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Expert Group on Disparities in a National Accounts Framework: Results from the 2015 Exercise

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ABSTRACT / RÉSUMÉ

In 2011, an Expert Group was launched to carry out a feasibility study on the compilation of distributional measures of income, consumption and wealth across household groups consistent with national accounts data. This group developed a methodology on the basis of which first experimental results on income, consumption and savings according to income quintiles were compiled and published in 2013. In 2015, the expert group engaged in a second exercise focusing on a more recent year and taking into account a number of adjustments to the methodology used in the previous exercise. This paper describes the sources, methods and results of this second exercise.

The results of the exercise show that in general all countries are able to comply with the methodology. Furthermore, countries have micro data available for most of the national accounts items and in case of lacking data, imputations lead to comparable results. However, the results also show that in some cases gaps between the micro aggregates and the national accounts totals are quite substantial, possibly affecting the overall distributional results. Furthermore, more information is needed on how countries link data across various data sources. The experimental results show that Mexico records the highest income and consumption disparities, followed by the United States and Portugal, and that Slovenia records the lowest. The paper also shows that breakdowns into other household groups, such as age group and labour market status reveal very interesting information.

Keywords: National Accounts, Households, Distributional results
JEL Classification: C82, D31, E01, E21

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En 2011, un groupe d'experts a été lancé pour afin d'étudier la possibilité de produire des indicateurs par groupe de ménages sur la distribution du revenu, de la consommation et du patrimoine qui soient cohérents avec les données des comptes nationaux. Ce groupe a développé une méthodologie, qui fut la base des premiers résultats expérimentaux publiés en 2013 sur le revenu, la consommation et l'épargne par quintile de revenu. En 2015, le groupe a mené un deuxième exercice, en se concentrant sur une année plus récente et en apportant quelques ajustements à la méthode utilisée dans le premier exercice. Ce papier décrit les sources, les méthodes et les résultats de ce deuxième exercice.

Les résultats de cet exercice montrent que tous les pays peuvent se conformer à la méthodologie. De plus, les pays ont des données micro pour presque toutes les composantes des comptes nationaux et dans le cas de données manquantes, les imputations mènent à des résultats comparables. Néanmoins, les résultats montrent aussi que dans certains cas, les différences entre les agrégats micro et les données des comptes nationaux sont importantes, et que cela influe probablement sur les résultats de la distribution globale. En outre, de plus amples informations sont nécessaires pour comprendre comment les pays lient les données provenant des différentes sources. Les résultats expérimentaux montrent que le Mexique enregistre les plus grandes inégalités, suivi des États-Unis et du Portugal, et que la Slovénie présente les plus petites. Le papier montre aussi que d'autres ventilations, par l'âge et par le statut sur le marché du travail, peuvent révéler des informations très intéressantes.

Mots-clés : Comptes nationaux, Ménage, Résultats distributifs
Classification JEL : C82, D31, E01, E21

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I. Introduction

1. In 2011, the OECD and Eurostat launched a joint Expert Group to carry out a feasibility study on the compilation of distributional measures of income, consumption and wealth across household groups that are consistent with national accounts definitions and totals, in response to the recommendations by Stiglitz, Sen and Fitoussi (2009). As part of the Expert Group, national experts from 16 countries performed experimental calculations compiling distributional results on income, consumption and savings using detailed micro and macro information available at the national level, and following the same framework and methodology. The results of this exercise have been presented in Fesseau and Mattonetti (2013)[1].

2. The work on the compilation of distributional measures has been continued by an OECD Expert Group on Disparities in National Accounts (EG DNA), which was established in 2014. The aim of this group is to further improve the methodology and to explore methods to compile timelier estimates. In 2015, members of the Expert Group conducted a second exercise focusing on a more recent year and taking into account a number of adjustments to the methodology used in the previous exercise. The results were used to assess the robustness of the current methodology and to identify areas for further research.

3. This paper describes the results of this second exercise. It presents results for twelve countries: Australia, Austria, France, Israel, Mexico, the Netherlands, Portugal, Slovenia, Sweden, Switzerland, the United Kingdom and the United States. The paper is structured as follows. Section II explains the rationale for the project. This is followed by some background information on the template and guidelines used in the exercise in Section III. Section IV provides general information on the responses received, amongst others on the time periods for which data have been compiled and the coverage of the datasets with regard to breakdowns into household groups and the breakdowns into the income and consumptions items. Meta information on the various steps in the process to arrive at distributional results is discussed in section V. The distributional results themselves are presented in section VI.

II. Aim of compiling national accounts aligned distributional results

4. The aim of the Expert Group is to develop methodologies to produce distributional results for household income, consumption and saving consistent with national accounts concepts using micro data. There are three main reasons for developing distributional results in line with national accounts totals, in addition to distributional results already available from micro sources. A first reason is that national accounts include items that are usually not covered in micro data which may however be very relevant in analysing inequality. An example concerns social transfers in kind, i.e. goods and services provided to households by government and non-profit institutions, either free of charge or at prices that are not economically significant. As in-kind provision of services such as health and education is a direct alternative to providing households with a cash benefit with which to purchase the services, its inclusion in distributional measures leads to a more comparable and more comprehensive measure of income inequality over time and across countries. Investment income earned by insurance policy holders and imputed rents

[1] See Fesseau, M. and M. Mattonetti (2013), "Distributional Measures Across Household Groups in a National Accounts Framework: Results from an Experimental Cross-country Exercise on Household Income, Consumption and Saving", OECD Statistics Working Papers, No. 2013/04, OECD Publishing, Paris, http://dx.doi.org/10.1787/5k3wdjqr775f-en.

for owner-occupied housing are other examples of items that are included in the national accounts, but are usually not covered in micro data sources.

5. A second reason to compile distributional results within the framework of national accounts is that it provides the opportunity to get a comprehensive view of the distribution of household economic resources (income, consumption and wealth) that is consistent with economy-wide totals. Whereas micro data sources usually focus on either income, consumption or wealth, the EG DNA methodology enables the combination of these flows and stocks in a coherent way, thus also providing the opportunity to derive consistent estimates on, for example, savings rates of the various household groups. Furthermore, as results are consistent with national accounts totals, the distributional results can also be linked to relevant macro-economic indicators, such as gross domestic product and household disposable income, therewith broadening the scope for various forms of policy analysis.

6. A final point relates to the increasing challenge that statistical offices face in compiling micro data results of high quality, due to increasing pressures to reduce the response burden as well as declining response rates. Moreover, comparability of these micro results may be hampered by the use of different types of underlying data sources, institutional set ups, and compilation techniques across countries. In this respect, alignment to the national accounts totals - which are the result of a process in which various data sources are confronted and balanced, and which are compiled conform a harmonized system of concepts and definitions – provides a way to capture households and transactions that are typically underrepresented in micro data, while also improving comparability of these results over time.

7. Due to the inclusion of several items that are not captured in micro data sources and due to the alignment of the data to the national accounts totals, the distributional measures obtained via the EG DNA methodology usually differ from the ones obtained via the micro data sources. Generally speaking, the inclusion of imputed items such as social transfers in kind has the effect of lowering measures of income inequality, as the distribution of these transfers is relatively flat across quintiles. On the other hand, the alignment of available micro data to the relevant national accounts totals tends to increase income inequality, as the largest adjustments for the gaps between micro data and national accounts most often concern items that are concentrated in higher income groups (such as property income). The overall impact on the distributional results will in the end depend on the size of the various adjustments. Section VI includes a brief comparison of distributional measures on the basis of micro data and national accounts aligned results comparing data for the most recent years in the exercise.

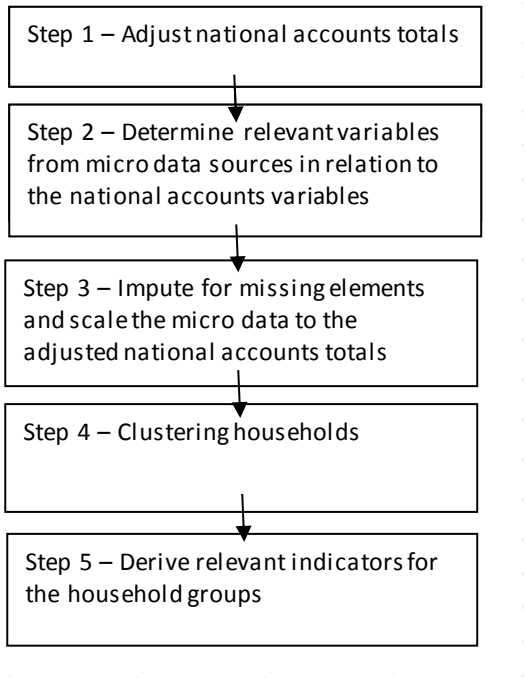
III. Guidelines and template

8. In September 2014, the OECD Secretariat sent out a request to the member states of the EG DNA to provide distributional data for a more recent year. The request was accompanied by a template and guidelines, in order to arrive at comparable results. The guidelines and the template were, except for a few modifications, in line with the earlier recommendations of the Expert Group. The main modifications related to the changeover to the 2008 System of National Accounts (SNA), the concept of income to be used for the income quintile definition (the 2008 SNA definition of disposable income per consumption unit), and the collection of supplementary socio-demographic information. This section provides a short overview of the methodology and the template used. More detailed information on the methodology for compiling distributional information consistent with national accounts is provided in section IV.

9. The procedure to arrive at distributional estimates contains five steps, starting with the adjustment of national accounts aggregates that is required to arrive at a better alignment with the micro data statistics. Population that is not part of domestic private households is excluded in this first step. This

primarily concerns non-profit institutions serving households (NPISH), people living in non-private dwellings, and final consumption expenditure by non-residents[2]. The second step consists in lining up the relevant components from the micro data sources to the income and consumption variables from national accounts. These micro data provide the underlying information to distribute income and consumption across households. Multiple data sources may be used in order to find the best possible matches. In the third step, the micro data totals for various income and consumption items are scaled to the 'adjusted' national accounts totals, to make sure that the distributional results are in line with the macro aggregates. Furthermore, imputations are made on the distribution of income and consumption items that fall outside the scope of micro data. This may relate to items that are specific to the system of national accounts (imputed items such as FISIM and investment income disbursements), but also to items that are likely to be under-reported or completely missing from the micro data (such as income from the underground economy and illegal activities). In the fourth step, households are clustered into household groups, for instance on the basis of their disposable income (i.e. after alignment to the adjusted national accounts totals in step 3) or on the basis of socio-demographic characteristics, such as main source of income or household type. In the final step, relevant indicators for the description of distribution of income, consumption and savings are derived, such as disparity ratios that show the degree of inequality in a country. Figure 1 presents an overview of this step-by-step procedure.

Figure 1. A step-by-step approach for the estimation of distributional information



10. The starting point for the above procedure is the list with all national accounts components related to income, consumption and savings. Annex 1 provides an overview of all items distinguished. In the exercise, a template was used to collect the relevant information. It included separate sheets for the

[2] Non-profit institutions serving households (NPISH) may be included within the broader household sector for some countries; the income and consumption of people living in non-private dwellings are generally not covered by micro data sources; and expenditures of non-resident households on the national territory may be included in the national accounts data on household final consumption expenditures.

income and consumption components, and it also requested information on the 'original' national accounts totals, the 'adjusted' national accounts totals (after conducting step 1), the total values according to the micro data sources, and a breakdown of the adjusted national accounts totals into quintiles. This information enabled the Secretariat to not only look at the distributional results, but to also analyse some of the intermediary steps. Table 1 presents a simplified overview of this template. In addition to a breakdown into income quintiles, the template also provided the opportunity to include breakdowns by household type and main source of income on a voluntary basis.

Table 1. Simplified template used by the members of the Expert Group

Transactions		SNA Households aggregates		Micro Source	Adjusted household aggregates broken down by quintile				
		Original	Adjusted		Q1	Q2	Q3	Q4	Q5
Transaction Codes	1st level								
	2nd level								
	3rd level								
	1st level								
	…								
	1st level								
	2nd level								
	3rd level								

11. In addition to the above mentioned sheets for the distributional data, the template contained a worksheet for socio-demographic information on the number of consumption units[3], the number of households (by household type and housing status), and the number of persons (by age group, gender, labour market status, and highest level of education achieved) per quintile. This information was needed to compile results on a household or per consumption unit basis, and also provides background information on the composition of the various quintiles. Furthermore, the template contained a metadata sheet for more general information on the exercise, providing more insights in the assumptions applied by countries and any deviations from the guidelines.

IV. General results

12. This section describes the general results from the 2015 exercise. It provides an overview of the country responses, the time periods covered, and the coverage with regard to the breakdowns requested.

A. Number of responses

13. The Secretariat sent out a request to the member states of the EG DNA in September 2014 to provide distributional data on the basis of the updated guidelines and template by March 2015. The request was addressed to 20 member states of which eleven provided the requested information: Austria, France, Israel, Japan, Mexico, the Netherlands, Portugal, Slovenia, Switzerland, the United Kingdom and the United States. Australia did not participate in the exercise, but as the Australian Bureau of Statistics (ABS) publishes distributional results aligned with national accounts data on their website[4], results for Australia

[3] The number of consumption units is used to correct for differences in needs between households of different size in order to arrive at comparable results. See for more information Subsection E under Section V.

[4] For more information, see http://www.abs.gov.au/ausstats/abs@.nsf/mf/5204.0.55.011?OpenDocument.

could also be included in the paper (although some of the process information that was requested in the template could not be obtained from the website).

14. After discussion of the results at a meeting of the expert group in May 2015, countries were given the opportunity to make further improvements to the data and to submit revised results by Mid-September. That led to updates of datasets and in some cases also to a delivery of additional breakdowns. It also led to the submission of data by an additional country, Sweden. So, in the end data were available for thirteen countries, of which twelve are included in this paper. For Japan, the data are still under review and are not included in this paper.

B. Data received

15. With regard to the datasets that were submitted, information was received for various years. Table 2 presents the time periods for which data have been provided by countries under the new as well as under the old exercise.

Table 2. Time periods for which data have been provided, according to the new and old exercise

Country	Reference years	Old exercise
Australia[1] (AUS)	2003, 2005, 2007, 2009, 2011	2009
Austria (AUT)	2012[2]	-
France (FRA)	2003, 2011	2003
Germany (DEU)	-	2008
Israel (ISR)	2012	2009
Italy (ITA)	-	2008
Japan (JPN)	2009[3]	2009
Korea (KOR)	-	2009
Mexico (MEX)	2008, 2010, 2012	2008, 2010
The Netherlands (NLD)	2008, 2011	2008
New Zealand (NZL)	-	2007
Portugal (PRT)	2006, 2011	2006, 2009
Slovenia (SVN)	2012	2008
Sweden (SWE)	2012	2008
Switzerland (CHE)	2008, 2011	2008
United Kingdom (GBR) [4]	2008, 2012, 2013[5]	-
United States (USA)	2010, 2012	2010

1. The accounting years run from July t to June t+1.
2. Income components relate to 2012, consumption components to 2009.
3. Data are still under review and are not included in the results.
4. NPISHs are included in the data.
5. Data for 2012 have been reported for the second exercise and are used in this paper. In the meantime, also data for 2008 and 2013 have become available.

16. Seven countries provided data for 2012 and five for 2011 as the most recent year. For Japan, the most recent data refer to 2009. Eight countries also updated the information that was compiled during the previous exercise, informing the Secretariat that the data for the new exercise were not comparable with the results from the previous exercise, mainly due to changes in the contents of the aggregates, changeover to the 2008 SNA, and improvements in the methodology. Only Israel, Slovenia and Sweden did not re-

transmit data for the previous exercise, explaining in their metadata that the data for the more recent year were comparable with the results of the old exercise. However, due to differences in the lay out and in the data structure used in the previous exercise, these data could not be included in the analyses in this document.

C. Coverage of reported data

Quintile breakdowns for various transactions

17. Looking at the data that have been submitted, the coverage of the breakdown into income quintiles for the various transactions is good (see Annex 2 for a detailed overview of the coverage). Almost all countries were able to provide data for the main income and consumption components. Only for Switzerland data were lacking for some of the main income items: *Investment income disbursements* (D44R), *Other current transfers (net)* (D7R-D7P) and *Social transfers in kind* (D63). This was due to lack of micro data on these items; as a consequence, Switzerland was also not able to provide data for balancing items *Primary income* (B5), *Disposable income* (B6) and *Adjusted disposable income* (B7). This has been solved by imputing distributional results for the missing items in such a way that the inclusion did not have an impact on the commonly used distributional indicators[5]. These imputations by the Secretariat have to be borne in mind when analysing the results.

18. On the consumption side, all countries were able to provide data for the main items. However, some countries expressed problems in providing aggregated data for *Resident household expenditure abroad* (P33) and in excluding consumption expenditure by non-residents at the level of underlying components of *Final domestic consumption expenditure* (P31DC), as was requested by the guidelines[6]. Some countries did not adjust for the consumption expenditure by non-residents (P34) at the detailed level, but combined this correction at the aggregated level with the adjustment for resident household expenditure abroad (P33). In the case of Australia, France and Switzerland, expenditure of residents abroad was already included at the detailed level, so that an aggregate correction (P33) was no longer needed. As a consequence of these differences, only results for *Final consumption expenditure* (P31NC) are fully comparable across countries, while results for the underlying consumption components are not.

19. Whereas the coverage of the distributional data transmitted was good for the more aggregated income and consumption items, the results for the detailed components are more mixed. Looking at the income components, the coverage of the reported data turns out to be quite good for some detailed items, such as for *Wages and salaries* (D11R), *Employers' actual social contributions* (D121R), *Interest (not adjusted for FISIM) received* and *paid* (D41'R and D41'P), *Employers' actual social contributions* (D611P), *Households' social contributions (actual and supplements)* (D613P_D614P) and *Net miscellaneous current transfers* (D75N). For other items, a number of countries had difficulties in providing distributional data. This was especially the case for the optional items *Investment Income Disbursements* (D442) and *Miscellaneous current transfer between resident households* (part of D75). For consumption items, most countries were able to provide results at the most detailed level. The Netherlands

[5] Depending on the missing item, the distribution of one of the balancing items (Primary income (B5), Disposable income (B6) or Adjusted disposable income (B7)) excluding the missing item was used as a proxy for the distribution of the missing item.

[6] In the template each detailed consumption item should contain the consumption expenditure of resident households in the domestic economy. This means that the consumption expenditure of non-residents, which is often still included in household consumption in the supply-and-use tables, should be excluded at the detailed level, as well as the consumption expenditure of resident households abroad. The latter is added at the end of the template at an aggregated level to arrive at final consumption expenditure of resident households.

were the only country that only provided consumption results at the aggregated levels. Furthermore, some countries were not able to provide data for some specific items (Australia and the United States for the breakdown of *Health* (CP060); and Australia, Slovenia, Sweden and the United States for some of the underlying items of *Housing, water, electricity, gas and other fuels* (CP040)).

Optional breakdowns

20. The template focused on distributional information by income quintile, but also contained an optional part to provide distributional breakdowns by 'household type' and 'main source of income'. This information may provide insights in the distributional effects for different groupings of households and can be helpful in analysing intermediate results. Of the countries that participated in the exercise, France, Israel, Mexico, Slovenia and Sweden provided data for these optional breakdowns. In addition, the Australian Bureau of Statistics disseminates this kind of information on its website. The other six countries did not provide information on the optional breakdowns, although they acknowledged that these breakdowns provide very relevant information and should remain part of future data collections.

V. Process information

21. This section provides more detailed information on the process of how countries arrived at the distributional results. It follows the various steps presented in section III.

A. Step 1: Adjustment of national accounts totals

22. As the distributional analysis concerns private households only, national accounts totals need to be adjusted for components that do not relate to private households. It should for instance exclude *Non-Profit Institutions Serving Households* (NPISHs), if the latter are reported together with households. Further amendments may be required to exclude people living in non-private dwellings (retirement homes, prisons, etc.) and - at the detailed level - the consumption expenditures of non-resident households on the national territory. As both the original national accounts totals and the adjusted national accounts totals were requested in the template, *national accounts adjustment coefficients* could be calculated.

23. Most countries provided data for the original and adjusted national accounts totals. Only for the United Kingdom this information was lacking, and for Australia information on the original national accounts estimates used in the exercise could not be derived from their website. For the countries that did provide information, Israel, the Netherlands and Portugal reported the same figures for the original and the adjusted national accounts estimates for all items. For Mexico this was the case for most of the items, except for a few consumption items. Slovenia reported the same values for all of the income items with the exception of *Social benefits other than STiK* (D62R). For countries reporting the same data for the original and the adjusted national accounts totals, NPISHs are already separated from the household sector in the national accounts and most of them also preferred to keep institutional households included in the distributional results. For Portugal and the Netherlands (the latter only for income items), this is due to the fact that institutional households are covered by the survey results, whereas the other countries explained that they lacked data to properly adjust for transactions of NPISHs. Some countries also expressed a preference to keep the distributional results aligned with the published national accounts data to better explain these results to their users. Although the inclusion of institutional households departs from the OECD guidelines, distributional results would still be more or less comparable to those of other countries, if the structure of income and consumption of institutional households does not deviate significantly from that of private households.

24. As mentioned before, not all countries were able to comply with the request to apply adjustments at the level of the detailed consumption items for non-resident households' expenditures on the territory.

The Netherlands and the United Kingdom did not apply this adjustment at the detailed level because of lack of data. They solved the issue by including this adjustment at the aggregated level. Furthermore, some countries not only applied the adjustment for consumption expenditure by non-residents on the more detailed level, but did the same for the adjustment for consumption expenditure by residents abroad. In these cases this expenditure was already included in the detailed consumption components, as a consequence of which no adjustment was needed anymore at the aggregated level. This was the case for Australia and Switzerland.

National accounts adjustment coefficient

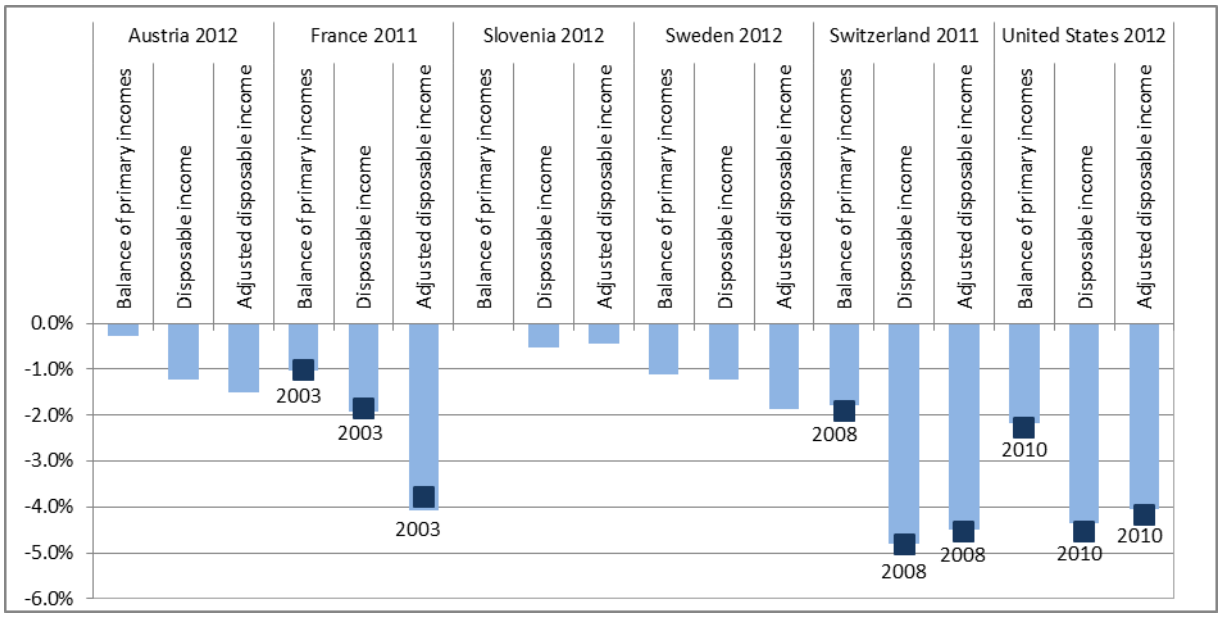
25. For those countries reporting different figures for the original and the adjusted national accounts totals (i.e. Austria, France, Mexico (only for a couple of consumption items), Slovenia (for consumption items and *Social benefits other than STiK*), Sweden, Switzerland, and the United States), a coefficient was calculated to measure the impact of the adjustment. This national account adjustment coefficient is computed as the difference between the adjusted and the original total as percentage of the latter. Figure 2 shows country results for the balancing items *Balance of primary incomes* (B5), *Disposable income* (B6), and *Adjusted disposable income* (B7).

26. Looking at the coefficients for the most recent year, Switzerland and the United States record the highest numbers, with adjustments for *Disposable income* (B6) and *Adjusted disposable income* (B7) of more than 4.0%. France also reports a relatively large adjustment for *Adjusted disposable income*, especially in comparison to *Disposable income* (B6), which relates to the relatively large adjustment for the item *Social transfers in kind* (D63). Austria, Slovenia and Sweden, on the other hand, record relatively low adjustments for all three items.

27. When comparing the results of the most recent year with a previous year, adjustment coefficients show to be relatively stable over time. The coefficients for France, Switzerland and the United States are very close for the years presented in the figure below. This may be due to a fixed adjustment rate that is being applied for the relevant years, but may also point to stability in the underlying data.

Figure 2. Impact of the adjustment to national accounts totals on income balancing items

Difference between adjusted and original national accounts estimate with regard to the main balancing items as percentage of the original estimate; recent year and second most recent year.



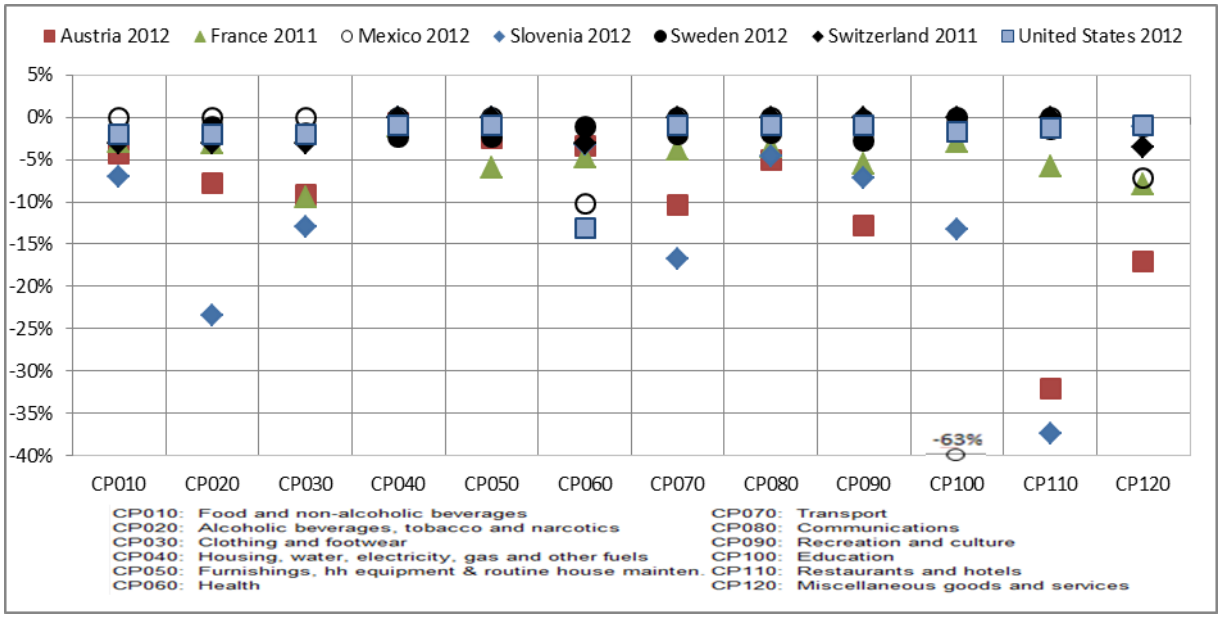
28. The same analysis was conducted for consumption expenditure components. Figure 3 shows the impact of the adjustments[7] for the main components for Austria, France, Mexico, Slovenia, Sweden, Switzerland and United States. Results show a quite diverse pattern across components, both within and between countries. Mexico records national accounts adjustment coefficients equal to zero for almost all consumption components (as was the case for the income components), indicating that the same figures were reported for both the original and the adjusted national accounts totals, with the exception of *Maintenance and repair of dwellings* (CP043), *Health* (CP060), *Recreation and culture* (CP090), *Education* (CP100) and *Miscellaneous good and services* (CP110). Especially for *Education* the coefficient is substantial. When looking at the other countries, France, Sweden, Switzerland and the United States record relatively small adjustments, with slightly higher values for *Clothing and footwear* (CP030) and *Miscellaneous goods and services* (CP120) for France, and *Health* (CP060) for the United States. Austria and Slovenia show larger adjustments than the other countries, with a relatively large adjustment for *Restaurants and hotels* (CP110) in both countries. The latter is most probably related to adjusting for consumption expenditure by non-residents.

29. Annex 5.1 presents the coefficients for consumption items for multiple years for France, Mexico, Switzerland and the United States. This analysis shows that the coefficients are relatively stable over time. The only exceptions are the items *Restaurants and hotels* (CP110) for France and *Education* (CP100) for Mexico.

[7] For the expenditure components the adjustment generally consists of an adjustment for NPISHs, expenditures of non-resident households on the territory, and population not covered by micro sources and does not include the adjustment for expenditures of resident households abroad, as this is a separate item in the exercise. However, for some countries it may differ because of deviations from the standard methodology.

Figure 3. Impact of the adjustment to national accounts totals on consumption expenditure components

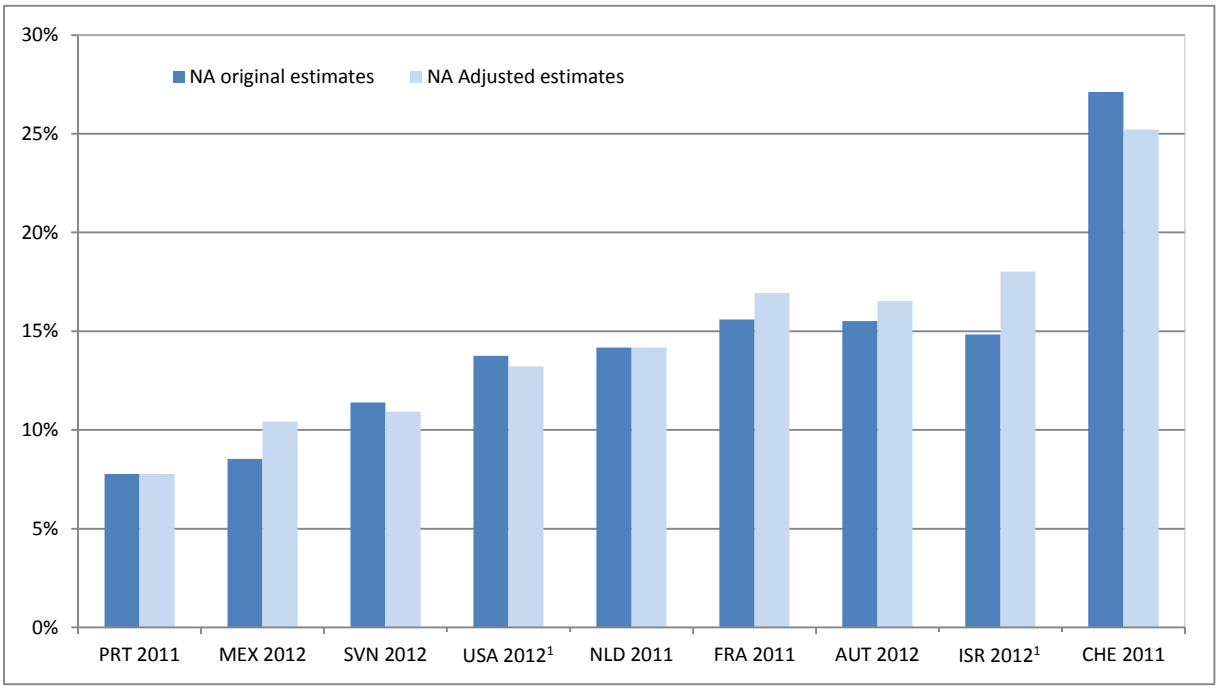
Difference between adjusted and original national accounts estimate as a percentage of the original estimate.



30. Figure 4 provides an overview of the impact of the adjustment of the national accounts totals on the savings ratio, i.e. savings as a percentage of household disposable income. For all countries presented in the graph the impact is relatively small. This also supports the assumption that results for the countries that did not exclude institutional households are by and large comparable with the results for the countries that did, although one has to bear in mind that the impact of the adjustments may be quite significant at more detailed levels, thus impacting on the alignment of micro data to the national accounts totals and potentially the classification of households into quintiles.

Figure 4. Savings ratio for original and adjusted national accounts estimates

Savings ratio as a percentage of household disposable income.



1. Savings for Israel and the United States do not include the adjustment for the change in pension entitlements (D8).

B. Step 2: Lining up the relevant micro data variables to national accounts variables

31. The second step in the procedure is to line up the relevant components from the micro data sources to the national account variables for income and consumption. Ideally, for all national accounts items, corresponding micro variables can be found. However, as some items are specific to the System of National Accounts (such as *FISIM* and *Investment income attributed to insurance policy holders*), full coverage is not possible. To gain more insights in the coverage, Table 3 presents an overview of the data coverage for the main items used in the exercise (Annex 3 provides an overview for all income and consumption items)[8]. It shows that most income and consumption items have a counterpart in micro data sources. Coverage only turns out to be poor for *Investment income disbursements* (D44R) and *Other Social Transfers in Kind (STiK)* (D63R-Other). As a consequence of the lack of data on *Investment income disbursements* (combined with lack of data on some of the other property income components), coverage is also low for *Net property income received* (D4R-D4P-FISIM). For consumption items coverage is better than for income components. Most countries have micro data available for all items, with the exception of Sweden for *Education* (CP100) and Switzerland for *Miscellaneous goods and services* (CP120).

[8] It has to be borne in mind that this only provides insight for which national accounts items micro data is available. It does not provide insight in the closeness of the data to the national accounts totals. This is discussed in section D.

Table 3. Micro data totals provided by countries for the main income and consumption items

Income

		Micro information										
		AUS	AUT	CHE	FRA	GBR	ISR	MEX	NLD	PRT	SVN	SWE	USA
B2	Operating surplus		X	X	X	X	X	X	X	X	X		X
B3	Mixed income		X	X	X	X		X	X	X	X	X	X
D1R	Compensation of employees		X	X	X	X	X	X	X	X	X	X	X
D4R-D4P-FISIM	Net property income received				X			X		X			X
D41'R	Interest (not adjusted for FISIM)		X	X[1]	X	X	X	X	X		X	X	X
D42R	Distributed income of corporations			X[1]	X	X		X	X		X	X	X
D44R	Investment income disbursements				X			X					X
-D41'P	Interest (not adjusted for FISIM)		X	X	X	X		X	X	X			X
B5	**Balance of primary incomes**				X			X		X			X
-D5P	Current taxes on income and wealth		X	X	X	X	X	X	X	X	X	X	X
-D61P	Net social contributions		X	X	X	X		X	X	X	X		X
D62R	Social benefits other than STiK		X	X	X	X	X	X	X	X	X	X	X
D7R-D7P	Other current transfers (net)				X			X					X
D72R-D71P	Net non-life insurance claims minus premiums		X		X	X		X					X
D75R	Net miscellaneous current transfers received - paid			X	X			X	X	X			X
B6	**Disposable income**				X			X		X			X
D63R	STiK				X	X	X	X		X		X	X
D63A	Education				X	X	X	X				X	X
D63B	Health				X	X	X	X				X	X
D63C	Other				X	X						X	X
B7	**Adjusted disposable income**				X			X		X			X

1. Switzerland reports combined results for Interest received (not adjusted for FISIM) (D41'R) and Distributed income of corporations (D42R).

Consumption

		Micro information										
		AUS	AUT	CHE	FRA	GBR	ISR	MEX	NLD	PRT	SVN	SWE	USA
CP010	Food and non-alcoholic beverages		X	X	X	X	X	X	X	X	X	X	X
CP020	Alcoholic beverages, tobacco and narcotics		X	X	X	X	X	X	X	X	X	X	X
CP030	Clothing and footwear		X	X	X	X	X	X	X	X	X	X	X
CP040	Housing, water, electricity, gas and other fuels		X	X	X	X	X	X	X	X	X	X	X
CP050	Furnishings, households equipment and routine maintenance of the house		X	X	X	X	X	X	X	X	X	X	X
CP060	Health		X	X	X	X	X	X	X	X	X	X	X
CP070	Transport		X	X	X	X	X	X	X	X	X	X	X
CP080	Communications		X	X	X	X	X	X	X	X	X	X	X
CP090	Recreation and culture		X	X	X	X	X	X	X	X	X	X	X
CP100	Education		X	X	X	X	X	X	X	X	X		X
CP110	Restaurants and hotels		X	X	X	X	X	X	X	X	X	X	X
CP120	Miscellaneous goods and services		X		X	X	X	X	X	X	X	X	X
P31DC	Final domestic consumption expenditure		X				X			X	X		X
P33	Final consumption expenditure of resident households abroad		X				X			X	X		X
P31NC	Final national consumption expenditure		X	X	X	X	X	X	X	X	X	X	X
D63R	STiK				X	X	X	X		X			X
P4	Actual final consumption				X	X	X	X		X			X

C. Step 3a: Imputations for missing information at the micro level

32. In the case of components for which no distributional information is available in micro sources, national experts had to make imputations to arrive at distributional results. One of the main items for which imputations are needed is *Social Transfers in Kind* (STiKs). As direct information for the distribution of this item is usually not available in micro data sources, estimates are often based on secondary information. This sub-section presents the imputation methods used in the various countries as well as the distributional results on STIKs.

Distribution of Social Transfers in Kind (STiK)

33. The guidelines attached to the template presented the approaches used to allocate STIKs during the first exercise as guidance for the current one. For *STiKs on health*, two approaches were indicated: (i) the actual value approach according to which the actual receipts of health benefits are allocated to the various household groups, and (ii) the insurance value approach according to which an insurance premium equivalence is allocated to the households. Similarly to health expenditures, an actual value approach or a modelled approach using socio-demographic information can be used to allocate spending on education to individuals and households.

34. Nine of twelve countries reported data for STiKs by quintile (i.e. Australia, Austria, France, Israel, Mexico, the Netherlands, Slovenia, Sweden and the United States), some of which provided additional information on the methodology used for the allocation. Most countries use the insurance approach for health care. An exception is Austria which assigns the same monetary value to every individual entitled to the compulsory health insurance scheme (which in Austria is more or less everyone).

35. The distribution of STiKs on health across income quintiles (see Table 4 for the distributional results for the most recent and the previous year) varies across countries. For Australia and Mexico the concentration is clearly highest in the lower income groups (Q1 and Q2). For Austria, France, Israel, Slovenia and the United States *STiKs on health* is distributed almost equally across quintiles, with a slightly higher concentration in the higher income quintiles in France and in the lower income quintiles in Slovenia. In Austria and the United States a relatively larger concentration can be observed in the middle income quintiles, for both the latest available year and the previous one. Finally, in the Netherlands and in Sweden, the distribution is almost equal across quintiles, with the exception of the lower income quintile (Q1) that records the lowest concentration in both countries.

Table 4. Distribution of STiKs on health across income quintiles (in percentages of total)

Country	Q1		Q2		Q3		Q4		Q5	
Australia (2011|2003)	21.4	*21.1*	24.2	*25.2*	20.2	*20.5*	18.0	*17.6*	16.1	*15.5*
Austria (2012|…)	18.7	…	20.6	…	20.8	…	20.7	…	19.3	…
France (2011|2003)	18.9	*18.9*	19.2	*19.2*	19.9	*19.9*	20.2	*20.2*	21.8	*21.8*
Israel (2012|…)	20.9	…	19.9	…	19.6	…	20.0	…	19.6	…
Mexico (2012|2008)	24.8	*24.0*	22.3	*21.5*	20.2	*20.6*	18.3	*19.0*	14.4	*14.9*
Netherlands (2011|2008)	15.3	*16.3*	22.2	*21.8*	20.6	*20.4*	20.8	*20.5*	21.0	*20.9*
Slovenia (2012|…)	21.8	…	21.1	…	19.5	…	19.1	…	18.5	…
Sweden (2012|…)	14.7	…	22.0	…	21.0	…	20.8	…	21.5	…
United States (2012|2010)	17.8	*18.4*	20.7	*21.5*	21.7	*21.2*	20.3	*19.7*	19.5	*19.2*

36. When looking at *STiKs on health* as percentage of disposable income (B6), Table 5 shows that for all countries it is decreasing along the income quintiles. This implies that the inclusion of STiKs on health has a lowering effect on inequality. For the first quintile *STiKs on health* vary from 18.2% to 27.7% of disposable income in all countries except the United States[9], whereas this share ranges between 0.7% and 6.7% for the fifth quintile. In terms of share of total disposable income, STiKs on health are around 10% in six countries (i.e. Australia, Austria, France, the Netherlands, Slovenia and Sweden). The Netherlands reports the highest ratio (13.8%) whereas Israel, Mexico and the United States record the lowest (respectively 6.8%, 3.1% and 1.3%). For the United States this is mainly due to the fact that part of the government provided health care is recorded as *social benefits other than social transfers in kind* (D62). This recording also accounts for a relatively large percentage of private consumption of health services (CP060) in the United States in comparison with other countries (see also Figure 18 in section V).

Table 5. STiKs on health as a percentage of disposable income across income quintiles

Country	Q1		Q2		Q3		Q4		Q5		Total	
Australia (2011|2003)	25.4	*25.2*	17.3	*18.5*	10.6	*11.1*	7.2	*7.2*	3.8	*3.9*	9.2	*9.6*
Austria (2012|…)	23.8	…	15.7	…	12.6	…	10.0	…	5.3	…	10.6	…
France (2011|2003)	20.4	*21.5*	14.0	*14.4*	11.4	*11.6*	9.1	*9.2*	5.9	*5.3*	10.1	*9.8*
Israel (2012|…)	21.4	…	13.4	…	9.2	…	5.9	…	2.9	…	6.8	…
Mexico (2012|2008)	18.2	*16.0*	9.5	*8.1*	6.1	*5.0*	3.3	*3.1*	0.7	*0.6*	3.1	*2.6*
Netherlands (2011|2008)	26.9	*27.8*	23.4	*21.0*	16.5	*15.0*	12.6	*11.5*	7.4	*6.3*	13.8	*12.4*
Slovenia (2012|…)	21.1	…	13.1	…	10.0	…	7.9	…	4.9	…	9.3	…
Sweden (2012|…)	27.7	…	25.1	…	14.2	…	10.8	…	6.7	…	12.5	…
United States (2012|2010)	4.3	*4.1*	2.7	*2.7*	2.0	*1.9*	1.2	*1.2*	0.5	*0.6*	1.3	*1.3*

37. The distribution of *STiKs on education*, as presented in Table 6, shows that it is mainly concentrated in the lowest income quintiles (Q1 and Q2) in five countries (i.e. Australia, Austria, France, Israel, and the United States). On the contrary, in Sweden the results show an increasing share along the income quintiles, with a peak in the fourth quintile. In Mexico and in Slovenia *STiKs on education* are almost uniformly distributed over the five income quintiles, similarly to what can be observed for the Netherlands (with the exception of the second quintile, for which the lowest concentration was recorded). These results apply to both the latest as the earlier years.

[9] For the United States STiKs on health in this exercise do not include government provided health care (Medicare and Medicaid) which are recorded as social benefits. STiKs on health consists of the overhead and administrative costs of administering this government provided health care, plus government consumption expenditures of Federal health agencies that conduct research such as the Centers of Disease Control (CDC) and National Institutes for Health (NIH). As a result, STiKs on health are significantly lower than in other countries and in comparison with the previous exercise.

Table 6. Distribution of STiKs on education across income quintiles (in percentages of total)

Country	Q1		Q2		Q3		Q4		Q5	
Australia (2011|2003)	24.0	*22.9*	21.4	*21.8*	23.5	*23.0*	18.0	*19.4*	13.1	*12.9*
Austria (2012|…)	23.3	…	23.8	…	21.6	…	18.1	…	13.2	…
France (2011|2003)	28.9	*28.0*	19.9	*20.3*	17.9	*18.5*	16.8	*17.9*	16.4	*15.4*
Israel (2012|…)	32.2	…	21.8	…	17.8	…	16.3	…	11.9	…
Mexico (2012|2008)	20.1	*17.5*	20.0	*21.0*	19.2	*18.9*	21.3	*20.1*	19.3	*22.5*
Netherlands (2011|2008)	21.0	*19.9*	16.7	*17.7*	20.6	*21.3*	21.9	*22.0*	19.9	*19.1*
Slovenia (2012|…)	20.0	…	20.1	…	21.2	…	19.7	…	19.1	…
Sweden (2012|…)	11.7	…	13.3	…	22.3	…	28.1	…	24.6	…
United States (2012|2010)	25.4	*24.1*	21.3	*21.1*	19.2	*19.8*	18.8	*19.8*	15.3	*15.2*

38. Finally, as far as other types of STiKs are concerned, the distribution across income quintiles shows a quite diversified picture (Table 7). Australia, Austria, Israel, the Netherlands and Sweden record a higher concentration in the lower income quintiles, with sharp peaks in Australia and Sweden for respectively the first and the second quintile. Austria, the Netherlands and Israel on the other hand show smaller gaps between the lowest and the highest income quintiles. Mexico, Slovenia and the United States have a relatively flat distribution across quintiles, as does France with the exception of the first quintile for which a relatively high share is recorded. It has to be noted that, in comparing these country results, one should take into account that the category of *STiKs other than health and education* can be very heterogeneous. Furthermore, data coverage for the various underlying items may be very diverse. In terms of deeper analysis, a more detailed breakdown of these other STiKs would provide additional insights in how to interpret these results and the differences between countries.

Table 7. Distribution of other STiKs across income quintiles (in percentages of total)

Country	Q1		Q2		Q3		Q4		Q5	
Australia (2011|2003)	37.0	*38.1*	29.4	*30.0*	17.9	*18.8*	10.8	*10.0*	4.9	*3.2*
Austria (2012|…)	24.8	…	20.9	…	20.1	…	16.8	…	17.4	…
France (2011|2003)	27.3	*29.9*	17.9	*18.5*	16.5	*16.5*	18.2	*17.1*	20.1	*18.0*
Israel (2012|…)	26.9	…	20.9	…	18.7	…	18.0	…	15.5	…
Mexico (2012|2008)	20.1	*17.5*	20.0	*21.0*	19.2	*18.9*	21.3	*20.1*	19.3	*22.5*
Netherlands (2011|2008)	20.6	*21.9*	25.0	*24.0*	19.4	*19.1*	18.2	*18.0*	16.8	*17.0*
Slovenia (2012|…)	19.9	…	20.2	…	19.8	…	20.0	…	20.1	…
Sweden (2012|…)	24.2	…	37.5	…	16.2	…	11.2	…	10.8	…
United States (2012|2010)	20.3	*19.8*	19.7	*19.8*	20.1	*20.2*	20.5	*20.7*	19.5	*19.4*

D. Step 3b: Scale the micro data to the adjusted national accounts totals

39. In order to arrive at comparable results for countries, the micro data should be scaled to match the adjusted national accounts totals. The guidelines included four methods to align the micro data with these totals. The first method (method A) implies a simple calibration, i.e. applying the same adjustment coefficient (macro total/micro total) to all households. This method is recommended when the micro totals are closely aligned to the adjusted national accounts totals, and the impact of the scaling is only small. However, when no micro data are available or the gap between the micro aggregate and the adjusted

national accounts total is very large, it may be useful to see whether part of this gap can be attributed to specific households or groups of households, before applying an adjustment coefficient[10].

40. If imputations are required due to lack of reliable data, three methods are recommended, all of them making use of indirect information. The first method (method B) proxies the missing information by using the distribution of a different income or consumption component. The second method (method C) imputes missing distributional information according to exogenous data (e.g. socio-demographic information) available at the individual or at the household level. If no information is available, a third method can be used (method D), in which the imputations are made in such a way that the inclusion or exclusion of the component does not affect the distributional results of the main indicators[11].

41. Table 8 presents the number of times that each method has been used in the exercise for each of the income and consumption components[12]. It turns out that in most cases method A is applied, followed by method C. No information is currently available on the type of exogenous data that countries use in cases where method C is applied. It would be interesting to investigate this further, as it may help other countries that currently lack data for some of these items. In case when no relevant exogenous data is available, method B (especially for income components) seems to be preferred to method D. The latter method is only applied in six cases, whereas method B is applied in 20 cases.

[10] For more information on how to deal with gaps between micro and macro data, see Zwijnenburg (2016), "Further enhancing the work on household distributional data – techniques for bridging gaps between micro and macro results and nowcasting methodologies for compiling more timely results", IARIW-paper.

[11] The distribution of one of the balancing items (Balance of primary incomes (B5), Disposable income (B6), Adjusted disposable income (B7), Final consumption expenditure of resident households (P3) or Actual final consumption (P4)) is used as a proxy, so that the overall distribution is not seriously altered by the imputations.

[12] As not all countries provided distributional results for all of the components (and not all countries specified the method used), the numbers do not always add up to 11.

Table 8. Number of times method A, B, C or D were used for each item*

Income

Code	Name	A	B	C	D
B2	Operating surplus	6	1	1	
B3	Mixed income	9			
D1R	Compensation of employees	9	1		
D41'R	Interest (not adjusted for FISIM)	8	1		
D42R	Distributed income of corporations	7	1	1	
D44R	Investment income disbursements	1	3		
-D41'P	Interest (not adjusted for FISIM)	9	1		
-D5P	Current taxes on income and wealth	10			
-D61P	Net social contributions	2	1		
D62R	Social benefits other than STiK	10			
D72R-D71P	Net non-life insurance claims minus premiums	1	2	1	
+D63A	Social transfers in kind - Education	3	1	4	
+D63B	Social transfers in kind - Health	3		5	
+D63C	Social transfers in kind - Other	1	2	5	

Consumption

Code	Name	A	B	C	D
CP010	Food and non-alcoholic beverages	10			
CP020	Alcoholic beverages, tobacco and narcotics	9			1
CP030	Clothing and footwear	10			
CP040	Housing, water, electricity, gas and other fuels	9			
CP050	Furnishings, households equipment and routine maintenance of the house	10			
CP060	Health	9		1	
CP070	Transport	8			
CP080	Communications	10			
CP090	Recreation and culture	10			
CP100	Education	10			
CP110	Restaurants and hotels	10			
CP120	Miscellaneous goods and services	7	1	1	
P33	Final consumption expenditure of resident households abroad	3	1	1	2

*An overview of all items is presented in Annex 4.

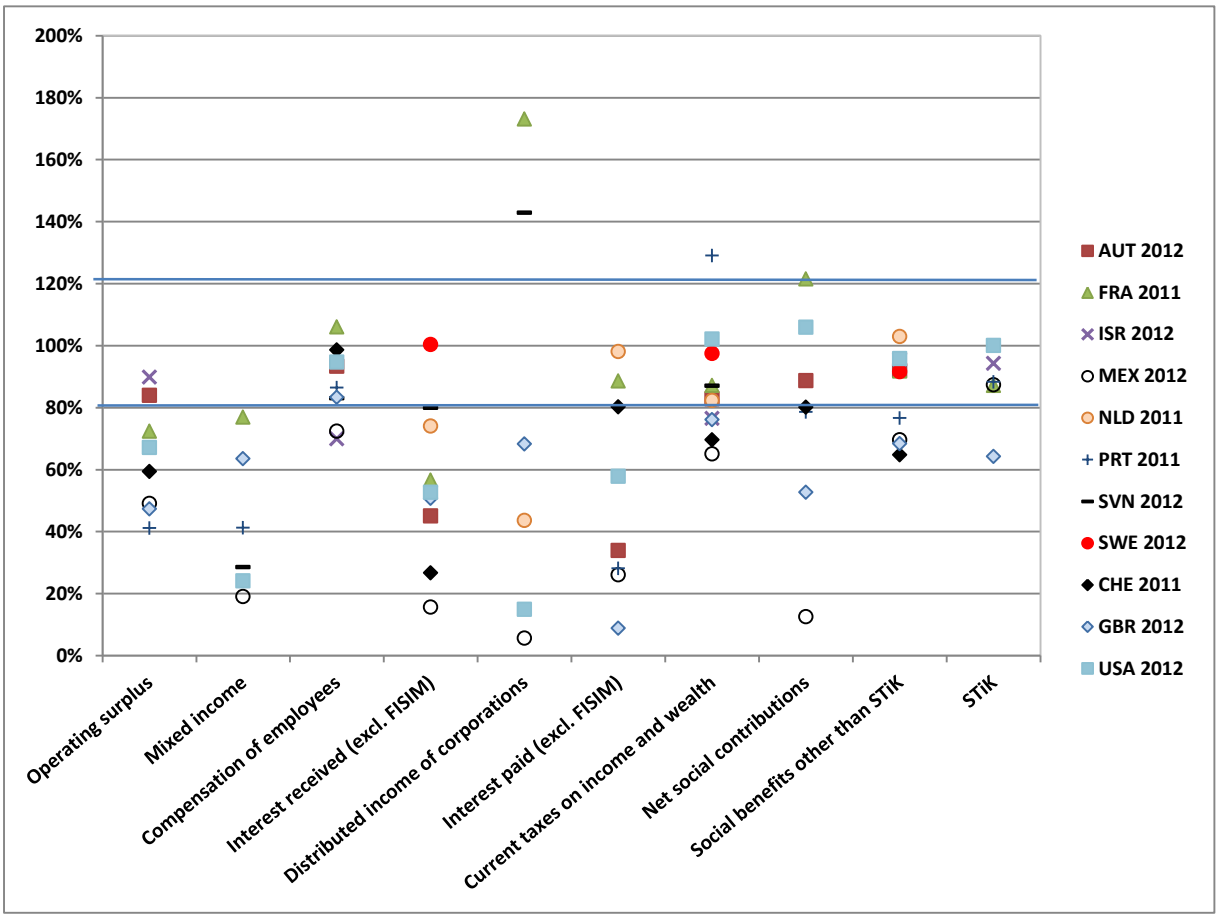
42. With regard to method A, it is interesting to look at the size of the gaps between the micro and macro aggregates that need to be bridged in aligning the two. This can be done by looking at coverage rates that shows the micro aggregate as a percentage of the adjusted national accounts total. Figure 5 shows coverage rates for the main income components. As not all countries have data available for all income components, the number of countries displayed in the figure varies from one component to the other. The figure also shows an interval of 80%-120% (marked by two solid lines) used to indicate relatively good alignment of the micro and macro data. Although this is an arbitrary interval, it provides an indication for which items the alignment is relatively good and for which it is poor, as well as an overview of the data situation for the various countries in this regard.

43. Mexico and the United Kingdom show low coverage rates for all components. On the other hand, Austria, France, the Netherlands, Sweden and the United States are within the interval for most of the components. Furthermore, none of the countries in the exercise show a coverage rate within the interval for *Distributed income of Corporations*, and only one for *Interest received (excl. FISIM)*. The significant gaps between the micro and macro aggregates for these two items (in some cases the micro data only captures

about 5% of the macro aggregate) imply a relatively large impact of the alignment of the micro data to the national accounts totals for the distributional results.

Figure 5. Coverage rates by country for the main income components

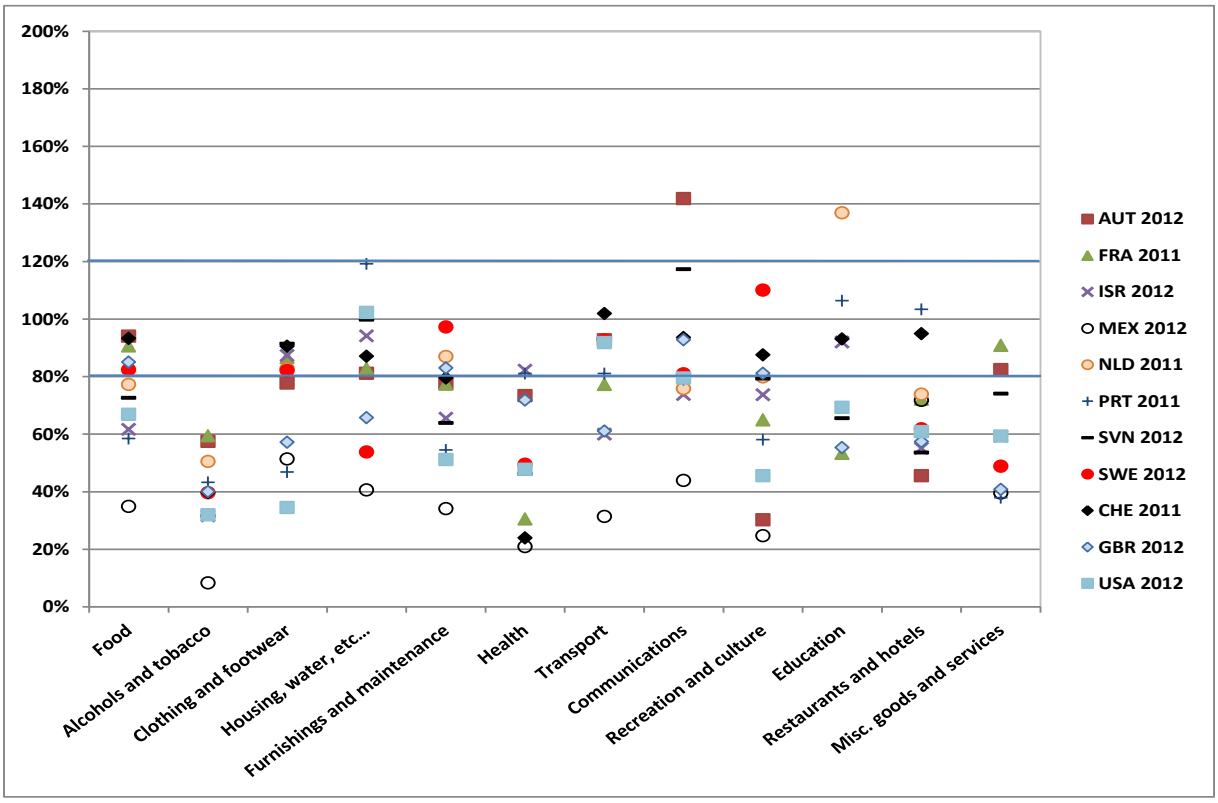
Micro aggregates divided by the adjusted national account totals.



44. Figure 6 shows coverage rates for the consumption components. As most countries have micro data available for all of the consumption components, more information is displayed in comparison with Figure 5. For consumption, half of the rates are within the 80%-120% interval which indicates good alignment. Switzerland and Sweden show the best rates as they are inside the interval for almost all components. For the other countries the picture is mixed. Looking at the various components, *Alcohol and tobacco* show a poor coverage, as no country reports a rate within the interval, with micro data in some cases only capturing 8% of the macro aggregate. *Restaurants and hotels* is also a category which shows a rather poor alignment. The best results are recorded for *Clothing and Footwear* and *Housing*.

Figure 6. Coverage rates by country for the consumption components

Micro aggregates divided by the adjusted national account totals.



E. Step 4: Clustering households

45. In the fourth step, households are clustered into household groups. For that purpose, first, information on all the income and consumption components (as derived from various data sources) needs to be linked to create complete sets of accounts for the various (types of) households. Some countries expressed difficulties in conducting this step. Information may be missing to do this in a right way, as surveys may lack good identification keys to link the various surveys. There are several ways to deal with this issue, varying from applying statistical matching techniques on a micro level to separately clustering quintiles for income and consumption, and only link the two at the aggregated level. As the way in which this step is conducted may significantly affect the results, it would be interesting to acquire more information on how countries currently deal with this specific step and to develop best practices on how to best match data across various data sources.

46. After the data from the various data sources have been linked to create complete household accounts, the households can be clustered into household groups. This can be done on the basis of socio-demographic characteristics, but also on the basis of their *Disposable income* (B6) according to the definition of the 2008 SNA[13]. To arrive at comparable results, two concepts are introduced to cluster and

[13] Disposable income is the balancing item in the secondary distribution of income account. It is derived from the balance of primary incomes by adding all current transfers receivable, except social transfers in kind, and subtracting all current transfers, except social transfers in kind (see 2008 SNA para. 8.20). See also Annex 1 for the composition of disposable income.

present the data: 'per household' and 'per consumption unit'. The 'per household' numbers reflect the values per household and are derived by dividing the distributional totals by the number of households in that specific group. 'Consumption units' are used to correct for differences in needs between households of different size. As needs increase with each additional household member, although not in a proportional way due to economies of scale, equivalence scales are used to reflect the needs of different compositions of households, assigning a value to each household member in proportion to its needs. In this exercise, the Oxford-modified equivalence scale[14] is used to arrive at 'per consumption units' results.

47. For the breakdown into income quintiles, households are ranked according to the value of the equivalized disposable income as explained above and allocated to five equal groups (quintiles), each of them containing 20% of all households. Most countries indicated that the "equivalized income quintiles" classification used in the exercise is consistent with the OECD guidelines. However, the Netherlands expressed that they use a cash disposable income concept as the basis for their clustering, including income from owner occupied dwellings, but excluding FISIM and income from the non-observed economy. Furthermore, Israel and Switzerland use a different equivalence scale that better reflects their country demographic culture. Also Australia uses a slightly different income definition for clustering households.

F. Step 5: Derive relevant indicators for the household groups

48. In a final step, results are derived for relevant indicators. On the basis of the results of the exercise, the next section analyses disparity ratios focusing on inequality between various household groups.

VI. Results

49. This section presents results on the disparities in household income, consumption and savings on the basis of the data received as part of the second exercise. The section starts with an explanation of the indicators used to show disparities and then presents the results for these indicators. The section ends with more detailed information on the socio-demographic composition of the quintiles, as provided in the exercise.

G. Disparity ratios used to present results

50. Within each country, disparities among households are analysed using the following three ratios:

- **The ratio to the average**: the value of income and consumption for each household group relative to the average household value, for a given household group i:

$$Ratio\ to\ average_i = \frac{\bar{X}_i^{NA_adj}}{\bar{X}^{NA_adj}}$$

- **The ratio of the highest to lowest**: the value of income and consumption for the highest household group to the lowest household group value, for a given classification of household z (i.e. Equivalized Disposable Income quintile, Main Source of Income and Household Type):

$$Ratio\ highest\ to\ lowest_z = \frac{Max_{i\epsilon z}\{\bar{X}_i^{NA_adj}\}}{Min_{i\epsilon z}\{\bar{X}_i^{NA_adj}\}}$$

[14] This scale assigns a value of 1 to the household head, of 0.5 to each additional adult member – aged 14 and over - and of 0.3 to each child – aged below 14.

- **The coefficient of variation**: the coefficient showing the variation from the average, which for a given classification of households (i.e. Equivalized Disposable Income quintile, Main Source of Income, and Household Type) is calculated as the ratio of the standard deviation to the mean:

$$CV_z = \frac{\sqrt{\frac{1}{N} \times \sum_{i \in z} [n_i \times \left(\bar{X}_i^{NA_adj} - \bar{X}^{NA_adj}\right)^2]}}{\bar{X}^{NA_adj}} * 100$$

$$\bar{X}^{NA_adj} = \frac{1}{N} \sum_{i \in z} n_i \times \bar{X}_i^{NA_adj}$$

51. In the above formulas:

X: income or consumption component

$z = \{EDI, MSI, HT\}$: type of household classification applied

$i = \{1, \dots, I\}$: household group

n_i: total number of households in group i

N: total number of households in the population

$\bar{X}_i^{NA_adj}$: per household or per consumption unit value according to adjusted national accounts for group i

$\bar{X}^{NA_adj}$: per household or per consumption unit value according to adjusted national accounts for the total population

52. When analysing the third disparity indicator, two properties need to be taken into account:

- Firstly, the above formula implicitly assumes that each household receives (spends) the average income (expenditures) of his group, i.e. disparity within a household group is assumed to be zero: as a consequence the coefficient of variation underestimates the variation. This remark is of less importance when considering the income quintile classification, as households are classified according to their income level, but it may have a substantial impact in the case of the other breakdowns into household groups for which within group disparities may be relatively high. For that reason, the coefficient of variation is not calculated for the optional breakdowns.

- Secondly, the results depend on the household structure in each country. Consequently, divergences in the coefficient of variation between two countries may be explained by two factors: differences across countries in the extent to which one household group departs from the average; and cross-country differences in the share of the household groups in the total household population.

53. The number of consumption units by quintile is not available for all countries. For the countries for which this information is missing, i.e. Australia and the United Kingdom, calculations for the quintile breakdown have been made under the assumption of equal composition of households across household groups[15]. As this may deviate from the actual 'per consumption' units, one has to be aware that there is a

[15] This assumption has been based on the results of the other countries that showed that on average the composition of households across household groups is relatively stable, with the exception of the breakdown into household type. For most countries the differences between the number of consumption units across

certain margin of error surrounding the results for these two countries. For the optional breakdown into household types the assumption of equal composition of households across household groups does not hold by definition. Therefore, no disparity ratios have been compiled for Australia for this specific breakdown.

H. Income results

54. This subsection presents the results on income disparity between households. Results are presented for the ratio to the average, the ratio of the highest to lowest, and the coefficient of variation, primarily focusing on the quintile breakdown according to equivalized disposable income, but also briefly discussing the main findings for the optional breakdowns into main source of income and household type[16].

Ratio to the average

55. The ratio to the average shows how household groups deviate from the average. Figure 7 presents the results for the breakdown into quintiles by equivalized disposable income for six of the countries that participated in the exercise[17]. The ratio to average for the highest income quintile is highest in Mexico and lowest in Slovenia. The income of the fifth quintile is 3.2 times the average income in Mexico, while it's 1.5 in Slovenia. Also Israel, Portugal, Switzerland and the United States record relatively high ratios for the fifth quintile. On the other hand, Mexico and the United States record the lowest ratios for the first quintile. Whereas the ratio of the lowest income quintile to the average is still 62% for France and 67% for Slovenia, it is only 35% in the United States and 27% in Mexico.

56. Looking at the results for the other quintiles, Israel, Mexico, Switzerland and the United States record relatively low ratios for the second and the third quintile. Also other countries record ratios below 1.0 for the third quintile. As the average income of the third quintile can be considered as an approximation of the median income, this means that median income is below average (1.0) in all countries. In Mexico, Slovenia and Portugal, the ratio is even below average for the fourth quintile. However, for the fourth quintile the gap between countries is smaller than for the other quintiles. Although the ratio for Mexico is somewhat lower, the ratios for the other countries range from 99% for Portugal and Slovenia to 109% for Australia.

57. For the countries that provided data for multiple years, for most of them the patterns have not changed that much over time[18]. Only Mexico and Portugal showed some modest developments in the patterns for the years reported, leading to larger inequality in Mexico and to slightly lower inequality in Portugal.

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quintiles are within a range of 10 percent of the average number of consumption units. Only Slovenia, Mexico and the Netherlands report higher differences (respectively 62, 18 and 19 percent).

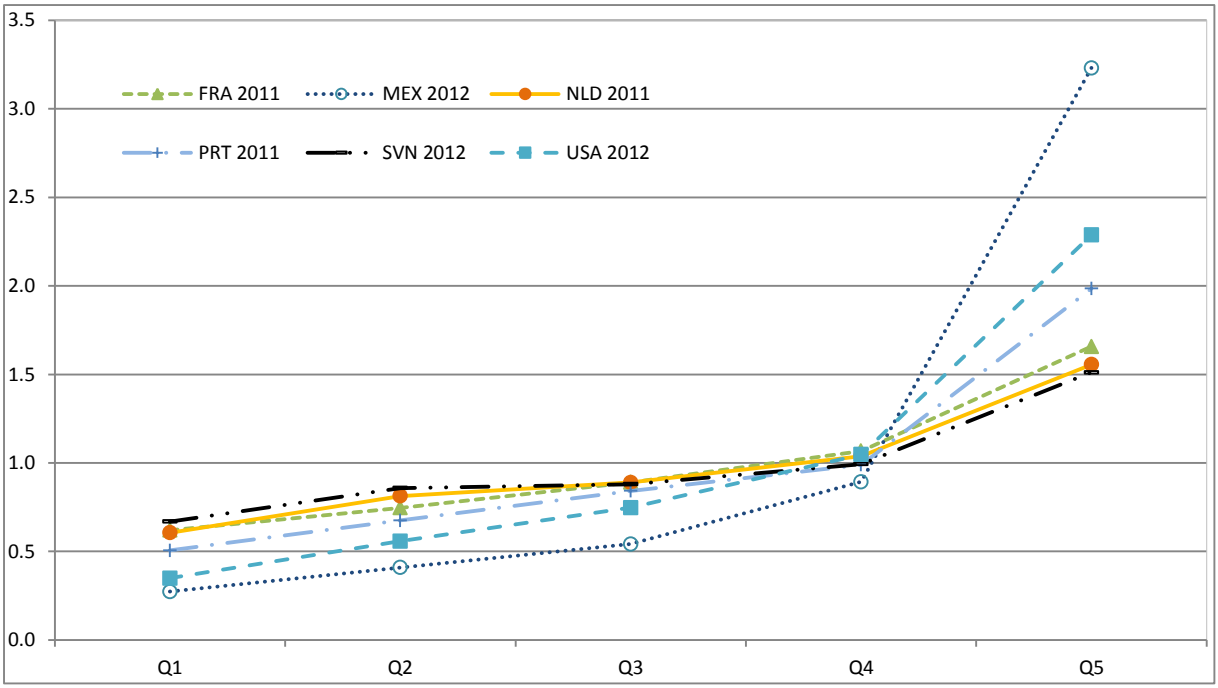
[16] Results for these two optional breakdowns are presented in Annexes 5.8 and 5.9.

[17] Results for the other countries are shown in Annex 5.2.

[18] See Annex 5.3 for results for the ratio to average for multiple years.

Figure 7. Relative position of each household group compared to the average, by equivalized disposable income quintile

Adjusted disposable income per consumption unit for each group to the average adjusted disposable income per consumption unit in the country.



58. Looking at the results for the optional breakdown into main source of income[19], large differences arise between the distinguished categories. Households with *Net property income* as main source of income record the highest ratios in most countries, with particularly large ratios in Mexico (8.8 times the average), followed by France (3.2) and Sweden (3.0). Households whose main source of income are *Current transfers* record the lowest ratios in all countries, with the lowest ratio recorded in Israel (0.3). For the group with *Wages and salaries* as main source of income, income is very close to the average in all countries. Here, one has to bear in mind that this may conceal some large disparities within the group. Finally, households for which *Income from self-employment* is the main source of income show quite significant differences across countries. In some countries (such as France, Slovenia and Sweden) their ratio is relatively high (1.5 or higher), for others it is close to 1.0, whereas for Israel it is significantly below average (0.6).

59. Looking at the breakdown into household types[20], the ratios for single person households are below average in most countries (except for *Single below 65 years old* in Mexico which receives an income which is more than 2.5 times the average[21]), whereas all 'two adult' categories record incomes that are relatively close to the average. However, the results are quite different between countries.

[19] See Annex 5.8.1.

[20] See Annex 5.9.1.

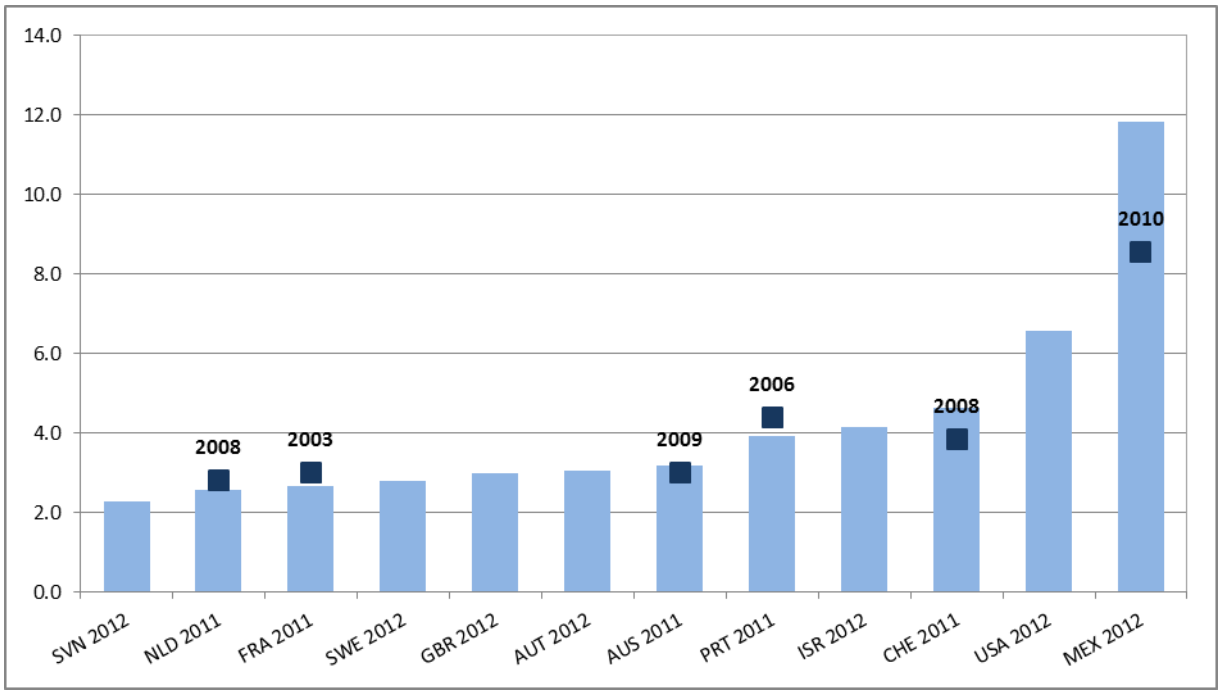
[21] In analyzing these results one has to realize that the share of the category Others, i.e. households that could not be classified, is relatively large in Mexico (41.4%). This may have a large impact on the results of some of the categories.

Ratio highest to lowest

60. The ratio highest to lowest compares the household groups with the highest income with the household groups with the lowest income. The results for the equivalized income quintiles are presented in Figure 8. Mexico has the highest ratio, followed by the United States. This is in line with the results that were presented for the ratio to the average. In Mexico, the households in the highest income quintile receive an adjusted disposable income that is 11.8 times higher than the one received by households in the lowest quintile. In the United States, this is 6.6 times. Slovenia records the lowest income disparity, with a ratio of only 2.3. Also for France, the Netherlands, Sweden and the United Kingdom this ratio is relatively low (less than 3.0). Comparison with the second most recent year shows that the ratio has dropped in the Netherlands, France and Portugal. For Switzerland and Mexico, the ratio increased, as well as for Australia, although to a lesser extent.

Figure 8. Relative position of the 20% highest to the 20% lowest income households, by equivalized disposable income quintile

Adjusted disposable income per consumption unit for the fifth quintile to the adjusted disposable income for the first quintile.



61. The ratio highest to lowest can also be calculated on the basis of the optional breakdowns[22]. Looking at the breakdown by main source of income, the ratios are in the same range as those for the income quintile breakdown. On the contrary, the ratios on the basis of household type are lower for most of the countries. Mexico still records the highest ratio for the latter, but with 3.8, this is substantially lower than the ones based on the income quintile breakdown (11.8) and the main source of income breakdown (11.6). This is also the case for the other countries, which implies that there are large disparities within the various household type groups. Looking at results for some of the other countries, Australia records the lowest ratio for main source of income, with households with *Wages and salaries* as main source of income only receiving an income of 1.9 times the income of the households with *Current transfers*

[22] See Annexes 5.8.2 and 5.9.2 for more detailed results.

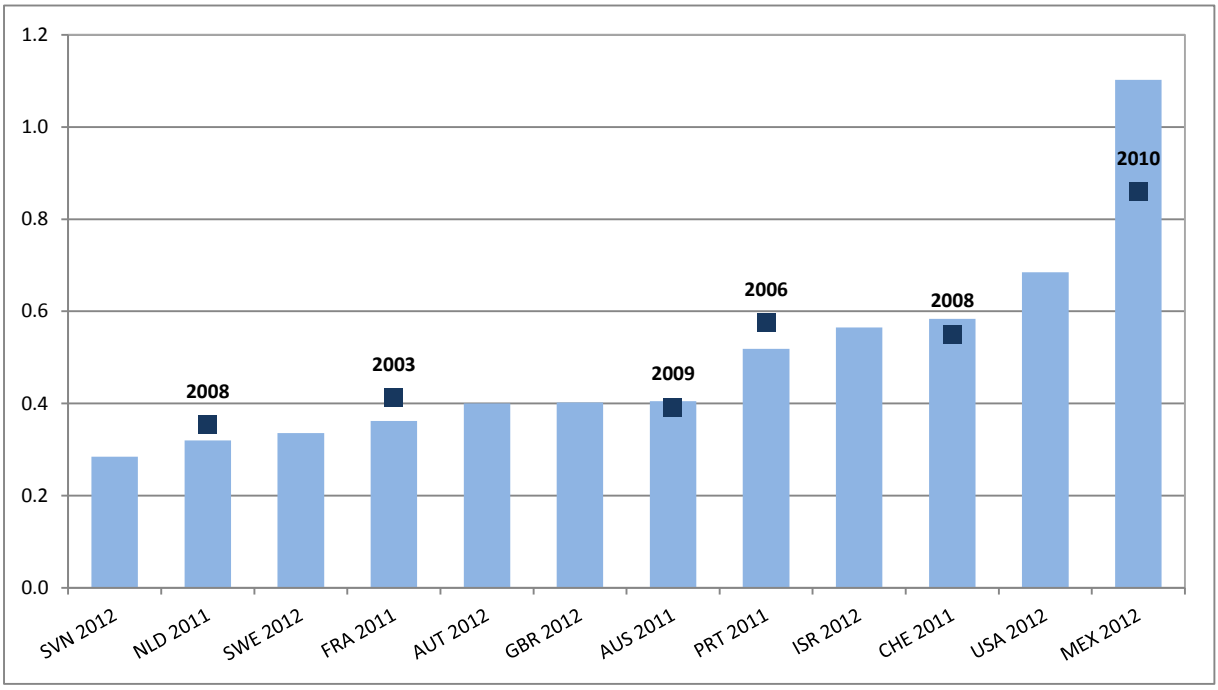
received as their main source of income. For the breakdown into household types, France records the lowest ratio, with the group *Single less 65 years old* receiving an income 1.3 times lower than *Two adults less 65 years old without children living at home*.

Coefficient of variation

62. The coefficient of variation shows the variation from the average. Figure 9 presents results on the basis of the classification into income quintiles. The figure highlights the significant differences between countries. It ranks from 28% in Slovenia, indicating very small disparities, to 110% in Mexico, pointing out very large inequalities. The countries that obtained high scores in the ratio 'highest to lowest' also rank high in the coefficient of variation. On the lower end of the spectrum, in addition to Slovenia, the ratio turns out to be very low for the Netherlands (32%), Sweden (34%) and France (36%). In comparison with the second most recent year available in the exercise, the variance has dropped in the Netherlands, France and Portugal, while the variance increased in Switzerland and Mexico and, to a lesser extent, in Australia. This is in line with the results in Figure 8.

Figure 9. Coefficient of variation on the basis of income according to equivalized disposable income quintiles

Coefficient of variation based on adjusted disposable income per consumption unit.



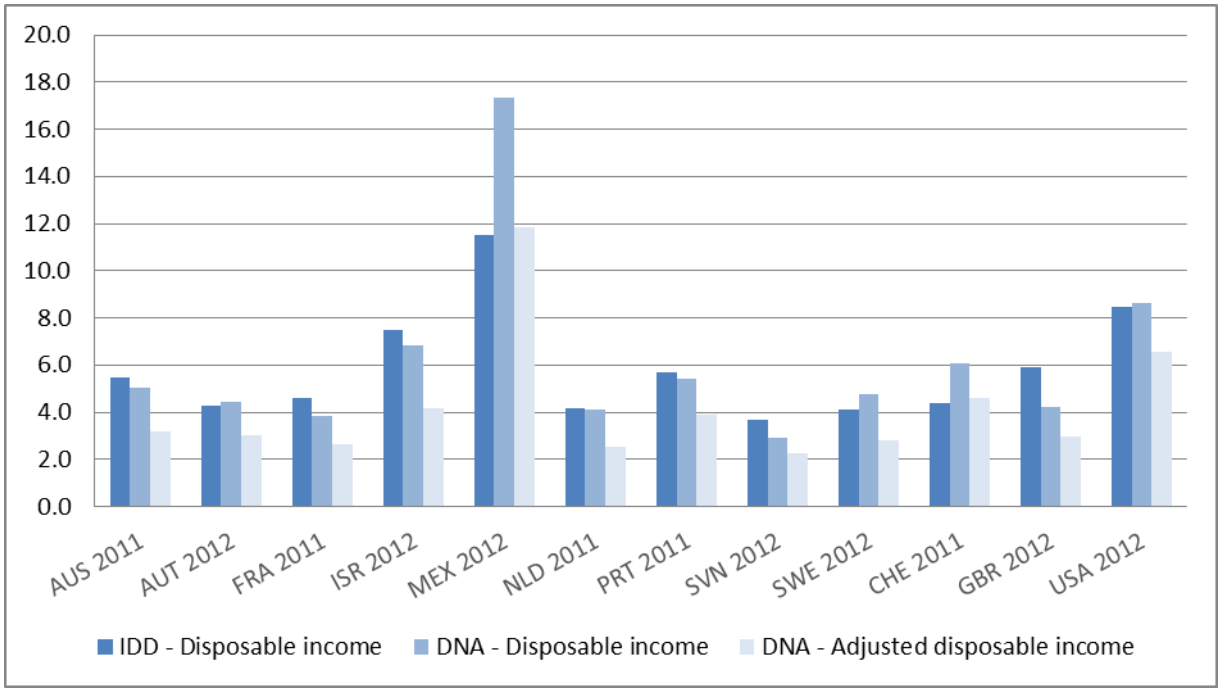
I. Comparison with micro results

63. Due to the inclusion of several items that are not captured in micro data sources and due to the alignment of data to the national accounts totals, the distributional measures obtained via the EG DNA methodology usually differ from the ones obtained via the micro data sources per se. To provide an overview of these differences, Figure 10 compares the relative position of the 20% highest to the 20% lowest income households by equivalized disposable income quintile, on the basis of the EG DNA exercise with those derived from the OECD Income Distribution database (IDD). This database contains information on income distribution in various OECD countries obtained through a network of national data providers, via a standardized questionnaire. It is based on national sources that are deemed to be most representative for each country. As social transfers in kind are not included in most of the micro data

sources, the ratios for IDD are based on disposable income levels. For the EG DNA exercise ratios are presented on the basis of both disposable income as adjusted disposable income. On the one hand this provides insight in the differences in ratios between the IDD and EG DNA results on the basis of similar income concepts, while on the other hand also explicitly showing the impact of the inclusion of social transfers in kind.

Figure 10. Relative position of the 20% highest to the 20% lowest income households, by equivalized disposable income quintile

(Adjusted) disposable income per consumption unit for the fifth quintile to the (adjusted) disposable income for the first quintile.



64. The figure shows that the impact of alignment to national accounts concepts differs across countries. This relates to the size of the various adjustments that have been made in the process, to impute for missing items and to align the micro data to the national accounts totals. When looking at the ratios on the basis of disposable income, some countries such as the Netherlands, Israel and the United States do not show large differences between IDD and EG DNA data. However, for some other countries such as Mexico, Switzerland and the United Kingdom larger differences can be observed. For Mexico and Switzerland the EG DNA exercise leads to higher ratios in comparison with the IDD database, whereas for the United Kingdom it is the other way around.

65. The inclusion of social transfers in kind has a lowering effect on inequality in all countries; EG DNA ratios based on adjusted disposable income levels are below the ratios based on disposable income for all countries. These ratios are also below IDD results (based on disposable income) for most countries, implying that the alignment to national accounts concepts has a lowering effect on inequality measures for almost all countries. Only for Mexico and Switzerland the alignment leads to slightly higher ratios. These results lead to the conclusion that in analysing distributional results, it may matter which measure is used.

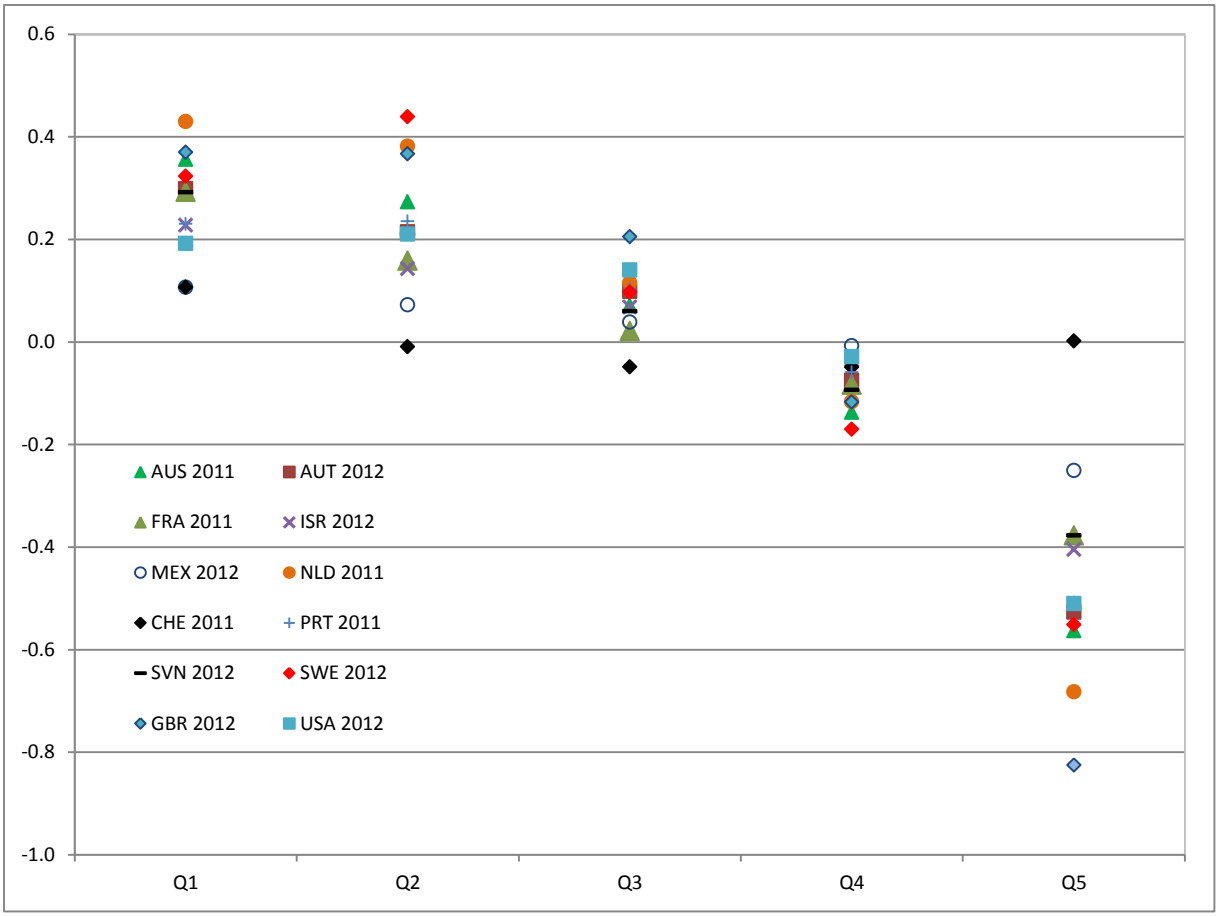
J. Impact of net current transfers on income disparity

66. Up to now, the focus has been on disparities on the basis of adjusted disposable income. The relative position of each household group compared to the average is quite different when measured on the basis of primary income, i.e. before deducting any income taxes and social contributions paid and adding transfers in cash and in kind. In this subsection, the effects of these re-distributional transactions are analysed, by comparing the ratio to the average for adjusted disposable income with that for primary income.

67. Figure 11 and Table 9 present changes due to re-distributional transactions for the various income quintiles. As can be derived from the figure, the first three quintiles mostly benefit from net current transfers. The distributional effects are highest in the Netherlands and the United Kingdom, whereas the impact is lowest in Switzerland and Mexico. For Switzerland, it has to be borne in mind that the distribution for Social Transfers in Kind has been imputed by the Secretariat[23].

Figure 11. Impact of net transfers on the relative position of each household group compared to the average, by quintile

Adjusted disposable income per consumption unit for each group to the adjusted disposable income per consumption unit average minus primary income per consumption unit to the primary income per consumption unit average.



[23] The average distribution of Social Transfers in Kind across the income quintile for the other countries is used as a proxy for the distribution for Switzerland.

68. When looking at Table 9, which shows the income gap between the 20% households with the highest income and the 20% households with the lowest income, it shows that the gap for primary income is significantly higher than for adjusted disposable income in Australia, Mexico, the Netherlands, the United Kingdom and the United States. Net current transfers reduce the income disparity between the highest and lowest income groups by 11.3 in the United States, by 10.2 in the Netherlands and by 9.2 in Australia. In this respect, one should be aware of the fact that the classification into quintiles in this table is based on disposable income. If it had been based on primary income, the disparity indicators probably would have been even higher. As was observed in Figure 11, the impact of net income transfers is lowest in Switzerland with only a reduction of 1.4. Effects are also relatively small for Slovenia and France.

Table 9. Impact of net transfers on the relative position of highest income households to the lowest income households

Primary income and adjusted disposable income per consumption unit: value for the fifth quintile to the first quintile; and difference in points.

	AUS 2011	AUT 2012	CHE 2011	FRA 2011	GBR 2012	ISR 2012	MEX 2012	NLD 2011	PRT 2011	SVN 2012	SWE 2012	USA 2012
Primary income (1)	12.3	8.4	6.0	6.2	11.9	11.3	20.9	12.7	9.1	5.0	8.9	17.9
Disposable income (2)	5.1	4.4	6.1	3.9	4.2	7.6	17.3	4.1	5.4	2.9	4.8	8.7
Adjusted Disposable income (3)	3.2	3.1	4.6	2.7	3.0	4.2	11.8	2.6	3.9	2.3	2.8	6.6
Impact = (3)-(1)	-9.2	-5.3	-1.4	-3.5	-8.9	-7.1	-9.0	-10.2	-5.1	-2.7	-6.1	-11.3

69. Looking at the impact of government transfers for groups according to main source of income, self-evidently the group with *Current transfers received* as main source of income benefits most in all countries[24]. The effect is largest for Sweden, followed by Slovenia. In most countries, the other categories experience a decrease in their ratio, with the exception of the category *Income from self-employment* in Israel and *Net property income* in Mexico. The impact of re-distributional transactions on the ratio to average for the various household types[25] shows that the groups with adults over 65 benefit in all countries, which is to be expected given the pension benefits they receive. The other category that experiences an increase of its ratio to average in all countries is *Two adults with at least three children living at home*. Categories for which the re-distributional transactions lead to a decrease of their ratio to average are *Single less 65 years old, Two adults less than 65 no child living at home* and *Two adults with less than 3 children living at home*. The largest effects can be observed in Sweden as was the case for main source of income categories. Effects are relatively small for Israel and Mexico.

K. Consumption results

70. This subsection presents results on consumption disparities across households, with a particular focus on *Actual final consumption expenditure* (P4) measured on a per consumption unit basis. Results are presented for the breakdown into equivalized income quintiles. The main findings for the optional breakdowns into main source of income and household type will only briefly be touched upon.

[24] See Annex 5.8.3.

[25] See Annex 5.9.3.

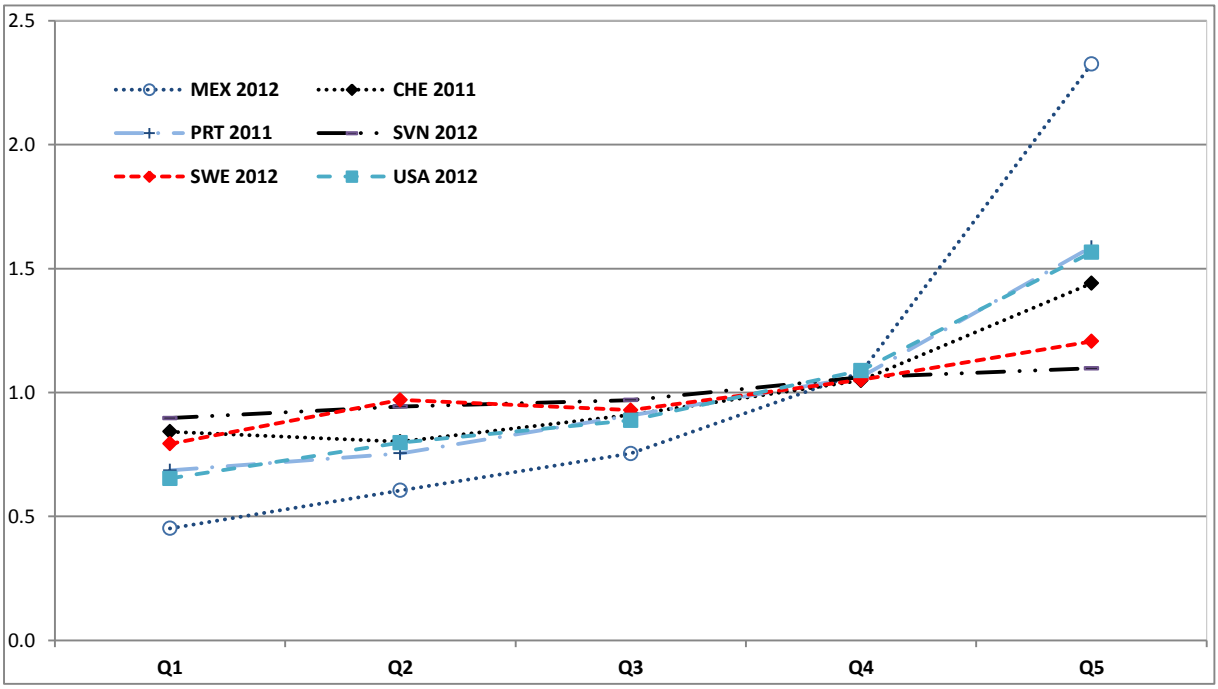
Ratio to average

71. The relative position of each quintile group compared to the average is shown in Figure 12 for a selection of 6 countries[26]. The distribution over the quintiles is quite similar for countries, Mexico being the only exception. For all other countries, the consumption of the lowest income quintile varies between 65% and 90% of the average, whereas the consumption of the highest income quintile ranges between 1.1 and 1.6 times the average. For Mexico, the disparity across household groups is significantly larger. Households in the first quintile only consume 45% of the average, whereas households in the fifth quintile consume 2.3 times the average. This higher disparity in consumption corresponds to the picture for the income distribution as presented in Figure 7, although to a lesser extent.

72. Looking at the other countries more closely, three countries show somewhat deviating patterns, i.e. Slovenia, Switzerland and Sweden. The Slovenian distribution is diverging from the other countries by showing a relatively flat distribution over the quintiles, with an almost equal percentage of 110% to the average for the fourth and the fifth quintile. The higher income levels in the fifth quintile are thus directly feeding into higher savings rates. For Switzerland it is interesting to observe that consumption in the second quintile is lower than in the first quintile. For Sweden this is the case for the third quintile in comparison to the second quintile. Even though these groups earn higher incomes, their level of consumption shows to be less than for the households in the income quintile direct below them. These counterintuitive results require further research.

Figure 12. Relative position of each household group compared to the average, by the equivalized disposable income quintile

Actual final consumption per consumption unit for each group to the average actual final consumption per consumption unit in the country.



[26] Results for the other countries are shown in Annex 5.5.

73. The results of the two optional breakdowns[27] show that the patterns for consumption are comparable with the results for income, although the level of ratios differs quite significantly in size. Looking at the breakdown into main source of income, the highest ratio is recorded for the category *Net property income* in Mexico, just as was the case with disposable income. However, whereas this group earned an income that was almost 9 times the average, their consumption is only 2.1 times the average. Slovenia and Sweden also record the highest ratio for this specific category, although the difference with the other categories is smaller than for Mexico. Similar to the disparity observed for disposable income, the ratio to the average for actual consumption is lowest for the category *Current transfers received* in most countries.

74. When looking at the breakdown into household type, the ratios to average for actual consumption expenditure are also in line with the patterns for income. Household groups for which consumption is below average are *Single less 65 years old* (with the exception of Mexico) and *Single with children living at home*, whereas consumption is above average in almost all countries for *Two adults less than 65 no child living at home* (except for Israel) and *Two adults with less than 3 children living at home*.

Ratio highest to lowest

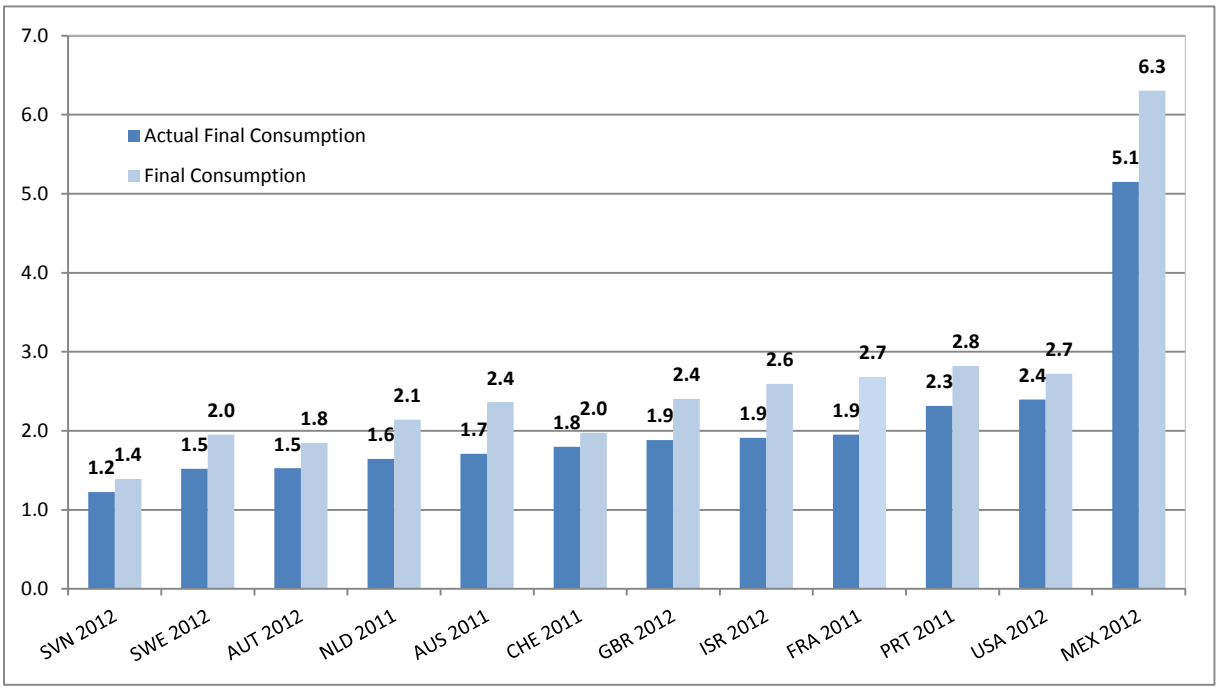
75. Figure 13 presents the relative position of final consumption for the income group with the highest consumption versus the income group with the lowest consumption. The figure presents the results for both final consumption expenditure and actual final consumption expenditure, the latter including *Social transfers in kind*. Mexico records the highest ratios, households in the fifth quintile having a level of actual consumption which is 5.1 times higher than the level of consumption by the lowest income households. Slovenia reports the smallest difference with a ratio of only 1.2. These results are in line with the observations from Figure 12. The exclusion of *Social transfers in kind* leads to higher consumption inequalities for all countries, a consequence of the relatively flat distributional of this item across quintiles. Looking at developments in the ratio over time, only Portugal records a decrease, from 2006 to 2011[28].

[27] See Annexes 5.8.4 and 5.9.4.

[28] See Annex 5.6.

Figure 13. Relative position of the income quintile with the highest consumption to the one with the lowest consumption

Final consumption expenditure and Actual final consumption, per consumption unit.



76. For the classification according to main source of income, the highest ratio is recorded for Mexico, where actual final consumption by households with *Net property income* as main source of income is 2.5 times higher than the consumption by households for which *Income from self-employment* is the main source of income, significantly lower than the ratio on the basis of income quintiles (which was 5.1). Israel also records a relatively high ratio: actual consumption of the group *Income from self-employment* is 2.1 times larger than that of *Current transfers received*, thus exceeding the ratio on the basis of the breakdown into income quintiles (1.8). In addition to Israel, also Slovenia records slightly higher ratios on the basis of main source of income categories in comparison to the ratio according to income quintiles.

77. In the case of the classification according to household type, Mexico also records the highest ratio with regard to *Final consumption expenditure*. However, when *Social Transfers in Kind* are included, Israel records the highest ratio. In contrast to most other countries, the inclusion of STiKs leads to an increasing ratio when using this classification. This is because the group with the highest consumption per consumption unit (*Two adults with at least 3 children living at home*) receives a relatively large amount of *STiKs on Education* in comparison with the amount of *STiKs on Health* that is received by the group with the lowest consumption (*Single 65 and older*). As a consequence, their actual final consumption is 2.7 times higher than that of the lowest consumption group.

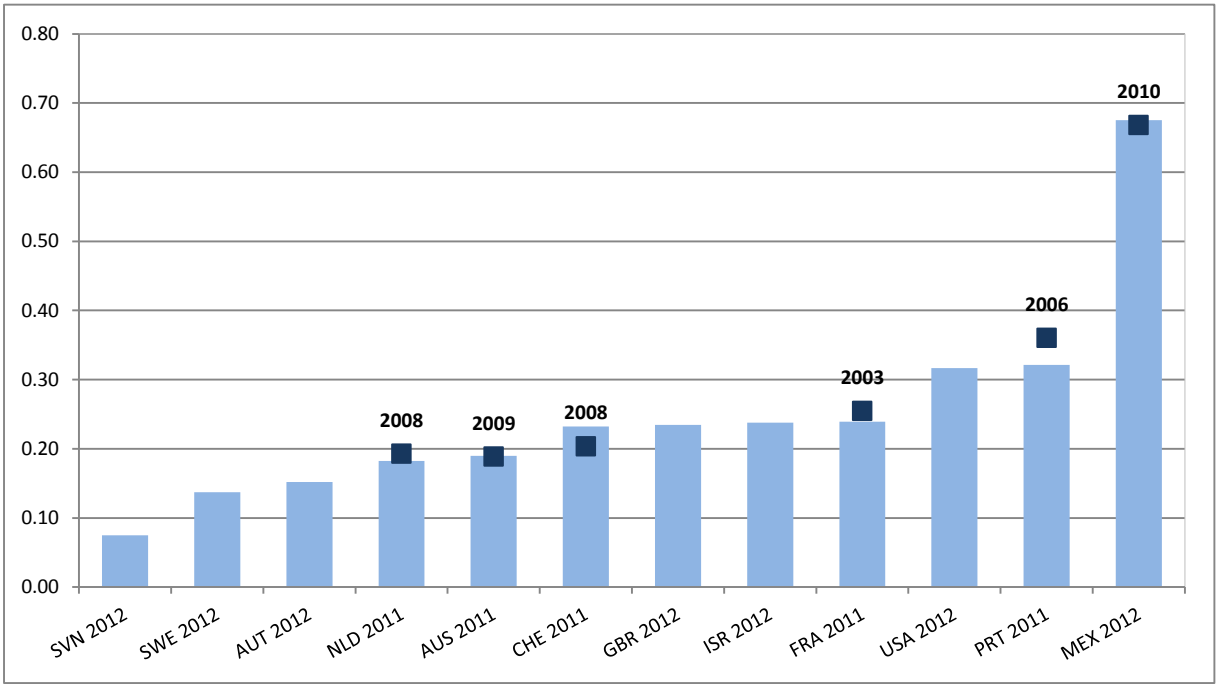
Coefficient of variation

78. As explained before, the coefficient of variation shows the dispersion from the average across all household groups. Figure 14 shows the coefficient for consumption on the basis of the income quintiles, which ranks from 7% in Slovenia to 67% in Mexico. In addition to Mexico, the variance is also relatively large for Portugal and the United States. On the other hand, variance shows to be relatively small for Sweden and Austria. These observations are in line with the results for the level of consumption to the

average as shown in Figure 12. Figure 14 also shows the variance for a previous year. For most countries the index did not change much. Only Portugal records a larger change, with a decline of the relative position of the fifth quintile in relation to the relative position of the first quintile over time.

Figure 14. Coefficient of variation on the basis of consumption according to equivalized disposible income quintiles

Coefficient of variation based on actual final consumption per consumption unit.



L. Savings results

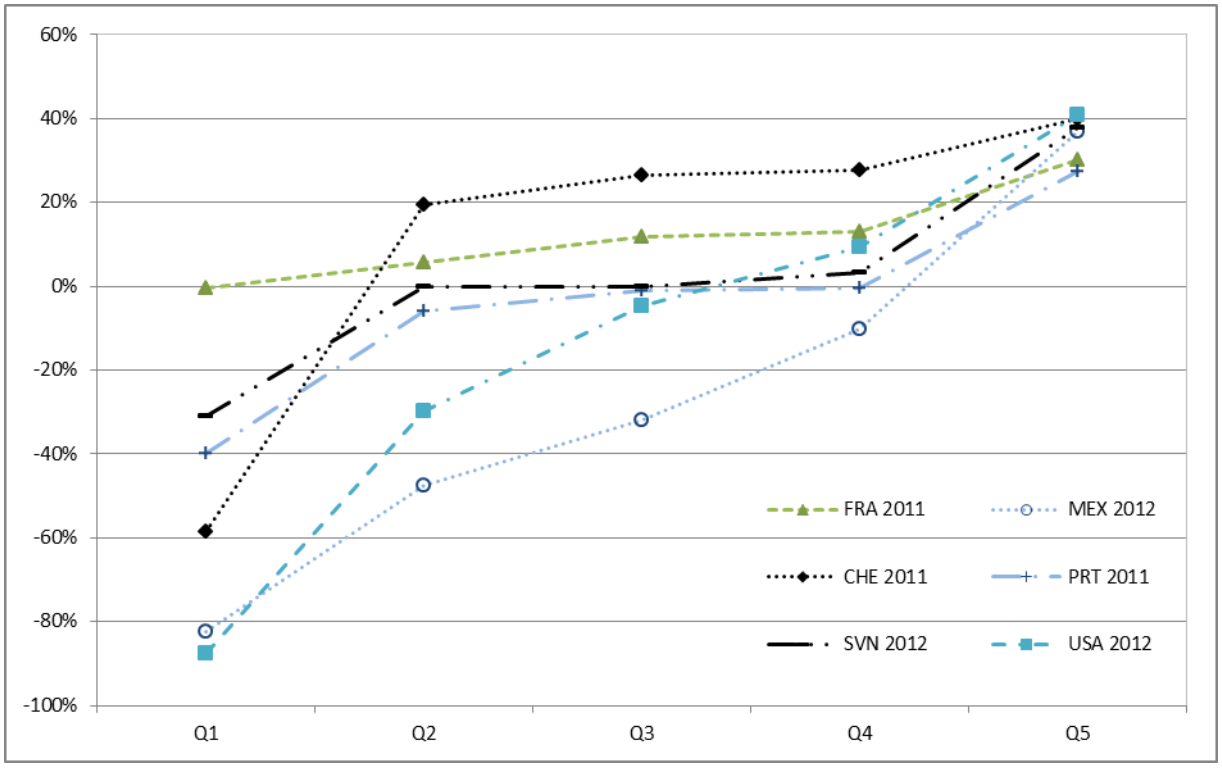
79. This subsection presents the results on savings, calculated as the difference between adjusted disposable income and actual final consumption plus the change in net equity of households in pension funds. The adjustment for net equity in pension funds is necessary because of the way contributions paid to pension funds and pension benefits received from these funds are treated in national accounts[29] [30]. As this adjustment item can significantly affect the savings ratio for certain groups, results in this section are not only shown for total savings including this adjustment item, but also for 'other' savings excluding the savings via pension funds. Please note, in this respect, that the adjustment item is not available for Israel and the United States due to lack of data. As a consequence, their savings ratios are not fully comparable with those of the other countries.

[29] Contributions (benefits) are recorded as current expenditure (income), while on the other hand they are also considered as a kind of saving (dissaving), adding to (decreasing) the value of pension entitlements. To include both views on pensions, the income point of view and the wealth point of view, and to bridge them, an adjustment had to be introduced. This dual treatment only concerns employment-related pension schemes. It is not relevant for individual life insurance schemes, for which neither the contributions nor the benefits are recorded as current expenditure/income; they are only recorded as a financial transaction.

[30] This adjustment item is only relevant for countries with employment-related pension schemes in which pension entitlements accrue over time. Therefore, Australia and France do not record data for this item.

80. Figure 15 presents the savings per quintile as a percentage of their disposable income[31] for a selection of 6 countries (the other countries are presented in Annex 5.7). The figure shows negative savings rates for the lowest income quintile in all countries, with the ratio for France being exceptionally close to zero[32]. On the other end of the spectrum is the United States with a negative savings rate of 87%. Also Mexico and Switzerland record savings rates for the first quintile that are highly negative. Savings are also negative in the second quintile for a number of countries. Mexico, Portugal and the United States even record negative savings in the third quintile, and Mexico and Portugal also in the fourth quintile. On the other hand, Switzerland records relatively large savings for the second, third and fourth quintile. Their savings ratios do not differ that much from the one for the fifth income quintile. Less dispersion across countries is observable for the savings rate for the fifth quintile. For most countries the savings rate for the fifth quintile is around 30 to 40% of disposable income.

Figure 15. Saving as a percentage of disposable income by equivalized disposable income quintile



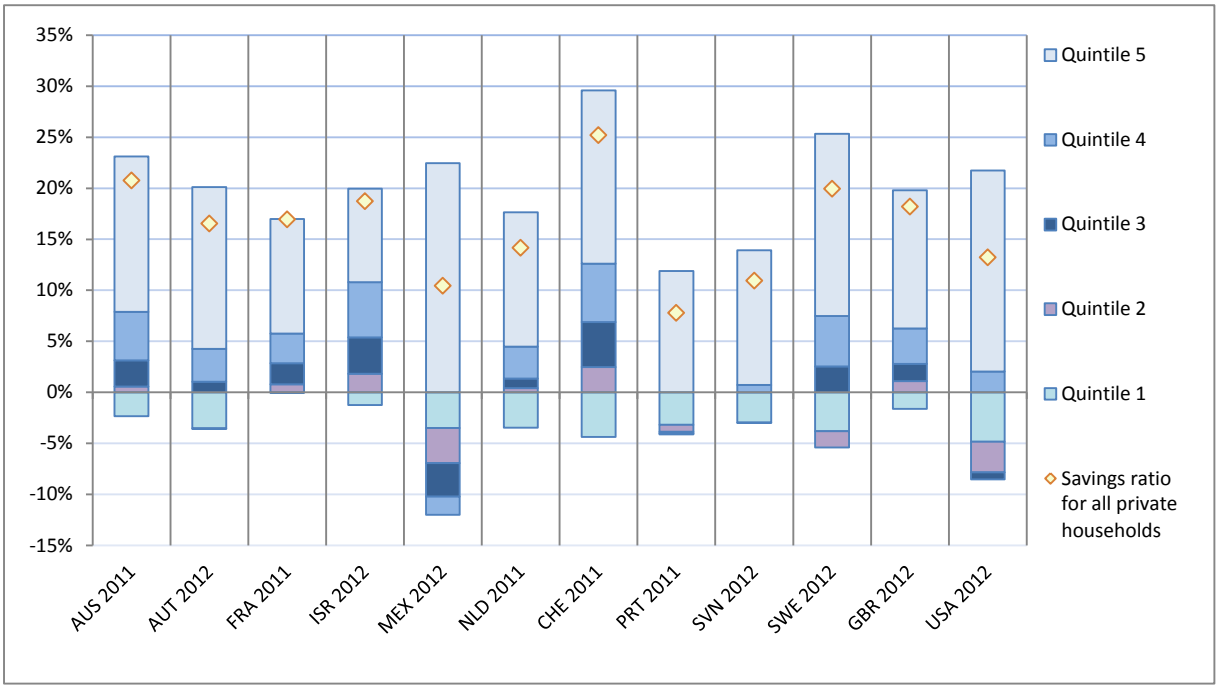
[31] Paragraph 9.30 of the 2008 SNA recommends adding the adjustment for the change in pension entitlements to the denominator of disposable income in calculating the savings ratio. However, as this may significantly affect savings ratios for specific household groups - in particular household groups with a relatively large share of individuals in retirement – the results in this paper are presented excluding this specific adjustment in the denominator.

[32] In contrast to many of the other countries, in France the consumption results are analysed in conjunction with income results. In case the level of consumption is exceeding that of income without households mentioning that they have to reduce their financial wealth or incur liabilities, the level of income is adjusted to bring it in line with that of consumption, focusing on the items that show largest gaps between the micro and macro aggregates. In this way, part of the gap between micro and macro aggregates is solved by better aligning income and consumption results on a household level. As a consequence of this approach French distributional results show less negative savings than other countries. Without this correction, the savings ratio for the first quintile would have been -7.6% instead of -0.5%

81. The quintile savings ratios affect the overall savings ratio for the household sector as a whole in different ways, depending on their relative weight. Figure 16 presents the aggregate savings ratios for the private household sector and the contributions of the underlying quintiles for the twelve countries in the exercise. Portugal records the lowest savings ratio for the private household sector as a whole (7.8%) which is due to a relatively low savings ratio of the fifth quintile in combination with negative savings up until the fourth quintile. In Mexico the savings of the fifth quintile are more than twice the size of the aggregated negative savings of the other four quintiles, which leads to an aggregated ratio for the private household sector as a whole that exceeds that of Portugal (10.4%). In addition to Mexico and Portugal, also the United States and Slovenia show a relatively large contrast between the savings of the fifth quintile and those of the other quintiles. In both countries the fifth quintile accounts for more than 90% of (positive) household savings and their savings are more than twice the size of the accumulated negative savings of the other quintiles. However, both countries record aggregate savings ratios that are below the simple average of all countries of 16% (13.2% for the United States and 10.9% for Slovenia). Switzerland records the highest savings ratio for the household sector as a whole which is mainly caused by positive savings ratios for four of the five quintiles. Also Sweden, Australia, Israel and the United Kingdom record relatively high savings ratios. In all these countries the fifth quintile records the highest contribution, but in contrast with most of the other countries, the contributions of the second (with the exception of Sweden), third and fourth quintile are also significant.

Figure 16. Composition of the private household sector savings ratio

Total private household savings and savings per quintile as percentage *of* total private household disposable income.

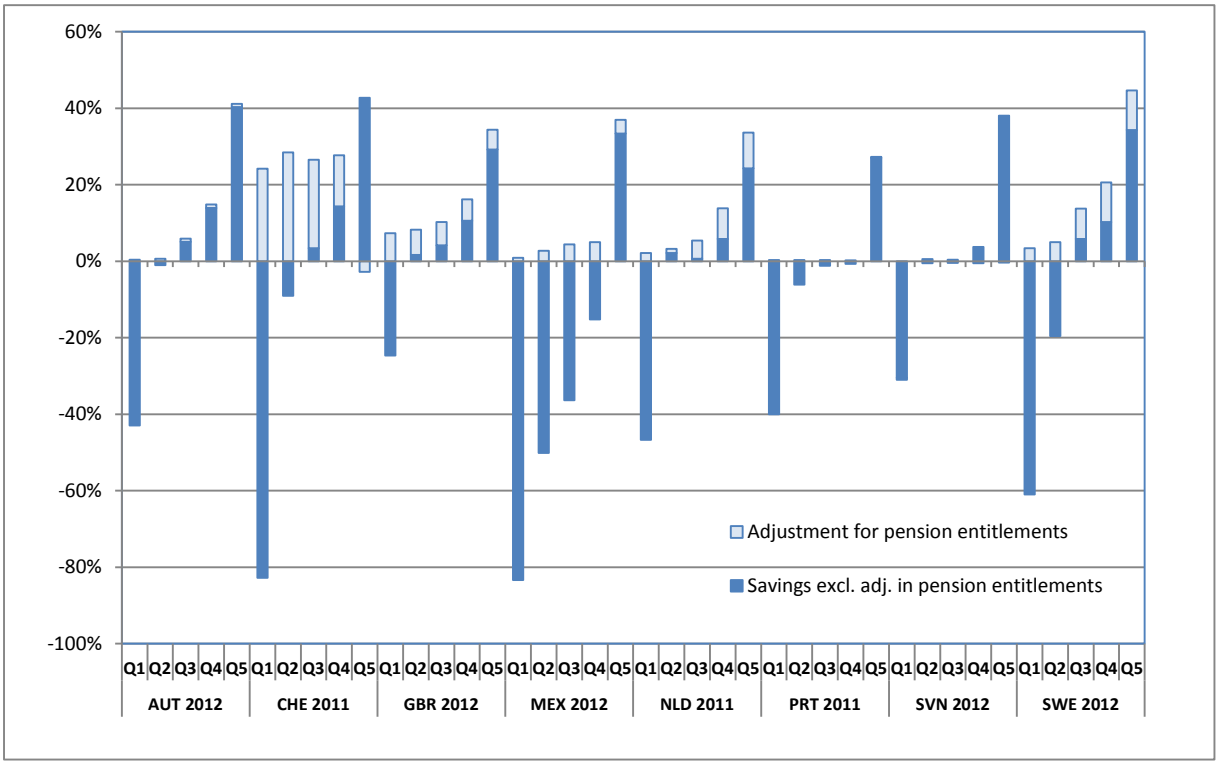


82. In countries with employment-related pension schemes in which pension entitlements accrue over time[33], household savings consist of a part that relates to the change in pension entitlements due to the building up of pension entitlements (*Adjustment for the change in pension entitlements* (D8)), and a part

[33] The recording of transactions related to pension schemes is a complex issue in the system of National Accounts with sometimes different recordings for different types of schemes. For more information on the recording of transactions related to pension, please refer to section J in chapter 17 of the 2008 SNA.

that relates to adjusted disposable income that has not been consumed. For the relevant countries (i.e. Austria, Mexico, the Netherlands, Portugal, Slovenia, Sweden, Switzerland and the United Kingdom) Figure 17 shows how these two components influence the savings rate for the various quintiles. The impact is relatively large in Switzerland, and, to a lesser extent, in the United Kingdom, Sweden and the Netherlands. Furthermore, for most countries the adjustment item as percentage of disposable income slowly increases with income quintile. The only exception is Switzerland, for which the adjustment item is negative for the fifth quintile, whereas it is positive for all other quintiles. This implies that the fifth quintile in Switzerland has a relatively large share of households in retirement.

Figure 17. Composition of savings ratio for eight countries



83. Looking at the optional breakdowns[34] most countries record the highest savings rates for the categories *Income from self-employment* and *Net property income* as their main source of income. Only Israel records a highly negative savings rate for the category *Income from self-employment*, which corresponds to the relatively low disposable income for this group in Israel. In most countries the category *Current transfers received* records (large) negative savings rates. On the other hand, households with *Wages and salaries* as their main source of income record positive savings rates in most countries. The only exception is Mexico which records a slightly negative savings rate for this group.

84. With regard to the breakdown into household types, all countries report positive savings ratios for *Two adults with at least 3 children living at home*, and also for *Single less 65 years old* the savings ratio is positive in most countries. For the other categories the picture is mixed. The largest negative savings rate can be observed for the group *Single 65 and older* in Mexico.

[34] See Annexes 5.8.6 and 5.9.6.

85. Obviously, the adjustment for the change in pension entitlements[35] may significantly affect the savings ratio of specific household groups. For example in Sweden, the adjustment item more than doubles the savings rate for the *Wages and salaries* category. In Mexico, it is the other way around for the category *Current transfers received*. Furthermore, as the adjustment item relates to pension premiums and benefits, the impact is even more evident when looking at some of the categories according to household types, especially the categories with persons older than 65. Half of the negative savings rate for the group *Single 65 and older* in Mexico is due to the decline of pension entitlements.

M. Composition of income and consumption for quintiles

86. The country results also provide insights in the composition of disposable income and final consumption per quintile. Figure 18 shows the composition of adjusted disposable income for six countries[36]. *Compensation of employees* is the most important source of income for households. It has a relatively high share in all quintiles and is the main source of income for the top three quintiles in almost all countries. Only in the United Kingdom *Social benefits (in cash and in kind)* has a slightly higher share in the third quintile, and in Mexico *Property income* is the most significant income category in the fifth quintile. The latter category is also relatively important in the fifth quintile in the United States. In all countries except Switzerland, *Social benefits* (the total of benefits in cash and in kind) form the main source of income for households in the first quintile. In half of the countries this is also the case for the second quintile.

87. Figure 19 presents the underlying components of *Actual consumption expenditure* for six countries[37]. The share of *Food and non-alcoholic beverages* is particularly large for the first four quintiles in Mexico, most probably related to the relatively low income in these quintiles. Furthermore, in all countries *Housing, water, electricity, gas and other fuels* constitutes a very important item. For most countries the shares vary between 15% and 25% and are relatively stable across quintiles. The figure also shows that the share of *Health* is relatively large in the United States. This is probably related to the relatively low amount of social transfers in kind on health in the United States. On average, 19% of consumption expenditure is spent on *Health*, whereas this is around 12 to 14% in most other countries.

[35] See Annexes 5.8.7 and 5.9.7.

[36] Other countries are presented in Annex 5.10.

[37] The other countries are presented in Annex 5.11.

Figure 18. Composition of adjusted disposable income per quintile for six countries

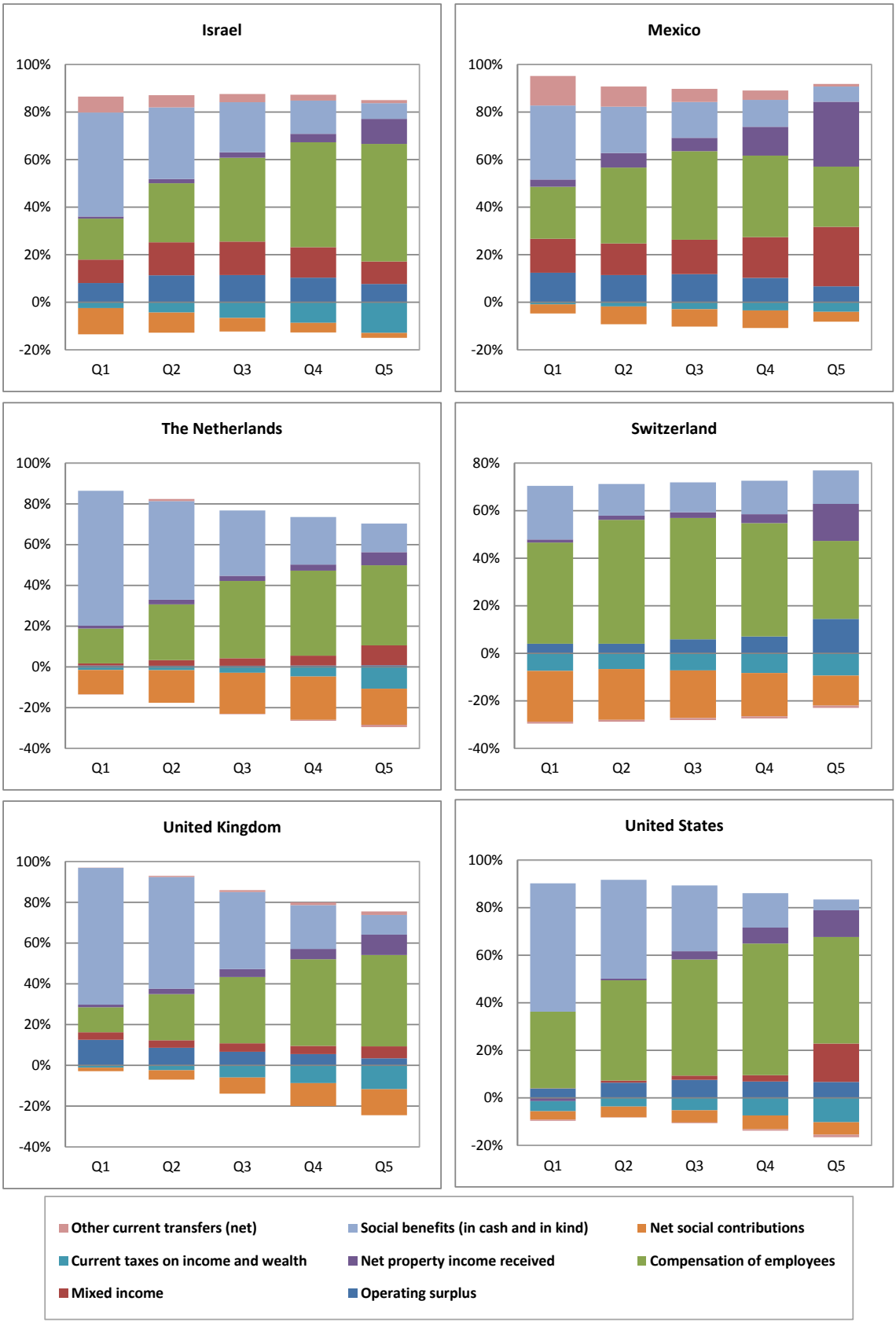
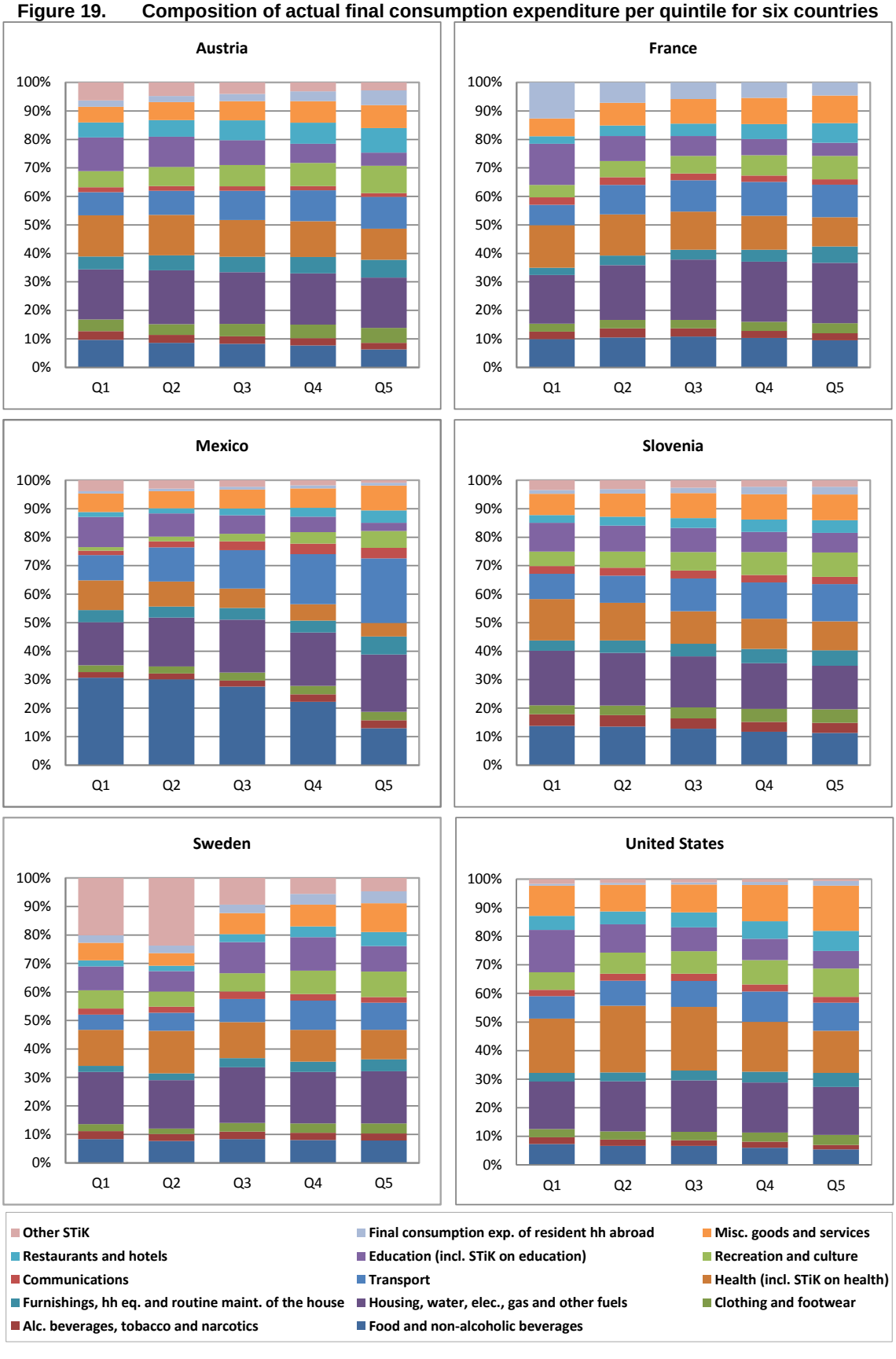


Figure 19. Composition of actual final consumption expenditure per quintile for six countries



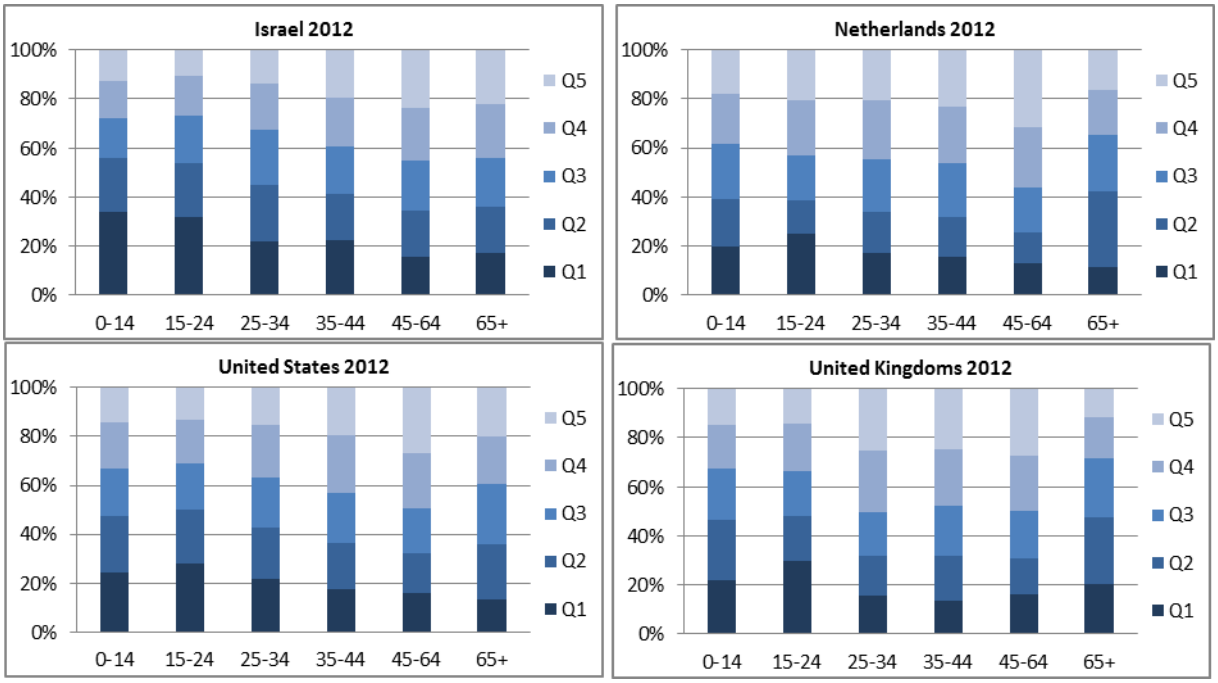
N. Socio-demographic composition of quintiles

88. This section presents some background information on the socio-demographic composition of the quintiles in the various countries. For this purpose the template requested data, for each of the income quintiles, on the number of households broken down by household type, main source of income and housing status. Countries also provided information on the number of persons by age group, gender, labour market status, and highest level of education achieved. This section presents the main results for the various breakdowns.

Structure by age

89. Figure 20 presents how the different age groups are represented in the quintiles for four countries[38, 39]. For Israel, it turns out that younger persons tend to have the lowest income, with income generally increasing with age. In the Netherlands, households in the middle age groups (*25-64*) are highly concentrated in the highest income quintiles (Q4 and Q5) with a particularly large concentration of the age group *45-64* in the fifth quintile. Looking at the drop of the percentage of the *65+* group in the fourth and the fifth quintile in comparison with the age group *45-64*, it clearly indicates that retired people have substantial lower incomes than individuals in the middle age group. A similar picture can be observed for the United Kingdom, where the share of highest income population (fourth and fifth quintile) more than halves. In the United States, the picture is more mixed, with a relatively equal distribution of the middle age groups (i.e. *25-34* and *35-44*) across the quintiles, a larger concentration of the youngest (i.e. age groups *0-14* and *15-24*) in the lower income quintiles, and of the second oldest age group (i.e. age groups *45-64*) in the higher income quintiles. Just as in the Netherlands and the United Kingdom, income drops when going from the *45-64* age group to the oldest age group.

Figure 20. Composition of age groups into quintiles



[38] Annex 5.12 presents the structure of the total resident population by age for the various countries.

[39] Other country examples and results over time are reported in Annex 5.13.

90. Comparing the numbers over time, the compositions turn out to be relatively stable for most countries. However, in France between 2003 and 2011, the share of the individuals in the first four age groups (i.e. from *0-14* to *35-44*) increased noticeably in the fifth quintile, while the age group *45-64* faced a slightly decreasing share. On the other hand, in Switzerland, between 2008 and 2011, the oldest income group (65+) experienced an increase in its share in the highest income groups (Q4 and Q5), at the expense of all other age groups with the exception of the lowest quintile group for which the share remained stable.

Structure by labour market status

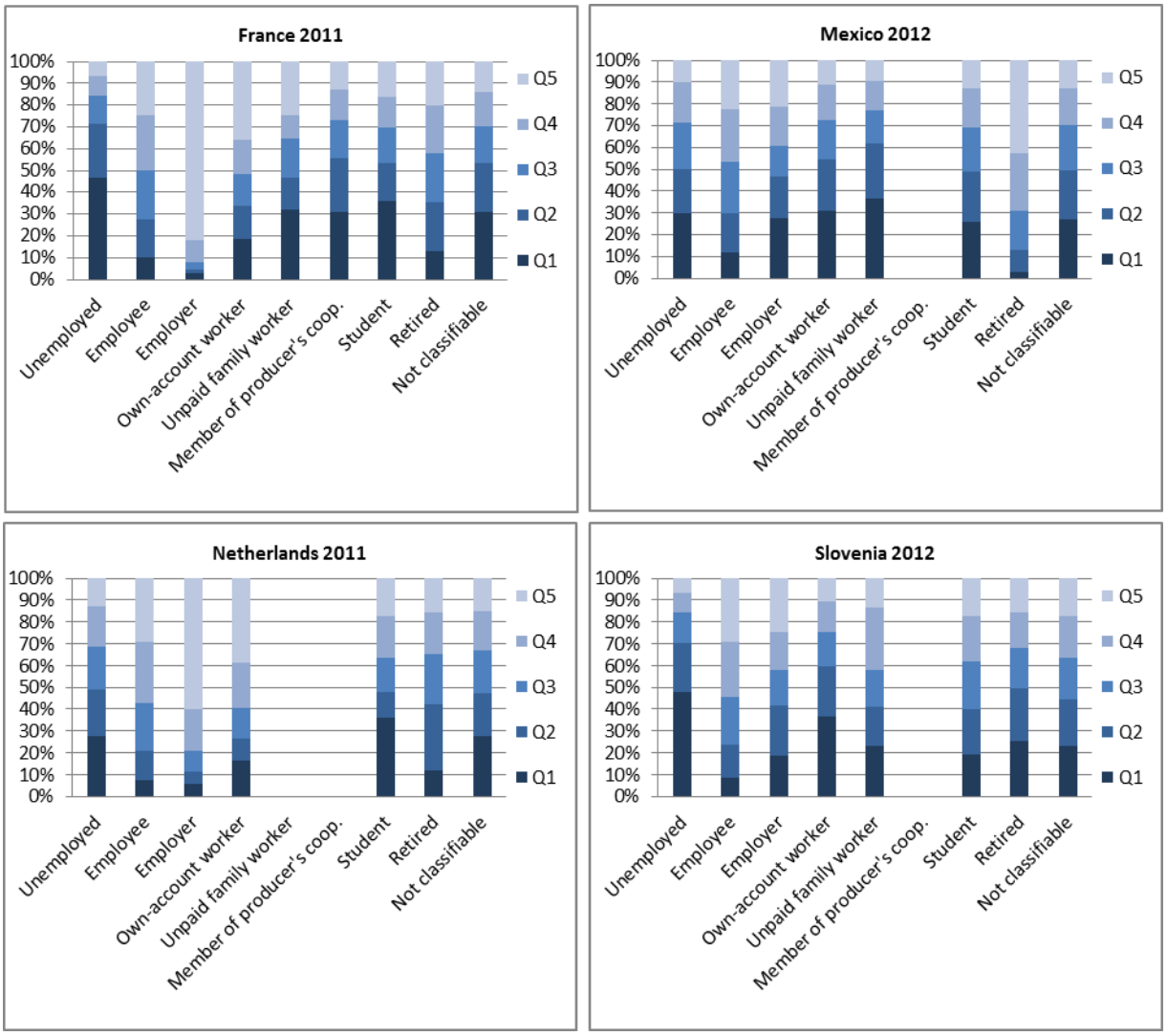
91. Figure 21 presents how the labour market status' categories in four countries are distributed across the income quintiles[40] [41]. As expected, in most countries the *Unemployed* category has a large concentration in the lowest income quintile, as do *Unpaid family workers*, as may be derived from the name itself. However, in the Netherlands the *Unemployed* show a relatively flat distribution across the quintiles when compared to other countries. Although it also has the largest concentration in the first quintile, the share is much smaller than in other countries. Furthermore, in most countries also *Students* and *Members of producer's cooperatives* have a relatively high share in the lower income quintiles. Only Slovenia records a somewhat lower share of students in the lower income quintiles.

92. When looking at categories with a high concentration in the higher income quintiles, the *Retired* seem to receive relatively high incomes in Mexico. Their share in the fourth and fifth quintile is significantly larger than for other countries. For France, it is evident that the *Employer* category, and to a lesser extent the *Own-account worker* category, is above average represented in the highest income quintile. In the Netherlands, similarly to the case of France, *Employers* are highly concentrated in the high income quintile (although less pronounced when compared to France). Finally, it is interesting to notice that in Slovenia *Employees* have the highest concentration in the highest income quintile, even higher than *Employers*.

[40] Annex 5.14 presents the structure of the resident population by labour market status for the various countries.

[41] Other country examples and results over time are presented in Annex 5.15.

Figure 21. Composition of labour market status groups into quintiles



Structure by education level

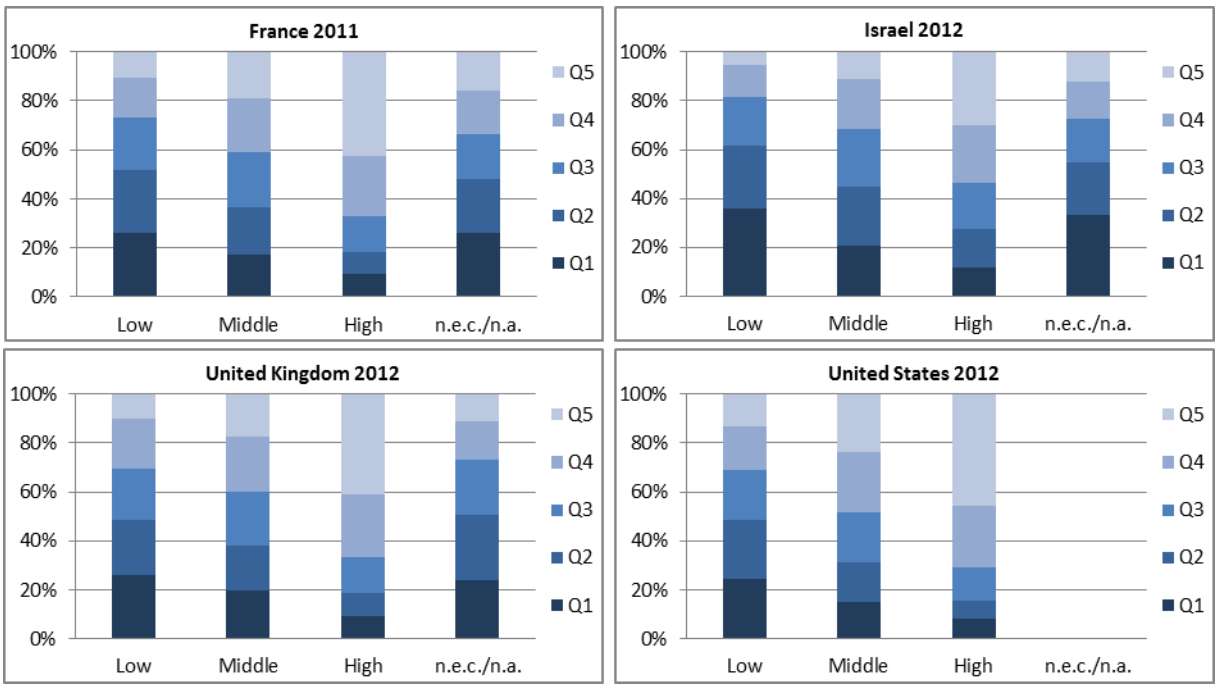
93. By looking at the composition of the resident population's education levels by quintile, in Figure 22, it immediately turns out that persons with a higher level of education are concentrated in the high income quintiles, while people with low education levels tend to be concentrated in the lower income quintiles[42] [43]. This is consistent over all the years reported in the exercise[44].

[42] Annex 5.16 presents the structure of the resident population by education level for the various countries.

[43] Other country examples and results over time are reported in Annex 5.17.

[44] In analysing these results, it has to be noted that some countries record relatively high numbers in the category 'not elsewhere classified'. It would be relevant to know more about the composition of the population belonging to this category to arrive at comparable data for the various countries.

Figure 22. Composition of education level groups into quintiles



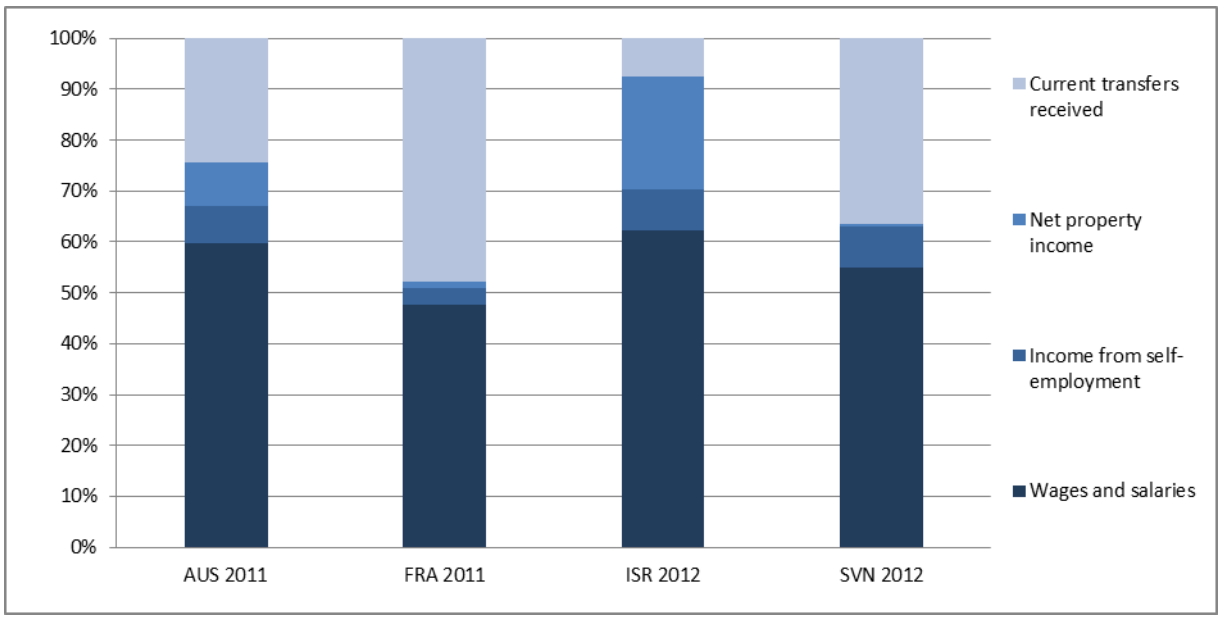
Structure by main source of income

94. With regard to main source of income, four categories are identified: *Wages and salaries*, *Income from self-employment*, *Net property income* and *Current transfers received*. Figure 23 shows that for most of the countries distinguished (i.e. Australia, Israel and Slovenia) *Wages and salaries* represents the main source of income for most households, with the exception of France, where *Wages and salaries* and *Current transfers received* have almost the same share (48% each). Results also reveal a substantial percentage for category *Net property income* (22%) in Israel, representing the second highest source of income. In the other countries the share of this category is rather small. Finally, the category *Income from self-employment* is very small in all the countries for which data are available.

95. By comparing results over the years, it becomes clear again that the shares do not change that much over time[45]. It is interesting to note however that in France the number of households for which *Current transfers received* was the main source of income has increased slightly between 2003 and 2011 (passing from 44% to 48%), with an associated decrease in the percentage for *Wages and salaries* (passing from 50% to 48%). It is assumed that this relates to the financial and economic crisis.

[45] See Annex 5.18.

Figure 23. Distribution of population across main source of income groups



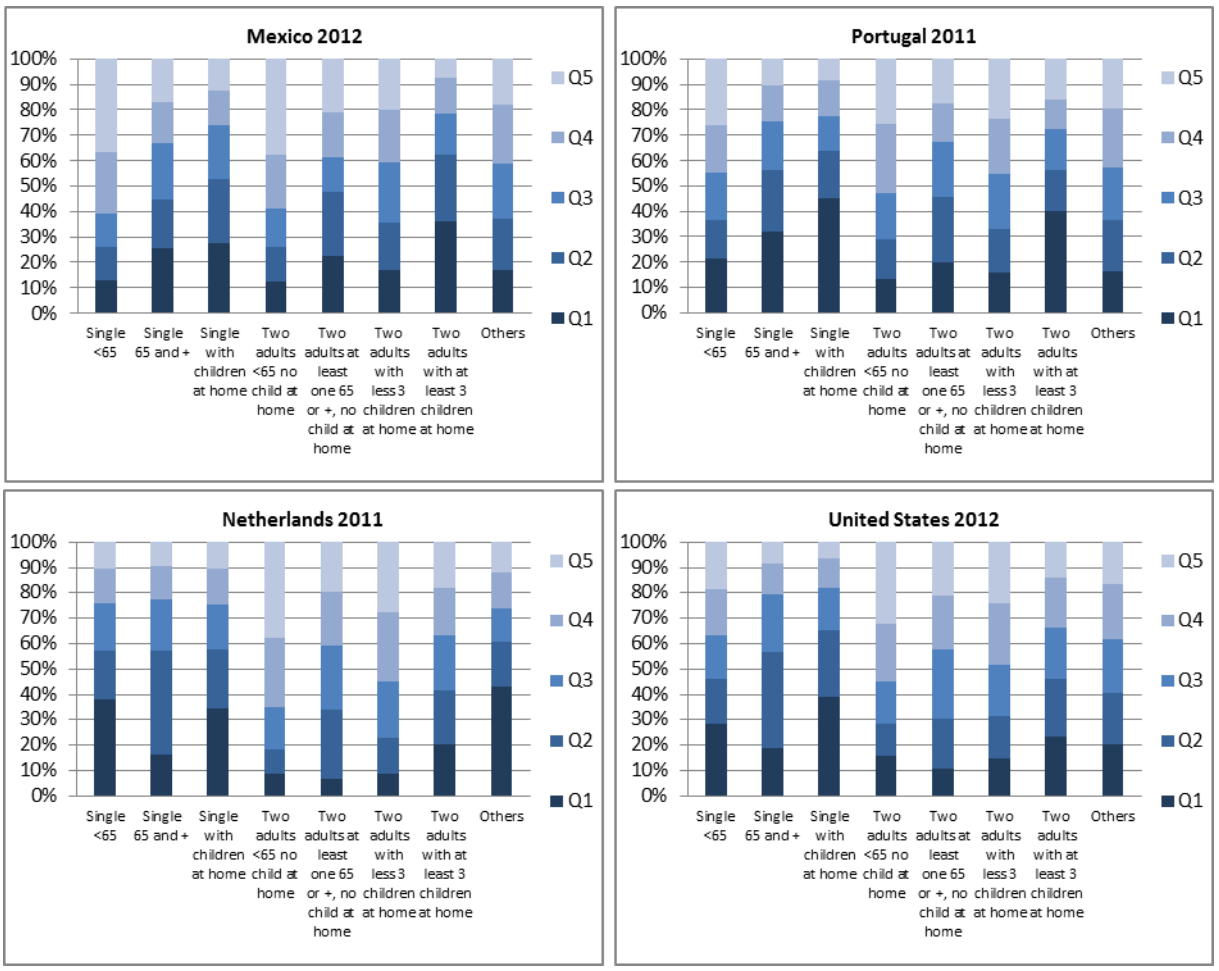
Structure by household type

96. The cross-classification of household types and income quintiles also provides useful information in analysing distributional results. Figure 24 shows the quintile breakdown of the various household types by country[46]. In Mexico, households composed of singles without children and those composed of *Two adults without children* tend to concentrate in the higher income quintiles, whereas categories of *Households with children* tend to concentrate in the lower quintiles. In Portugal, the categories *Without children* tend to have a relatively flat and heterogeneous concentration across quintiles, whereas households with children appear to concentrate in the lower income quintiles (with the exception of *Two adults with less than 3 children living at home*, showing a more flat concentration). In the Netherlands, the composition varies considerably from one group to another, but two adults' households generally have higher incomes that single person households. Similar results can be observed for the United States, with the exception of the *Two adults with at least 3 children living at home* and the *Others* categories, where a smoother distribution is observable.

97. When comparing the quintile compositions over time, all countries show relatively stable results. However, the cases of Portugal and Mexico are worth mentioning here. In Portugal, the households composed of *Single with children living at home* experienced a considerable increase of their share in the lowest quintile (from 29%, in 2006 to 45%, in 2011), while the category *Single 65 and older* recorded a decrease in the lowest quintile share (from 41% in 2006 to 32% in 2011). Also in Mexico the category *Single 65 and older* experienced a decrease of their share in the lowest quintile, but almost twice as large to what can be observed in Portugal, passing from 46% in 2008 to 25% in 2012.

[46] Other country examples and results over time are reported in Annex 5.19.

Figure 24. Composition of household type groups into quintiles



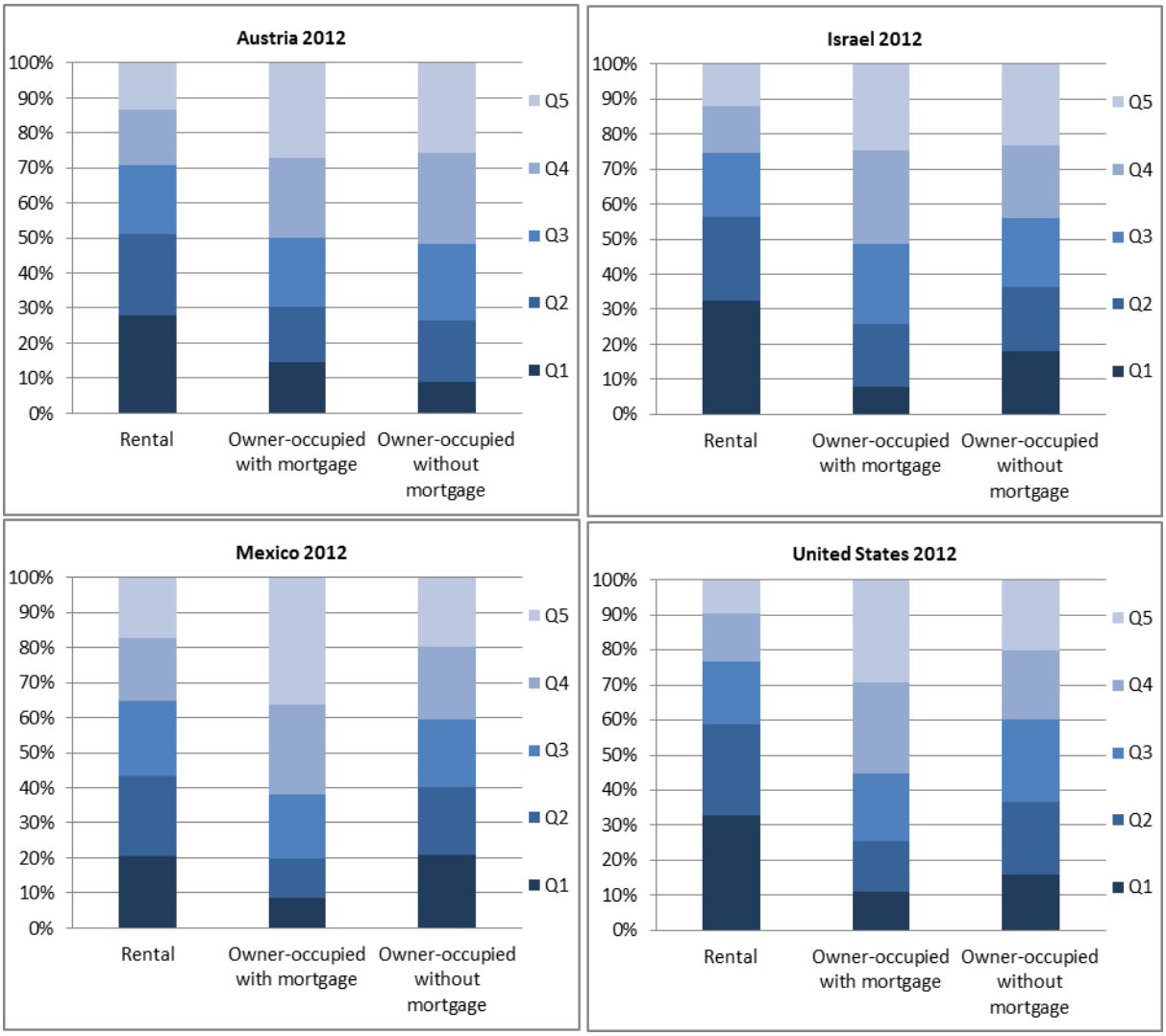
Structure by housing status

98. Finally, the examples reported in Figure 25[47] show that in all countries (to different extents) households paying rent are usually more concentrated in the lower income quintiles than those owning a house (with or without mortgage)[48]. Comparison of the results over the years does not show significant changes in the distribution over quintiles by households' housing status.

[47] Annex 5.20 presents the structure of the resident population by housing status for the various countries.

[48] Other country examples and results over time are reported in Annex 5.21.

Figure 25. Composition of housing status groups into quintiles



VII. Conclusions and way forward

99. This paper presented the results for twelve countries on the distribution of household income, consumption and savings consistent with national accounts totals. The goal of the exercise was to get more insights in the dynamics of the distributional information and to help the Expert Group to assess the robustness of the assumptions made, and to further improve the methodology.

100. With regard to the methodologies applied by the countries, it can be concluded that all of them comply with the guidelines to the extent possible. Sometimes countries deviate for pragmatic reasons, for instance by including institutional households in the data or by combining the correction for expenditure of non-residents in the domestic economy with the correction for expenditure of residents abroad at the aggregate level, but in general the results are considered to be sufficiently comparable in terms of definitions and coverage.

101. Looking at relevant process information, three items provide further insights in the quality and comparability of the results. First of all, one can have a closer look at the coverage of micro data used in the exercise. As can be derived from the metadata provided, it becomes clear that the overall coverage is

quite good. Most countries have micro data available for most of the items in the exercise with usually only data lacking on items imputed in the System of National Accounts and for some countries on a couple of other components.

102. The imputation techniques applied provide a second item of information to assess the quality. When looking at STiK more specifically, it can be concluded from the results that, although the imputation techniques vary across countries, the results appear to be comparable for most of them and they also turn out to be relatively stable over time. Sharing more information on the rationale for the imputation methods and the results would help improve the methodology and the comparability of this specific item. With regard to other items for which micro data is lacking, it is also considered important to share more information on how countries deal with this, as it turned out that a number of countries faced problems in finding acceptable solutions. The EG DNA would therefore benefit from exchanging information on the methods currently applied by countries, to further improve guidance on this point.

103. A third quality indication is the scaling factor that had to be applied to align the micro data with the adjusted national accounts totals. If the gap between the two is high, this can be viewed upon as a sign of major consistency problems in the total set of statistics produced by statistical offices. The adjustment coefficients turn out to be high for quite a number of countries. This is especially the case for some of the income components, such as distributed income of corporations, interest received and paid, and mixed income. For the consumption components the coefficients tend to be smaller, but some countries report quite substantial numbers for some of them. The size of the adjustment coefficient is considered as an important piece of information to prioritise the main areas for further research, to improve the methodology and thus enhance the accuracy of the distributional results.

104. Another issue that has been mentioned in the paper which may have a serious impact on the distributional results, but for which no information is currently available, is how countries deal with linking information across various data sources. As in most countries multiple micro data sources are used, the way in which these are linked to arrive at homogeneous households results across all items for income and consumption is highly relevant. If for the consumption results the income levels do not match the ones from the income components, it may automatically lead to inconsistent results for income, consumption and savings. This issue will also be part of the research agenda of the EG DNA.

105. Turning to the main results, Mexico records the highest disparities (for adjusted disposable income as well as for consumption), followed by the United States and Portugal. Other countries that show higher disparities when looking at disposable income are Israel and Switzerland. Slovenia records the lowest inequalities. The other countries are more similar to one another in this respect. Their results only deviate by a little and their ranking depends on the disparity ratio used. The results show that the disparities are quite similar over time, with only a couple of countries showing some larger differences between the two years.

106. The breakdown of the quintile information into other household groups provides another layer of information. The paper showed the distribution across quintiles by age group, labour market status, level of education and housing status. These additional breakdowns indeed provide very interesting insights in which groups are mainly concentrated in the lower income quintiles and which groups tend to be concentrated in the higher income quintiles.

107. A number of countries have already started to publish distributional results on the basis of the methodology developed by the EG DNA. In the meantime, the Expert Group is continuing its work to further improve the methodology by addressing specific issues and exchanging best practices. The most relevant issues in this regard, as was shown in this paper, are the micro-macro gaps, the linking of data across different data sources, and the imputation of distributional information in case micro data is lacking.

These will be the topics on the research agenda of the EG DNA in the coming period. Furthermore, the Expert Group intends to start exploring possibilities to set up a regular data collection and also to develop formats for regularly disseminating distributional results. The group also aims to further extend the country coverage by including G20 countries as part of the Data Gaps Initiative and to assist other countries in adopting the methodology. In this work, the EG DNA will closely cooperate with Eurostat which is also very interested in the compilation of distributional results.

108. In addition to further improving the methodology and extending the number of countries involved in the compilation of distributional results, the Expert Group is also looking into possibilities to improve the timeliness of the results. As the methodology relies heavily on micro data sources that usually only become available with a certain delay, distributional results currently suffer from a substantial time lag. Therefore, the Expert Group has started to explore nowcasting techniques to arrive at more timely distributional estimates. The Expert Group intends to continue its work in this area and will most probably release a working paper on the methodology in the course of 2017.

109. Finally, together with the European Central Bank, the Expert Group wants to explore possibilities to also include the wealth dimension in the work on distributional results. On the one hand, this would provide more insight in the plausibility of the savings results derived by the Expert Group, as data on wealth can be linked to data on income and consumption. On the other hand, it would meet very important user demands to provide a more comprehensive picture of the situation of the various household groups. For the purpose of these goals, micro and macro data on income, consumption and wealth will need to be analysed in conjunction and methodology will need to be developed on how to best link these data.

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ANNEX 1: INCOME, CONSUMPTION AND SAVING: TRANSACTIONS AND RELATIONSHIPS IN THE NATIONAL ACCOUNTS FRAMEWORK USING THE ASSOCIATED CODES

INCOME ACCORDING TO SNA

B2	**Operating surplus from actual and imputed rentals**	
	Owner occupied dwellings	
	Leasing of dwellings	
B3	**Mixed income**	
	Own account production	
	Underground production	
	Mixed income excluding underground and own account production	
D1	**Compensation of employees**	
D11	Wages and salaries	
D121	Employers' actual social contributions	Counterpart in D611
D122	Employers' imputed social contributions	Counterpart in D612
D4	**Net property income**	
	Property income received (not adjusted for FISIM)	
D41'	Interest (not adjusted for FISIM)	
D42	Distributed income of corporations	
D44	Investment income disbursements	
D441	*Investment income attributable to insurance policy holders*	
D441A	*Property income received attributed to non-life insurance policy holders (optional)*	*Part of D71*
D441B	*Property income received attributed to life insurance policy holders (optional)*	
D442	*Investment income payable on pension entitlements (optional)*	*Part of D614*
D443	*Investment income attributable to collective investment funds shareholders (optional)*	
D45	Rent	
	Property income paid (not adjusted for FISIM)	
D41'	Interest (not adjusted for FISIM)	
D45	Rent	
	Adjustment for FISIM	
B5	**Primary income**	**= B2 + B3 + D1 + D4 resources – D4 uses - Adjustment for FISIM**
D62	**Social benefits other than STiK**	
D7	**Other current transfers (net)**	
D72-D71	Net non-life insurance claims minus premiums	
-D71	*Non-life insurance premiums*	*Including D441A*
D72	*Non-life insurance claims*	
D75	Net miscellaneous current transfers received – paid	
D75	*Miscellaneous current transfers received*	
-D75	*Miscellaneous current transfers paid*	
	Of which transfers between resident households	

D5	**Current taxes on income and wealth**	
D61	**Net social contributions**	
D611	Employers' actual social contributions	Counterpart in D121
D612	Employers' imputed social contributions	Counterpart in D122
D613+D614	Households' social contributions (actual and supplements)	Including D442
B6	**Disposable income**	**= B5 + D62 + D7 resources – D5 – D61 – D7 uses**
D63	**Social Transfers in Kind**	
D63A	Education	
D63B	Health	
D63C	Other	
B7	**Adjusted disposable income**	**= B6 + D63**

CONSUMPTION

P3_01	Food and non-alcoholic beverages	
P3_02	Alcoholic beverages, tobacco and narcotics	
P3_03	Clothing and footwear	
P3_04	Housing, water, electricity, gas and other fuels	
P3_05	Furnishings, household equipment and routine household maintenance	
P3_06	Health	
P3_07	Transport	
P3_08	Communication	
P3_09	Recreation and culture	
P3_10	Education	
P3_11	Restaurants and hotels	
P3_12	Miscellaneous goods and services	
P33	Resident household expenditure abroad	
P3	**Final consumption expenditure of resident households**	**P3_01+P3_02+P3_03+P3_04+P3_05+P3_06+P3_07+P3_08+ P3_09+P3_10+P3_11+P3_12 + P33**
D63	Social Transfers in Kind	
P4	**Actual final consumption**	**P3 + D63**

SAVING

D8	Change in net equity of households in pension funds	
B8	**Saving**	**B6+D8-P3=B7+D8-P4**