corresponds to income from self-employment is called mixed income. Mixed income measures the surplus or deficit accruing from production, after deducting (paid) compensation of employees and taxes (less subsidies) on production, but before taking into account any interest, rent or similar charges payable on financial assets or natural resources borrowed or rented by unincorporated enterprises, or any interest, rent or similar receipts receivable on financial assets or natural resources owned by enterprises. Mixed income is generally estimated both gross and net, depending on whether capital depreciation is deducted or not. In most countries, mixed income is computed by using administrative records, business surveys or a mix of surveys and administrative records (see http://www.oecd.org/std/WP-STD-2013-3-2.pdf), and typically has large adjustments to take account of unreported income. Among the countries involved in this comparison exercise, the share of income from self-employment covered by micro sources in total adjusted disposable income ranges from 2% to 27%.

14 Most important components across countries involved in the comparison exercise.

45. Only in Italy, Korea, the Netherlands and Sweden is there a relatively good alignment of the two totals. Experts mentioned no specific statistical treatment either on the macro or on the micro side that could explain this result. The estimation methods applied by national accountants usually differs from those used in the cases of micro data. Experts did not mention specific calibration methods[15] on the survey side either. Canada is the only country whose micro estimates of income from self-employment are higher than those in national accounts. One possible explanation provided by national experts is the fact that the proportion of the self-employed is higher than in the population at large.

46. Many reasons may explain why micro and macro estimates of income from self-employment are far from each other:

Delineation issues

47. The SNA recommends that production activities undertaken by unincorporated enterprises owned by households should be separately identified and treated as "quasi-corporations". In order to be able to realistically capture information on quasi-corporations, the SNA defines them according to whether they keep separate accounts or not. Those unincorporated enterprises that do keep separate accounts are labelled quasi-corporations and are included in the corporate sector (and not in the household sector). And those that do not keep separate accounts are left in the household sector. It is often the case that, for example, professionals working alone, do not separate their professional and household financial affairs and as such this income is considered in the national accounts as mixed income received by households. This national accounts differentiation may differ from households' self-perception and lead to divergences between what is recorded as income from unincorporated businesses owned by households in national accounts and what people declare as income generated as a self-employed business activity in surveys. Further complexity is added by the fact that, as legal arrangements vary across countries, even the compilers' interpretation of national accounts rules can vary across countries (http://www.oecd.org/std/WP-STD-2013-3-2.pdf).

Classification issues

48. In micro surveys, income from self-employment is the income received by individuals as a result of their involvement in self-employment jobs. This income from self-employment includes the profit or loss that accrues to owners of, or partners in, unincorporated enterprises who work in these enterprises, after deduction of charges such as interest, dividends and rents payable that are related to the production activities. In the SNA framework, the mixed income estimate corresponds to the value of output less operating costs (such as intermediate consumption, payment of compensation of employees and net taxes) and before any deduction and receipt of property income (i.e. interests, dividends and rents). The micro-data concept differs from the national accounts mixed income, mainly because property income received/paid by the enterprises is treated in different way[16]. Moreover, profits or losses from partners who do not work in these enterprises ("silent" or "sleeping" partners) may be included in dividend income in most surveys, and as mixed income in national accounts.

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15 In this context, the calibration approach consists of a computation of weights that incorporate specified auxiliary information and are restrained by calibration equations. Such calibration may be used to obtain know totals.

16 In the SNA, the balancing item "entrepreneurial income" is much closer to the micro definition. Indeed, entrepreneurial income is calculated by deducting from operating surplus any interest, dividends and property, and rents payable, and adding the relevant incomes receivable. It is specified however, in the SNA2008, that the entrepreneurial income should not be calculated for households, for conceptual and practical reasons.

Valuation method

49. In some cases the micro estimate of self-employment income and the mixed income estimates are both measured net of capital depreciation. However, capital depreciation is difficult to compare in practice. Indeed, the depreciation allowances deducted when deriving business profits in surveys are likely to be those based on tax and accounting rules, based on historic cost. They may not reflect the actual value at which fixed capital is used up in the production process. Consumption of fixed capital in national accounts is based on current replacement cost, not historic cost, and on estimates of actual prices of capital consumption.

Statistical treatment

50. In most countries, macro compilers use direct sources (surveys or/and administrative sources) to estimate mixed income but make an explicit adjustment for hidden activities. This adjustment can have a major impact on the national accounts estimate (http://www.oecd.org/std/WP-STD-2013-3-2.pdf), but was generally not accounted for when calculating the coverage rate. The impact of the exclusion varies among the countries. In France, for example, the correction for hidden activities represents 14% of total mixed income. As a consequence, correcting for this factor raised the coverage rate from 49% to 57%. In Sweden, hidden activities accounts for 34%; when excluding these, the coverage rate for self-employment income raises from 63% to 96%.

Interest and dividends received

51. In the SNA framework, interest received is the income receivable by owners of certain kinds of financial assets (deposits, debt securities and possibly other receivable accounts), for putting the financial asset at the disposal of another institutional unit. The SNA considers the amount of interest received by households to be composed of two elements: of the "true" interest plus and an implicit charge for the services provided by financial intermediaries (FISIM). Although this service charge is not explicitly charged by financial institutions, it is recorded in the national accounts as an expense by households, with the remainder, the "true" interest, being recorded as interest received. The micro-macro comparisons presented here for most countries are based on the macro total for interest actually paid and received by households.

52. In the SNA framework, dividends are a form of investment income to which shareholders become entitled as a result of placing funds at the disposal of corporations. Dividends cover all distributions of profits by corporations to their shareholders or owners. It includes withdrawal of income from quasi-corporations, which consists of that part of distributable income that the owner withdraws from the quasi-corporation. As the income that owners of quasi-corporations withdraw is more or less the equivalent of the income withdrawn from corporations by paying out dividends to their shareholders, it is treated as property income accruing to the owners of quasi-corporations.

53. National accounts compilers usually compute these items by using data from administrative records (sometimes combined with household surveys). Administrative data typically provide information on total interest received and paid with "from-whom-to-whom matrix" used to allocate interest across sectors (e.g. household, corporations, and government). For the countries analyzed here, the share of interest and/or dividends covered by micro sources ranges from 1% of the total adjusted disposable income to 25%.

54. The alignment between micro and macro sources for interest and dividends received by households is considered good for only a quarter of countries. Various reasons explaining this poor alignment were mentioned by experts:

- Limitation of micro sources: as wealthy households are rare in a population, they are hardly selected in the sample giving problem of representativeness in the survey results if no special sampling design procedure is applied. Most of the time this combines with a possible under-declaration of the households interviewed.

- Classification issues: the partitioning of income from self-employed business owners between mixed income and property income in national accounts may be very different from what is done in micro sources, and may be difficult to reclassify. Royalties and other intellectual property income such as research grants were also identified by experts as possible reasons for gaps since they are recorded as income from self-employment in the micro surveys, whereas in the SNA they are treated as property income. However, even when combining mixed income with interest and dividends received and paid, micro and macro estimates are still far from each other, the micro total being substantially lower than the national accounts total.

- Missing components: family trusts[17] might be an important source of divergences in Anglo-Saxon countries too, as income generated by this financial instrument is sometimes not covered by micro sources, whereas it is part of property income received by households in the National Accounts.

- Population scope: the inclusion of property income received by NPISH that are included in the macro totals; older people in non-private dwellings are excluded from micro totals.

55. Among the countries for which there is a good alignment, Denmark shows a coverage rate of 100%, as both micro and macro compilers use the same source, i.e. the income register. In Sweden, the main source used to compile interest and dividends received (Income and Taxation Statistics) is also common to micro and macro sources, which may explain the good alignment.

C. A more detailed description of imputed rents and STiK

56. In the SNA framework, two important types of imputed income that affect the household accounts are imputed rents for owner-occupied dwellings and STiK. For these two items households themselves do not know the equivalent income they receive or pay, especially for costs for public education of children and health care expenditures financed by taxes or social contributions. They may, however, be imputed at the micro level. Thus, in the case of imputed rents, information is available in most micro data sources, which enabled national experts to compare the component between the sources. Conversely, in most countries micro sources do not provide information on STiK but a comparison between micro and macro sources could be done for a few countries.

Imputed rents

57. In the SNA, persons who own the dwelling in which they live (main residence and holiday homes) are treated as producers of housing services for their own final consumption. The housing services produced are deemed to be equal in value to the rents that would be paid on the market for similar accommodation. Owner-occupiers therefore receive as income an operating surplus from the production process, equal to the relevant output of housing services minus operational costs incurred. The housing services are therefore also recorded as part of final consumption expenditure.

[17] Family trust refers to a discretionary trust set up to hold a family's asset or to conduct a family business. Generally, they are established for asset protection or tax purposes.

58. Imputed rents are covered in the micro estimates in approximately half of the 21 countries involved in the comparison. For the countries analyzed here, the share of income from owner-occupied dwellings ranges from 6% of total adjusted disposable income to 13%. At the micro level, a majority of countries estimate imputed rents by assuming a rental value equivalent to the market value of similar dwellings (same size, quality and type), similar to the SNA recommendations in this area. Nevertheless, only main residence is taken into account, second residence and holidays home are not included in the micro estimates. In a few countries, estimation methods and concepts differ from national accounts. For example, in the Mexican survey, a self-assessment method is used; interviewers ask owner-occupiers to estimate the potential rental for their property. In Canada the budget survey concept reflects direct, out of pocket costs incurred by home-owners, including mortgage payments, condominium charges, property taxes and sewage charges which may be quite different from the national accounts' market equivalent approach.

59. Experts for 9 countries compared income from owner-occupied dwellings; 12 countries compared micro and macro totals for consumption expenditures on imputed rents. Among those 12 countries, the share of imputed rents in total actual final consumption ranges from 6% to 12%. More than half of the countries show a good alignment of the relevant estimates. Results are close for both income and expenditure, except in Germany and in the Netherlands. In these two countries the comparison of expenditure shows close estimates, whereas micro and macro totals are far from each other when studying the income generated from the production of dwelling services.

60. National experts highlighted three main reasons that could explain divergences in estimates:

- Classification and conceptual differences in the delineation of the costs to be subtracted from imputed rents. In practice, the exact content of the costs associated with the production of housing services for own consumption in micro and macro estimates is not that clear. Also, the macro total takes into account FISIM on mortgage loans, which is not part of the micro estimate. For the 'income from owner-occupied dwellings' component, it would therefore be preferable to compare the output of imputed rents separately from the associated costs.

- Missing data on homes owned other than the main residence: most surveys provide information on imputed rents and income generated for main residence owned homes only. The national accounts estimates cover all the homes owned by households.

- Statistical treatment: although most micro and macro compilers both use a market-equivalent valuation method to measure imputed rents, they selected different econometric models.

Social Transfers in Kind

61. STiK represents a major part of the income and consumption components not covered by micro sources. They reflect expenditure on education, social protection, health care, recreation and culture made by government or by Non-Profit Institutions Serving Households (NPISH) on behalf of an individual household. In most countries there is no data source providing information on STiK at the micro level, thus allowing an allocation of the relevant costs to specific households. Generally, the only information available is the total cost incurred by government from administrative data that is used by macro compilers. Sometimes information is available on the number of beneficiaries, possibly by type of beneficiary (gender, age, education level, etc.).

62. Six countries, however, were able to make a more detailed micro-macro comparison on this component: Australia, Denmark, Japan, Sweden, the United Kingdom and the United States. Among those 6 countries, the share of STiK that has been compared to micro sources ranges from 5% in the United

States to 26% in Sweden. The micro information used for these comparisons has been, in most cases, imputed by micro compilers in the relevant survey or register. For example, in the United States, the largest STiK for health care paid by government are made through the Medicare and Medicaid schemes. The average costs incurred by government per type of recipient could be imputed in the Annual Socio-Economic Supplement to the Current Population Survey. This imputation is akin to the insurance cost approach[18]. Every individual is assumed to receive a public benefit determined by the average public spending, irrespective of whether or not the health care services have been provided. In the United Kingdom, the average costs for pupils by type of education, taken from administrative data, have been allocated to respondents who indicated in the Living Costs and Food Survey that they are in full time education provided by the government. Only Denmark made use of information directly collected at the level of households. The Danish expenditures survey provides detailed information on services by public administrations and services related to medical assistance, hospital admissions, education, childcare and domestic help.

63. Japan, Sweden and the United-Kingdom show that the totals are well aligned. This close alignment between micro and macro totals was expected, as the total value used by both micro and macro compilers has been derived from similar administrative sources.

64. One specific issue in relation to STiK concerns the treatment of in-kind transfers received by those who died during the year. Indeed, the national accounts estimate includes the income and expenditures of those who died during the year, which normally are not captured in micro sources. In most countries, surveys collect income data from households for the previous calendar year, as a consequence of which persons who died prior to the survey in the previous year are not in the sample. The situation may be very important for some of the income components, such as STiK. Studies on United States data showed that approximately 25% of Medicare and Medicaid expenditures were for those in the last year of life (Clinton P. Mc Cully (2012)).

D. Main conclusions

65. Results show some similarities across countries regarding the components of adjusted disposable income. Micro sources provide information for the main national accounts components, with the exception of conceptual items that are specific to the SNA framework, and STiK. Generally, the components for which micro sources provide information show relatively close estimates. The two main components showing larger gaps and a significant dispersion in results across countries are ‘income from self-employment’ and ‘interest and other income from corporations’. Various reasons explain the divergences. The detailed analysis on these two components illustrates that comparing micro and macro estimates can be tricky because of major classification issues that are difficult to quantify.

66. The study confirms that using similar sources and methods in compiling micro and macro estimates generally leads to a better alignment. Regarding the population scope, the population not covered in micro sources was not considered as a major issue by national experts, except for STiK. Also NPISH can have an impact on the comparison of specific components (operating surplus, property income and current transfers).

[18] This type of imputation has been made on a large number of countries, as part of an international study. See Gerlinde Verbist, Michael Förster, Maria Vaalavuo (2012).

67. Three types of recommendations emerge from the detailed comparison of micro and macro totals on income components:

- To facilitate the micro-macro comparison:
  - Clarify how unincorporated enterprises and quasi-corporations are delineated in the national accounts and quantify the separate components;
  - Detail the national accounts compilation process for operating surplus and mixed income, in order to separate the estimates for leased dwellings, owner-occupied dwellings, self-employment activities and own-account production of goods;
  - Separately identify the impact of the national accounts adjustment for underground production.
- To improve the alignment between micro and macro totals:
  - Encourage discussion between micro and macro experts on the sources used, in particular in relation to administrative sources, to find out the components for which common primary sources could be used in the national accounts compilation process, and in a possible statistical matching with household surveys;
  - Compilers should separate NPISH from households.
- To enable comparison of a more comprehensive definition of adjusted disposable income:
  - Suggest to micro experts to consider imputing rents for owner-occupied dwellings and STiK at the micro level.

IV. Detailed results for consumption components

68. This section presents the main conclusions arising from an analysis of coverage rates calculated for detailed components of consumption. The first sub-section presents an overview of coverage rates for the various components. The second sub-section describes the main factors accounting for the differences between micro and macro sources for those components displaying the largest discrepancies across countries. The third sub-section provides one illustration of the impact of territorial reclassifications. The fourth sub-section concludes.

A. General overview

69. Table 3 summarizes results on coverage rates, as calculated by national experts, by consumption component:

- the number of countries that undertook the comparison;
- the average, minimum and maximum values of the coverage rates across countries;
- the proportion of countries showing a good alignment between micro and macro sources (i.e., coverage rate between 80% and 120%);

- the average, minimum and maximum share of each component in actual final consumption across countries[19].

70. The match between micro and macro totals is considered good for all three of the consumption components with the highest expenditure (food, housing and transport) in more than half of the countries considered (Table 3 and Figure 2). Indeed, for 'housing' the match is considered good for almost three quarters of countries. Conversely, there is a low degree of alignment for "alcohol beverages and tobacco" and "miscellaneous goods and services" in most countries. For all the other components, coverage rates are quite diverse across countries. Large differences in coverage rates across countries might reflect a lack of harmonization of household budget surveys (e.g. in the method of collection, in the statistical treatments applied to obtain annual totals, etc.) and sampling problems.

71. The comparison performed at an even finer expenditure level helped in refining the analysis and identifying divergences shared across countries. For example, several countries compared alcohol and tobacco, housing, transport and health expenditures at a more detailed level (see http://www.oecd.org/std/WP-STD-2013-3-4.xlsx). For housing, this detailed comparison makes clear that "actual rents" and "electricity, gas and other fuel" expenditures are well aligned in most countries (more than 70%), whereas only a very few countries show a good alignment for "maintenance and repair of the dwelling, water supply and miscellaneous services". For the latter, classification issues may explain why micro totals are far from national accounts totals: e.g. the distinction between what is classified as "maintenance and repair of the dwelling" and as "investment in the dwelling" may differ between micro and macro sources.

[19] The weight of the component in total aggregate may not appear consistent with the published national accounts estimates because the share is calculated using the adjusted national accounts total for each component, i.e. the national accounts totals after reclassification and adjustments.

Table 3: Micro and macro comparison by household consumption component: coverage rates and weights in national accounts total actual final consumption

Consumption items compared (1)	*Number of countries*	Coverage rates				Weights in total actual consumption		
		Average	Minimum	Maximum	% of countries in the 80%-120% interval	Average	Minimum	Maximum
Food and non-alcoholic beverages	19	81%	33%	120%	58%	12%	6%	23%
Alcoholic beverages, tobacco and narcotics	19	44%	7%	63%	0%	3%	2%	6%
Alcoholic beverages	14	51%	5%	86%	7%	1%	1%	3%
Tobacco	14	40%	12%	59%	0%	1%	1%	2%
Clothing and footwear	21	80%	46%	114%	52%	4%	2%	6%
Housing	15	95%	61%	119%	73%	18%	12%	21%
Actual rentals for housing	15	98%	27%	125%	73%	3%	1%	6%
Imputed rents for housing	12	98%	67%	159%	50%	9%	6%	12%
Maintenance and repair of the dwelling, water supply and miscellaneous services	16	129%	49%	292%	25%	2%	0%	3%
Electricity, gas and other fuels	16	90%	49%	114%	81%	3%	2%	5%
Furnishings, household equipment and routine households maintenance	21	71%	38%	99%	38%	5%	3%	7%
Health	19	69%	18%	102%	37%	3%	1%	6%
Transport	21	79%	23%	116%	52%	11%	7%	19%
Communications	21	86%	35%	136%	48%	2%	1%	4%
Recreation and culture	21	71%	33%	110%	43%	7%	4%	9%
Education	21	82%	5%	160%	52%	1%	0%	6%
Restaurants and hotels	21	65%	40%	102%	33%	6%	2%	10%
Miscellaneous goods and services, Fisim gap corrected	21	65%	29%	140%	19%	8%	4%	15%
Social transfers in kind received	6	87%	62%	108%	83%	17%	6%	27%
Total actual consumption covered	**21**	**76%**	**39%**	**97%**	**43%**	**82%**	**69%**	**94%**
Total actual consumption not covered						**17%**	**6%**	**28%**
...among which consumption expenditure of resident households abroad						*1%*	*0%*	*4%*
...among which consumption expenditure of non-resident households on the territory						*-2%*	*-8%*	*0%*
...among which social transfers in kind received						*13%*	*3%*	*26%*
Aggregate : Final actual consumption of resident households	**21**	61%	35%	88%		**100%**	**100%**	**100%**

(1) To obtain a relevant comparison, national experts might have used macro totals that did not strictly correspond to the National Accounts as shown in the SNA. Therefore, the weight of the item compared does not necessarily correspond to the weight as shown in the National Accounts publications. Note that when the territorial balance was not broken down by type of expenditures it is included in the not covered items leading to negative consumption when the consumption expenditure on the territory of non-resident households is higher than the consumption of the resident households abroad.

(2) Except for e few countries that did not adjust totals for FISIM before calculating the coverage rate – Annex 2.

B. Focus on the main gaps

72. This sub-section focuses on the two consumption components for which the match between micro and macro sources is the least good: "alcohol beverages and tobacco" and "miscellaneous goods and services". No country has a good coverage rate for expenditure on "alcohol beverages and tobacco", and very few countries show a good coverage rate for expenditures on "miscellaneous goods and services". This may reflect household under reporting in surveys and problems related to the scope of comparison.

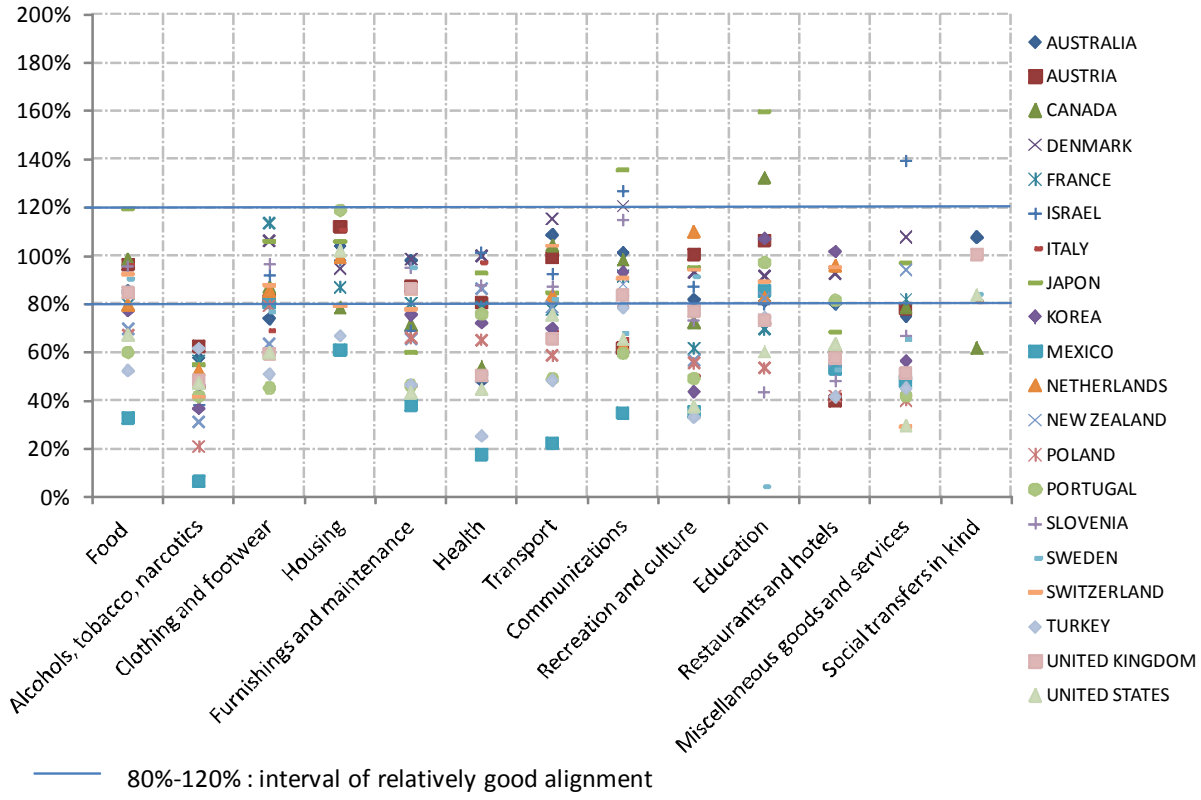
Alcoholic beverages and tobacco

73. For the 19 countries analyzed, the share of alcoholic beverages and tobacco ranges from 2% to 6% and the coverage rated from 7% to 63%. Results for the fourteen countries where the comparison was made at a more detailed level, distinguishing alcohol from tobacco, show that both sub-components are equally poorly aligned.

74. Most national experts explain the large difference between micro and macro totals on this component by households underreporting in surveys. Information on national account compilation

practices indicates that various types of sources are used to measure alcohol and tobacco expenditures (household surveys, administrative data, a combination of both, and trade sources). However, alcohol and tobacco expenditures are one of the components where macro compilers tend to adjust for under reporting and smuggling, often by taking total supply as a starting point. However, no expert quantified the impact of this adjustment for under reporting.

Figure 2. Coverage rates by country for detailed consumption components



Miscellaneous goods and services

75. "Miscellaneous goods and services" is the second expenditure component that only a few countries showed adequate coverage rates. The share of this item in total consumption expenditure is significant ranging between 4% and 15%. The SNA definition of "miscellaneous goods and services" component combines various types of goods and services:

- personal care (e.g., hairdressing, personal grooming, related electric appliances);
- personal effects (e.g., jewellery, clocks and watches);
- social protection;
- insurance services (service charges[20] for life and non-life insurance);
- financial services (FISIM and actual charges for financial services provided by banks, brokers, investment counselors and the like; administrative charges of private pension funds and the like).

76. Some of the more important factors explaining the divergences between micro and macro sources as mentioned by experts include:

– Conceptual gaps: for insurance services, the national accounts only include service charges, whereas micro data sources collect total premiums paid. Regarding financial services, the national accounts distinguish FISIM from actual charges paid by households (see Annex 2). Almost all countries quantified the impact of FISIM in the comparison; FISIM does not explain the low coverage rate. On the other hand, five country experts made adjustments for the difference in treatment of insurance services before calculating the coverage rate. Australia excluded life and pension fund insurance from insurance services; Poland excluded both insurance and financial services; Sweden excluded financial services; and Denmark excluded insurance services. The United States performed the comparison on premiums actually paid.

– Limitation of sources: this factor mainly relates to problems in the collection of reliable data on financial services and personal care in the surveys used (possibly combined with administrative sources) by macro compilers to estimate expenditures on miscellaneous goods and services (See http://www.oecd.org/std/WP-STD-2013-3-4.xlsx).

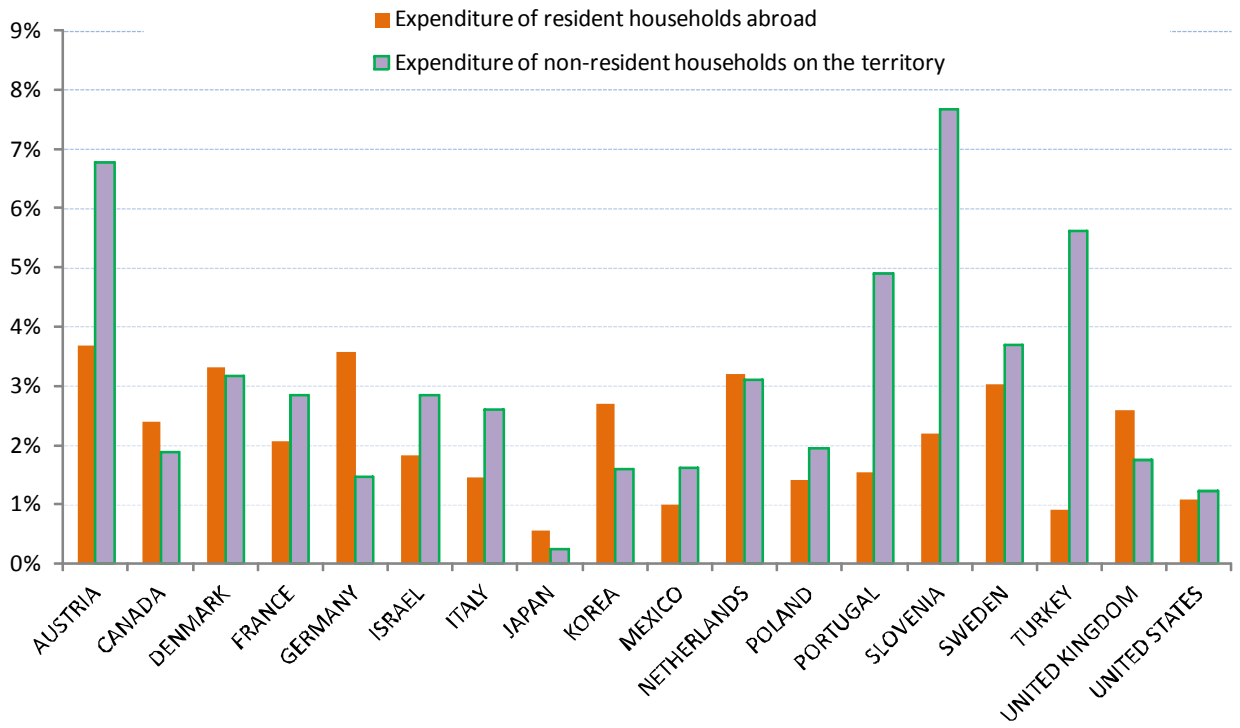
C. A more detailed description of the impact of the territorial adjustment

77. In most countries, national accounts data for household final consumption expenditure by type of goods and services include the expenditures of non-resident households on the territory and exclude the expenditures by resident households while abroad. Usually, an adjustment is made in national accounts to narrow the difference between domestic consumption (expenditures on the territory) and national consumption (expenditures by resident households), but this adjustment is only made at the aggregate level, and not at the level of the detailed components of consumption expenditure. Among the 21 countries covered in the comparison of consumption expenditure, three countries publish national accounts data on household expenditure by type focusing on resident households. Among these three countries Australia and Switzerland include expenditure made abroad at the item level whereas New Zealand publishes expenditures made abroad as a separate aggregated item.

[20] The service charges are defined as premiums earned plus premium supplements (i.e. investment income on insurance technical reserves) minus claims due.

78. Figure 3 shows the importance of non-resident household expenditure on the territory, and the share of resident households' expenditures abroad in total actual final consumption, for the countries that do not publish household expenditure by type focusing on resident households only. Non-resident household expenditure on the territory of the considered country are high in Austria, Portugal, Slovenia and Turkey, where this share is above 4.0% of total actual final consumption, reaching a maximum of 7.7% in Slovenia. On the contrary, the share of non-resident household expenditure is very low in Japan (0.2%). The share for resident household expenditure abroad ranges from 0.6% in Japan to 3.7% in Austria. The share may differ quite considerably by type of product.

Figure 3 – Expenditure of resident household abroad and of non-resident households on the territory, as a percentage of the total actual final consumption



79. To compare micro and macro totals at a detailed level, the national accounts values for non-resident expenditure on the territory should be broken down by type of expenditure and deducted from each expenditure item. In most countries resident expenditure abroad should also be broken down by component, and added to the relevant item. Micro data on consumption generally measure expenditure of resident households both on the territory and abroad. Depending on the country, micro sources may either provide detailed information combining resident expenditure on the territory and abroad, or amounts distinguishing between resident expenditure abroad and resident expenditure on the territory.

80. For comparison purposes, some national experts reclassified total non-resident expenditure on the territory and, when necessary, total resident expenditure abroad. To do so, they sometimes used information from their Tourism Satellite Accounts. In other cases, estimates were derived from the micro surveys used for the comparison, or from specific surveys on non-resident visitors. Information on resident

expenditure abroad could generally be derived from the micro surveys used in the comparison. A few countries used other sources such as credit card information and data from Balance of Payments statistics.

81. The territorial adjustments applied by experts have a significant impact on the coverage rate by type of expenditure, predominantly for expenditure on restaurants and hotels, transport, and recreation and culture. Tables 4 and 5 illustrate the impact of the reclassification due to the territorial adjustment on coverage rates. In Denmark, Italy and Poland, the adjustments are limited to non-resident expenditure in the country; in Portugal and Sweden, adjustments for resident expenditure abroad are also included. The adjustments have the highest impact on "restaurants and hotels" expenditure in Denmark and Portugal (around 20 points). The adjustments changed significantly the results on "clothing and footwear" in Poland.

Table 4 – Impact of the reclassification of non-resident expenditure on the territory by type of expenditure – illustrations on Denmark, Italy, Poland

	Denmark		Italy		Poland	
	Coverage rate	Impact (in points)	Coverage rate	Impact (in points)	Coverage rate	Impact (in points)
Food and non-alcoholic beverages	90%	4	96%	1	68%	1
Alcoholic beverages, tobacco and narcotics			46%	0	21%	0
Clothing and footwear	106%	4	69%	4	80%	12
Housing, water, electricity, gas and other fuels	95%	0	111%	0	43%	0
Furnishing and maintenance	99%	3	47%	0	66%	2
Health	100%	4	97%	0	65%	2
Transport	116%	8	69%	3	59%	3
Communication	121%	8	65%	2	82%	2
Recreation and culture	93%	7	50%	2	56%	1
Education	92%	16	72%	3	54%	1
Restaurants and hotels	93%	20	42%	7	42%	3
Miscellaneous goods and services	108%	2	49%	8	40%	2

Note: In Denmark the coverage rate for Restaurant and hotel expenditures is 93%. This coverage rate has risen by 20 points due to the territorial correction. Prior to the correction the coverage rate was 73%.

Table 5 – Impact of the reclassification of the territorial adjustment by type of expenditure – illustrations on Portugal and Sweden

	Portugal		Sweden	
	Coverage rate	Impact (in points)	Coverage rate	Impact (in points)
Food and non-alcoholic beverages	60%	1	91%	5
Alcoholic beverages, tobacco and narcotics	42%	1	42%	0
Clothing and footwear	46%	2	77%	2
Housing, water, electricity, gas and other fuels	119%	0	87%	0
Furnishing and maintenance	47%	1	95%	4
Health	76%	-1	51%	0
Transport	49%	2	82%	5
Communication	60%	1	68%	-1
Recreation and culture	49%	1	92%	-6
Education	98%	2	5%	-1
Restaurants and hotels	82%	19	53%	-1
Miscellaneous goods and services	42%	0	66%	1

D. Main conclusions

82. Micro sources provide information for the main components of actual final consumption expenditures, with the exception of some items that are specific to the SNA framework and of STiK. Results generally show a relatively poor alignment between micro and macro sources, especially for expenditures on "alcoholic beverages and tobacco" and "miscellaneous goods and services". Also, coverage rates differ significantly across countries for almost all expenditures components. Three types of recommendations emerge from the detailed comparison of micro and macro totals on consumption components:

- To facilitate the micro-macro comparison, national accounts compilers should:
  - Explain in further detail how surveys are used and adjusted in the national accounts compilation process;
  - Provide macro estimates of non-resident household expenditure on the territory and resident household expenditure abroad by types of expenditure.
- To improve the alignment between micro and macro totals:
  - Encourage micro and macro compilers to discuss the statistical treatment they apply to primary sources, in particular the adjustment for underreporting.
- To enable comparison of a more comprehensive definition actual final consumption:
  - Suggest to micro experts to consider imputing rents for owner-occupied dwellings and STiK at the micro level.

V. Detailed results for wealth components: general overview

83. This section presents the main results for coverage rates of the detailed wealth components. Results are not analyzed in detail because of the low number of countries involved, and because the Expert Group decided to give priority to income and consumption. This section is therefore more of an illustrative nature.

Experts for seven countries performed the micro-macro comparison on all or some of the household net worth components. Six of these (Australia, Canada, France, Japan, the Netherlands and the United Kingdom) undertook the exercise for the full balance sheets including non-financial assets, financial assets and liabilities (see http://www.oecd.org/std/WP-STD-2013-3-5.xlsx).

84. Table 6 shows statistics on the coverage rates, by wealth component on:

- the number of countries performed a comparison;
- the average, minimum and maximum coverage rates across countries;
- the proportion of countries that are showing a good alignment between micro and macro sources (i.e., coverage rate between 80% and 120%);
- the average, the minimum and the maximum share of each component in the net worth across countries[21].

[21] The weight of the component in total aggregate may not appear consistent with the published national accounts estimates because the share is calculated using the adjusted national accounts total for each component, i.e. the national accounts totals after reclassification and adjustments.

85. As in the cases with household income and consumption, the national accounts totals are generally higher than the micro totals. Countries show similar results for the five major wealth components: dwellings and land; currency and deposits; shares and other equity; provisions for pensions; and mortgages (Figure 4). Among these components, alignment is relatively good for "dwellings and land" and "provisions for pensions". Dwellings and land are recorded separately in the national accounts. To provide a basis for relevant comparison, national experts added the two items together, as only the total value is generally collected in the micro surveys. Differences between micro and macro sources are high for the four other components. More detailed analysis performed by a few experts shows that amounts of mortgage loans is rather well aligned between surveys and national accounts, while that for non housing loans is significantly lower (Table 6).

86. While no general conclusions have been drawn from this exercise, several factors could explain the large differences between micro and macro measures of household wealth:

- Population scope: four countries compared micro and macro sources using national account totals that include NPISH. Also, no countries applied any adjustment to national accounts wealth totals to exclude the part owned/owed by the population not covered in the micro sources, e.g. elderly people living in retirement homes that are likely to own assets.

- Limitation of sources: lack of oversampling of rich households.

- Valuation method: national accounts mainly use a Perpetual Inventory Method (i.e., a depreciated replacement cost method) for valuing buildings, and market value for land. Instead, in household surveys, households are generally asked to provide their own assessment for the value of dwellings and land.

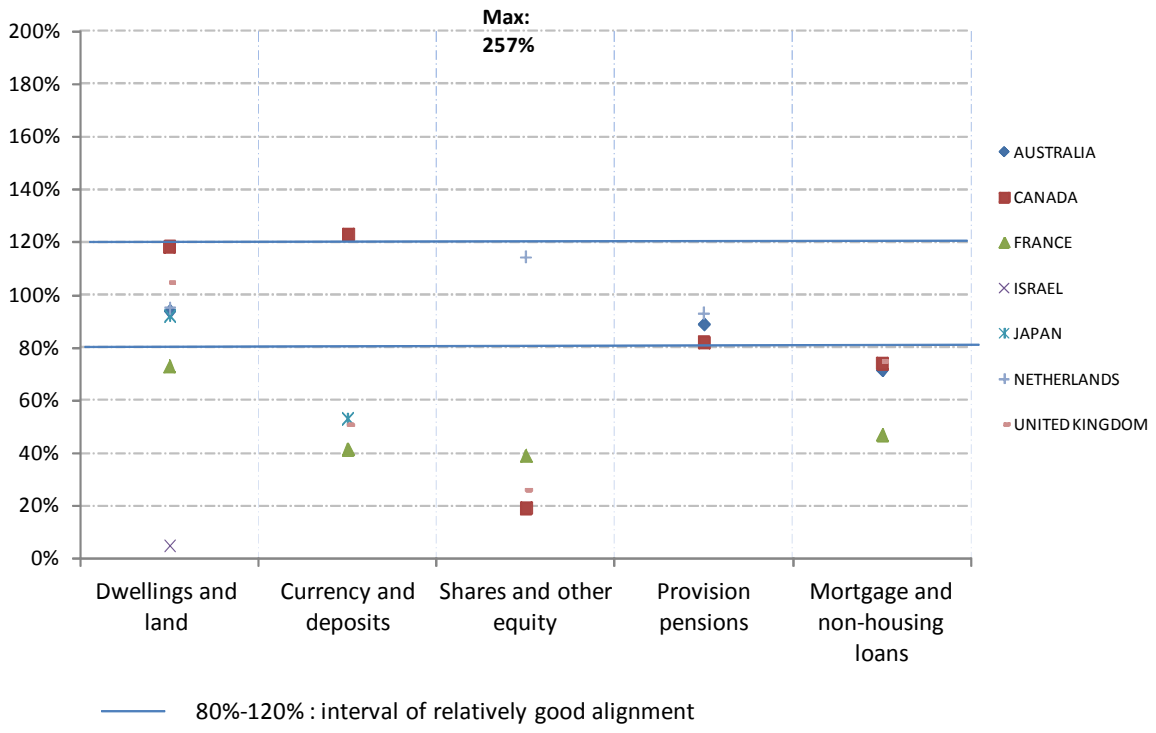
Table 6: Micro and macro comparison by household wealth component: coverage rates and weights in national accounts total net worth

		Number of countries	Coverage rates				Weights in total net worth*		
			Average	**Minimum**	**Maximum**	**% of countries in the 80%-120% interval**	**Average**	**Minimum**	**Maximum**
Non financial assets	Dwellings and land underlying buildings and structures	7	83%	5%	118%	71%	56%	43%	70%
	Other buildings and structures	2	93%	48%	138%	0%	2%	1%	3%
	Machinery and equipment	2	119%	98%	140%	50%	1%	1%	1%
	Cultivated assets	2	59%	54%	64%	0%	2%	1%	3%
	Intangible fixed assets + Intangible non-produced assets	2	48%	0%	96%	50%	4%	1%	8%
Financial assets	Currency and deposits	4	67%	41%	123%	0%	20%	14%	36%
	Securities other than shares	5	120%	31%	395%	20%	1%	0%	2%
	Shares and other equity	5	91%	19%	257%	20%	12%	5%	27%
	Loans	3	92%	21%	147%	33%	0%	0%	0%
	Provision pensions	3	88%	82%	93%	100%	25%	18%	28%
	Other accounts receivable	4	37%	1%	95%	25%	3%	2%	4%
Financial liabilities	Mortgage and non-housing loans	*4*	48%	47%	74%	0%	-14%	-24%	*-10%*
	Mortgage loans	*3*	103%	91%	116%	100%	*-17%*	*-26%*	*-13%*
	Non-housing loans	*2*	33%	19%	47%	0%	*-10%*	*-11%*	*-9%*
	Total household net worth covered	**7**	**70%**	**9%**	**103%**	43%	**92%**	**79%**	**102%**
	Total household net worth not covered *						**8%**	**-2%**	**21%**
	Aggregate: household net worth*	**6**	**72%**	**59%**	**83%**	33%	**100%**	**100%**	**100%**

* Calculated for a maximum of six countries that performed a comparison on the full balance sheets accounts

Note: the wealth components shown in the table correspond to the level at which two countries or more made a comparison.

Figure 4. Coverage rates by country for the main wealth components



VI. Summary of results at the aggregate level

87. This section summarizes the main patterns from the analysis based on the average gap indicator. This indicator, described in section 2, provides an overview of the gaps between micro and macro sources across components, using one single measure per country. The average indicator is measured for three different aggregations of national accounts components: i) the national accounts components for which micro sources provide similar information and for which coverage rates could be computed; ii) the complete set of components included in the national accounts aggregates namely the adjusted disposable income, the actual final consumption and the household net worth; iii) the complete set of components included in the national accounts income and consumption aggregates excluding Social Transfers in Kind (STiK) if not covered by micro sources.

88. The difference between the two first measures indicates the impact of the reasons for differences between micro and macro totals that could be quantified by experts on the average gap indicator measure. The third measure has been computed to separately identify the role of STiK in the gap measured between micro and macro sources.

Adjusted disposable income

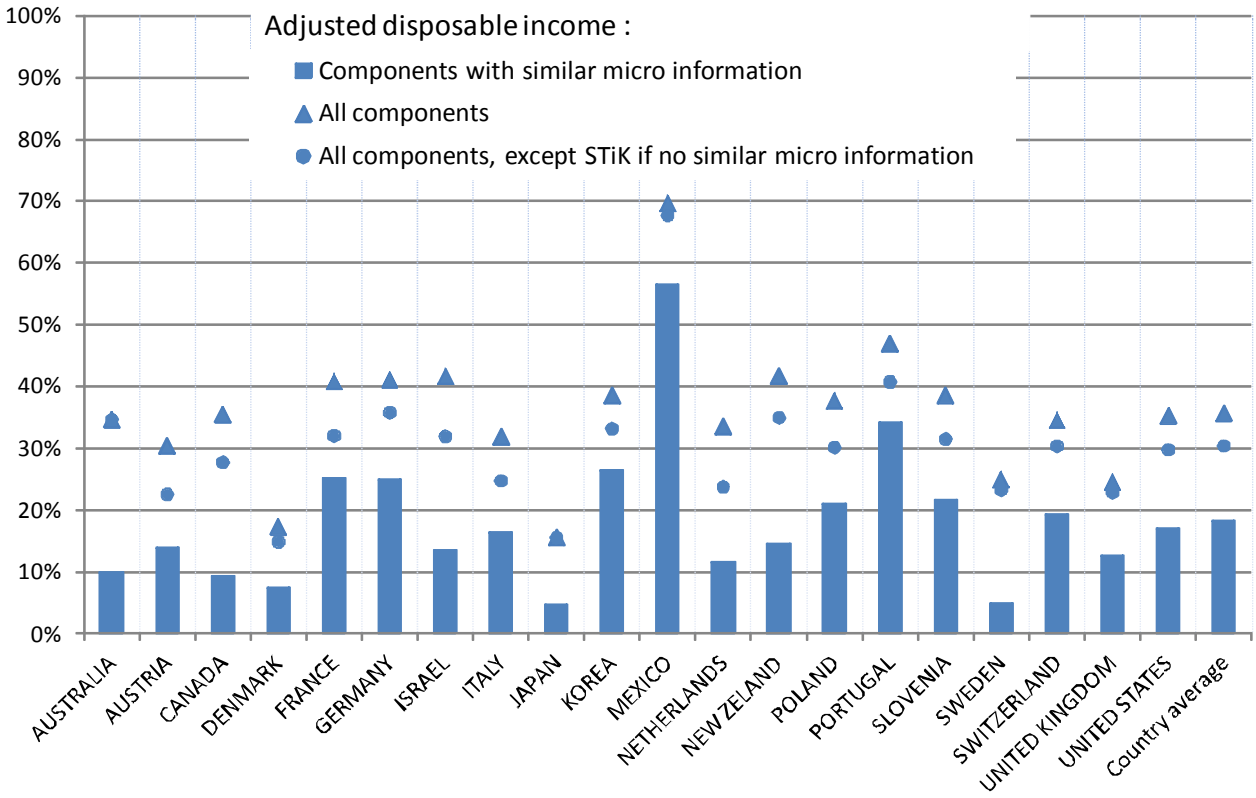
89. For the adjusted disposable income components, the average gap ranges from 16% in Japan to 70% in Mexico; the average across the 20 countries analyzed[22] is 36%. When measured with respect to those national accounts items that are available in micro sources, the average gap indicator is below 20% for 12 out of the 20 countries analyzed. The average gap indicator is particularly low, below 10%, in Australia, Canada, Denmark, Japan and Sweden and particularly high, above 50%, in Mexico.

[22] The cross country average is a simple average in which each country has the same weight.

90. Taking into account the known reasons for differences between micro and macro sources that could be quantified reduces the average gap indicator from 36% to 18% on average across all countries, with the reduction ranging between 10 and 28 points depending on the country considered (Figure 5). The impact differs across countries for two main reasons: first, the number of national accounts components not covered by micro sources; and, second, the weight of these components in the aggregate. Cross country differences in the impact may also reflect differences in national experts' decisions. While some experts were able to exclude a component from the comparison fully, others had to rely on (rough) approximations. In most countries the reasons for gaps quantified relate to national accounts components for which no micro information is available (i.e. imputed social contributions, FISIM, property income attributed to insurance policy holders, STiK, and in the relevant countries, income from owner-occupied dwellings); it may relates also to NPISH for the suitable countries.

91. The STiK component accounts for a significant part of the divergences between micro and macro totals in some countries, mainly because there is no micro data source providing information on STiK that account for an important share in total adjusted disposable income. However, in six countries the exclusion of STiK has little impact on the average gap indicator value (2 points or less). In the cases of Australia, Denmark, Japan, Sweden and the United Kingdom, micro information available at the individual level was used by experts to estimate a major part of this component (health care, education and social protection). In Mexico, STiK is not covered by micro sources but has a very low share on the national accounts aggregate, which explains the low impact of its exclusion on the value of the indicator.

Figure 5: Average gap indicator for income components

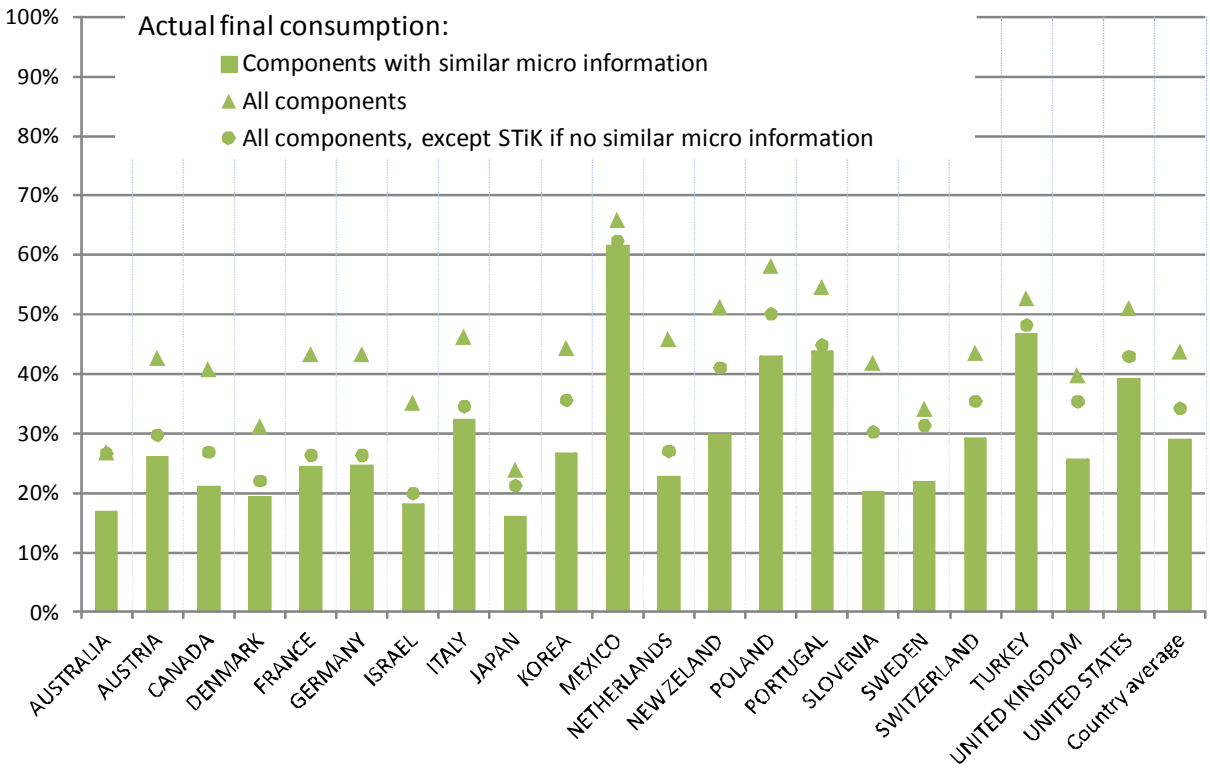


Actual final consumption

92. For the actual final consumption components, the average gap ranges from 24% to 66%; the average across the 21 countries analyzed is 44%. When measured with respect to those national accounts items that are available in micro sources, the average gap is below 20% in four countries only namely in Australia, Denmark, Israel and Japan (Figure 6). Conversely the average gap indicator is above 40% in Mexico, Poland, Portugal and Turkey.

93. The quantified factors that were identified by experts reduce the average gap indicator value from 4 to 23 percentage points depending on the country with a reduction of 15 points on average. As in the case of income, the importance of these factors differs significantly across countries. In most countries, however, the reduction of the average gap is mainly driven by STiK. This is particularly true in France, Germany, Israel and the Netherlands. In most countries the reasons for gaps quantified relate to national accounts components for which no micro information is available (i.e. STiK, FISIM and, for the relevant countries, imputed rents for owner occupied dwellings). In a number of countries the impact of the territorial adjustment could also be quantified.

Figure 6: Average gap indicator for consumption components

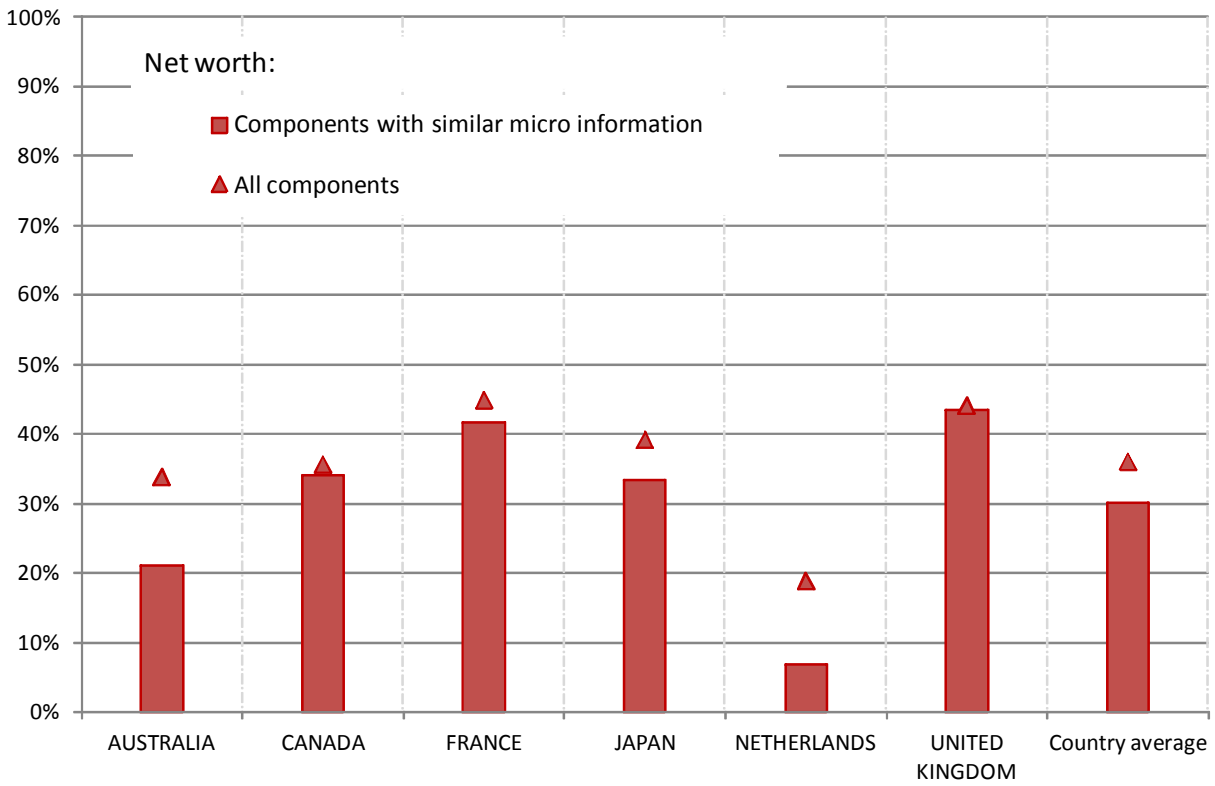


Net worth

94. Taking into account of the known reasons for differences between micro and macro sources that could be quantified for wealth components reduces the indicator from 36% to 30% (Figure 7). When compared across those items that are included in micro and macro sources, the average gap indicator for household wealth ranges between 7% in the Netherlands and 40% or more in France and in the United Kingdom. For France a new oversampling strategy of wealthy households for the wealth survey has significantly lowered this gap in the latest survey run in 2009-2010. Coverage rates have then been

improved: for example, it has increased by 20 points for financial assets. The reasons for gaps quantified relate to national accounts components for which no micro information is available such as provision for life insurance.

Figure 7: Average gap indicator for wealth components



Overview across the household economic resources

95. When looking at the three dimensions of household economic resources, most countries report a better alignment between micro and macro sources for income than for consumption (Figures 8 and 9).When compared across those items that are included in both the micro and macro sources, only in France, Germany, Korea and Slovenia are the average gap indicators for income and for consumption similar. The higher average gap between micro and macro estimates for consumption is somewhat surprising, as household consumption surveys are more often used by national accountants than income surveys (Box 1). This may be explained, however, by the fact that, in some countries, national accounts compilers use consumption surveys as a reference for consumption structures but not for totals; and the average gap focuses only on divergences in totals by component. Concerning wealth, among the six countries for which results are presented, Canada, France, Japan and the United Kingdom show an average gap higher for net worth components than for income and consumption. Australia reports a gap for wealth that is close to that for consumption. The Netherlands is the only country where micro and macro sources show a closer alignment on wealth than for other dimensions of household economic resources.

Figure 8: Average gap indicator for three national accounts aggregates

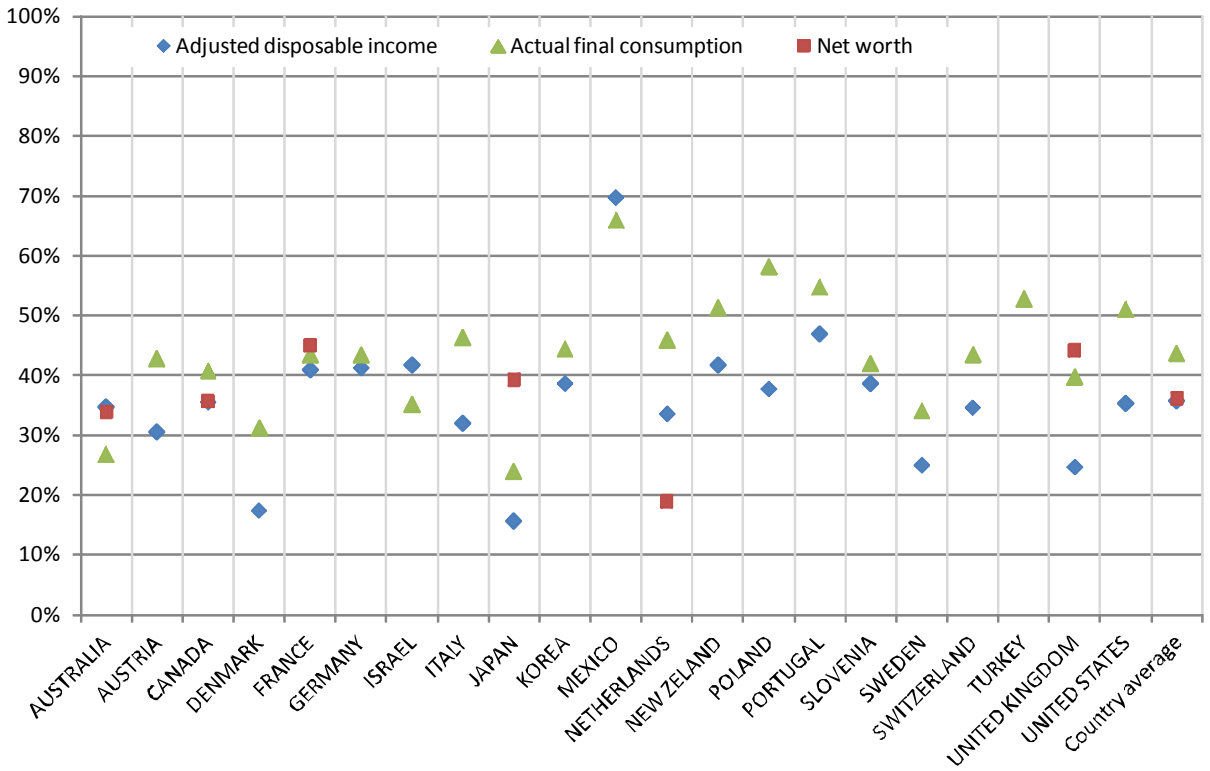
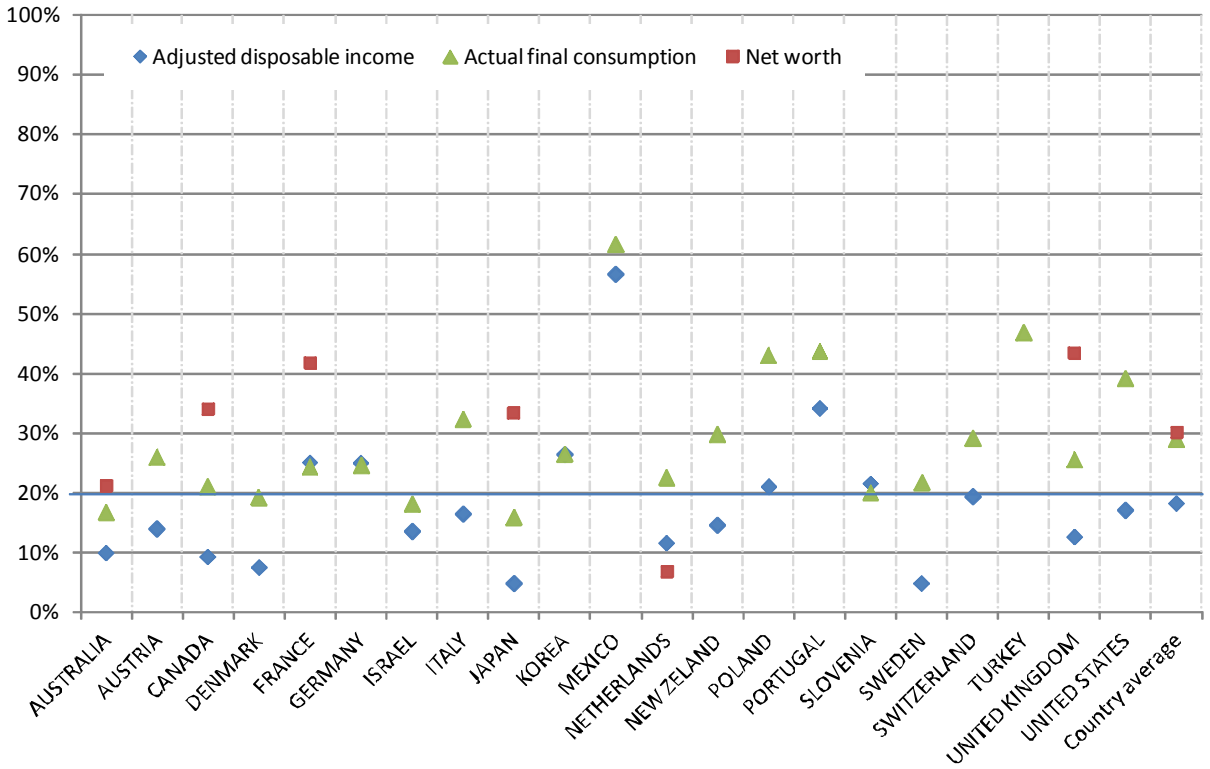


Figure 9: Average gap indicator for three national accounts aggregates after excluding all the factors for differences between micro and national accounts quantified by experts



VII. Conclusions and recommendations

96. The micro-macro comparison performed by experts shows that micro sources provide information on most of the major components of adjusted disposable income, actual final consumption and household net worth, except for components that are specific to the national accounts framework among which Social Transfers in Kind. In most countries, differences in population scope, in statistical treatment and in classification explain the differences in the total amounts recorded by the two sources. Once the quantified divergences are put aside, micro and macro totals on the main income components are relatively well aligned as compared to consumption and wealth. Results show a greater heterogeneity across countries for consumption components. When looking at the detailed components covered by both micro and macro sources, a vast majority of countries face significant gaps in estimates for 'income from self-employment' and 'interest and other property income from corporations' on the income side; on 'alcohol and tobacco' and 'miscellaneous goods and services' in the case of final consumption expenditures; on 'currency and deposits', 'shares and other equity' and 'non-housing loans' for wealth, not all these components having the same importance in the aggregates.

97. The comparison was the opportunity to look at the compilation process of the household accounts in more detail than usual, and to understand the underlying concepts, methods and sources used better. Sharing experiences and ideas on reasons for gaps, and on the feasibility to quantify, was useful for experts who compared micro and macro sources for the first time in the Expert Group activities. The comparison performed by experts also illustrates the main problems to be confronted when comparing micro and macro estimates, and the relevance of conducting such an exercise. In practice, establishing a common scope for the comparison and estimating the impact from each of the reasons for differences can be difficult. Quantifying the impact of the reclassifications and adjustments needed was not always feasible and, even when done, relied on strong assumptions.

98. Recommendations have emerged from the exercise for facilitating a similar comparison work in future, and for closing some of the gaps between micro and macro estimates. More specifically, some recommendations highlight the need to:

- Make the national account compilation processes more detailed: e.g. separating NPISH and households; producing final consumption expenditures by type following the national concept; compiling more detailed transactions (e.g. separate operating surplus from mixed income);

- Make the national account compilation processes more clear and transparent: e.g. clarifications on the rules applied in practice to delineate unincorporated enterprises that are allocated to the household sector; clarifications on how household surveys are used and adjusted in the national accounts compilation process, in particular in relation to consumption;

- Encourage micro and macro compilers to discuss the sources they use, in particular on administrative sources, to find out which common primary sources both could use;

- Suggest to micro experts to consider imputing rents for owner-occupied dwellings and Social Transfers in Kind at the micro level, to enable comparison of a more comprehensive definition actual final consumption;

- Encourage the comparison of micro and macro estimates at the national level on a regular basis.

99. Comparing micro and macro totals does not provide a full reconciliation of micro and macro sources. Doing so implies a further step by making assumptions to fill the conceptual and practical gaps

between micro and macro estimates. As part of the Expert Group work, national experts worked on assumptions and compiled experimental estimates on the distribution of income, consumption and saving among household groups that are consistent with national accounts totals. The results and the methodology applied are discussed in a related working paper (Fesseau M. and Mattonetti M-L (2013)).

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ANNEX 1 – National Accounts aggregates: list of components included

I. Adjusted disposable income (B7)

Components of the SNA Adjusted Disposable Income		2008 SNA code
Ressources	**Income from production**	
	Income from owner-occupied dwellings	Part of B2
	Income from leased dwellings	Part of B2
	Mixed income from unincorporated enterprises activities	Part of B3
	Mixed income from own-account production	Part of B3
	Compensation of employees	
	Wages and salaries (in cash and in kind)	D11
	Employers' actual social contributions	D121
	Imputed employers' social contributions	D122
	Property income	
	Interest	D41
	Distributed income by corporations	D42
	Reinvested earnings on foreign direct investment	D43
	Investment income attributable to households	D44
	Rents	D45
	Social benefits and current transfers	
	Social benefits other than Social Transfers in Kind received	D62
	Non-life insurance claims	D72
	Other miscellaneous current transfers	D75
	Social Transfers in Kind received	D63
Uses	**Property income**	
	Interest paid	D41
	Rent (mainly on land)	D45
	Taxes and social contributions	
	Current taxes on income and wealth	D5
	Employers' actual social contributions paid	D6111
	Employees' social contributions paid	D6112
	Self-employed social contributions paid	D6113
	Imputed employers' social contributions	D612
	Current transfers	
	Net non-life insurance premiums	D71
	Other miscellaneous current transfers	D75

II. Actual final consumption (P41)

Components of the SNA Actual final consumption		COICOP code
Final consumption expenditures	Food and non-alcoholic beverages	01
	Alcoholic beverages, tobacco and narcotics	02
	Clothing and footwear	03
	Housing, water, electricity, gas and other fuels	04
	Actual rentals for housing	*04.1*
	Imputed rents for housing	*04.2*
	Maintenance and repairs of the dwelling	*04.3*
	Water supply and miscellaneous services relating to the dwelling	*04.4*
	Electricity, gas and other fuels	*04.5*
	Furnishings, household equipment and routine households maintenance	05
	Health	06
	Transport	07
	Communications	08
	Recreation and culture	09
	Education	10
	Restaurants and hotels	11
	Miscellaneous goods and services	12
	Final consumption expenditure of resident households abroad	**P33**
	Final consumption expenditure of non-resident households on the territory	**P34**
	Social Transfers in Kind received	D63

III. Net worth (B9)

Components of the SNA household net worth		2008 SNA code
Non financial assets	Fixed assets	AN11
	Dwellings	AN.1111
	Other buildings and structures	AN.1112
	Machinery and equipment	AN.1113
	Cultivated assets	AN.1114
	Intangible fixed assets	AN.112
	Inventories	AN12
	Valuables	AN13
	Natural resources	AN21
	Contract, leases and licenses	AN22
	Goodwill and marketing assets	AN23
Financial assets	Currency and deposits	AF.2
	Debt securities	AF.3
	Loans	AF.4
	Equity and investment fund shares	AF.5
	Insurance, pension and standardized guarantee schemes	AF.6
	Financial derivatives and employee stock options	AF.7
	Other accounts receivable	AF.8
Financial liabilities	Loans	AF.4
	Other accounts receivable	AF.8

ANNEX 2 – Reasons for gaps quantified by national experts

This annex explains in detail the main factors accounting for the divergences between micro sources and national accounts estimates identified by national experts as part of the Expert Group work on "*measuring disparities in a National Accounts framework*".

The main factors underlying the divergences can be grouped into four categories: scope, missing components, classification issues and other. For each of these categories, some specific cases are identified. For each case, a table is shown which includes a description of the reason for gap (line label "Definition, issue"); a list of national account components for which the comparison with micro sources may have an impact (line label "SNA transactions impacted"); and a description on how national experts dealt with the issue (line label "Expert group work").

Some of these gaps were quantified by national experts and excluded from the calculation of the coverage rate measured by component. At the end of the annex a table indicates the exclusion/reclassifications applied by national experts, by country, for the main quantified gaps.

I. Scope

Non-Profit Institutions Serving Households

Definition, issue	**Reason for gap: s**ome countries only compile accounts for the combined sector households and Non-Profit Institutions Serving Households (NPISH) whereas the analysis focuses on households.
SNA transactions impacted	Most transactions might be affected. Those that are the most relevant, however, may be operating surplus, property income, current transfers and Social Transfers in Kind: B2, D4, D7 and D63.
Expert Group work	Of the eight countries that used a combined sector for income comparisons, three made adjustments to reduce the scope of the macro figures for relevant items (namely operating surplus, interest and dividends received/paid, and other current transfers received/paid). These adjustments were made using either partial information available on NPISH or by calculating rough estimates making use of experts' knowledge. Only one country adjusts the national accounts totals on wealth.

Part of the population missing in micro sources

Definition, issue	**Reason for gap:** part of the population is excluded from micro sources In the 2008 SNA, a household is defined as a group of persons sharing the same living accommodation, that pool some or all of their income and wealth, and that consume certain types of goods (mainly housing and food) and services collectively. Persons living in an institution are treated as belonging to institutional households. The residency of individual persons is determined by the household of which they are part and not by their place of work. Compared to the SNA household definition, almost all micro data sources used for comparison exclude a part of the population. People falling outside the scope of the micro data sources are mainly people without a permanent address, people living in non-private dwellings (such as prisons, boarding schools, retirement homes, hospitals and nursing homes, religious institutions, hotels, etc.), and people in territories overseas or sparsely populated areas. Only a few micro data sources, mainly corresponding to administrative records from registers, use a definition of households that closely matches the population according to the SNA. In some countries the data used for the grossing and weighting procedures used in household surveys cover the whole population even if the micro source does not. Such grossing and weighting is one of many statistical treatments that micro compilers may carry out to ensure that estimates are suitable for interpretation. By grossing up to broader totals, an assumption is being made that people falling outside the scope of the micro data have the same average income, consumption and wealth as people that are within the survey scope. Also, SNA estimates include the income and expenditures of those who died during the year that may not be captured in most micro sources. Indeed, surveys collect income data from households for the previous calendar year. Persons who died in the previous year may not be in the sample. The situation may be very important for some of the income components such as Social Transfers in Kind.
SNA transactions impacted	Most transactions might be affected depending on the characteristics of the part of the population not covered.
Expert Group work	When micro and macro data had different population scopes, some countries made adjustments to reduce these gaps for income and for consumption, mainly by using a percentage of the population derived from demographic statistics. Experts considered some specific items of income or expenditures to be zero for the institutional population and therefore not relevant for adjustment.

II. Missing components

Owner-occupied dwellings

Definition, issue	**Reason for gap:** missing in micro data The SNA specifies that an imputed rental on owner occupied housing should be included in the production boundary and form part of household consumption. The whole of the imputed rental less actual costs incurred (including costs other than those relating to repairs) is treated as operating surplus of the owner. The full value of the rental is shown as consumption of owner-occupied dwellings. The same principle applies for the main residence and the houses owned as second homes. SNA2008, chapters 20.64, 24.52, 24.56
SNA transactions impacted	- Operating surplus: B2 - Housing expenditures: P31 – COICOP 04.2
Expert Group work	Owner-occupied dwellings are covered at the micro level in most countries (when these are the main residence). In some countries, however, they are still omitted from micro sources. In case the information is not available at the micro level, national experts excluded the national accounts totals related in the comparison.

Own-account production of goods

Definition, issue	**Reason for gap:** missing in micro data The SNA includes the production of all goods for own final consumption within the production boundary, when they are economically significant. When the amount of a good produced within households is believed to be quantitatively important in relation to the total supply of that good in a country, its production should be recorded. It is not feasible to draw up a complete, exhaustive list of all possible productive activities but common types are production of agricultural products, wood-cutting; hunting and fishing; the processing of agricultural products, other kinds of processing such as weaving cloth; dress making and tailoring; the production of footwear, supply of water. Output for own final use should be valued at the basic prices at which the goods and services could be sold if offered for sale on the market. When reliable market prices cannot be obtained, a second-best procedure must be used in which the value of the output of the goods or services produced for own final use is deemed to be equal to the sum of their costs of production. The goods produced for own-account production are treated as being consumed immediately. SNA 2008, chapters 6.32, 6.33, 6.124, 6.125
SNA transactions impacted	- Mixed income: B3 - Consumption expenditures, for the relevant COICOP items: P31
Expert Group work	A few countries excluded own-account production from the national accounts totals. This item is, however, covered by micro sources in a certain number of countries. In the guidelines for micro-data collection in EU Member States, the value of goods produced for own consumption refers to the value of food and beverages produced and also consumed within the same household and are collected (only) when they are a significant component of the income at national level or when they constitute a significant component of the income of particular groups of households.

Wages and salaries in kind

Definition, issue	**Reason for gap:** missing in micro data Employers may remunerate their employees through wages in kind that must be valued consistently with other goods and services. When the goods or services have been purchased by the employer, they should be valued at purchasers' prices. When produced by the employer, they should be valued at producers' prices. When provided free, the value of the wages and salaries in kind is given by the full value of the goods and services in question. When provided at reduced prices, the value of the wages and salaries in kind is given by the difference between the full value of the goods and services and the amount paid by the employees. Almost any kind of consumption good or service may be provided as remuneration in kind. The following list includes some of the most common types of goods and services provided without charge, or at reduced prices, by employers to their employees: meals and drinks, housing services, the services of vehicles, goods and services produced as outputs from the employers' own processes of production, transportation to and from work, sports, recreation or holiday facilities for employees and their families, childcare for the children of employees. Another form of income in kind results from the practice of an employer giving an employee the option to buy stocks (shares) at some future date. Reference: SNA 2008, chapters 7.48 to 7.51
SNA transactions impacted	- Wages and salaries: D11R - Consumption expenditures, for the relevant COICOP items: P31
Expert Group work	A few countries excluded wages in kind from the relevant income and consumption national accounts totals.

Employers' imputed social contributions

Definition, issue	**Reason for gap:** missing in micro data Some employers provide benefits themselves directly to their employees, former employees or dependents without involving an insurance enterprise or autonomous pension fund, and without creating a special fund or segregated reserve for the purpose. In this situation, in the SNA, existing employees are considered as being protected against various specified needs or circumstances, even though no reserves are built up to provide future entitlement. Remuneration is therefore imputed for such employees equal in value to the amount of social contributions that would be needed to secure the de facto entitlements to the social benefits they accumulate. Reference: SNA 2008, chapter 7.68.
SNA transactions impacted	- Employers' imputed social contributions received: D122R - Employers' imputed social contributions paid: D612P
Expert Group work	Not all countries impute social contributions in practice in their accounts or identify them as such in the accounts. In countries where such item is part of the accounts, the transaction was excluded from the comparison.

Contributions to / Benefits from employers-related social insurance scheme

Definition, issue	**Reason for gap:** missing in micro data The SNA recognizes two classes of social insurance schemes: social security on the one hand; and employment related social insurance schemes other than social security on the other. The schemes other than social security may be arranged with an insurance corporation or by an employer directly on his own behalf. Those participating in employment-related social insurance schemes other than social security make contributions to the scheme (or have contributions made on their behalf) and receive benefits. *Reference: SNA2008, chapters 17.87 to 17.91.*
SNA transactions impacted	- Employers' actual contributions: D121R - Employers' actual social contributions: D611P - Other social insurance benefits: D622R
Expert Group work	Only a few countries reclassified income from employers' related social insurance scheme. Reclassification consisted of excluding these contributions and benefits from the national account totals.

Financial Intermediation Services Indirectly Measured (FISIM)

Definition, issue	**Reason for gap:** missing in micro data Financial intermediation services indirectly measured (FISIM) are an indirect measure of the value of financial intermediation services provided but for which financial institutions do not charge explicitly. Financial institutions provide services and charge for them. The ways in which they charge, however, are not always obvious. When a bank offers "free banking" it only signifies that there are no explicit fees, not that there are no implicit fees. Fees may be charged indirectly by means of charging those purchasing a financial asset more than the seller of the same asset receives. The amounts of interest payable on loans and of interest received by households include a margin that represents an implicit payment for the services provided by the financial corporations in providing loans and accepting deposits. The actual payments or receipts to or from financial corporations, described as bank interest, need to be partitioned so that SNA interest and the service charges may be recorded separately. The amounts of SNA interest paid by borrowers to financial corporations are less than bank interest by the estimated values of the charges payable, while the amounts of SNA interest receivable by depositors is higher than bank interest by the amount of the service charge payable. Reference: SNA 2008, chapters 7.116 and 17.230.
SNA transactions impacted	- Interest received and paid by households: D41R and D41P - Intermediate consumption, for the services attributed to households as owners of dwellings and as owners of unincorporated enterprises, and as a consequence the operating surplus: P2, B2 - Consumption expenditure for the services attributed to households for individual consumption: P3
Expert Group work	Almost all countries compared interest received and paid based on the amount actually paid by households. Only a few countries, however, corrected the national accounts totals on intermediate consumption. Israel and New Zealand do not allocate FISIM to households.

Interest on consumption loans

Definition, issue	**Reason for gap:** difference in definition of property income paid In the SNA interest payable on loans is part of the property income paid by household, and as such included in the calculation of adjusted disposable income. The amounts of interest on loans payable to financial corporations include a margin that represents an implicit payment for the services provided by the financial corporations in providing loans. The amounts of SNA interest paid by borrowers to financial corporations are less than bank interest actually paid by the estimated values of the charges payable. (FISIM) Reference: SNA 2008, chapter 7.116 In the ICW framework, interest paid on consumer credit is included as current expenditures.
SNA transaction impacted	Interest paid: D41P
Expert Group work	Among countries that performed a comparison on interest paid the situation is mixed. A few countries extracted the interest paid on consumption loans from the national accounts total; some other made no correction although they mentioned the missing micro information as a reason for gaps. For some countries, interest paid on loans is covered in the micro source.

Reinvested earnings on foreign direct investment

Definition, issue	**Reason for gap:** missing in micro data The SNA recommends that the retained earnings of a foreign direct investment enterprise should be treated as if they were distributed to foreign direct investors in proportion to their ownership of the equity of the enterprise. These earnings are then reinvested by those owners as additions to equity in the financial accounts. This amount is in addition to any actual distributions made out of the distributable income. Reference: SNA 2008, chapters 7.136 to 7.139.
SNA transaction impacted	- Reinvested earnings on foreign direct investment: D43R
Expert Group work	Two countries (Australia and Austria) are affected by this transaction and excluded this item from the comparison.

Property (investment) income attributed to insurance policy holders

Definition, issue	**Reason for gap:** missing in micro data The insurance corporation has a liability towards the policyholders and annuitants. Set against this liability, the insurance corporation holds technical reserves (non-life policies) or has funds that are invested in a range of financial assets and possibly non-financial assets (life insurance policies and annuities). The investment income on these reserves is treated as income attributable to the policyholders. For life insurance policies and annuities contracted as part of an employment-related social insurance scheme the investment income is paid back as household social contributions supplements. For non-life policies contracted, the investment income is paid back to the insurance corporation as a net non-life direct insurance premium supplement. Reference: SNA 2008, from chapters 7.142 to 7.150.
SNA transactions impacted	- Investment income disbursements: D44R - Household social contributions supplements: D61P - Net non-life insurance premiums: D71P
Expert Group work	For the comparison, all experts excluded D44 from the comparison except two countries (Japan and France) that had micro level information available on this item. No country corrected social contributions to exclude premium supplement.

Income from family trust

Definition, issue	**Reason for gap:** missing in micro data A family trust is a discretionary trust set up to hold a family's asset or to conduct a family business. Generally, they are established for asset protection or tax purposes. It might be an important issue, in particular in Anglo-Saxon countries. Indeed, income generated from family trusts is most probably not covered by micro sources.
SNA transaction impacted	- Distributed income of corporations: D42R
Expert Group work	One country excluded the income from family trusts from property income received.

Non-life insurance[23]: net premiums/claims

Definition, issue	**Reason for gap:** difference in definition of current transfers, capital transfers and consumption *In the SNA the actual premiums and claims on non-life insurance policies contracted by households are recorded as current transfers*[24]. *As a transfer paid, the SNA records* "Net non-life insurance premiums" which comprises both the actual premiums payable by policyholders to obtain insurance coverage and the premium supplements payable out of the investment income attributed to insurance policyholders less the service charges payable to the insurance corporation. After deducting the service charges from the sum of non-life insurance premiums and premium supplements, the remainder is described as net non-life insurance premiums. Only the net non-life insurance premiums constitute current transfers. The service charges constitute purchases of services by the policyholders and are recorded as intermediate or final consumption, as appropriate. The service charge is defined as the difference between claims due and premiums earned and premium supplement Reference: *SNA 2008, chapters 8.117-8.118.* The ICW framework does not treat non-life insurance premiums and claims as current transfers. - Premiums paid to insure dwellings for owner-occupied dwellings offset costs incurred in providing the services. Claims offset the capital loss in the stock of wealth. - Premiums paid for other type of insurance (e.g., protecting against unemployment, illness, disruption of travel) are recorded as consumption expenditure and benefits/claims as negative consumption expenditures.
SNA transactions impacted	- Intermediate consumption, for the services attributed to households as owners of dwellings and as owners of unincorporated enterprises, and as a consequence the operating surplus: P2, B2 - Net non-life insurance premiums : D71P - Non-life insurance claims : D72R - Insurance expenditures: P3- COICOP - 12.5 - The relevant expenditures related to the risk covered (housing, transport, health): P3- COICOP 04, 06, 07 (the national accounts record household expenditures before any private insurance payment/reimbursement whereas on the micro side the information collected correspond to household expenditure net of private insurance payment/reimbursements).
Expert Group	The valuation method for "net non-life premiums" in the national accounts makes the comparison

23 Non-life insurance policies provide cover against various events or accidents resulting in damage to goods or property or harm to persons as a result of natural or human causes (for example, fires, floods, crashes, collisions, sinking, theft, violence, accidents, sickness, etc.) or against financial losses resulting from events such as sickness, unemployment, accidents, etc. Such policies taken out by individual households are those taken out on their own initiative and for their own benefit, independently of their employers or the government. *SNA 2008, chapters 8.117*

24 A transfer is a transaction in which one institutional unit provides a good, service or asset to another unit without receiving from the latter any good, service or asset in return as a direct counterpart. In non-life insurance, the facts that a premium has been paid does not automatically mean that a claim/benefit will be received by the household nor, if it does, that the amount of the benefit is commensurate with the amount of the premium. It is for this reason that the SNA holds there is no direct counterpart to the transfer. *SNA 2008, chapter 8.34.*

work	with micro sources difficult. In addition, from the comparison exercise it seems that no information is available at the micro level on claims received by households. Most experts did not produce micro-macro comparison on non-life insurance as part of the income comparison. Conversely, most countries compared the service charges to premiums as part of the consumption comparison. Some countries, however, excluded the item from the consumption comparison and one country compared micro and macro totals on actual premiums.

Social Transfers in Kind

Definition, issue	**Reason for gap:** missing in micro data Social Transfers in Kind consist of goods and services provided to households by government and NPISH either free or at prices that are not economically significant. Social Transfers in Kind include services such as health care, education, long-term elderly care, and childcare services. SNA 2008, chapter 8.141
SNA transactions impacted	- Social Transfers in Kind received: D63R - Actual final consumption: P41
Expert Group work	In a majority of countries no information is available on Social Transfers in Kind at the micro level. Five countries, however, made a micro-macro comparison on this component, namely Denmark, Japan, Sweden, the United Kingdom and the United States. All five countries included health care in the comparison; four included education; three included social protection. No country included recreation and culture costs.

Purchase of used cars

Definition, issue	**Reason for gap:** actual expense versus service charge In the SNA, only the service charge is measured when households purchase used cars. Instead in micro sources the concept measured is the total expense incurred by the household.
SNA transaction impacted	- Purchase of vehicles, for used cars (P3 – COICOP 07.1)
Expert Group work	The notion of service charge is not recognized as such in household budget surveys since households can only report what they pay.

Games of chance

Definition, issue	**Reason for gap:** difference in definition of current transfers, capital transfers and consumption In the SNA, the amounts paid for lottery tickets or placed in bets consist of two elements: the payment of a service charge to the unit organizing the lottery gambling scheme, and residual current transfers that are distributed from purchasers to the winners. The service charge is recorded as consumption expenditure and is defined as the difference between the amount paid for lottery tickets or placed in bets and the amounts paid out to winners. The transfers are regarded in the SNA as taking place directly between those participating in the lottery or gambling, that is, between households. Reference: SNA2008, chapter 8.136.
SNA transactions impacted	- Miscellaneous current transfers received: D75R - Miscellaneous current transfers paid: D75P Note: neutral on adjusted disposable income D75R=D75P on winnings and gambling - Game of chances COICOP 09.4.3 (impact due to the fact that part of the winnings are recorded as capital transfers; otherwise both framework record a service charge as defined in the SNA)
Expert Group work	A few countries corrected data on consumption by excluding this item from the comparison.

III. Classification issues

Income from unincorporated enterprise activities

Definition, issue	**Reason for gap:** divergences in classification The SNA balance item 'mixed income' is defined as the income accruing from unincorporated business activity before any payment of property income. In the ICW framework, and in practice in most current micro sources property income received and paid as part of unincorporated business operations are netted from the self-employment income. **Also, an unincorporated enterprise** is defined in the SNA as a producer unit which is not incorporated as a legal entity separate from the owner (household, government or foreign resident). In the SNA, the unincorporated enterprises owned by households should "be treated as quasi corporations, included in one of the corporations sectors separated from the rest of the household. However, […] a quasi-corporation can only be created when a full set of accounts, including balance sheet entries and information about withdrawals of income from the quasi-corporation, is available. Very frequently, and especially so in the case of a professional working alone, there may be complete information available on the production activities but it may not be possible to separate out other income flows, transfers and financial transactions relating to the production activity from those for the household in general. In this case as well as in ones where even the information on the production activity is incomplete, an unincorporated enterprise remains as part of the household." (SNA2008 §24.6) The distribution of income from unincorporated enterprise between property income and mixed income may depend on data availability in the country.
SNA transactions impacted	- Mixed income: B3 - Property income of corporations: D41, D42, D45
Expert Group work	A few countries were able to reclassify part of the property income.

'Sleeping' or 'silent' partners, royalties and other intellectual property income

Definition, issue	**Reason for gap:** divergences in classification 'Sleeping' or 'silent' partners, royalties and other intellectual property income are recorded as mixed income in the SNA whereas recorded as property income in most current micro sources.
SNA transactions impacted	- Mixed income: B3 - Distributed income of corporations: D42R
Expert Group work	A few countries reclassify income from sleeping partners, royalties and research grants.

Wages and salaries paid while employee is on sick, injury or maternity leave

Definition, issue	**Reason for gap:** divergences in classification Wages and salaries paid while employee is on sick, injury or maternity leave are recorded as social benefits in the household national accounts while recorded as wages and salaries in micro data sources
SNA transactions impacted	- Wages and salaries: D11 - Social benefits other than Social Transfers in Kind: D62R
Expert Group work	A few countries made reclassifications.

Income from renting dwellings and lands

Definition, issue	**Reason for gap:** divergences in classification Income from renting dwellings and lands are recorded in two different items in the SNA. The former is recorded as operating surplus whereas the latter is recorded as property income. In most micro sources the two sources of income are not distinguished.
SNA transactions impacted	- Operating surplus: B2 - Rent: D45
Expert Group work	More than half of the countries performing the comparison exercise reclassified income received from renting land.

Territorial adjustment (resident household expenditures abroad minus non-resident household expenditure in the territory)

Definition, issue	**Reason for gap:** divergences in classification In most countries, national accounts data for household final consumption expenditure by type of goods and services refer to consumption on the territory; i.e. they include the amount of non-resident household expenditure on the territory and exclude resident household expenditure abroad. Usually, a correction to bridge the difference between domestic consumption and national consumption is made, but only at the aggregate level and not by type of consumption expenditures. On the other hand, all micro data sources on consumption focus on resident household expenditure on the territory and abroad. This difference is one of the main reasons for the gaps between micro and macro data on consumption at a detailed level. The types of expenditures that are particularly affected are transport, hotels and restaurants, and recreational services.
SNA transactions impacted	- All possible type of expenditures that resident households make abroad and that non-resident households make in the territory.
Expert Group work	For comparison purposes, national experts applied the correction, usually applied at the aggregate level, at a detailed level to reflect the national accounts expenditures by type according to the national concept. To reduce the gap due to non-resident expenditures on the territory they made use of information from Tourism Satellite Accounts. In other cases, estimates were derived from the micro surveys used for the comparison or from specific surveys on non-resident visitors. To reduce the gap caused by resident expenditures abroad information was generally derived from the micro surveys used in the comparison. A few countries used other specific sources: credit card information and information from the Balance of Payments. For two countries there was no need to adjust the data, as these two countries already produce national accounts household expenditure by types according to the national concept.

Package holiday (associated expenditures)

Definition, issue	**Reason for gap:** divergences in classification In the SNA the package expenditure on holidays corresponds to the travel agency margins[25]. The other costs specifically related to transport, hotel, food or other recreational expenditures are recorded in those categories. On the contrary in most micro data sources the whole price paid by households to the travel agency is recorded as package holidays expenditures.
SNA transactions impacted	- Package holidays (P31 – COICOP 09.6) - All other possible type of expenditures that travel agencies cover such as transport services (07), hotels and restaurants (11), recreation and culture (09)
Expert Group work	No reclassification was done on package holiday expenditures.

Maintenance and repair of the dwelling

Definition, issue	**Reason for gap:** blurred classification in national accounts may explain gaps In the SNA, - Decoration, minor repairs and maintenance are included in consumption expenditures. - Expenditures that owner-occupiers, incur on the decoration, minor repairs and maintenance of the dwelling that would normally be seen as the responsibility of a landlord should not be treated as household final consumption expenditure but as intermediate expenditure incurred in the production of housing services. - Expenditures on major improvements (that is, reconstructions, renovations or enlargements) to dwellings are treated as gross fixed capital formation. SNA 2008, chapter 9.68
SNA transactions impacted	- Operating surplus (through intermediate consumption): B2 (P2) - Housing expenditures - *Maintenance and repair of the dwelling: P31 - COICOP 04.3*
Expert Group work	No correction was applied.

[25] The output of tour operator services is measured by the full expenditure made by travellers to the tour operator. 3.62. Travel agency services and tour operator services are distinguished by the fact that travel agency services amount only to intermediation on behalf of the traveller, while tour operator services create a new product called a tour, which has various components of travel, accommodation and entertainment.

IV. Others

Valuation method: capital depreciation

Definition, issue	**Reason for gap:** difference in valuation Micro and macro net measures, even if they match in definition, are difficult to compare in practice. Indeed, the depreciation allowances deducted when deriving business profit or loss in surveys are likely to be the allowances under relevant tax and accounting rules, based on historic cost. They may not reflect the actual rate at which fixed capital is used up in the production process. Consumption of fixed capital is the corresponding item in national accounts, but it is based on current replacement cost, not historic cost, and it is based on estimates of actual rates of capital consumption.
SNA transactions impacted	- Mixed income: B3 - Operating surplus: B2 (leased dwellings)
Expert Group work	No correction was applied.

Valuation method: Dwellings and lands underlying buildings and structure

Definition, issue	**Reason for gap:** difference in valuation National Accounts compilers mainly use a Perpetual Inventory Method (PIM) which is a depreciated replacement cost method for buildings and a market value for land. Instead in micro surveys, households are asked to give a market value for both dwellings and lands.
SNA transactions impacted	- Dwellings: AN1111 - Land underlying buildings and structures: AN2111
Expert Group work	No correction was applied.

Statistical treatments: under reporting

Most sources suffer from deliberately under declared activity. Surveys are subject to sampling error and non-response. These well-known limitations of sources are sometimes corrected, where possible, by statisticians. The statistical treatments applied may be rough and were sometimes highlighted by national experts as reasons for divergences. The limitations of the sources were also emphasized as reasons for gaps when no specific treatment is applied by statisticians to correct for them.

Definition, issue	**Reason for gap:** national accounts adjustment to correct for underreporting Most primary sources suffer from deliberately under declared activity. The SNA recommends that national accounts compilers apply an adjustment to correct for under declared activity.
SNA transactions impacted	Several transactions may be affected by the adjustment to correct for exhaustiveness. The transactions mentioned by national experts as part of the comparison exercise are: - Mixed income: B3 - Compensation of employees: D1 - Alcohol and tobacco expenditures: P31 - COICOP 02
Expert Group work	Five countries excluded the underreporting adjustment from the national accounts mixed income total for the comparison purpose. Two countries also mentioned that the national accounts adjustment for underreporting has an effect on the wages and salaries total received by households. They excluded this national accounts adjustment before performing the comparison on wages and salaries.

Time recording: accrual versus cash

Definition, issue	**Reason for gap:** Both the SNA and the ICW recommend recording flows on an accrual basis but sometimes the information is only available on a cash basis. Part of the gap is explained by the sources used that do not provide sufficient information that would fit the framework for the time recording.
SNA transactions impacted	Several transactions may be affected among which 'income taxes' and 'property income' received and paid.
Expert Group work	No correction was applied.

V. Information on treatments applied to detailed components by country

Experts identified factors accounting for differences between micro and national accounts totals that are explained above. To correct totals for some of these factors some experts applied adjustments and/or reclassifications to totals prior to the calculation of the coverage rates. This table indicates in which countries the main factors described in this annex were identified as a possible reason for gaps, and whether a statistical treatment was applied to micro and macro totals before calculating the coverage rates. Three codes are used in the Table:

- O: this code indicates that the factor is identified as a possible reason for difference by the expert but no adjustment/reclassification was applied prior to the calculation of the coverage rate. As a consequence, the factor may explain divergences shown in coverage rates;

- X: this code indicates that the factor is identified as a possible reason for difference by the expert and that adjustment/reclassification was applied prior to the calculation of the coverage rate. As a consequence, the factor is not anymore a reason that may explain divergences in coverage rates;

- PART: this code indicates that the factor is identified as a possible reason for difference by the expert and that adjustment/reclassification was applied prior to the calculation of the coverage rate. However, the treatment applied to micro and macro totals correct totals partially only. As a consequence, the factor may explain divergences in coverage rates although its impact has been reduced.

		AUSTRALIA	AUSTRIA	CANADA	DENMARK	FRANCE	GERMANY	ISRAEL	ITALY
I. SCOPE	**Population missing in micro sources** - income components	O	O	X	X	O	X	PART	O
	Population missing in micro sources - consumption components	O	O	O	X	O	X	O	O
	Population missing in micro sources - wealth components	O		O		O		O	
	NPISH - income components	O	X	O	X		PART		
	NPISH - consumption components	X		O	O				
	NPISH - wealth components	X		X					
II. MISSING COMPONENTS	**Owner-occupied-dwellings** - income			X					
	Owner-occupied-dwellings - consumption			O					
	Own-account production - income	X		X			X		
	Own-account production - consumption	X							
	Wages and salaries in kind - income								
	Wages and salaries in kind - consumption								
	Employers' imputed social contributions		X		X	X			X
	Contribution to/ benefits from employer's scheme		X	O		O			
	FISIM - operating surplus and mixed income	X	X		X	O	O		O
	FISIM - interest received	X	X	X	X	X	X		X
	FISIM - interest paid		X		X	X	O		X
	FISIM - consumption	X	X	X	X	O	O		X
	Interests - consumption loans		X			X			
	Reinvested earnings on foreign direct investment		X						
	Property income attributed to insurance holders - property income received		X	X	X		X		X
	Property income attributed to insurance holders - social contribution paid				X	O			O
	Non-life insurance - premiums						X		
	Non-life insurance - claims						O		
	Non-life insurance - servie charge (consumption)	O	O	O	X	O	O		X
	Social Transfers in Kind				PART				
III. CLASSIFICATION ISSUES	**Income from unincorporated enterprise activities** - interest and/or rents on land	X	X		O	X			O
	Income from unincorporated enterprise activities - withdrawals from quasi-corporation	O	X		O	X			O
	Income from unincorporated enterprise activities - sleeping partners, royalties and research grant	X		X					
	Wages paid while employee is on sick, maternity leave						X		
	Income from renting dwellings and land		X	X	O	X	X		X
	Territorial adjustment - non-resident expenditure on the territory		O	O	X	O	X	O	X
	Territorial adjustment - resident expenditure abroad	O	O	O	X	O	X	O	
IV. OTHERS	**Statistical adjustment** - under-reporting	X		X		X			O

		JAPAN	KOREA	MEXICO	NETHERLANDS	NEW ZEALAND	POLAND
I. SCOPE	**Population missing in micro sources** - income components	O	O	O	O	O	O
	Population missing in micro sources - consumption components	O	O	O	O	O	O
	Population missing in micro sources - wealth components	O			O		
	NPISH - income components		X				
	NPISH - consumption components						
	NPISH - wealth components				O		
II. MISSING COMPONENTS	**Owner-occupied-dwellings** - income					X	
	Owner-occupied-dwellings - consumption		X			X	X
	Own-account production - income		O	O			
	Own-account production - consumption			O			
	Wages and salaries in kind - income				X	X	
	Wages and salaries in kind - consumption					X	
	Employers' imputed social contributions	X		X	X		
	Contribution to/ benefits from employer's scheme	X		X			
	FISIM - operating surplus and mixed income		O	O	O		O
	FISIM - interest received	X	X	O	X		X
	FISIM - interest paid	X	X	O	X		X
	FISIM - consumption	X	X	O	O		X
	Interests - consumption loans						
	Reinvested earnings on foreign direct investment						
	Property income attributed to insurance holders - property income received			X		X	X
	Property income attributed to insurance holders - social contribution paid	O			O	X	O
	Non-life insurance - premiums	O	X	O		O	
	Non-life insurance - claims	O	X	O		O	
	Non-life insurance - servie charge (consumption)	O	O	O		O	X
	Social Transfers in Kind	PART					
III. CLASSIFICATION ISSUES	**Income from unincorporated enterprise activities** - interest and/or rents on land	O	O	O			O
	Income from unincorporated enterprise activities - withdrawals from quasi-corporation	O	X	O			O
	Income from unincorporated enterprise activities - sleeping partners, royalties and research grant	O	O	X			
	Wages paid while employee is on sick, maternity leave			O	X		X
	Income from renting dwellings and land	X	X	X	O		
	Territorial adjustment - non-resident expenditure on the territory	O	O	O	O	O	X
	Territorial adjustment - resident expenditure abroad	O		O	O		
IV. OTHERS	**Statistical adjustment** - under-reporting			O			

		PORTUGAL	SLOVENIA	SWEDEN	SWITZERLAND	TURKEY	UNITED KINGDOM	UNITED STATES
I. SCOPE	**Population missing in micro sources** - income components			O	O		O	X
	Population missing in micro sources - consumption components		X	O	X	O	O	X
	Population missing in micro sources - wealth components						O	
	NPISH - income components				PART		O	
	NPISH - consumption components							
	NPISH - wealth components						O	
II. MISSING COMPONENTS	**Owner-occupied-dwellings** - income			X			X	
	Owner-occupied-dwellings - consumption		X	X	O		X	
	Own-account production - income				O		X	O
	Own-account production - consumption		X	O				O
	Wages and salaries in kind - income							O
	Wages and salaries in kind - consumption		X	O	O			
	Employers' imputed social contributions	X			X		X	
	Contribution to/ benefits from employer's scheme				O			PART
	FISIM - operating surplus and mixed income	O	O	O	O		O	O
	FISIM - interest received	X	X	X	X		X	X
	FISIM - interest paid	X	O				X	X
	FISIM - consumption	X	X	X	X	X	X	X
	Interests - consumption loans	O	O					
	Reinvested earnings on foreign direct investment							
	Property income attributed to insurance holders - property income received	X	X	X	X		X	X
	Property income attributed to insurance holders - social contribution paid	O	O	O	O		O	NR
	Non-life insurance - premiums			O			O	NR
	Non-life insurance - claims			X	O		O	NR
	Non-life insurance - servie charge (consumption)		X	O	O	O		X
	Social Transfers in Kind			PART			PART	PART
III. CLASSIFICATION ISSUES	**Income from unincorporated enterprise activities** - interest and/or rents on land				PART			X
	Income from unincorporated enterprise activities - withdrawals from quasi-corporation				O			
	Income from unincorporated enterprise activities - sleeping partners, royalties and research grant			X	O			O
	Wages paid while employee is on sick, maternity leave				PART			
	Income from renting dwellings and land	X	X	X				
	Territorial adjustment - non-resident expenditure on the territory	X	X	X		O	O	X
	Territorial adjustment - resident expenditure abroad	X	X	X			O	X
IV. OTHERS	**Statistical adjustment** - under-reporting		O	X	O		X	O

ANNEX 3 – Comparison with the a-minima exercise

I. Background

In 2011, the OECD and Eurostat launched a joint Expert Group to perform a feasibility study on compiling measures of the distribution of income, consumption and wealth among households groups consistent with national accounts totals. In parallel to the Expert Group, Eurostat launched a similar study, the "a-minima" exercise, to be carried out at the centralized level.

At the European level, the two studies were recommended by a Task Force set-up by Eurostat to explore data from a Households Perspective and to work on distributional aspects of income, consumption and wealth (TF-HP). The mandate of the TF-HP[26], among other tasks, was to analyze how the European statistical system should meet the challenge of producing disparity indicators for income, consumption and wealth matched with national accounts data.

The first challenge of both the studies was to draw a detailed picture of the extent to which statistical information derived from micro sources match with national accounts definitions and totals, the micro-macro comparison exercise. To perform this comparison of definitions and totals on components of household income, consumption and wealth, national experts were asked to make use of all the relevant information available in each country as part of the Expert Group exercise. Whereas at the European level more emphasis was put on the use of across countries comparable micro/macro data sources and on the production of European Union (EU) results.

Eurostat used thus the harmonized information available for the EU members (plus EFTA) in the European Statistical System: National accounts for macro data and, as its work was limited to household income, the European Union Statistics on Income and Living Conditions (EU-SILC) for micro data.

Twelve countries, henceforth termed as "common countries", belonging to the Expert Group were shared by both the exercises, i.e. Denmark (DK), Germany (DE), France (FR), Italy (IT), the Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Slovenia (SI), Sweden (SE), the United Kingdom (UK) and Switzerland (CH). Results from both the exercises can be compared to complete the picture of the Expert Group activities detailed in this paper.

This annex presents a confrontation of the Expert Group and the a-minima exercise for the common countries on income components. The second section explains briefly the main departing factors between the two exercises that may explain divergences in results. The third section compares the results obtained by the two exercises. The fourth section presents the main conclusions.

[26] This Task-Force was part of a work programme underway in Europe to respond to the report of the Commission on the Measurement of Economic Performance and Social Progress, published in 2010, and authored by Stiglitz, Sen and Fitoussi. The Commission's report sets out 14 recommendations to better measure societal progress; moving away from existing narrow economic measures such as GDP to a broader range that can better reflect the multi-dimensionality of a population's quality of life and well-being.

II. Departing factors between the two exercises

Both the Expert Group and the a-minima exercise were conducted in parallel and to the extent possible took consistent methodological decisions. For some choices however the two exercises departed from each other. A list of the departing factors is provided in this section which may help to understand and explain divergences shown in results between the two exercises in the next section.

The micro data sources

The a-minima exercise used the European Union Statistics on Income and Living Conditions (EU-SILC) which is a harmonised European micro data source on income.

Expert Group members chose for micro data on income what they judged as the most suitable for their exercise: seven common countries used EU-SILC as part of the Expert Group work whereas the other five worked with different data sources.

Two sub-groups in the Expert Group can then be identified according to the main micro data sources mainly used for income:

a) AT, CH, FR, IT, PL, PT, SI who use EU-SILC
b) and DE, DK, NL, SE, UK who use other micro data sources.

The income reference year

Eurostat selected the most recent year available at the time for the EU-SILC cross sectional data, 2009, that refers to the 2008 as income reference period.

The experts chose, in most of the cases, the period that allowed them to work on both the income and consumption resources.

Among the twelve common countries, seven countries chose to work on the income reference period 2008 i.e., DE, FR, IT, NL, PT, SI and CH. Four countries worked on 2009 (AT, SE, PL and UK) and one (DK) chose 2007.

The macro income sub components

As the two exercises were carried out on two different sets of income components, a confrontation is possible only if a common set is delineated.

Table 1 shows the income components worked in the exercises. Expert Group components are on the left and the a-minima components on the right. The nine components in the central column were here selected as set for the confrontation of the results of the two exercises.

From Table 1 three differences immediately appear between the a-minima and the Expert Group sets: first, the a-minima set is quite aggregate in respect to the Expert Group level of work. Actually, the a-minima could enjoy less degree of freedom than the Expert Group as the published information for both national accounts and EU-SILC sources is standardised across countries but limited in respect to the detail available for the Expert Group exercise.

Secondly, no micro macro comparison is performed at the level of other transfers in the a-minima framework. Actually, the EU-SILC information on these income sub-components (cash transfers among households) was deemed not informative for the micro-macro comparison after a collection of the EU-SILC producers' opinions.

Thirdly, no analysis of social transfers in kind (STIK) is performed in the a-minima exercise, as no (or very negligible) information is available in the EU-SILC for this income-subcomponent. In any case, the Expert Group common countries that performed the comparison for STIK were a few (DK, SE, UK).

Moreover, the Expert Group members were allowed to depart from the list of components agreed by the Expert Group to obtain better results and to capitalise the heterogeneous information available in their country. That led to further differences (within the Expert Group and with the a-minima) not visible from Before comparing micro and macro totals national experts applied adjustments and reclassifications to exclude quantifiable elements that are not comparable and that could generate gaps in the totals. Due to restrictions in data availability, the a-minima operated a set of adjustments/reclassifications different from the ones performed by the Expert Group.

On the macro side, prior to the calculation of coverage rates, the a-minima adjusted national accounts data in two cases: firstly by correcting the national accounts scope through the cutting-off of Non-Profit Institutions Serving Households (NPISHs), when needed (DK, DE, AT, UK and CH). Then, by putting aside the national accounts components that are not covered by micro sources, i.e. investment income attributable to households and, finally, the Financial Intermediation Services Indirectly Measured (FISIM) for both the interest received and paid.

Among the twelve common countries, two out of the five countries that include NPISHs in the households sector accounts, corrected totals for NPISHs (DK and DE). Experts from three countries made a correction for the part of population missing in micro sources (AT, DE and CH). In the case of Financial Intermediation Services Indirectly Measured, FISIM, the common countries applied a reclassification similar to the a-minima but for DE, SI, SE and CH that applied it only on interest received, whereas the a-minima corrected both the sides of the accounts. And for investment income attributable to households all the common countries but FR applied a similar reclassification. National experts from FR have information on investment income attributable to household imputed at the micro level which is not the case at the centralized level.

On the micro side the a-minima reclassified the EU-SILC income across the income working components in order to obtain the best matching with the national accounts data. Table **2** reports the details of the micro–macro matching of EU-SILC and national accounts variables operated by the 'a-minima'.

In synthesis the main EU-SILC reclassifications operated by the 'a-minima' were:

a) the substitution of the value of company car with the whole import of non-cash employee income as in the EU-SILC income concept for wages and salaries in kind only the former item is accounted for;

b) the introduction of imputed rents and of value of goods produced for own consumption as in the EU-SILC income concepts those variables are excluded;

c) and finally, the repartition of income from rental of a property of land between income from self-employment and from dwellings and interest and distributed income received.

The Expert Group could perform reclassifications more targeted than the a-minima thanks to the availability of more data sources and details. Among these reclassifications, countries moved components that are recorded by micro and macro compilers in different income components; like interest and rents received/paid as part of the business activity, that are accounted for in "gross cash profits/self-employment income" in the micro framework and in "property income" by the macro compilers.

Moreover, country peculiarities could be better figured in the country exercise thanks to the country specific information like the high underreporting in the Italian economy.

The different level of details and adjustments/reclassifications adopted by the Expert Group members make difficult the confrontation between the two exercises because they impact on the indicators' results. More insights on this matter will be given in §III.

Table 1: Income component' sets by exercise.

Expert Group set (SNA/ESA code)	Confrontation set	A-minima set (SNA/ESA code)
Income from owner-occupied dwellings (part of B2)	**1) Income from self-employment and from dwellings**	Operating surplus + mixed income (B2+B3)
Income from leased dwellings (part of B2)		
Mixed income (unincorporated enterprises, own-account production) (B3)		
Wages and salaries received (D11)	**2) Wages and salaries**	Wages and salaries received (D11)
Employers' social contributions (D12)	**3) Employers' social contributions**	Employers' social contributions (D12)
Interest and distributed income by corporations received (D41R+D42R)	**4) Interest and distributed income received**	Interest and distributed income by corporations received (D41R+D42R)
Social benefits other than Social Transfers in Kind received (D62R)	**5) Social benefits in cash**	Social benefits other than Social Transfers in Kind received (D62R)
Social Transfers in Kind received (D63R)	**6) Social Transfers in Kind**	
Other current transfers received (D7R)	**7) Other transfers received**	
Interest paid (D41P)	**8) Property income**	Property income paid (D4P)
Rents on lands paid (D45P)		
Current taxes on income and wealth (D5P)	**9) Current taxes plus social contributions paid**	Current taxes plus social contributions paid (D5P+ D6111P+ D6112P+ D6113P)
Employer's social contributions paid (D6111P)		
Employee's social contributions paid (D6112P)		
Self-employed social contributions paid (D6113P)		
Other current transfers paid (D75P)	**10) Other transfers paid**	

The adjustments and/reclassifications

Before comparing micro and macro totals national experts applied adjustments and reclassifications to exclude quantifiable elements that are not comparable and that could generate gaps in the totals. Due to restrictions in data availability, the a-minima operated a set of adjustments/reclassifications different from the ones performed by the Expert Group[27].

On the macro side, prior to the calculation of coverage rates, the a-minima adjusted national accounts data in two cases: firstly by correcting the national accounts scope through the cutting-off of Non-Profit Institutions Serving Households (NPISHs), when needed (DK, DE, AT, UK and CH). Then, by putting aside the national accounts components that are not covered by micro sources, i.e. investment income attributable to households and, finally, the Financial Intermediation Services Indirectly Measured (FISIM) for both the interest received and paid.

Among the twelve common countries, two out of the five countries that include NPISHs in the households sector accounts, corrected totals for NPISHs (DK and DE). Experts from three countries made a correction for the part of population missing in micro sources (AT, DE and CH). In the case of Financial Intermediation Services Indirectly Measured, FISIM, the common countries applied a reclassification similar to the a-minima but for DE, SI, SE and CH that applied it only on interest received, whereas the a-minima corrected both the sides of the accounts. And for investment income attributable to households all the common countries but FR applied a similar reclassification. National experts from FR have information on investment income attributable to household imputed at the micro level which is not the case at the centralized level.

On the micro side the a-minima reclassified the EU-SILC income across the income working components in order to obtain the best matching with the national accounts data. Table **2** reports the details of the micro–macro matching of EU-SILC and national accounts variables operated by the 'a-minima'.

In synthesis the main EU-SILC reclassifications operated by the 'a-minima' were:

d) the substitution of the value of company car with the whole import of non-cash employee income as in the EU-SILC income concept for wages and salaries in kind only the former item is accounted for;

e) the introduction of imputed rents and of value of goods produced for own consumption as in the EU-SILC income concepts those variables are excluded;

f) and finally, the repartition of income from rental of a property of land between income from self-employment and from dwellings and interest and distributed income received.

The Expert Group could perform reclassifications more targeted than the a-minima thanks to the availability of more data sources and details. Among these reclassifications, countries moved components that are recorded by micro and macro compilers in different income components; like interest and rents received/paid as part of the business activity, that are accounted for in "gross cash profits/self-employment income" in the micro framework and in "property income" by the macro compilers.

Moreover, country peculiarities could be better figured in the country exercise thanks to the country specific information like the high underreporting in the Italian economy.

[27] A by country list of adjustments and reclassifications operated by the Expert Group members prior to calculate the coverage rates is reported in Annex 2.

The different level of details and adjustments/reclassifications adopted by the Expert Group members make difficult the confrontation between the two exercises because they impact on the indicators' results. More insights on this matter will be given in §III.

Table 2: Matching of EU-SILC and national accounts income components operated by the 'a-minima' for the micro-macro comparison

Income component	National accounts	EU-SILC
1. Income from self-employment and from dwellings	* Operating surplus and mixed income	* Gross cash profits or losses from self-employment (including royalties) * Value of goods produced for own consumption * Imputed rent * PART of income from rental of a property or land
2. Wages and salaries	* Wages and salaries (in cash and in kind)	* Gross cash or near-cash employee income * Gross non-cash employee income * Income received by people aged under 16
3. Employers' social contributions	* Employers' social contributions	* Employers' social insurance contributions
4. Interest and distributed income received	* Property income received (-) FISIM allocated (-) property income attributed to insurance policy holders)	* Interest, dividends, profits from capital investment in an unincorporated business * PART of income from rental of a property or land
5. Social benefits in cash	Social benefits other than Social Transfers in Kind	* Family/children-related allowances * Unemployment benefits * Old-age benefits * Survivors' benefits * Sickness benefits * Disability benefits * Education-related allowances * Social exclusion not elsewhere classified
8. Property income paid	* Property income paid (-) FISIM allocated	* Interest paid on mortgage
9. Current taxes and social contributions paid[(1)]	* Taxes on income * employees' social contributions * social contributions paid by self- and non-employed persons	* Tax on income * Regular taxes on wealth * Social insurance contributions

(1) net of employers' social contributions

Note: the symbol (-) indicates that the components were netted by those parts.

In synthesis the main EU-SILC reclassifications operated by the 'a-minima' were:

a. the substitution of the value of company car with the whole import of non-cash employee income as in the EU-SILC income concept for wages and salaries in kind only the former item is accounted for;
b. the introduction of imputed rents and of value of goods produced for own consumption as in the EU-SILC income concepts those variables are excluded;
c. and finally, the repartition of income from rental of a property of land between income from self-employment and from dwellings and interest and distributed income received.

III. Results confrontation

Two indicators were calculated in both the exercises: on the one hand, the average gap indicator (GI), that is a synthetic indicator calculated at the aggregate level on income and, on the other hand the coverage rate calculated for each individual income component. The average gap indicator is computed as a weighted average of the absolute differences between the micro and macro amounts across the different components of the national income aggregate. The coverage rate shows the extent to which the total amounts from the micro source and the national accounts match with each other, when using similar definitions (to the extent possible) and after having adjusted totals.

This exercise has identified two related confrontation issues: the level of detail and the reclassification/adjustments. Firstly a too low level of detail could mask under or over coverage rates. Second, the high level of detail mixed with reclassifications can show high coverage rates for specific components.

The first issue could appear mainly in the a-minima case at the level of working components and/or of further disaggregation/adjustments, which the a-minima could not perform because of missing information whereas the Expert Group did. Both are difficult to verify and quantify. A numerical example of this issue is included in Box 1 of the paper this document is annexed.

The second issue could arise in the Expert Group exercise. Focusing on what we obtain after the exclusion of the quantified gaps could result in higher coverage rates at the level of single national accounts components without any or little improvement at the level of average gap indicator. For example, if the in kind part is cleaned up from wages and salaries because it is not included in micro item, the coverage rate at the level of wages and salaries improves as the national accounts denominator is reduced, but remains reflected at the level of the average gap indicator. A numerical example of this second issue is given in

Box 1.

In this confrontation, there are analysed differences in results coming from two exercises. In most of the cases, these differences are due to different income reference years, scope, level of details and adjustments/reclassifications.

Keeping in mind all these issues, we establish a tolerance threshold of 5% for differences in indicators. This means that a difference between the two exercises is deemed significant if it is greater than 5% in absolute value.

The confrontation will first show comparison of results between the Expert Group and the a-minima exercise at the average gap indicator level and then at the coverage rates level; finally with an illustration on one country, namely Austria is reported.

Box 1 - The computation of coverage rate after adjustments: a numerical example

This box shows how the coverage rate changes after an adjustment, using simple, illustrative numbers.
Given a national accounts component (macro total) equals to 100 and a micro total for the same component of 50, if the national accounts component is adjusted to exclude a quantified gap of 20 and becomes 80, the adjusted coverage rate is higher than the first coverage rate.

Country X	**Macro total**	**Micro total**
Component 1	100	50
Adjustment 2	20	0
Component adjusted = 1 -2	80	50

$$CR = \frac{50}{100} = 50\% \; ; \; CR_{adjusted} = \frac{50}{80} = 62.5\%$$

This improves the comparison at the level of the individual component, but it corresponds to a real improvement at the level of disposable income only if micro information is available for the adjustment.

Confrontation of average gap indicators

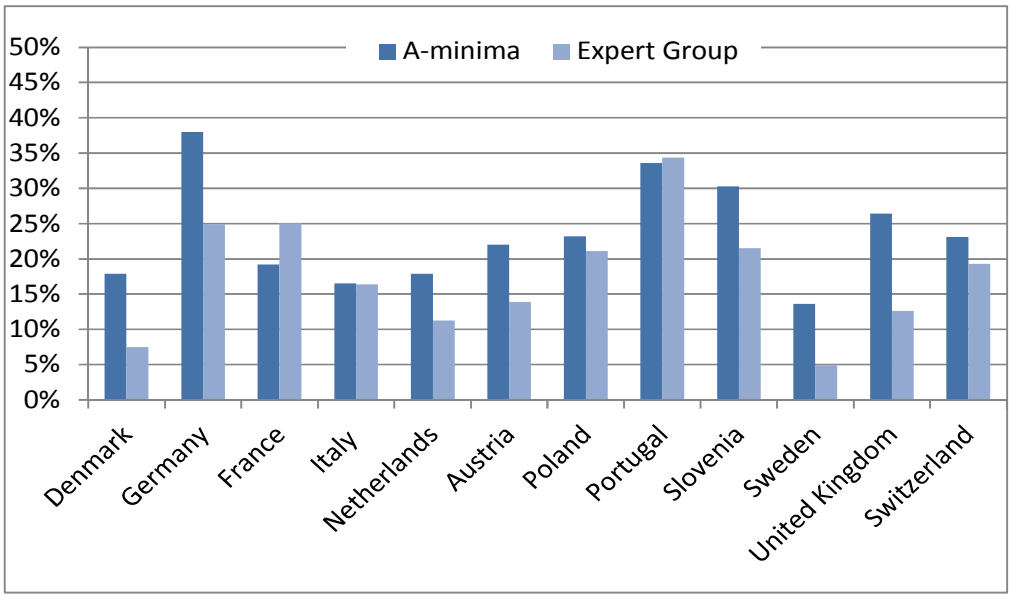
The average gap indicator can be obtained with respect to different reference aggregates. In this confrontation of results the analysis focuses on two versions of income. Firstly, with respect to a derived national accounts income aggregate defined by the availability of the information in the micro data sources, namely the adjusted disposable income excluding all quantified gaps (

Figure 1), and; second with respect to the adjusted disposable income because reconciling micro data on income with national accounts income is the goal of this exercise (Figure 2).

Looking at the derived income aggregate, the a-minima results give higher gap level results than the Expert Group results, except for FR, PT. For eight out of the twelve common countries (DE, DK, FR, NL, AT, SI, SE and UK) the gap between the two exercises is significant, i.e. greater than 5% in absolute value. Out of the eight, six (DE, DK, FR, NL, SE and UK) used micro data sources other than EU-SILC for the reconciliation and four worked on an income reference year other than 2008 (DK, AT, SE and UK). These divergences may explain the differences in results.

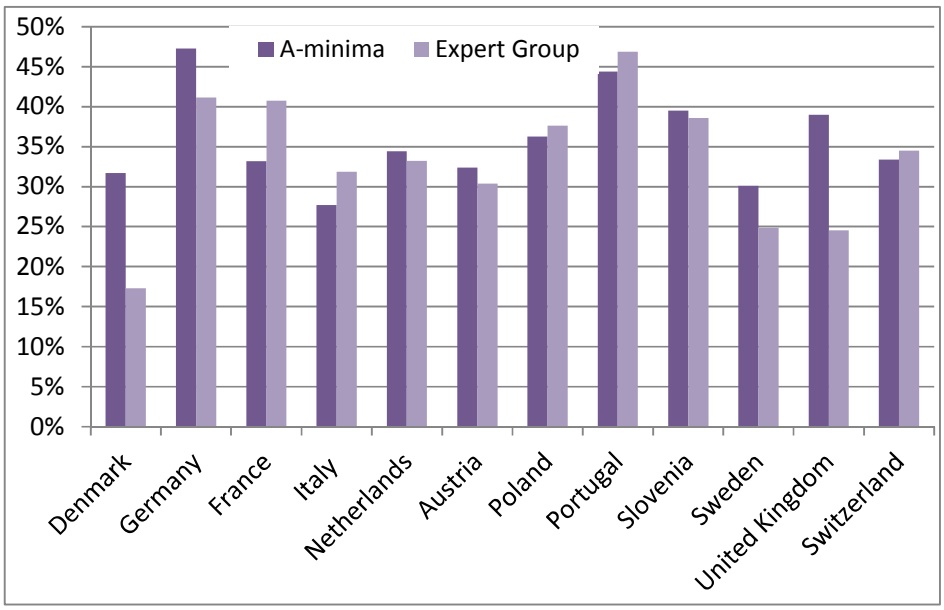
With respect to the adjusted disposable income, the confrontation of average gap indicators report show lower gaps for five countries under the a-minima (FR, IT, PL, PT and CH) and seven under the Expert Group exercise (DK, DE, NL, AT, SI, SE and UK). The discrepancies are significant for five countries (DE, FR, DK, SE and UK). Out of the five, the four that show a lower gap in the Expert Group exercise (DE, DK, SE and UK) used a different micro data source from the a-minima exercise; in addition DK, SE and UK worked on a different income reference year.

Figure 1. GI confrontation for the derived national accounts income (income less all quantified gaps)



These different results drawn from the two versions of GIs could be due to a combined effect of the issues linked to the level of detail, to different adjustments/reclassifications and to the different income reference year.

Figure 2. GI confrontation for the adjusted disposable income



Confrontation at the coverage rate level

This part compares the results for one country, Austria, trying to show the difficulties that arise from a similar confrontation.

First of all, regarding Austria, the two exercises are performed on two different reference years (2009 for the Expert Group exercise, 2008 for the a-minima) and on two different national accounts scopes because the macro data of the Expert Group exercise include NPISH whereas it is excluded from the national accounts totals used in the a-minima because this latter exercise used an experimental estimates for the household sector only.

In both exercises the micro source is EU-SILC but the level of details analysed is different. Moreover, in the Expert Group exercise, part of some components is included with other components to better quantify the gaps (Table 3).

In Figure 3 we tried to aggregate income components from the Expert Group to produce as far as possible a common ground for confrontation. According to the threshold previously defined, the coverage rates show results that are significantly different (more than 5% in absolute value) for the following components: income from self-employment, interest and dividends received, interest and dividends paid; and current taxes and social contributions paid. For the first component the a-minima presents a higher coverage rate than the Expert Group. For the latter three components, the country exercise obtains closer micro and macro totals than the a-minima micro-macro comparison.

Table 3: Components analysed by the Expert Group and by the a-minima exercise

Macro Name	Expert Group	A-minima	Macro Name
Income from owner-occupied dwellings (part of B2)	X	X	Operating surplus + mixed income (B2+B3)
Income from leased dwellings (part of B2)			
Income from leased dwellings + rent on lands			
Mixed income (unincorporated enterprises, own-account production) (B3) + interest and distributed income by corporations received (D41R+D42R)	X		
Mixed income (unincorporated enterprises, own-account production) + property incomes			
Wages and salaries received (D11)	X	X	Wages and salaries received (D11)
Employer's actual social contributions (D121)	X	X	Employer's social contributions (D12)
Interest and distributed income by corporations received (D41R+D42R)	included in another item	X	Interest and distributed income by corporations received (D41R+D42R)
Interest and dividends received (D41R+D42R) - excluding the part already added to mixed income			
Income attributed to insurance policy holders			
Social benefits other than social transfers in kind received (D62R)	X	X	Social benefits other than social transfers in kind received (D62R)
Interest paid (D41P)	X		Property income paid (D4P)
Interest paid (D41P) - excluding the part already taken into account with mixed income and operating surplus			
Rents on lands paid (D45P)			
Current taxes on income and wealth (D5P)	X	X	Current taxes plus social contributions paid(D5P+ D6112P+ D613P)
Employee's social contributions paid (D6112P)			
Self-employed social contributions paid (D6113P)			
Social transfers in kind received (D63R)			
Employer's social contributions paid (D6111P)	X	X	
Other transfers received			
Other transfers paid			

Note: X in the central columns means that the national accounts component is compared to micro information.

The information supplied by the Expert Group delegate about these components can help in explaining differences. In at least three cases the discrepancies are explainable with something more than the different year for which the comparison was performed.

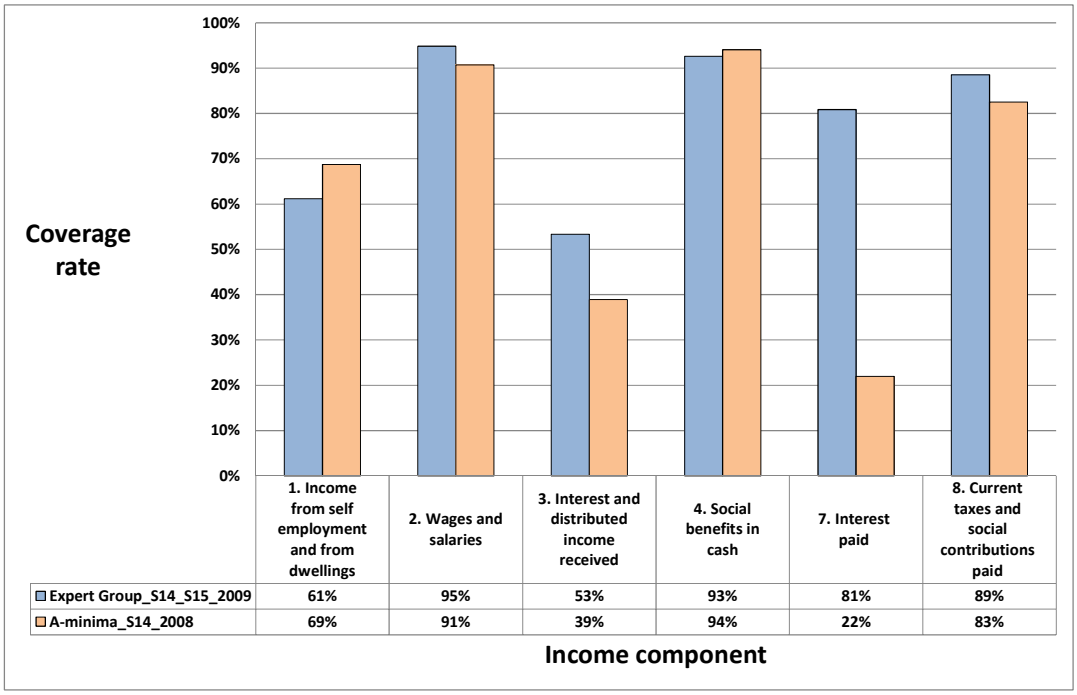
Firstly, for "interest and dividends paid" Austria used as macro total only interest on housing loans whereas in the a-minima the macro amount includes all "interest and dividends paid.

Secondly, the comparison for current taxes and social contributions paid is performed for Austria by netting tax on capital yields and interest deducted at source from the macro total (in this case the micro total is netted too, but with an amount that has a coverage rate around 20% in respect of the amount used for the macro component).

Thirdly, regarding "income from self-employment", the difference between the two exercises is due to the fact that in the Expert Group, the coverage rate is calculated by using micro and macro information netted by consumption of fixed capital (depreciation) whereas in the a-minima exercise the comparison is based on components that are gross of depreciation.

Looking at the GI, it assumes better values for the Expert Group exercise if we take into account the quantified gaps. It is not significantly different from the a-minima exercise if we refer to the adjusted disposable income.

Figure 3. Confrontation of the a-minima with the country specific results (AT)



	1. Income from self employment and from dwellings	2. Wages and salaries	3. Interest and distributed income received	4. Social benefits in cash	7. Interest paid	8. Current taxes and social contributions paid
Expert Group_S14_S15_2009	61%	95%	53%	93%	81%	89%
A-minima_S14_2008	69%	91%	39%	94%	22%	83%

*: from both the sides no analysis was performed for other transfers received, Social Transfers in Kind and other transfers paid.

IV. Conclusions

This annex reports on the comparison between the results of two similar exercises on the reconciliation of micro and macro data sources on household income. The first exercise was carried out by the Expert Group members whereas the second was performed at the European centralised level by Eurostat (the so-called a-minima exercise).

Twelve European countries were common to both the exercises: Denmark, Germany, France, Italy, the Netherlands, Austria, Poland, Portugal, Slovenia, Sweden, the United Kingdom and Switzerland.

Strict connections linked the two exercises: the a-minima exercise participated in and benefitted from the Expert Group methodological choices whereas the Expert Group common countries compared and discussed their results with Eurostat.

This annex identifies several factors of divergences between the a-minima and the Expert Group results. Mainly, the factors of divergence are related to the micro data source/s for income; namely, the income reference period, the level of detail for the macro income sub-components and the adjustments/reclassifications due to conceptual and/or practical reasons. Most of these factors have a crucial role in both the exercises.

In the Expert Group, divergences are due to the need of getting detailed results and of capitalising the heterogeneous but specific information available in countries.

In the a-minima exercise these divergences emerged mainly because of the constraint of using only the harmonized information available for the EU members.

This confrontation is mainly carried out at the level of average gap indicator that synthesises the results for the income aggregates.

The comparison of the two exercises at the level of GIs shows different results according to the definition of income adopted. In particular, for adjusted disposable income, a-minima shows lower gaps for France, Italy, Poland, Portugal, and Sweden whereas for adjusted disposable income less quantified gaps, a-minima shows smaller gaps for France and Portugal. GIs for adjusted disposable income show significant differences in five countries out of twelve. GIs for the income obtained once the quantified gaps are excluded, result significantly different in eight countries. In both the confrontations, the a-minima show significantly larger gaps between micro and macro totals except for one country.

Due to several issues, linked to different factors adopted by both the exercises, this confrontation should be analyzed with caution, in particular at the coverage rate level.

It is too early to reach conclusions about the two exercises because an accurate confrontation should be performed for several years. To do that the different factors between the two exercises should be reduced to the greatest possible extent. Mainly the results of the two exercises should be produced for common years, and Eurostat should work on further national accounts components details in order to replicate the same list followed by the Expert Group and, in some cases, equivalent adjustments and reclassifications.

ANNEX 4 – Country comments

The opportunity has been given to the national experts who performed the micro-macro comparison to add specific comments on their country. Comments are presented below.

COUNTRY	COMMENT
MEXICO	The micro-macro comparison presented in this paper for México considers on the one hand the figures released and prepared annually in the Accounts by institutional sector, and on the other hand the figures from the Household Income and Expenditure National Survey (ENIGH). The micro data for ENIGH are released in the website of the National Institute of Statistics and Geography. All the data is available without restriction to the users. The ENIGH gathers data of an irregular quarter. Therefore, the crucial task is to find the better method to annualize the data in an economical pattern to obtain micro annual totals.
SWITZERLAND	By performing the micro-macro comparison, adjustments done are usually based on justified technical reclassifications rather than on assumptions. Nevertheless, the potential for reducing the gap by further reclassifications and by introducing assumptions seems to be given. To get an idea of the robustness of the results, it would be reasonable to perform the comparison for several years and to include confidence intervals for the micro data. Also, it would be more adequate to look in detail at certain subcomponents for example for transfers in cash.