

Distributional national account estimates for household income and consumption: methodological issues and experimental results

ALESSANDRA COLI, RADOSLAV ISTATKOV, HAKAM JAYYOUSI, FRIDERIKE OEHLER, ORESTIS TSIGKAS

2022 edition



**Distributional national account
estimates for household income
and consumption: methodological
issues and experimental results**

Alessandra Coli, Radoslav Istatkov, Hakam Jayyousi,
Friderike Oehler, Orestis Tsigkas

2022 edition

This document should not be considered as representative of the European Commission's official position.

Luxembourg: Publications Office of the European Union, 2022

© European Union / OECD, 2022

Reproduction is authorised for non commercial purposes only provided the source is acknowledged

For any use or reproduction of elements that are not owned by the European Union, permission may need to be sought directly from the respective rightholders.

The opinions expressed herein should not be considered as representative of the official position of the European Union or of the OECD Members.

For any clarifications on the re-use of this work, you may contact the Publications Office Copyright service at op-copyright@publications.europa.eu.

Theme: Economy and finance

Collection: Statistical working papers

PDF: ISBN 978-92-76-46198-2 ISSN 2315-0807 KS-TC-21-010-EN-N



Abstract

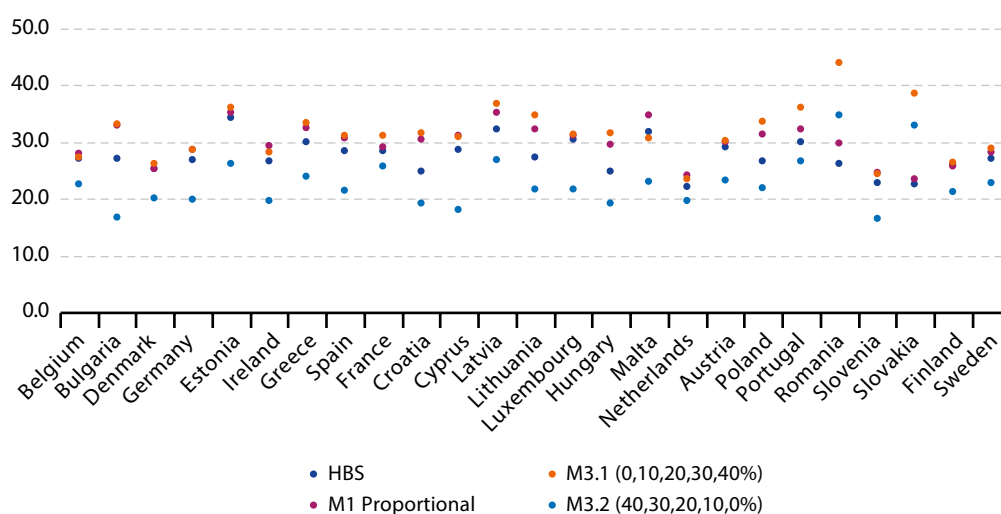
Distributional national account estimates for household income and consumption: methodological issues and experimental results

Final report of the Joint OECD-Eurostat Expert Group on Disparities in a National Accounts Framework (EG DNA).

Who benefits from economic growth? What shares of national income and consumption are held by which household groups? How can national accounts (NA) aggregates for the household sector be distributed over population subgroups? Such questions have been asked many times over recent years and decades. In an attempt to make progress answering these questions, a joint OECD-Eurostat expert group has continued previous work on reconciling national accounts income and consumption with micro data sources, providing distributional information in line with the System of National Accounts (SNA). As a result, 16 countries provided distributional national accounts (DNA) data for a number of recent reference years following guidelines developed by the expert group. In addition, Eurostat compiled DNA for EU/EFTA countries based on harmonised micro- and macroeconomic statistics. Different methods to allocate the micro-macro data gap of individual income and consumption components were tested. Experimental results highlight the inequality in the distribution of disposable income and consumption expenditure in NA across countries. However, certain microeconomic concepts deviate significantly from the SNA. For such items, data comparability and coverage rates are low. In the absence of supplementary knowledge and (administrative) data sources, the uncertainty of allocating the gap for these items remains high. To improve the results, micro- and macroeconomic concepts will need to be further aligned in the future. A longer time series will make it possible to monitor the stability of DNA indicators. The DNA can then be an important source of information to judge the success of redistributive measures taken at national level.

Keywords: micro-macro data reconciliation, economic inequality, distributional national accounts

Figure 3.6.2 Gini coefficient before and after gap allocation, centralised exercise, total consumption (%)



The simple proportional method (M1) preserved the original distribution from the survey data at the detailed level. When aggregated up to total income or consumption, the inequality across households generally increased, depending on the household income composition and the size of the micro-macro gap by item. As was also to be expected, the Pareto tail modelling (M2) drastically increased the inequality by targeting only a small portion of the population. Applied to all income items, it was a fairly extreme scenario. However, it proved appropriate for transactions that were concentrated in the top income population. The two M3 sub-approaches allocation of ascending/descending shares by quintile were less marginal and produced contrasting results in terms of inequality. Despite the rather hypothetical approach, the applied assumptions were still considered relevant for some country-specific cases of underestimating higher/lower income households. Finally, the combined approach (M4) seemed to provide balanced results by combining the most suitable method for each item and capturing the likely distributional pattern of household income. As explained earlier, it was thus used as the default method for countries not having indicated a preferred set of centralised results.

3.7. Limitations

The process of compiling distributional results in line with macro totals is challenging. Most difficulties were mentioned in the previous sections but it is worth summarising some limitations that have presented challenges for the exercise and have potentially given rise to uncertainties in the results.

Availability of suitable micro data. Indeed, national accounts include items that are usually not covered in micro statistics. In such cases, imputations are necessary. In addition, not all national compilers have access to additional data sources, such as tax information or administrative registers. For the centralised exercise, micro data are only available from regular social surveys; additional sources that might be available nationally cannot be used. (On the other hand, this ensures a harmonised approach across all countries.)

Lack of knowledge of the nature of the micro-macro gaps. The micro-macro gaps may be relevant not only for the centralised exercise but also to some extent at the national level. In this regard, several countries claimed to have additional data sources available that can be used to allocate a large part of the gap to relevant households. However, in some cases, countries need to rely on assumptions to allocate any remaining gap. A number of approaches have been recommended in the EG DNA guidelines, while several alternative scenarios were tested centrally. Where one needs to rely on assumptions, this adds to the uncertainties of the results.

Frequency and timeliness of survey data. National accounts data are normally obtained with higher frequency and better timeliness than survey data, which are typically available no earlier than T+2 years after the reference period. Some surveys are even less frequent, for example the Household Budget Survey in the EU, which most countries only conduct every 5 years.

Resources. Last but not least, the compilation of distributional results depends on the availability of sufficient resources. Many countries opted to be included in the centralised exercise mainly due to the lack of resources. A couple of countries made use of grants offered by international organisations (Eurostat).

3.8. Publication of manual for producing distributional results

Because of the complexities involved in the compilation of distributional results in line with national accounts' totals and the need to arrive at harmonised results, the secretariat has been working on a compilation guide that provides a detailed description of the methodology, and which focuses on specific compilation issues. In this way, it combines all the knowledge and expertise as built up by the expert group during the project. This will help compilers in developing high-quality and comparable results, and users in obtaining a good understanding of the underlying concepts and in how results have been derived.

A first draft of the manual already gained useful feedback. This will be incorporated in the final version. At the same time, the secretariat is working on further updating the manual to incorporate guidance on specific issues as addressed by the group over the recent period. It is expected that the manual will be published in the course of 2022.

4

Experimental distributional results

4.1. Experimental statistics

In December 2020, Eurostat and the OECD published for the first time the results of the third EG DNA exercise. Eurostat published the results as a dedicated section 'Income and Consumption: Social Surveys and National Accounts' in the Experimental Statistics area of the website. Data are presented in two excel files, the first for household income and the second for household consumption. Both files contain a 'Results' and a 'Flat data' sheet.

The Results sheet allows the user to select and extract specific tables by combining the following fields (pivot table slicers) and categories:

- Dataset: Distributional (adjusted), EU-SILC, HBS, NA (adjusted), NA (original), NA-EU-SILC coverage rate, NA-HBS coverage rate, NA-EU-SILC gap, and NA-HBS gap.
- Indicator: Sensitivity indicators (Gini coefficient and Q5/Q1 ratio), Q1, Q2, Q3, Q4, Q5 and Total.
- Country: All countries participating in the EG DNA are included. For user convenience, countries in the national exercise are marked with a note.
- Year: From 2011 to 2018.
- Item: A selection of NA items of the 'allocation of primary income' and 'use of income' account. For user convenience, the items compiled within the national exercises are marked with a note.

The 'Flat data' sheet allows users to download data in a format easily processable with various statistical software.

Beyond data, users can also access documents that help in understanding the data, in particular the [Guidelines of the OECD-Eurostat joint Expert Group on Disparities in a National Accounts Framework](#), a methodological note on the centralised exercise and a metadata file.

The OECD website presents the 'Distributional information on household income, consumption and saving' dataset as experimental statistics, in the Annual National Accounts section of the OECD database. The dataset includes the main items of 'allocation of primary income' and 'use of income' accounts distributed across households, classified according to equivalised disposable income quintile, household type and main source of income of the household.

It is possible to select and extract various tables by using the following filters: Country (all countries that participated in the third EG DNA exercise); Year; Measure (current, prices, per consumption unit and per household). Furthermore, for most countries, supplementary information is provided on the distribution of the number of households and individuals across the households groups as defined in the distributional accounts, broken down by socio-demographic categories, such as age group, gender, education level and labour market status.

Additional information on data can be found in the metadata section accompanying the visualisation of data.

The OECD also drafted a working paper on the results of the third exercise, focusing on the methodological steps and presenting the main results of the national exercises (Zwijnenburg *et al.*, 2021). The working paper does not include the results of the centralised exercise.

In fact, its main focus is on adjusted disposable income and actual final consumption, which are not covered in the centralised approach.

4.2. Examples of analysis of distributional data

The aim of this section is to highlight how distributional national accounts data can improve our understanding of economic inequality with respect to both national accounts and micro data. Unfortunately, it was not possible to develop all analyses for all countries, due to the different availability of data. Indeed, for some countries, the distributive results of some specific income or consumption items are lacking (see Section 3.2 for details). In addition, centralised and national exercises refer to a slightly different list of NA items. In general, the national exercise contains more items than the centralised exercise and follows the sequence of household sector accounts more closely. On the other hand, cross-country comparability might be more challenging for the national exercise due to the use of different data sources and methods.

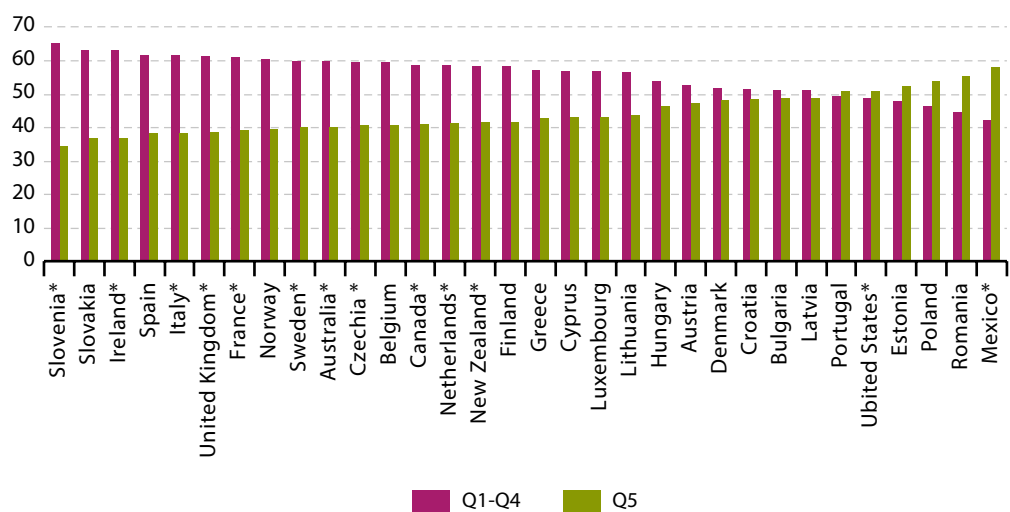
For transparency, national accounts countries are marked with an asterisk in the graphs.

4.2.1. Inequality in the distribution of disposable income

Figure 4.2.1 shows the share of gross disposable income received by households belonging to the first four equalised disposable income quantiles (Q1–Q4), compared with the share of gross disposable income of households in the fifth quintile. Countries are ranked according to the increasing share of disposable income held by the fifth quintile or, equivalently, according to the decreasing share held by the first to fourth quintiles as a whole. The graph illustrates the proportion of disposable income held by the two groups. In 6 out of the 32 countries for which data are available, the 20% highest income households own more of the gross disposable income than the other 80% of the population all together. In the cross-country comparison, Slovenia is the country where households in the fifth quintile hold the lowest share of disposable income (35%), while fifth quintile households in Mexico hold the highest share (nearly 60%).

Figure 4.2.1.1: Shares of gross disposable income held by households belonging to the first four quintiles (Q1–Q4), compared with the share held by the fifth quintile (Q5). Year around 2015. Countries ranked by percentage according to the increasing share of disposable income held by the fifth quintile.

(%)



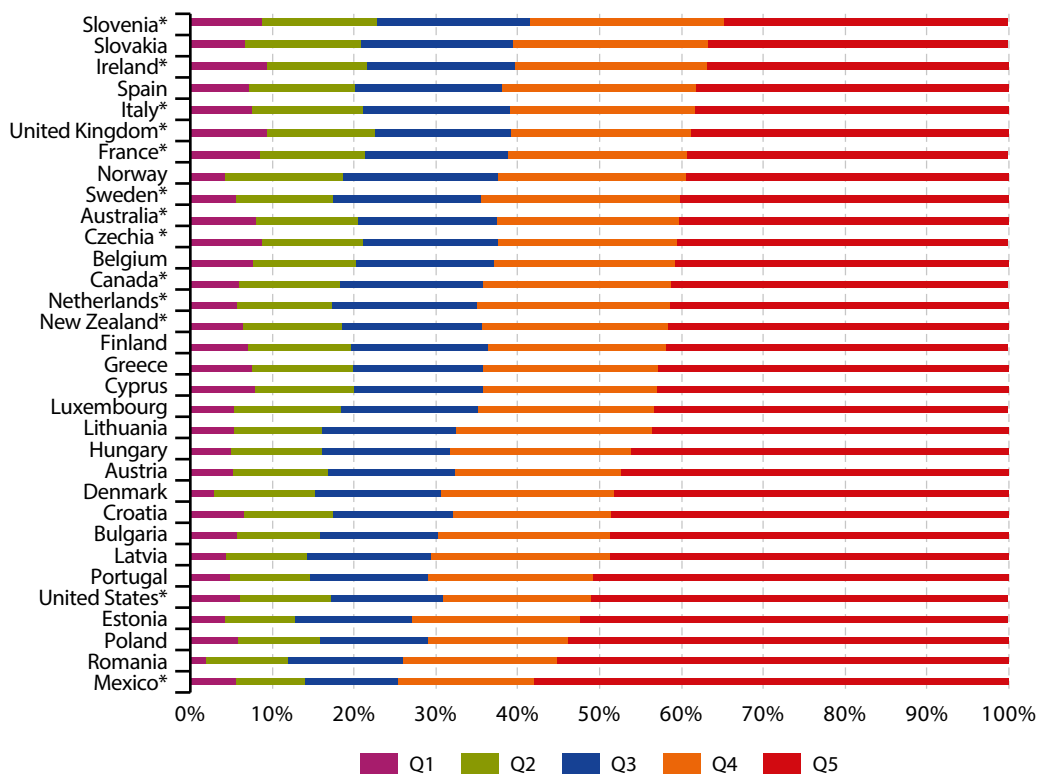
Note: Countries are ranked according to the increasing share of disposable income held by the fifth quintile. Asterisks indicate the countries that carried out a national exercise.

In a perfect, equal situation, each quintile would receive one fifth of total disposable income. The further the distribution moves away from this distribution, the more unequal is the distribution of disposable income.

Detailing the analysis by single quintile, it can be seen (Figure 4.2.1.2) that Slovenia shows not only the lowest share of disposable income (35 %) for the richest group of households, but also the highest share of disposable income (9 %) for the poorest group. Although Mexico shows the highest share held by the fifth quintile, the distribution from the first to the fourth quintile appears more equal than in other countries.

Finally, averaging across countries, the analysis shows that the first quintile holds 6.3 % of disposable total disposable income, the second quintile holds 11.8 %, the third 16.2 %, the fourth 21.6 % and the fifth 44.1 %.

Figure 4.2.1.2: Shares of gross disposable income by equivalised disposable income quintiles. Year around 2015.

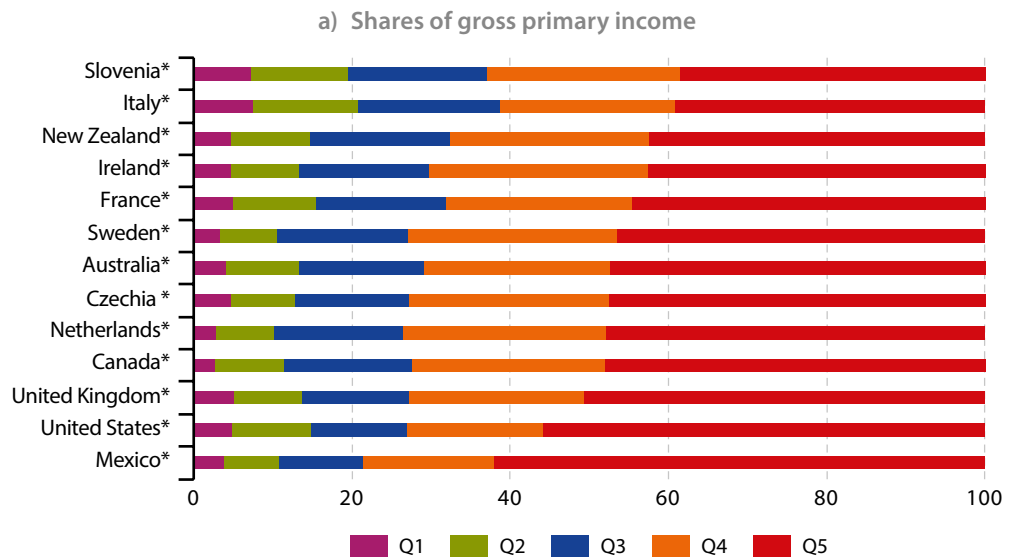


Note: Countries are ranked according to the decreasing share of disposable income held by the fifth quintile. Asterisks indicate the countries that have carried out a national exercise.

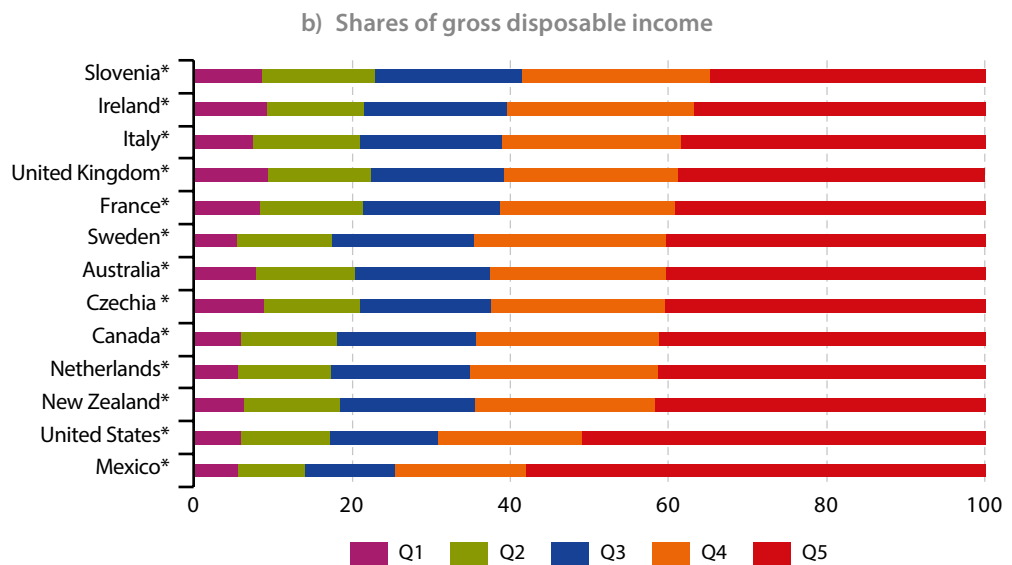
4.2.2. Inequality in the distribution of primary and disposable income

Distributional national accounts have the advantage of showing how income inequality changes in the passage from primary to disposable income. Comparing the shares by quintile of primary and disposable income provides an indication of the impact of the income redistribution process in mitigating inequality (Figure 4.2.2.1). The distribution of primary income by quintile is available only for national exercise countries. Due to the lack of appropriate micro data (in particular for employers' imputed social contributions), the centralised exercise did not so far include employers' social contributions (on both the resource and the use sides), which finally did not affect the aggregate disposable income according to the NA definition.

Figure 4.2.2.1: Primary and disposable income shares by equivalised income quintiles. National exercise countries, year around 2015.
(%)



Note: Countries are ranked according to the decreasing share of gross primary income held by the fifth quintile. Asterisks indicate the countries that have carried out a national exercise.

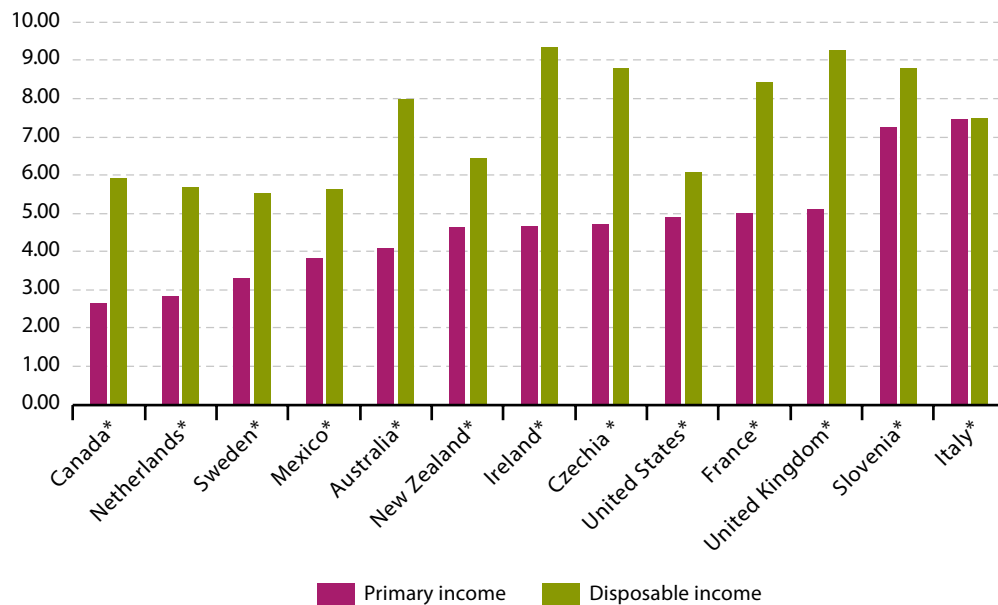


Note: Countries are ranked according to the decreasing share of gross disposable income held by the fifth quintile. Asterisks indicate the countries that have carried out a national exercise.

The share of the first income quintile is expected to increase as we move from primary to disposable income. Indeed, this happens for all countries but with significant variations from country to country (see Figure 4.2.2.2). The redistributive effect is greatest in Canada and Ireland, where disposable income doubles as compared with primary income in the lowest income group of households. By contrast, in the United States, the share of disposable income of the same group increases only by 1% as compared with primary income, and in Italy, it does not change at all.

Fig. 4.2.2.2: Shares of primary and disposable income allocated to the poorest group of households (bottom quintile). National exercise countries, year around 2015.

(%)



Note: Countries are ranked according to the increasing share of primary income held by the first quintile. Asterisks indicate the countries that have carried out a national exercise.

4.2.3. Inequality in consumption expenditure

Inequality in terms of consumption expenditure can be highlighted best by comparing the shares of expenditure incurred by the different groups of households. As in the income analysis, we compare the share of consumption expenditure of households belonging to the fifth quintile with the consumption expenditure of all other households. The analysis can be carried out for consumption expenditure as a whole (Figure 4.2.3.1) or for specific consumption categories, such as food and non-alcoholic beverages (Figure 4.2.3.2).