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MICRO AND MACRO ESTIMATES ON HOUSEHOLDS ECONOMIC RESOURCES: A CROSS COUNTRY DATA RECONCILIATION

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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 suitable measures to portray people's material conditions in any comprehensive sense. The focus on GDP as the single most important measure of economic performance has driven a wedge between headline statistics and ordinary people's perception of their economic conditions. The financial and economic crisis of the past years has further amplified these concerns which may have been damaging for the credibility of official statistics.

2.   Putting forward measures that better monitor the well-being of households reduces this credibility gap. The 2009 report of the Stiglitz-Sen-Fitoussi Commission stressed the importance of the household perspective in devising measures of living standards. The OECD's work on measuring well-being and progress has been focusing on the household perspective for a number of years and in 2011, released a set of international indicators in its *How's Life*? report. The same year, the European Statistical System (ESS) adopted the report of the Sponsorship Group on measuring Progress, Well-Being and Sustainable Development summarizing the main actions by the ESS to implement the recommendations from the European Union's *GDP and Beyond* initiative and the Stiglitz-Sen-Fitoussi Commission report. Many initiatives at the national and international level have gone similar ways. Typically, these initiatives embrace a notion of well-being that covers both material well-being of households (such as income, wealth, housing) and households' quality of life (such as health, education, or safety). A reoccurring theme throughout this work is the importance of inequality – there is a broad understanding that simple averages tend to not be reflective of the conditions of a 'typical household', be it in the area of income, wealth, health or other domains.

3.   In the specific area of household material living conditions much valuable information exists already. For instance, the national accounts provide measures of disposable income, social transfers in-kind, consumption expenditure and investment, assets and liabilities. However, national accounts measures are of an aggregate nature and convey no distributional information. Surveys, administrative records, and censuses, on the other hand, can be used to derive measures of the distribution of income, consumption and wealth. At the same time, micro data tends to be less comprehensive in scope than aggregate, national accounts-based measures.

4.   Over the years, macro and micro statisticians working on household income, consumption and wealth have developed their activities on somewhat parallel tracks which in some cases have led to inconsistent results. While these tracks are based on different analytical angles, it can cause significant problems for users, when interpreting sometimes divergent results, in particular for those who may wish to combine macro and micro information. Consistency of the information provided also matters for the credibility of official statistics. There is thus considerable value in efforts made to improve the consistency of the two sources.

5.   In 2011, the OECD and Eurostat launched a joint Expert Group to bridge this gap and to examine how existing data can be used to produce measures of disparities between groups of households that are consistent with National Accounts totals.

6.		This paper presents the preliminary results of this work undertaken by experts from 20 countries who are part of the OECD-Eurostat Expert Group. The paper measures the extent to which estimates from the relevant micro and macro datasets line up. In examining discrepancies between micro and macro estimates, the paper offers valuable information for compilers and for national and international organisations by identifying possible measurement issues. This, in turn will be useful in assessing and improving the quality of micro and macro sources. Last but not least, the paper points out opportunities for further development, in particular the extent to which distributional measures can be used more extensively in macro economic analysis.

7.		The paper first presents the context of this cross country data reconciliation (section 2). Section 3 shows results for (components of) adjusted disposable income, actual final consumption expenditure and wealth. In section 4, some conclusions are drawn on the possibilities for future work on the alignment of micro and macro data sources.

II. A data reconciliation done by national compilers and co-ordinated at international level

II.1. A cross country reconciliation as a first step toward integration

8.		The OECD-Eurostat Expert Group on *Disparities in a National Accounts framework* (EG DNA), established in early 2011, is considering how existing data can be used to produce measures of disparities between groups of households that are consistent with the relevant totals in the System of National Accounts (SNA). The main work to lead to this objective consists of devising a robust and internationally comparable methodology to break down SNA-aggregates for the household sector using distributional information available from micro-sources (i.e. allocating macro-aggregates among different groups of households) so that measures of disparities, consistent with SNA aggregates, can be computed. The conclusions of the Expert Group on the feasibility of integrating micro data sources on household with the data on households in the System of National Accounts are expected to be delivered by mid-2013.

9.		To prepare the integration of micro and macro data, experts from countries participating in the Expert Group were asked to complete a rather detailed questionnaire, comparing component by component, micro and macro data available in their countries for income, consumption and wealth. Starting from a list of transactions according to National Accounts definition, experts looked for similar information in micro data.

10.		In the EG DNA, 20 countries[1] were able to undertake this comparison. Among them, 19 countries on adjusted disposable income components, 20 countries on actual final consumption components, and 8 countries on balance sheets components. The reconciliation was done for a specific given year. Doing so, priority was given either to the most recent year available or to the most recent year for which all the micro information on income, consumption and wealth are available[2]. Countries worked mainly on 2008 or 2009 data sources (Graph 1).

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[1] Australia, Austria, Canada, Denmark, France, Germany, Israel, Italy, Japan, Korea, Mexico, the Netherlands, Poland, Portugal, Slovenia, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

[2] Indeed, it is relevant for the end purpose of the Expert Group to give priority to consistency across household economic resources conditions.

Graph 1 – Reference year used in the comparison exercise by type of household economic resource (proportion of countries working on a given comparison year)
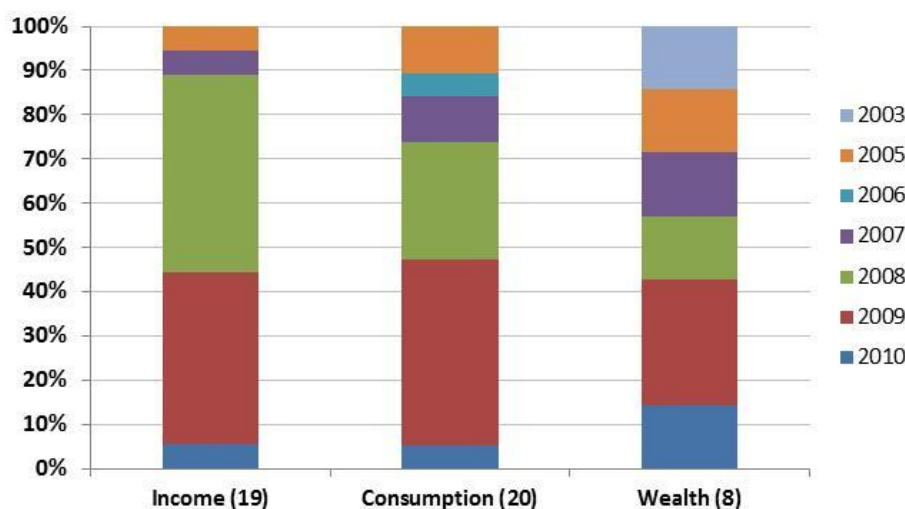
II.2. Reclassifications, scope adjustments and conceptual differences to be addressed for a relevant micro-macro comparison

11.   Experts made the comparison by using existing micro sources (mainly household surveys and/or, in a few cases, administrative records from registers) and the data on household according to national accounts. An inventory of the micro sources used is provided in appendix 1. Sources have been used by experts at a very detailed level, making use of both public and non-public data. On the micro side, existing variables, either collected or imputed, have been used. To varying degrees, national experts aggregated or disaggregated the available micro variables and/or the transactions distinguished in the SNA, to get the most relevant common scope for the micro-macro comparison.

12.   Some experts also adjusted the figures by making assumptions when possible/reasonable, to take into account three main divergences in scope between micro and macro data sources:

-   *Non-Profit Institutions serving households*

    To be relevant, the data reconciliation should focus strictly on households. However, some countries are only compiling accounts for the combined sector households and Non-Profit Institutions Serving Households (NPISHs: political parties, trade unions, sport clubs, etc.). This is mainly because of the lack of data sources which does not allow them to produce the full sequence of accounts for NPISHs and households separately. This lack of data relates particularly to income and wealth components.

    Among the eight countries that used a combined sector for income comparison, four made adjustments to reduce the scope of the macro figures for relevant items (namely operating surplus, interests and dividends received/paid, and other current transfers received/paid). These adjustments were made using either partial information available on NPISHs or by calculating rough estimates making use of experts' knowledge.

- *Population falling outside the scope of 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 which they are part of 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. However, this represents less than 5% of the population in most countries. Moreover, in some countries the data used for the calibration procedure of household surveys covers the all population even if the micro source does not. People falling outside the scope of the micro data sources are mainly people without permanent addresses, 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.

  Four countries made adjustments to reduce these gaps for income and six countries 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 institutional population and therefore not relevant for adjustment.

- *Resident households expenditures abroad and non-resident households expenditures on the territory*

  In most countries, national accounts data for households' final consumption expenditure by type of goods and services refers to the consumption in the national territory; i.e. they include the amount of non-resident households' expenditures on the territory and exclude the resident households' expenditures abroad. Usually, the adjustment 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 the resident households' expenditures 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. Particularly affected are expenditures on transport, hotel and restaurants, and recreational services.

  Eight countries adjusted the data for comparison purposes to reduce the gap due to non-resident expenditures on the territory. When available, Tourism Satellite Accounts were used for this purpose. In the other cases, estimates were derived from the micro surveys used for the comparison or from specific surveys on non-resident visitors.

  Five countries adjusted the data to reduce the gap due to resident expenditures abroad. Adjustment estimates were generally derived from the micro surveys used for comparison. Two countries used other specific sources: credit card information and information from the Balance of Payments.

13.   Ideally, each scope and conceptual divergences should be identified and measured while doing a micro-macro reconciliation. This is however not always possible as underlined later in this paper for the treatment of unincorporated enterprises owned by households. In this particular case the extent to which national accounts practices are consistent both across countries and with micro sources is difficult to cope with.

14.   After having made the possible reclassifications and scope/conceptual adjustments each expert calculated a coverage rate by component, dividing the micro total (grossed up to population total) and the relevant National Accounts total. This coverage rate shows the extent to which micro and macro totals match when compared on the basis of similar definitions (to the extent possible). For a given country (c) and a given component (x) the calculation applied is as follows:

$$CR_{x,c} = \frac{Micro_{x,c-weighted\ total}}{NA_{x,c}} \times 100 \qquad\qquad (1)$$

15.   It should be noted that the experimental work undertaken by the Expert Group is on-going and results may change before the release of the final report in mid-2013. Also, for confidentiality reasons, country names are not mentioned in this paper.

II.3. Consideration on results

Accuracy

16.   Readers are most likely to focus on the coverage rates as it is the practical outcome of this study. However, it should be noted that the comparison of micro and macro estimates over only one time period, does not allow the drawing of firm conclusions.

17.   More importantly, one drawback of this type of comparative analysis is that you can't view the difference between the macro and micro estimates as absolute. The point estimates from the macro and micro data sources each have standard errors associated with them. Consequently, the difference between the two point estimates has a standard error as well. However, the actual calculation of a joint confidence interval from both the macro and micro side is difficult, mainly because national accounts estimates are derived from diverse data sources. As a consequence, it is not possible to provide a single and comprehensive measure of the accuracy of estimates. Moreover, the macro figures are often subject to revisions that might impact coverage rates.

18.   In order to not focus on the absolute values, an arbitrary "quality interval" is introduced in this paper for which results are considered of relatively good quality. The interval 70% - 130% is applied. This interval gives the same importance to the under and over coverage of a limited extent.

Interpretability

19.   From the users' point of view, an aggregate indicator measuring the extent to which micro and macro match is quicker to work with. As it was done by component, a coverage rate can be calculated at an aggregate level, dividing the micro total giving information on the national accounts components and the national accounts aggregate total. This "total coverage rate" (TCR) can be computed as follows for a given country c:

$$TCR_c = \frac{\sum_{x=1}^{x=t} Micro_{x,c-weighted\ total}}{\sum_{x=1}^{x=k} NA_{x,c}} \times 100 = \sum_{x=1}^{x=k} W_{x,c} \times CR_{x,c} \qquad (2)$$

With: c: country;

x: component part of the national accounts aggregate;

k: number of national accounts components (x) in the macro aggregate;

t: number of national account components for which the micro data set provide information;

$W_{x,c} = \frac{NA_{x,c}}{\sum_{x=1}^{x=k} NA_{x,c}}$: weight of the component x in the total macro aggregate; it can be either positive (in case of resources/assets) or negative (in case of uses/liabilities); and

$CR_{x,c}$: coverage rate for the component x. Refers to (1).

20.   It should be noted, however, that using the total coverage rate might be misleading. In fact, the underlying assumption when calculating the TCR is a full substitutability   across   components.   It compares totals without considering of what they are built. Thus, one euro missing in the micro estimates of wages compared to the macro total can be compensated by one euro too many on social benefits received. Also, for a given coverage rate on resources, the country that does not cover uses will show a better total coverage rate than the country that covers part of uses (see Box 1).

21.   The purpose of the reconciliation done by experts as part of the EG DNA is to measure the extent of alignment between micro and macro datasets. The EG is interested not only in the match of the aggregates totals but also in the respective composition of the aggregate between the two datasets. Therefore, an alternative "global indicator" (GI) is presented in this paper that measures the quality of the match. It is estimated as the weighted average of the gaps between the coverage rate and the one value calculated by component, measuring both the gaps and the national accounts weights in absolute value with the following formula:

$$GI_c = \frac{1}{\sum_{x=1}^{k}|W_{x,c}|} \left(\sum_{x=1}^{k} |W_{x,c}| \times \left| 1 - \frac{CR_{x,c}}{100} \right| \right) \qquad (3)$$

The global indicator is then normalised using the group of countries that undertook the reconciliation exercise (C) as a reference:

$$GI_c^{Norm} = \left| \frac{(GI_c - \max_C GI_c)}{(\max_C GI_c - \min_C GI_c)} \right| \qquad (4)$$

22.   The global indicator value is zero for the country showing the lowest performance compared to the other countries (i.e. showing the higher value of weighted average of absolute gaps). The value for the country with the best performance compared to the other countries is 1 (i.e. showing the lowest value of the weighted average of absolute gaps). Results then depend on the group of countries that undertook the micro-macro reconciliation.

23.   The global indicator as defined above measure the extent to which micro and macro totals are aligned. The global indicator does not measure the quality of the distributional information provided by micro sources.

Box 1 - Measure of micro-macro gaps at aggregate level: comparison of the total coverage rate (TCR) and the alternative global indicator (GI) through a simple example with 3 countries

Country 1	Macro	Micro	Coverage rate
Component 1	20	30	150%
Component 2	80	65	81%
Aggregate = 1 + 2	100	95	95%

$TCR_1 = 95\%$

$GI_1 = 0.25 = \frac{1}{|20|+|80|}(|20| \times |1-1.5| + |80| \times |1-0.81|)$; $GI_1^{Norm} = \left|\frac{0.25-0.30}{0.30-0.20}\right| = 0.5$

Country 2	Macro	Micro	Coverage rate
Component 1	80	60	75%
Component 2	-20	-10	50%
Aggregate = 1 + 2	60	50	83%

$TCR_2 = 83\%$

$GI_2 = 0.30 = \frac{1}{|80|+|-20|}(|80| \times |1-0.75| + |-20| \times |1-0.5|)$; $GI_2^{Norm} = \left|\frac{0.30-0.30}{0.30-0.20}\right| = 0.0$

Country 3	Macro	Micro	Coverage rate
Component 1	80	60	75%
Component 2	-20	-20	100%
Aggregate = 1 + 2	60	40	67%

$TCR_3 = 67\%$

$GI_3 = 0.20 = \frac{1}{80+|-20|}(|80| \times |1-0.75| + |-20| \times |1-1|)$; $GI_3^{Norm} = \left|\frac{0.20-0.30}{0.30-0.20}\right| = 1.0$

The total coverage rate shows the lowest value for country 3 (67%) whereas it presents the best performance among the three countries according to the alternative global indicator.

Cross country comparability

24.   To compare micro and macro amounts, some experts have done reclassifications and adjustments. In this respect, one of the cross country comparability methodological issues is that not all experts used the same treatments. Three possible reasons might explain why experts applied different reclassifications and adjustments: i) relevance; ii) lack of data source; and iii) resource constraints[3] (see scheme 1).

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[3] The Expert Group has the mandate of drawing conclusion within two years. The first year was devoted to this micro-macro reconciliation, including the time to gather micro and macro experts and data together.

Scheme 1. Four possible cases regarding adjustment/reclassification for a given component
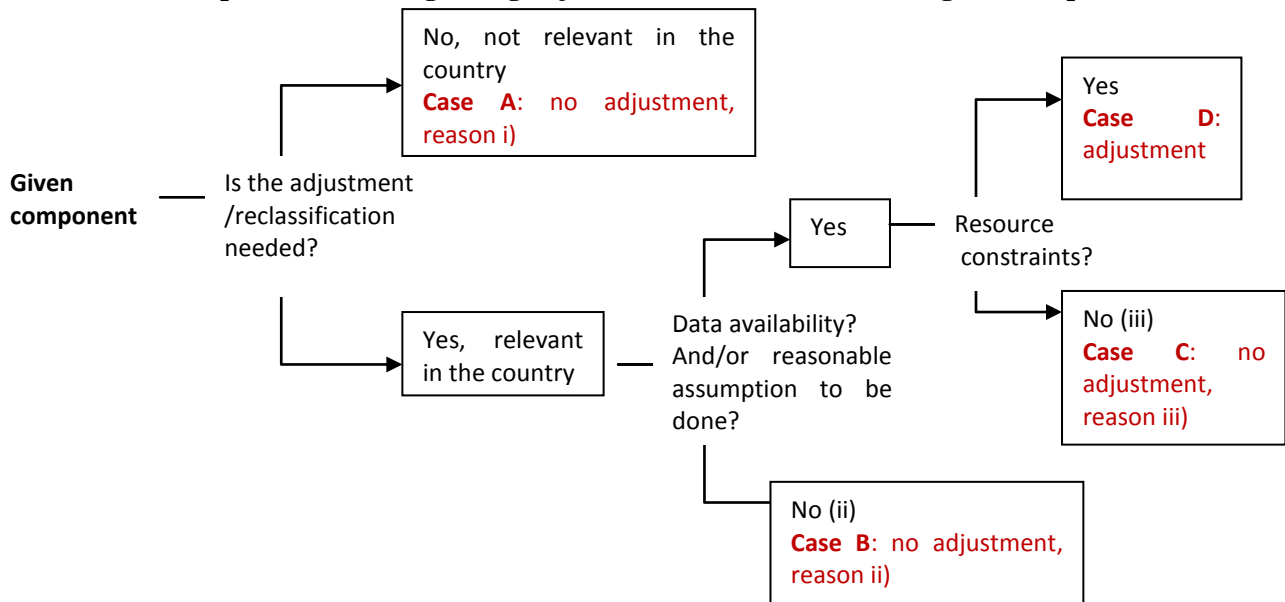
25.   Comparing coverage rates calculated in cases A and D is fully relevant. On the contrary, countries providing coverage rates in cases B and D (or C and D respectively) are less comparable. Although not all countries were able to make the same adjustments and produce comparisons for the exact same list of components and for the same year, efforts of harmonisation done by experts as part of the Expert Group work make it possible to have a cross country comparison.

III. Results

26.   This section presents overviews of the results for each dimension of household economic resources: income, consumption and wealth. When presenting these overviews, it is assumed that results are comparable across countries and that coverage rates depend very little on the year of the data sources chosen by country.

27.   Further information on country specificities (underlying adjustment, year of comparison) can be given when detailing the analysis by component, thus giving more insight on the extent to which some countries depart from others. In this paper, for the time being, more details are provided for one income component, by way of illustration. Information will be provided in the final report of the *Expert Group on Disparities in a National Accounts framework* for other components, in particular on social transfers in kind, property income, housing expenditures and mortgage loans.

III.1. Households' adjusted disposable income

28.　　Table 1 presents the average results of the data reconciliation on national accounts income components produced by the 19 countries that were able to undertake the comparison. Three types of indicators by income component (or sum of components) are provided in this table:

- Number of countries: number of countries able to undertake the relevant comparison;

- Coverage rates ($CR_{x,c}$ in (1)): the micro total (grossed up to population total), as a percentage of the national accounts total by component (or sum of components): average across countries, minimum and maximum coverage rates; and

- Weights ($W_{x,c}$ in (2)): share of the component (or sum of the components) analysed in the total national accounts adjusted disposable income; this information provides an idea of the importance of the component (or sum of components) in the aggregate; average across countries, minimum and maximum values are shown.

Components not covered by the micro-macro comparison

29.　　As expected, the national accounts imputed income components (namely employer's imputed social contributions, social transfers in kind, property income attributed to insurance policy holders and financial intermediation services indirectly measured – fisim) are in most cases not available in micro sources. Therefore, countries seldom undertook a micro-macro confrontation for these components. In these latter cases this means that imputed components are collected/estimated by micro compilers and/or, in the case of social transfers in kind, that administrative data records from registers are available to statisticians for comparison. Other income components such as "rents on land" (received/paid) are not easily comparable in most countries.

30.　　The share of the national accounts components not covered in micro sources, as a percentage of total adjusted disposable income, is 21% on average, and ranges from 6% to 39% depending on the country. A comparison of a higher share of non-covered items in one country compared to that of other countries can be explained in two ways: i) specific items are not covered in the given country whereas they are covered in others; and ii) for a given item not covered in most countries, the share in the national accounts income aggregate is higher in the given country. The weight of non-covered components is, however, mainly driven by social transfers in kind in most countries.

Components covered by the micro-macro comparison

31.　　Focusing on income components that were part of the analysis in most countries, clear similarities across countries are visible (Graph 2).

32.　　Given the quality interval adopted for this study (coverage rate between 70% and 130%), wages and salaries and actual employer's social contributions[4] are the components that show the best match. Indeed, in these cases, at least 90% of the countries taking part in the income exercise meet the quality interval. This is also the case, although to a lesser extent, for taxes on income paid (88% of the countries meet the quality interval), employees' social contributions (85%), self-employed social contributions (82%) and social benefits in cash received (79%).

33.　　On the contrary, very few countries meet the quality interval for other current transfers (20%), interest and dividends received (28%) and mixed income (33%).

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[4] Household surveys can provide either collected or imputed information depending on the country.

Table 1. Micro and macro comparison by household income component: coverage rates and weights in the national accounts total adjusted disposable income

Income items compared [1]	Number of countries	Coverage rates			Weights in total adjusted disposable income		
		Average	Minimum	Maximum	Average	Minimum	Maximum
. Macro resources							
Income from owner-occupied dwellings	15	105%	41%	247%	8%	3%	13%
Income from leased dwellings [2]	15	105%	53%	172%	1%	0%	2%
Income from self-employment and income from own-account production [2]	18	72%	14%	163%	13%	3%	28%
Wages and salaries	19	91%	65%	107%	53%	32%	70%
Employer's actual social contributions	12	98%	71%	163%	9%	6%	14%
Employer's imputed social contributions	-	-	-	-	-	-	-
Interests and distributed income by corporations received, before Fisim allocation [2,3]	18	53%	4%	126%	6%	1%	12%
Fisim	-	-	-	-	-	-	-
Property income attributed to insurance policy holders	2	95%	90%	100%	3%	2%	3%
Rents received	-	-	-	-	-	-	-
Social benefits other than social transfers in kind received	19	80%	11%	99%	19%	3%	28%
Other current transfers	10	53%	13%	117%	4%	1%	11%
Social transfers in kind	5	98%	62%	173%	16%	2%	26%
Total resources covered	**19**	**83%**	**49%**	**98%**	108%	78%	142%
. Macro uses							
Interests, before Fisim allocation [3]	12	62%	20%	102%	-5%	-10%	-1%
Fisim	-	-	-	-	-	-	-
Rents paid	1	63%	63%	63%	0%	0%	0%
Current taxes on income and wealth	16	84%	30%	107%	-13%	-39%	-6%
Employee's social contributions	14	88%	0%	170%	-7%	-18%	0%
Self-employed social contributions	12	75%	0%	98%	-2%	-5%	0%
Other current transfers paid	11	77%	14%	178%	-3%	-7%	-2%
Total uses covered	**18**	**89%**	**37%**	**178%**	**-28%**	**-63%**	**0%**
Total adjusted disposable income covered (resources minus uses)	**19**	**84%**	**47%**	**126%**	**79%**	**61%**	**94%**
Total adjusted disposable income not covered (resources minus uses)					**21%**	**6%**	**39%**
...among which social transfers in kind not covered					12%	4%	26%
Gross adjusted disposable income	**19**	**66%**	**36%**	**87%**	**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 transactions as shown in the SNA sequence of accounts. Therefore, the weight of the item compared does not necessarily correspond to the weight of National Accounts transaction as they are published.

[2] These items might include part of property income received / paid when experts found it relevant for the micro-macro comparison.

[3] Except three countries that did not adjust totals for Fisim before calculating the coverage rate, one on the ressources side and two on the uses side.

Note - The detailed components shown correspond to the level at which most experts did the comparison. For the few countries that produced comparison at a more aggregated level the coverage rate estimated for the aggregated component is used for each of its sub components. These cases are rare.

Graph 2: Coverage rates by income component and by country
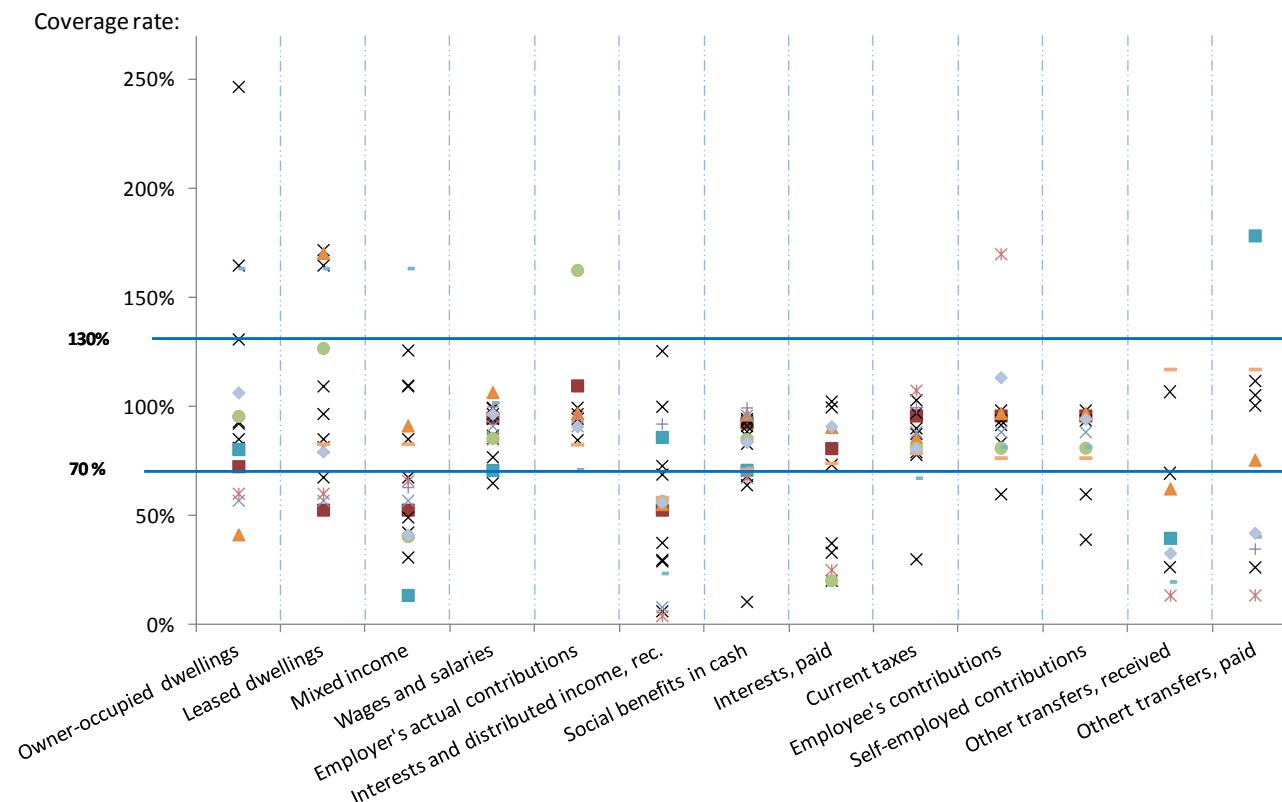
Focus on Income from self-employment – sources of gaps and limitations of the comparison

34.   This focus on income from self-employment illustrates both the challenges and the value added of a micro-macro data reconciliation. It provides details on the main reasons for the gaps (delineation, definition, valuation, adjustment) and the subsequent difficulties to match both sources. As such, this sheds light on the limitations of data sources and also calls for a cautious approach when interpreting the results.

   i)   Difficulties in matching both sources: main reasons for gaps

Delineation

35.   National accounts rules go beyond the households' self-perception. In fact, the idea of producing a set of systematic and detailed descriptions for a total economy is to introduce some concepts that are not immediately understood by households or, in any case, that are not consistent with their perception. 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.

36.   Looking at the concept of Unincorporated Enterprises (UE), the System of National Accounts distinguishes those that belong to the household sector from the so-called quasi-corporations. Indeed, UE owned by resident households that have sufficient information to compile a complete set of accounts and are operated as if they were separate corporations should be treated as quasi-corporations in the SNA. Only UE that do not meet the two conditions listed above should have the transactions related to the production of goods and services recorded as part of the household sector.

37. Experience has shown that countries have difficulty treating unincorporated enterprises owned by households as quasi-corporations. A survey launched by the *Expert Group on Disparities in a National Accounts framework* on compilation practices confirms that there is indeed a wide range of practices across countries in terms of including unincorporated enterprises in the households sector (see Appendix 2). The extent to which this divergence reflects different national arrangements or differences in the statistical treatment of the relevant enterprises should be further analysed.

38. In this context, it is difficult to know the extent to which national accounts compilers' practices are consistent with how people receiving self-employment income are defined in micro sources (which in surveys corresponds, in most cases, to how individuals answer on their employment status).

Income aggregate definition

39. In the SNA sequence of accounts, the balancing item that captures the income from self-employment is mixed income. Mixed income measures the surplus or deficit accruing from production, after deducting compensation of employees and taxes (less subsidies) on production. This, before taking into account any interest, rent or similar charges payable on financial assets or natural resources borrowed or rented by the unincorporated enterprise, or any interest, rent or similar receipts receivable on financial assets or natural resources owned by the enterprise. It is estimated gross and net, depending on whether the cost for depreciation of capital is deducted.

40. On the micro side, as it is stated in the *Canberra Group Handbook on Household Income*, income from self-employment is income received by individuals as a result of their involvement in self-employment jobs. This net income from self-employment includes the profit or loss that accrues to owners of, or partners in, unincorporated enterprises who work in these enterprises. The concept of "net" income corresponds to the value of gross output less operating costs, after adjustments for depreciation assets used in production. Profits or losses from the capital investment of partners who do not work in these enterprises ("silent" or "sleeping" partners) are excluded since they are included in dividend income.

41. There are basically two differences between the SNA and the Canberra Handbook definition: first, whether or not property income received/paid by the enterprises is deducted[5]; second, whether or not income from partners who do not work in the enterprise are included.

Valuation methods

42. It should be noted that net measure, even if it matches in definition, is 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.

Other reasons for gaps

43. Royalties and other intellectual property income such as research grants have also been identified by experts as possible reasons for gaps. The relevant transactions are excluded from mixed income in national accounts figures, while they are considered as income from self-employment in the micro surveys.

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[5] 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, investment income disbursements and rent payable and adding property incomes receivable. It is specified however, in the SNA2008, that entrepreneurial income balance item should not be calculated for households, for practical reasons.

ii)   Difficult interpretation of measured gaps: caution required

Difference in treatments across countries

44.   All experts did not strictly apply the same comparison regarding the self-employment item. As explained above, there are three possible reasons explaining the difference in treatment across countries: relevance, data constraint and resources constraint (Scheme 1).

45.   In the case of self-employment income, the two main treatment differences are explained by data constraints[6]:

- First, a few countries (five) cannot differentiate income from self-employment (mixed income) from income from renting and imputed dwellings. Therefore, for these countries, the coverage rate shown does not strictly focus on self-employment income but covers also income from dwellings.

- Second, a few countries (six) are able to isolate part of property income received/paid by the unincorporated enterprise (mainly rents on land received in the first case and interests and dividends received in the second case) and add it to mixed income to get a better match with the micro definition for the purpose of comparison.

46.   In the case of self-employment income, a particular interpretation issue in terms of capital depreciation should be addressed. Capital depreciation takes both micro and macro definitions into account but uses different valuation methods. This is a difficult choice which leads to a different treatment by experts: some used the gross macro amount (eleven) for the comparison whereas others used the net measure (seven). Among the six countries that used the harmonised EU-SILC survey, five countries compared the SILC variable for the self-employed income to the gross amount from the macro side[7].

Macro estimates include fraud correction

47.   The survey on national account compilation practices launched by the EG DNA shows that, in most countries, compilers are using direct sources (surveys or/and administrative sources) to estimate mixed income. Also, most compilers are making an adjustment for deliberately under declared activity affecting the balance item. This adjustment can have a strong impact on the final value. Indeed, five countries report that it represents more than 50% of the final mixed income value.

48.   The micro-macro confrontation should be interpreted with caution for two reasons: i) the micro amount may be underestimated if households do not report to the interviewer the income generated by undeclared activity; ii) the macro estimate for the underground production adjustment is difficult to estimate and has a quality difficult to assess.

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[6] Note: different treatments in excluding people outside the micro scope and NPISHs from macro totals should not be a source of high gaps across countries.
[7] A harmonisation of the treatment of capital depreciation in the micro-macro comparison across countries is under consideration.

III.2. Households' actual consumption

49.   Table 3 presents the average results of the data comparison on National Accounts consumption components produced by the 20 countries able to undertake the comparison. Three types of information are given in this table by component:

-   Number of countries: number of countries able to undertake the relevant comparison;

-   Coverage rates ($CR_{x,c}$ in (1)): the micro total (grossed up to population total), as a percentage of the national accounts total by component (or sum of components): average across countries, minimum and maximum coverage rates; and

-   Weights ($W_{x,c}$ in (2)): share of the component (or sum of the components) analysed in the total national accounts actual final consumption; this information provides an idea of the importance of the component (or sum of components) in the aggregate; average across countries, minimum and maximum values are shown.

Components not covered by the micro-macro comparison

50.   All countries matched macro aggregates with micro data on the twelve types of expenditures as described in the Classification of Individual Consumption according to Purpose (COICOP) although only partially in some cases (housing, health) for a few countries. The imputed component fisim is not covered at all and social transfers in kind received are not covered by most countries. Finally, the share of the component not covered by micro sources is 20% on average, and ranges from 1% to 32% depending on the country. The weight of National Accounts components non-covered in micro source is mainly driven by social transfers in kind. This is very similar to results obtained on income.

Components covered by the micro-macro comparison

51.   Given the quality interval devised for this exercise (coverage rate between 70% and 130%), actual rents, and electricity, gas and fuels expenditures show the best performance with 80% of countries meeting the quality interval. On the contrary, tobacco (15%), alcoholic beverages (20%) and miscellaneous goods and services without fisim (30%) present the lowest performances (Graph 3).

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

Consumption items compared [1]	Number of countries	Coverage rates			Weights in total actual consumption		
		Average	Minimum	Maximum	Average	Minimum	Maximum
Food and non-alcoholic beverages	20	80%	33%	116%	12%	6%	23%
Alcoholic beverages	20	54%	5%	90%	1%	1%	3%
Tobacco	20	48%	12%	90%	1%	1%	3%
Clothing and footwear	20	80%	46%	114%	4%	2%	6%
Actual rentals for housing	20	94%	27%	130%	4%	1%	10%
Imputed rentals for housing	14	94%	67%	159%	9%	6%	12%
Maintenance and repair of the dwelling + water supply and miscellaneous services	20	115%	58%	310%	2%	0%	7%
Electricity, gas and other fuels	20	86%	51%	112%	3%	2%	7%
Furnishings, household equipment and routine households maintenance	20	72%	38%	99%	5%	3%	7%
Medical products, appliances and equipment	20	75%	16%	141%	1%	1%	2%
Outpatient services	19	62%	15%	105%	2%	0%	5%
Hospital services	18	56%	8%	100%	1%	0%	1%
Purchases of vehicles	20	84%	14%	131%	3%	2%	5%
Operation of personal transport equipment	20	81%	24%	141%	5%	3%	8%
Transports services	20	67%	26%	116%	2%	1%	6%
Communications	20	84%	35%	127%	2%	1%	4%
Recreation and culture	20	73%	33%	110%	7%	4%	9%
Education	20	80%	6%	133%	1%	0%	6%
Restaurants and hotels	20	66%	40%	102%	6%	2%	10%
Miscellaneous goods and services, Fisim gap corrected [2]	20	63%	29%	140%	8%	4%	16%
Fisim	-	-	-	-	-	-	-
Social transfers in kind received	4	107%	71%	173%	15%	3%	27%
Consumption expenditure of resident households abroad	2	63%	14%	112%	2%	1%	3%
Total actual consumption covered	**20**	**77%**	**39%**	**98%**	80%	68%	99%
Total actual consumption not covered					**20%**	**1%**	**32%**
...among which consumption expenditure of resident households abroad					**1%**	**1%**	**4%**
...among which consumption expenditure of non-resident households on the territory					**-2%**	**-8%**	**0%**
...among which social transfers in kind received					**16%**	**4%**	**29%**
Aggregate : Final actual consumption of resident households	**20**	**61%**	**35%**	**85%**	**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 COICOP classification 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 six countries that did not adjust totals for Fisim before calculating the coverage rate.

Graph 3: Coverage rates by consumption component and by country
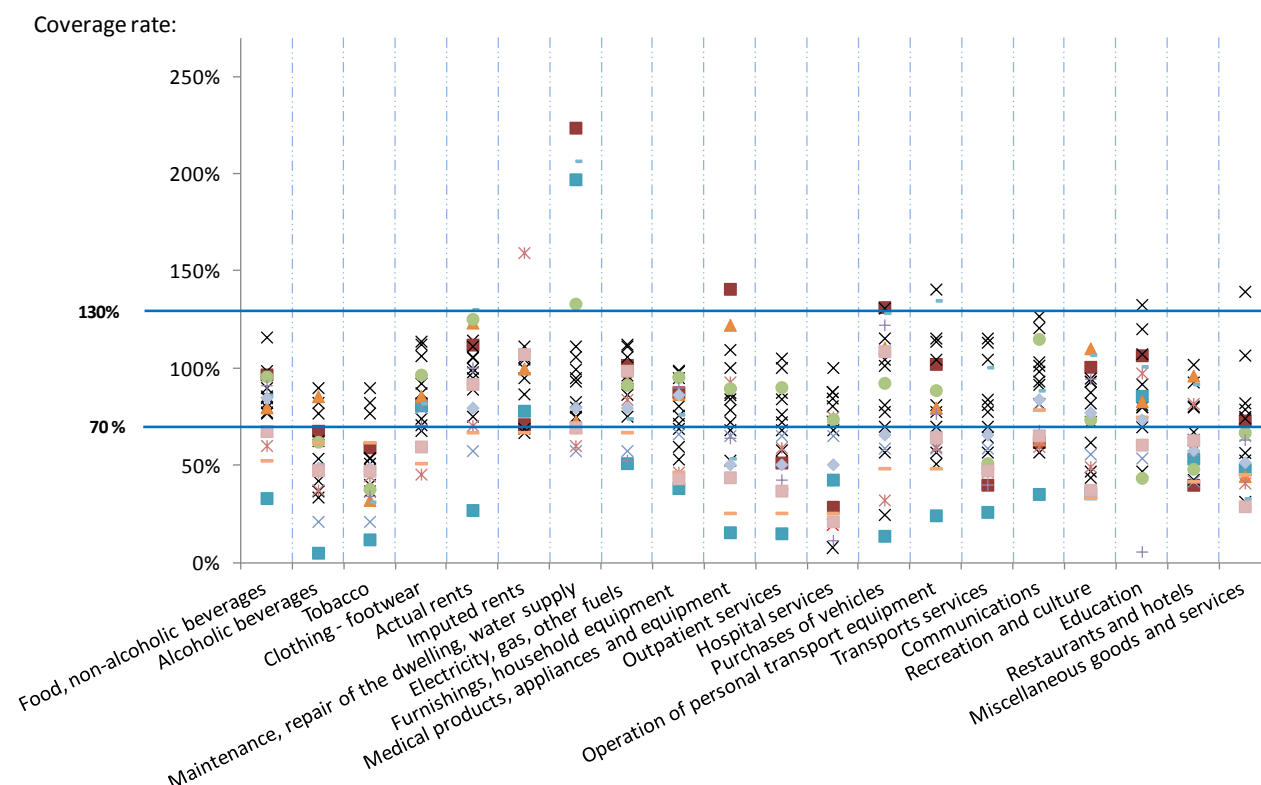
III.3. Households' net worth

52.   Table 4 presents the average results of the data comparison on National Accounts wealth components. Three types of information are given in this table by component:

- Number of countries: number of countries able to undertake the relevant comparison;

- Coverage rates ($CR_{x,c}$ in (1)): the micro total (grossed up to population total), as a percentage of the national accounts total by component (or sum of components): average across countries, minimum and maximum coverage rates; and

- Weights ($W_{x,c}$ in (2)): share of the component (or sum of the components) analysed in the total national accounts net worth; this information provides an idea of the importance of the component (or sum of components) in the aggregate; average across countries, minimum and maximum values are shown.

53.   Only 8 countries were able to undertake the micro-macro confrontation on household wealth as part of the work of the *Expert Group on Disparities in a National Accounts framework*. This can be explained either by a lack of resources or by a lack of information at both the micro and the macro level. Indeed, comparing the two types of data sources implies compiling both household balance sheets and wealth surveys. Only half of OECD countries have existing household wealth surveys[8]. On the macro side, only few countries compile a full household balance sheets. Among the 8 countries for which results are

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[8] Note that efforts are currently on going to extend the number of countries producing households wealth surveys with the support of the OECD, ECB and Eurostat. More specifically, the ECB has launched the Household Finance and Consumption Survey across the Euro Area Countries.

presented in this paper, only 6 undertook the exercise for the full balance sheets including financial and non-financial assets and liabilities. Information on weight on the household net worth aggregate can therefore be estimated for only these six countries.

54.   Because of the low number of countries involved in the wealth confrontation, it is difficult to draw firm conclusions. This part is therefore illustrative rather than conclusive.

Table 4. Micro and macro comparison by household wealth component: coverage rates and weights in the national accounts total net worth

		Number of countries	Coverage rates			Weights in total net worth*		
			Average	Minimum	Maximum	Average	Minimum	Maximum
Non financial assets	Dwellings and land underlying buildings and structures	7	86%	5%	118%	56%	43%	70%
	Other buildings and structures	2	93%	48%	138%	2%	1%	3%
	Machinery and equipment	2	119%	98%	140%	1%	1%	1%
	Cultivated assets	2	59%	54%	64%	2%	1%	3%
	Intangible fixed assets + Intangible non-produced assets	2	48%	0%	96%	4%	1%	8%
	Inventories	1	32%	32%	32%	0%	0%	0%
	Land under cultivation + other land	0	-	-	-	-	-	-
Financial assets	Currency	5	61%	35%	123%	20%	14%	38%
	Deposits	7	62%	35%	123%	18%	10%	38%
	Securities other than shares	7	97%	24%	395%	2%	0%	4%
	Shares and other equity	6	78%	15%	257%	12%	5%	27%
	Loans	4	79%	21%	147%	0%	0%	0%
	Provision life insurance	3	33%	4%	61%	19%	13%	30%
	Provision pensions	5	61%	4%	93%	39%	13%	30%
	Prepayments of insurance premiums and reserves for outstanding claims	3	36%	4%	61%	22%	14%	30%
	Other accounts receivable	4	31%	1%	95%	3%	2%	4%
Financial liabilities	Mortgage loans	7	79%	47%	116%	-16%	-26%	-10%
	Non-housing loans	6	52%	19%	75%	-13%	-19%	-9%
	Other accounts receivable	1	15%	15%	15%	-	-	-
Total household net worth covered		8	68%	9%	112%	91%	79%	102%
Total household net worth not covered *						9%	-2%	21%
Aggregate: household net worth*		6	78%	59%	93%	100%	100%	100%

*Calculated for the 6 countries that compile a full balance sheets accounts

Components not covered by the micro-macro confrontation

55.   The main components of National Accounts household net worth are covered by micro sources (dwellings, deposits, securities including shares, provision on pensions and loans). Therefore, the share of items not covered by micro sources is 9% on average, lower than for income and consumption.

Components covered by the micro-macro comparison

56.   Given the quality interval devised for this exercise (coverage rate between 70% and 130%), dwellings and lands underlying the building show the best performance. Indeed, for this combined item, all countries except one meet the quality interval. Note that to obtain a relevant micro and macro comparison, experts added the two National Accounts items (dwellings and lands) since only the total value is collected in surveys.

57. Currency and deposits, securities other than shares, shares and other equity and non-housing loans, on the contrary, present the lowest performances with only one or two countries meeting the quality interval (Graph 4).

**Graph 4: Coverage rates by wealth component and by country**

Coverage rate:
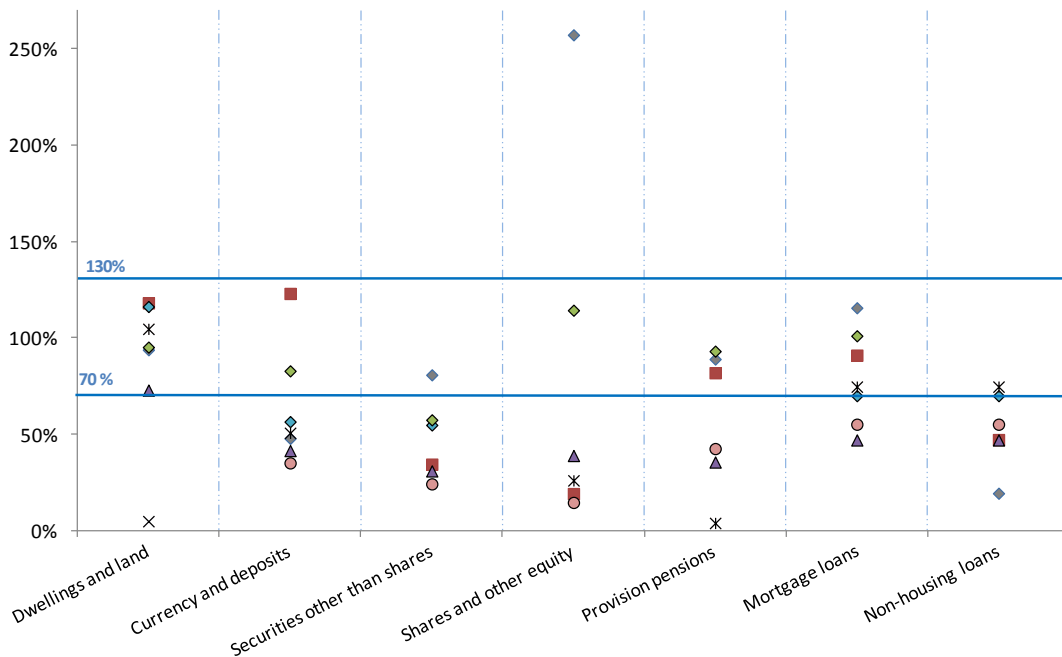
*III.4. Comparison of performances across countries and across household economic resources*

58. Results at the aggregate level are examined by using the global indicator as described in section II (formula (4)). It should be underlined that the indicator value depends on the group of countries that undertook the micro-macro reconciliation. As a consequence, the country with the one value is *not* a country showing a perfect alignment in micro and macro totals for all components; and the country showing the zero value is *not* a country with no match at all between micro and macro data sets. Instead, the indicator value is zero (respectively one) for the country showing the lowest (respectively best) performance when matching micro and macro data sets compared to other countries that undertook the comparison.

59. Overall, there is no correlation in the performance across households' economic resources. Indeed, some countries showing good performance on the total adjusted disposable income compared to other countries show low performance for the actual final consumption aggregate (Graph 5 bottom right). The same applies for the total adjusted disposable income and the household net worth (Graph 6, bottom right). However, there are two significant exceptions: 1) the country showing the best performance for the adjusted disposable income is also the one showing the best performance for the actual consumption; and 2) on the other side of the scale, the same happens for the country with the lowest performance on income and consumption (Graph 5).

Graph 5: Global indicator on total adjusted disposable income and total actual final consumption
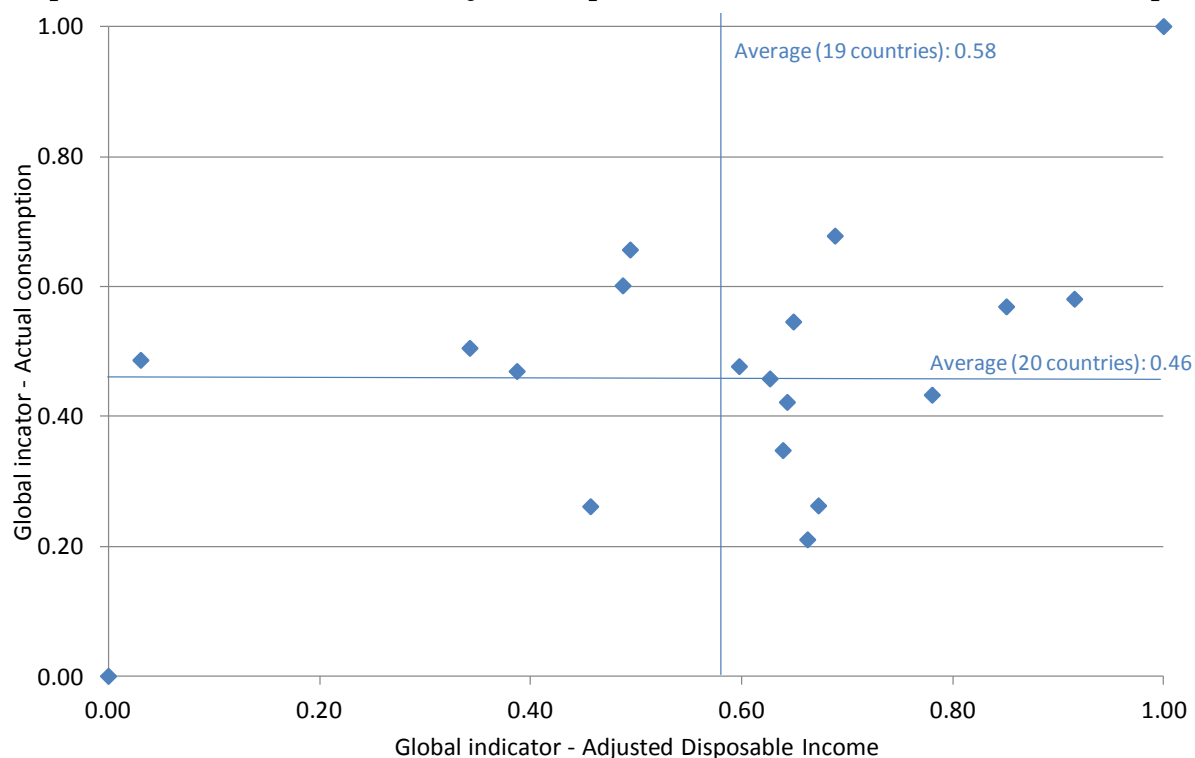
Graph 6: Global indicator on total adjusted disposable income and total household net worth
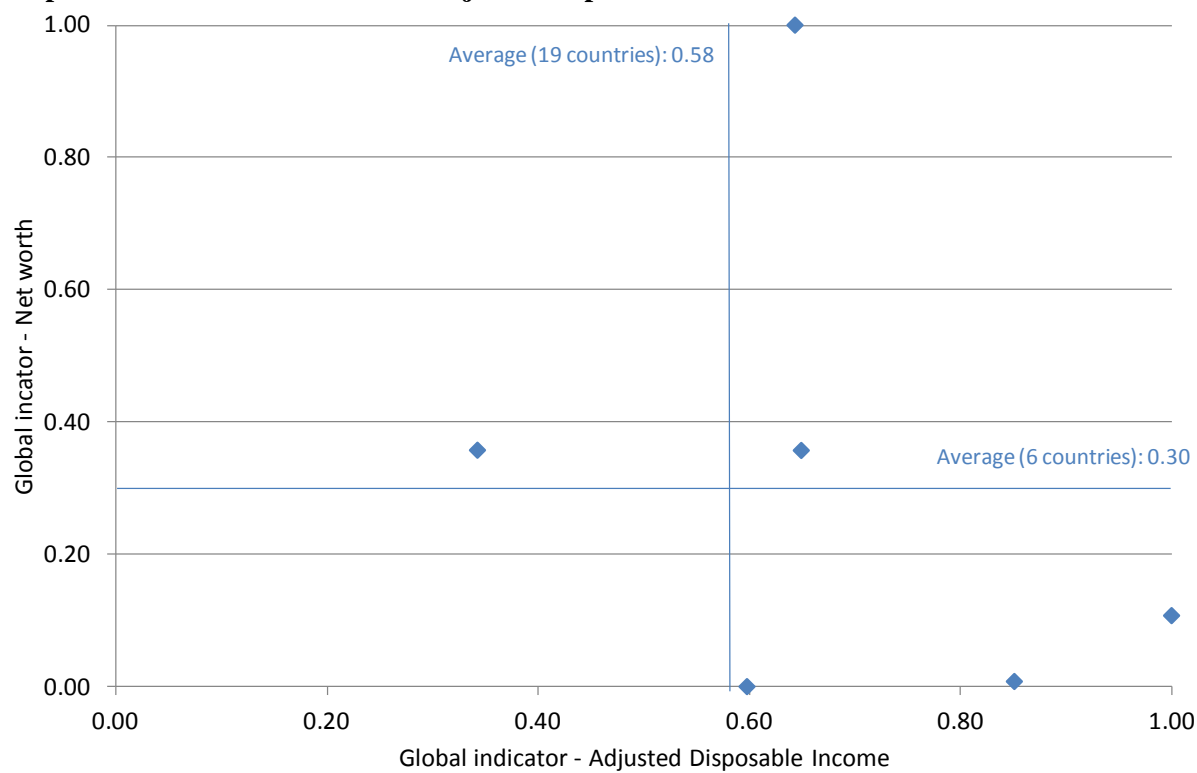
IV. Conclusions

60.   The work by national experts involved in the *OECD-Eurostat Expert Group on measuring disparities in a National Accounts framework* illustrates that, even if micro data sources do not provide similar information for all components of household economic resources as defined in the System of National Accounts, existing micro data cover the majority of the income and consumption aggregates in most countries. National Accounts components for which there is no micro data are mainly related to imputed items (social transfers in kind, FISIM, employer's imputed contributions, etc.). Further work on household assets and liabilities will be needed before more solid conclusions are possible.

61.   Despite these shortcomings, the work being undertaken demonstrates the relevance of a reconciliation of micro and macro sources. It provides explanations of divergences and facilitates the understanding of gaps between micro and macro aggregates for users. Reconciliation offers valuable information for compilers on measurement issues as shown in the case of self-employment income (delineation, valuation, under reporting). Reconciliation was done for a single year only and the year under consideration may not be representative of other years. The feasibility of producing a regular reconciliation exercise will therefore be discussed with Expert Group members.

62.   Whilst the study demonstrates that micro and macro measures can be reconciled for most macroeconomic income and consumption components, it does not provide a full integration of both sources. Further work is needed to assess the quality of the distributional information provided by micro sources, and to consider the relevance of imputing distributions for National Accounts components with no adequate micro information. This is a key part of the Expert Group's work programme, for which the first investigation has started.

63.   Indeed, national experts are currently working on a breakdown of the National Accounts by household groups following a common template that focuses on income, consumption (including social transfers in kind) and savings. Such a breakdown would make it possible to produce indicators (adjusted disposable income, actual consumption, saving rates, etc.) by groups of households consistent with National Accounts totals. Three criteria for classifying households groups are under consideration: household equivalent income (quintiles), main source of income and household type. The next meeting of the Expert Group in August 2012 will discuss methodological issues raised by the provisional results identified in this paper. The final conclusions of the Expert Group on the feasibility of a full integration of micro and macro data are expected to be released by mid-2013.

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Appendix 1 – List of micro sources used by country

Country	Name of the data source
AUSTRALIA	Survey of Income and Housing Household Expenditure Survey
AUSTRIA	European Union Statistics on Income and Living Conditions (EU-SILC) Household Budget Survey
CANADA	Survey of Labour and Income Dynamics (SLID) Survey of Household Spending (SHS) Survey of Financial Security (SFS)
DENMARK	Household budget survey
FRANCE	Fiscal and social income survey (ERFS) European Union Statistics on Income and Living Conditions (EU-SILC) Household Budget Survey (BDF) Health data set Housing survey Wealth Survey
GERMANY	Household Budget Survey
ISRAEL	Income Survey Houshold Expenditure survey
ITALY	European Union Statistics on Income and Living Conditions (EU-SILC) Bank of Italy survey on household income and wealth (SHIW) Istat survey on household budget (HBS)
JAPAN	The National Survey on Family Income and Expenditure
KOREA	Household Income and Expenditure Survey Farm Household Economy Survey Fishery Household Economy Survey Survey of Household Finances
MEXICO	Household Income and Expenditure National Survey (ENIGH)
NETHERLANDS	Income Panel Survey Household Budget Survey
POLAND	European Union Statistics on Income and Living Conditions (EU-SILC) Household budget survey
PORTUGAL	European Union Statistics on Income and Living Conditions (EU-SILC) Household budget survey (HBS)
SLOVENIA	European Union Statistics on Income and Living Conditions (EU-SILC) Household Budget Survey
SWEDEN	Income and taxation register (STAR) Household budget survey Income statistics/Income aggregates
SWITZERLAND	European Union Statistics on Income and Living Conditions (EU-SILC) Household Budget Survey
TURKEY	Household Budget Survey
UNITED KINGDOM	Living Costs and Food Survey (Including Redistribution of Income variables) Wealth and Assets Survey European Union Statistics on Income and Living Conditions (EU-SILC - GLF)
UNITED STATES	Annual Socio-Economic Supplement to the Current Population Survey Consumer Expenditure Survey (CEX) Statistics of Income Public Use Individual Income Tax Data (SOI)

Appendix 2 – Survey on the compilation of annual households' current accounts – focus on mixed income results

64.　　A better understanding of the availability of micro data for households as well as the sources, methods and concepts that countries use in constructing their macro estimates of the household sector is a pre-requisite for the activities of the EG DNA, and motivated the launch of a survey on the compilation of annual household accounts. The survey focuses on annual households' current accounts covering households' income, consumption (including social transfers in kind) and savings. The survey was sent in June 2011 to 42 countries belonging to the OECD, the EU27 and EFTA countries, and India as a member of the Expert Group. Overall, 39 countries responded.

65.　　The survey results confirm that there is indeed a wide range of practices across countries regarding the inclusion of unincorporated enterprises in the households sector. Across the OECD, sole proprietorships are included in most cases but practices regarding partnerships are more diverse (Graph A). In practice, varying criteria are used to determine whether the unincorporated enterprises is part of the corporation sectors or part of the household sector, although the legal status is the criterion most often applied (Table 1).

Graph A. Frequency of inclusion of unincorporated enterprises in the household sector
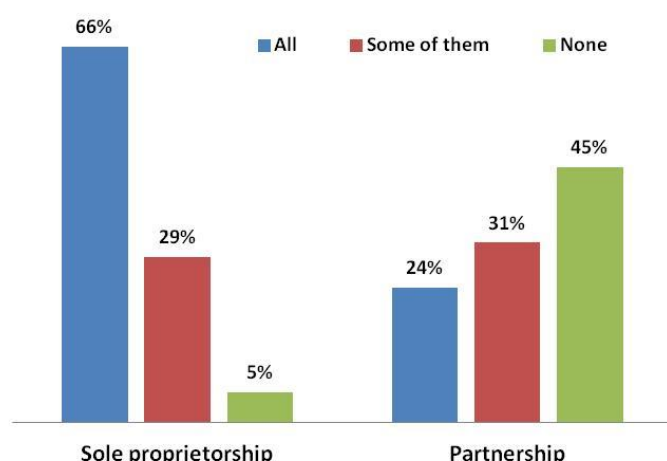
Source: EGDNA survey on the compilation of annual households' current accounts.
Scope: 36 countries including unincorporated enterprises as part of the household accounts.

Table 1 – Criteria used to differentiate between household unincorporated enterprise and quasi-corporations (% of countries using the criteria)

Information on the legal status	72%
Number of employees	22%
Monetary (e.g. turnover/output/capital) treshold	19%
Type of industry, branch	17%
Other	17%

Source: EGDNA survey on the compilation of annual households' current accounts.
Scope: 36 countries including unincorporated enterprises as part of the household accounts.

66.   The share of income of unincorporated enterprises in the households' disposable income aggregate is lower than 20% in most countries. It is, however, higher than 30% in a few countries (Table 2).

Table 2 - Mixed income as part of the household disposable income (% of countries)

Less than 10%	25%
10% to less than 20%	53%
20% to less than 30%	14%
30% or more	8%

Source: EGDNA survey on the compilation of annual households' current accounts.
Scope: 36 countries including unincorporated enterprises as part of the household accounts.