



UNEQUAL DISTRIBUTIONS?

A study on differences between the compilation of household distributional results according to DINA and EGDNA methodology.

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Disclaimer:

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1. Introduction

1. The past years have seen an increased interest in distributional information on the household sector. The Commission on the Measurement of Economic Performance and Social Progress (also known as the Stiglitz, Sen and Fitoussi Commission (2009)) already stressed the need to have more focus on the household perspective and on how different groups within the household sector are faring, and also the work by Piketty (2014) has led to an increased attention on the development of inequality over time.

2. In response, several projects have been initiated to further improve the availability and the quality of distributional measures. A significant number of these initiatives further explored the use of micro economic statistics, but two initiatives specifically focus on the development of distributional results in line with national accounts totals. Their aim is to provide a more comprehensive overview of the distribution of household income, consumption and wealth, consistent with economy wide aggregates such as GDP and household disposable income. The first initiative concerns the development of methodology to compile distributional measures of household income, consumption and saving within the framework of the national accounts by an Expert Group that was initially set up by the OECD and Eurostat in 2011, and that continued in 2014 by an OECD Expert Group on Disparities in a National Accounts framework (EGDNA). The second initiative relates to work in the context of the World Wealth and Income Database (WID.world) to develop annual estimates of the distribution of income and wealth consistent with national accounts concepts, thereby not only compiling results at an aggregated level, but also including the production of synthetic income and wealth micro-files. This work is known as the Distributional National Accounts (DINA) project.

3. As both projects aim to compile distributional results in line with national accounts totals on the basis of underlying micro data, the EGDNA project and the DINA project share a lot of similarities. However, there are also some differences between the two projects, for example regarding scope, concepts used and methodologies applied, which give rise to differences in results. To obtain a better understanding of both projects and of how specific choices in the setup and in the compilation may affect distributional results, this paper provides an overview of the main characteristics of both initiatives, and zooms in on the differences. In this comparison, the focus is mainly on the distribution of household income, as wealth distribution is not yet included in the EGDNA project, whereas DINA does not include consumption. In addition to broadening the knowledge on both initiatives, the paper aims to open up discussion on pros and cons of using certain concepts and assumptions in the compilation of distributional results. This should give further impetus to a correct understanding and interpretation of the results, as well as to their quality and usefulness.

4. The paper is structured as follows. Section 2 provides an overview of the EGDNA project, presenting the background of the project, its main objective, and also briefly explaining the methodology applied. Section 3 provides a similar overview for the DINA project. Section 4 then zooms in on the various aspects of both projects, explaining where they correspond and where they differ, focusing on the scope, the underlying concepts and their methodologies. The paper ends with some conclusions and recommendations in section 5.

2. An overview of the EGDNA project

5. In response to the recommendations by Stiglitz, Sen and Fitoussi (2009), the OECD and Eurostat launched a joint Expert Group in 2011 to develop methodology for compiling distributional measures of income, consumption and saving across household groups within the framework of the national accounts. The expert group elaborated a preliminary methodology on the basis of which first experimental results were compiled in 2013 (see Fesseau and Mattonetti (2013)) after which the work was followed up by an OECD Expert Group on Disparities in National Accounts (EGDNA) to further improve the methodology and to look into possibilities to improve the timeliness of the distributional results. On the basis of an enhanced methodology, a second exercise was conducted in 2015, the results of which have been published in Zwijnenburg et al. (2017).

6. The objective of the EGDNA is to break down the results for the household sector, as included in the national accounts, into more detailed household groups. Currently the project aims at a breakdown according to so-called equivalized disposable income (see below) into five income quintiles; main source of income into four groups; and household composition into eight groups. However, other and more granular breakdowns can also be envisaged, depending on the level of detail and quality of the underlying data, and the robustness of the methodology in combining micro data with national accounts totals. In breaking down the household sector, the project currently focuses on household income, consumption and saving, but in the future the aim is to also include breakdowns of wealth, in order to have a full and consistent set of accounts for the various household groups.

7. In compiling distributional results, the EGDNA project focuses on households (in line with the 2008 SNA), under the assumption that income is pooled and shared within the household, and that certain types of goods (mainly housing and food) are consumed collectively by the household, benefiting from economies of scale. Only private households are taken into account as these are assumed to have autonomy of decision in economic matters, whereas this is often not the case for institutional households (e.g., people living in prison, nursing homes or boarding schools). To adjust for differences in consumption needs for households of different size and composition, the project looks at so-called equivalized results. As the needs of a household increase with each additional household member, although not in a proportional way (due to economies of scale), equivalence scales assign a value to each household member in proportion to its needs, which leads to a number of consumption units for each household¹. Household income and consumption are divided by this number of consumption units to arrive at comparable measures across households, i.e., *equivalized* income and consumption results.

8. The income measure used to analyse income inequality is household adjusted disposable income as defined in the 2008 SNA². This concerns the income of a household after re-distribution, including social transfers in kind. Although the latter item is often excluded from micro distributional analyses,

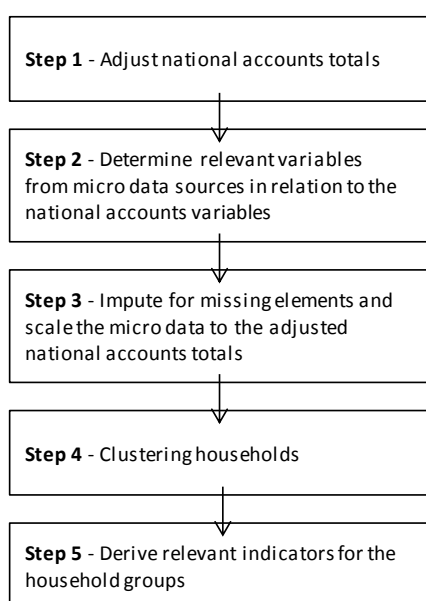
¹ In the EGDNA project, the Oxford-modified equivalence scale has been chosen as reference method. Accordingly, the first adult counts as 1 consumption unit, any additional persons aged 14 and over count as 0.5, while all children under 14 count as 0.3.

² See Annex 1 for an overview of the composition of adjusted disposable income as used in the EGDNA project.

these in-kind transfers can be regarded as a direct alternative to providing households with a cash benefit to purchase associated goods and services themselves, as a consequence of which their inclusion in income distribution analysis leads to a more comprehensive assessment of income inequality and of the impact of re-distributional policies. Consumption inequality is measured on the basis of actual final consumption as defined in the 2008 SNA, so also including the consumption of goods and services provided in kind by government. As the work of the EGDNA concerns both household income and consumption expenditures, it also provides estimates on the saving of the various household groups.

9. The methodology for compiling distributional results uses a step-by-step approach combining data from national accounts with micro data. Figure 1 provides a schematic overview of this approach. In the first step, national accounts totals for the household sector, either or not including non-profit institutions serving households (NPISHs), are 'adjusted' to exclude items that do not concern private households resident in a country, such as NPISHs if combined with results of the household sector, and the income and consumption of institutional households. In the second step, micro variables are identified that have an immediate counterpart with the relevant national accounts items. Different data sources may be selected in this step, depending on which sources provide the best link for the various income and consumption items. In the third step, the micro data are scaled to match the 'adjusted' national accounts totals from step 1. Furthermore, imputations are made for items that typically fall outside the scope of micro data. This may relate to items that are specific to the system of national accounts (e.g., imputed items such as financial intermediation services indirectly measured (FISIM) and investment income disbursements), but also to items that are likely to be underreported or completely missing from the micro data (such as income from the underground economy and illegal activities). Finally, households are clustered into income quintiles (on the basis of their equivalized household disposable income) or into alternative groupings, and results are derived for the main aggregates and distributional measures.

Figure 1: Step by step approach for the estimation of distributional information.



10. Some countries have already started to publish distributional results on the basis of the methodology developed by the EGDNA (e.g., Australia, the Netherlands and the United Kingdom). In the meantime, the expert group continues to work on further improvements in order to arrive at more robust methodology thus motivating more countries to publish results, and on techniques to improve the timeliness of distributional results. The group also intends to start looking into the compilation of distributional results on wealth, most probably in cooperation with the ECB and Eurostat. In addition to providing users with a more comprehensive overview of inequalities, it would provide compilers the opportunity to jointly analyse, at the level of household groups, results on income, consumption and wealth, thus adding to the quality of the distributional data.

3. An overview of the DINA project

11. The origin of the DINA project dates back to 2011, when several top income shares series that were constructed by combining historical fiscal data and national accounts data were made available in the World Top Income Database (WTID). At the end of 2015 the WTID, which currently contains information for more than 30 countries, was included in the so-called World Wealth and Income Database (WID) which aims to provide series on the entire distribution on both income and wealth, the ultimate goal being to be able to produce Distributional National Accounts (DINA), i.e., annual estimates of the distribution of income and wealth using concepts that are consistent with national accounts (see Alvaredo et al. (2017)). In addition to providing distributional results at the level of disaggregated income groups, focusing on percentiles and more detailed breakdowns for the top shares (eventually even providing information at the level of the 0.001% richest income group), the DINA project aims to construct synthetic income and wealth micro-files, which would provide the opportunity to construct various national, regional or global distributional breakdowns.

12. In constructing distributional results, the DINA project focuses on the adult individual, which in practice comes down to all individuals of 20 years old and over. Where in the past the usefulness of the WTID data series was hampered by a lack of homogeneity in results due to the use of the tax unit (which may concern single adults and multi-person households) as unit of observation, possibly causing bias in the evolution of the results in case of changing household compositions, this has been solved in the DINA series by focusing on the individual. As data may still concern multi-person tax units, two methods are applied to split income and wealth between adults who belong to a couple and/or to the same household. The first method is the “equal-split-adults series” in which income and wealth are equally split between adults belonging to the same couple and/or household. The second method is the “individualistic-adults series” in which income and wealth are attributed to each individual income earner and wealth owner. In the DINA project, inequality results are computed on the basis of both methods.

13. In looking at income inequality, the DINA project focuses on four income concepts, all aligned to nation-wide income, i.e., income for the economy as a whole, as defined in the System of National Accounts. This means that the income of all domestic sectors is allocated to individuals, not only the income directly earned by the household sector. The rationale is that the DINA project considers

households as the ultimate beneficiaries of all the income accrued through economic activities in a country. The first income measure used in the DINA project is *pre-tax factor income* which is equal to the sum of all pre-tax income flows accruing to the owners of the production factors labour and capital, that is, before taking into account any redistribution. The second measure concerns *pre-tax national income* which is equal to pre-tax factor income, after taking into account the operation of the pension system, thus after deducting pension contributions paid and pension benefits received by households (and also allocating any mismatch between the two). The third measure is *post-tax disposable income* which is equal to pre-tax national income minus all taxes on production, income and wealth, minus non-pension social insurance contributions paid by households, and plus non-pension social insurance benefits and social assistance benefits in cash received by households. Finally, *post-tax national income* is equal to post-tax disposable income plus social transfers in kind, collective consumption expenditure and government primary surplus. By including the latter two items, it is made sure that the aggregate post-tax national income is again equal to the aggregate national income as under the first measure. The various income measures are explained in more detail in subsection 4.2.

14. For wealth, the DINA project focuses on *personal wealth*, *private wealth*, *public wealth*, and *national wealth*. Personal wealth is equal to the wealth of the household sector, and is defined as the sum of non-financial and financial assets owned by households minus their financial liabilities. Private wealth also includes the wealth of non-profit institutions serving households (NPISHs), which is quite relevant as not all countries have separate information available on the household sector but instead combine the household and the NPISH sector in their financial accounts. Public wealth is equal to the net wealth of the government sector. Finally, when looking at the value of the corporations' sector, it is assumed that the market value is already reflected in the net wealth of the other sectors, as the corporate sectors are to a large extent owned by households, NPISHs and government. As a consequence, national wealth at market value is set equal to the sum of private wealth and public wealth.

15. The DINA series are constructed by combining data from national accounts with income, inheritance and wealth tax data, household income and wealth surveys, and wealth rankings provided by 'rich lists'. Fiscal income flows are generally scaled up to national accounts totals, either on the basis of additional information or on the basis of simply applying a proportional grossing up rule. For items for which no micro data are available, imputations are made to allocate the relevant amounts to individuals. This mainly concerns social transfers in kind and public spending on collective goods and services. For social transfers in kind on health a lump-sum method is applied in which the same average monetary money value is allocated to each adult individual. All other in-kind transfers and collective expenditures are allocated in proportion to post-tax disposable income. Finally, the wealth distribution is obtained by using a so-called capitalization method which uses capital income flows in combination with assumptions on the rates of return of different asset classes as a starting point, but which also uses information from income and wealth surveys, and other data sources for items and for individuals that are not generally covered by taxable capital income flows.

16. The DINA project is still working on further increasing the coverage of countries and on improving the methodology. In this respect, the Guidelines stress that the series and methods "are [still] fragile, exploratory and subject to revision". Experiences obtained when including additional countries are

understood to possibly lead to redefining and updating the methodology, also giving rise to regular updates of the Guidelines on the WID.world website.

4. Comparison between the two projects

17. The previous two sections provided an introduction to the work of the EGDNA and of the DINA project. It is clear that both methods share a lot of similarities, both aiming at the compilation of distributional results in line with national accounts aggregates on the basis of micro data. However, it is also clear that they differ in some important respects. To have a better understanding of how to interpret the results of both projects and to what extent they differ, this section provides an overview of the main aspects of both initiatives, starting with the scope in subsection 4.1, discussing the concepts used in 4.2, and finishing with the methodology in 4.3.

4.1 Differences in scope

18. Starting with the scope, both projects aim to compile distributional results in line with national accounts concepts. However, while the DINA project is focusing on income and wealth, the EGDNA project currently focuses on income, consumption and saving, planning to include the wealth component in a second phase (most probably in cooperation with the ECB and Eurostat). This would lead to full sets of accounts (i.e., income, consumption and wealth³) for the various households groups, on the one hand providing users with more comprehensive distributional information on the various aspects of household well-being, and on the other hand providing compilers with the possibility to check the consistency of the distributional results across the accounts (i.e., confronting saving from income and consumption with saving derived from the capital and financial accounts). As the methodology to arrive at distributional results depends on several assumptions and on the quality of the underlying data, this possibility to cross-check the results is likely to add to the quality of the results. Regarding the current exclusion of distributional data on consumption in DINA, which is probably related to the fact that individual consumption data are not available from fiscal data, it is not clear whether there are any plans to include it in the near future. Its inclusion would most likely add to the quality of the distributional results.

19. In addition to their coverage, both projects also differ in the level of detail with which they aim to provide distributional results. While the EGDNA project aims to arrive at breakdowns of the household sector at an aggregated level (the level of detail depending on the quality and the available detail from the underlying micro data and the robustness of the methodology), the DINA project also aims at arriving at synthetic micro-files. The DINA project is thus able to derive distributional results at more granular levels, e.g., providing income distribution at the percentile level and even more detailed breakdowns for the top percentiles. However, it has to be borne in mind that the quality of the results will always depend on the coverage and the quality of the underlying micro data. In case many assumptions are needed to bridge gaps between the micro data and the national accounts totals, and many imputations are needed

³ Please note that this would also require a distributional breakdown for information included in the capital account.

for items for which micro data are lacking, the results may contain substantial margins of error. This may hamper the use of data, especially at very granular levels of detail. The possible impact of these assumptions is discussed in more detail in subsection 4.3.

4.2 Differences in concepts

4.2.1 Differences in target population and unit of analysis

20. In compiling and analysing distributional results, it may make a difference how the target population is defined. The EGDNA and DINA project differ considerably in this respect. The DINA series use the adult individual as the benchmark, aiming to estimate the distribution of income and wealth for all individuals of 20 years old and above. This means that all individuals below 20 years old are excluded from the inequality measures. The EGDNA project, on the other hand, focuses on private households, excluding transactions by institutional households such as people living in prison or retirement homes, as these households are assumed to have little or no autonomy of decision in economic matters, and are usually not covered by micro data sources. Although it is not possible to say upfront how these differences in target population will affect inequality results, it is clear that they may give rise to different outcomes between the two projects.

21. In addition to different delineations of the target population, both projects also apply different units of analysis. Whereas the DINA project looks at inequality on the basis of the income and wealth of the *individual*, the EGDNA project looks at inequality on the basis of the *equivalized* income and consumption of the *household*. The main reason for DINA to focus on the individual seems related to the objective of arriving at homogenous results on the basis of fiscal data. As fiscal units may concern single persons as well as multi-person households with different consumption needs, focusing on results at the fiscal level would not provide a fair comparison, particularly in times of changing household compositions. Two approaches are applied to arrive at individual results in case of fiscal units that consist of more than one adult. The “equal-split-adults series” split income and wealth equally between the adult household members, whereas the “individualistic-adults series” attribute income and wealth to each individual income earner and wealth owner. This means that the equal-split-adult series already take into account a form of re-distribution within the household, leading to lower inequality results than the individualistic-adult series.

22. In the EGDNA, on the other hand, the focus is on the household, as income is assumed to be shared within the household and certain types of goods (mainly housing and food) are assumed to be consumed collectively by the household. To correct for differences in size and composition of households, taking into account economies of scale for additional household members, the EGDNA project applies equivalence scales that assign values to each household member in proportion to its needs, recalculating results into so-called per consumption unit results. In this way, the EGDNA arrives at homogenous results for households of different size and composition.

23. When having a closer look at the ‘equal split’ series of the DINA project and the use of equivalence scales in the EGDNA project, they actually rely on similar concepts, but differ in the weights they assign to additional household members. Whereas the EGDNA considers economies of scale for

additional household members and also takes into account the consumption needs of children belonging to the household when deriving per consumption unit results, the ‘equal split’ series only consider the number of adults in the household, assigning a value of one to each additional adult household member to reflect its consumption needs. That means that where the number of consumption units for the EGDNA project is derived according to the formula:

$$\text{Number of consumption units}_{EGDNA} = 1.0 + 0.5 * \text{additional adults} + 0.3 * \text{children}$$

the number of consumption units according to the equal split series of DINA is derived as follows:

$$\text{Number of consumption units}_{DINA_{equal\ split}} = 1.0 + 1.0 * \text{additional adults} + 0.0 * \text{children}$$

24. It is clear that these different approaches may lead to different numbers of consumption units per household, depending on the number of additional adults and the number of children, also giving rise to differences in income results and consequently inequality measures. Additional adult household members would leave individuals with lower income levels under the ‘equal split’ series as they do not take into account economies of scale, whereas children living at home would lower household income under the EGDNA approach while leaving the ‘equal split’ income unaffected.

25. How this difference in unit of analysis affects inequality measures will depend on the composition of households across the distribution. If it is distributed rather equally, the impact will be negligible. However, if the composition differs across the distribution, DINA and EGDNA are likely to come up with different inequality results. In general, inequality will be lower according to ‘equal split’ series when higher income households consist of a relatively larger number of adults, whereas a relatively larger number of children at the top would lead to lower inequality results on the basis of EGDNA measures. Furthermore, the difference in unit of analysis may affect cross-country comparisons in case of large differences in household composition across countries, and also lead to different results for the evolution of inequality in case household composition changes over time. The latter is particularly relevant as in many countries household size has been shrinking considerably over the past 50 years.

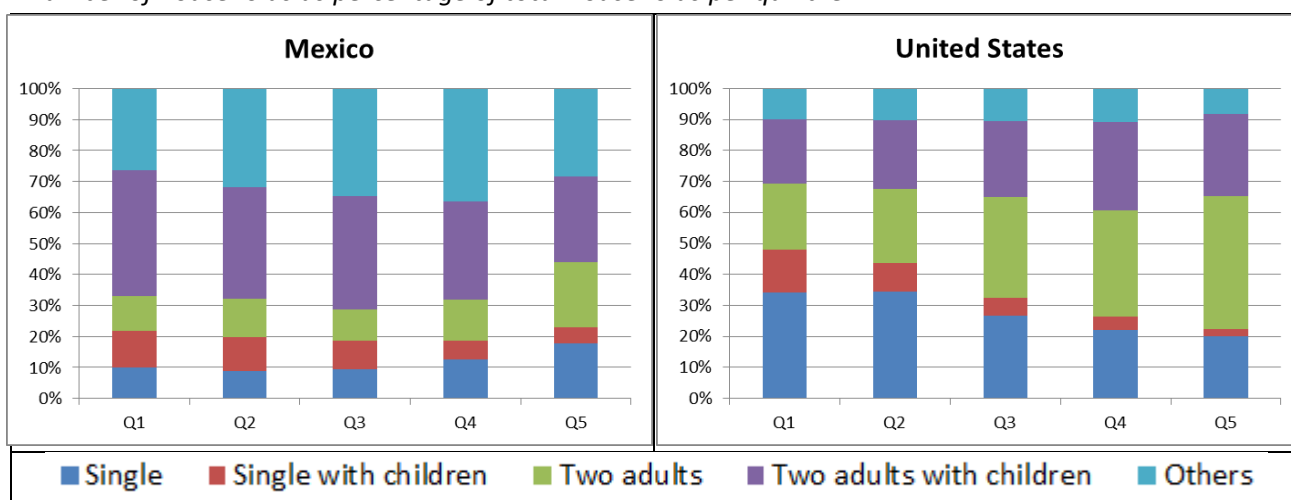
26. That the composition of households is not equal across the distribution and may differ across countries is shown in Figure 2, on the basis of equalized household income results⁴. It provides an overview of the shares of the various household types in the five income quintiles for Mexico and the United States (based on results for 2012). The results are derived from EGDNA data obtained during the exercise conducted in 2015 and distinguishes five types of households, i.e., single households, singles with children living at home, two adults, two adults with children living at home, and other households (the latter often relating to households that consist of more than two adults). A first observation is that Mexico has far more households that consist of two adults with children than the United States. This will give rise to differences in cross-country comparisons when comparing results on the basis of the

⁴ Please note that the ranking on the basis of equalized household income may differ from the ranking on the basis of individual income results, possibly leading to a slightly different composition of households across the distribution.

individual (either ‘equal split’ or ‘individualistic’) with results based on equivalized household results. A second observation is that the different types of households are not equally distributed across quintiles in both countries. For Mexico the share of single households increases with income quintile, whereas this is the reverse for the United States. Furthermore, for both countries the share of two adult households seems to increase with income, whereas the share of singles with children decreases. This implies that the composition of households is not equal across the distribution and that it will indeed make a difference whether inequality is measured on the basis of the income of the individual or on the basis of equivalized household income.

Figure 2: Composition of quintiles according to household composition, for Mexico and the United States, 2012.

Number of households as percentage of total households per quintile.



Source: Zwiijnenburg et al. (2017).

4.2.2 Differences in income concepts

27. Both the DINA and the EGDNA project focus on income inequality. However, they use different income concepts which may give rise to significant differences between their results. The EGDNA project focuses on household disposable and adjusted disposable income, whereas the DINA project looks at pre-tax factor income, pre-tax national income, post-tax disposable income, and post-tax national income. This subsection discusses these concepts in more detail and explains how they differ.

Pre-tax factor income

28. Pre-tax factor income as defined in the DINA project is equal to the sum of primary incomes of all domestic institutional sectors. This means that it not only takes into account primary incomes of the household sector, but also those of the other domestic sectors, adding up to national income. The rationale, as explained in Piketty et al. (2016), is that “national income is [...] internationally comparable, it is the aggregate used to compute macroeconomic growth, and it is comprehensive, including all forms of income that eventually accrue to individuals”. In that regard, it is assumed that in the end all income within the economy is benefiting households.

29. Looking at the calculation (see Table 3 of the DINA Guidelines (Alvaredo et al. (2017))), pre-tax factor income is in general⁵ equal to Net National Income (NNI) ($B5n_{S1}$), which is equal to the sum of the primary incomes of all domestic sectors in the economy, i.e., the non-financial corporations sector (S11), the financial corporations sector (S12), the general government sector (S13), the household sector (S14), and the non-profit institutions serving households sector (NPISHs) (S15). As the net primary income of the government sector consists for a large part of taxes (less subsidies) on production ($(D2-D3)_{S13}$), for which the DINA Guidelines argue that it would be better to treat them as if not being paid yet⁶, the Guidelines make a correction, excluding these taxes (less subsidies) on production from net primary income of government, leaving it with only net operating surplus ($B2n_{S13}$) and net property income received ($D4n_{S13}$), and adding the amount of taxes (less subsidies) on production back to the incomes of the domestic sectors that paid (and received) them. Pre-tax factor income is then calculated as follows⁷:

$$\begin{aligned}
 & \text{Pre-tax factor income } (Y_{f,pretax}) \\
 & = \text{sum of primary incomes of domestic sectors net of taxes (less subsidies) on production} \\
 & = (B5n_{S14} + B5n_{S11+S12} + B5n_{S15} + (D2P - D3R)_{S1}) + (B5n_{S13} - (D2R - D3P)_{S13}) \\
 & = B5n_{S1} + (D2R - D3P)_{S2} - (D2P - D3R)_{S2} \\
 & = B5n_{S14} + B5n_{S11+S12} + B5n_{S15} + (D2P - D3R)_{S1} + B2n_{S13} + D4n_{S13}
 \end{aligned}$$

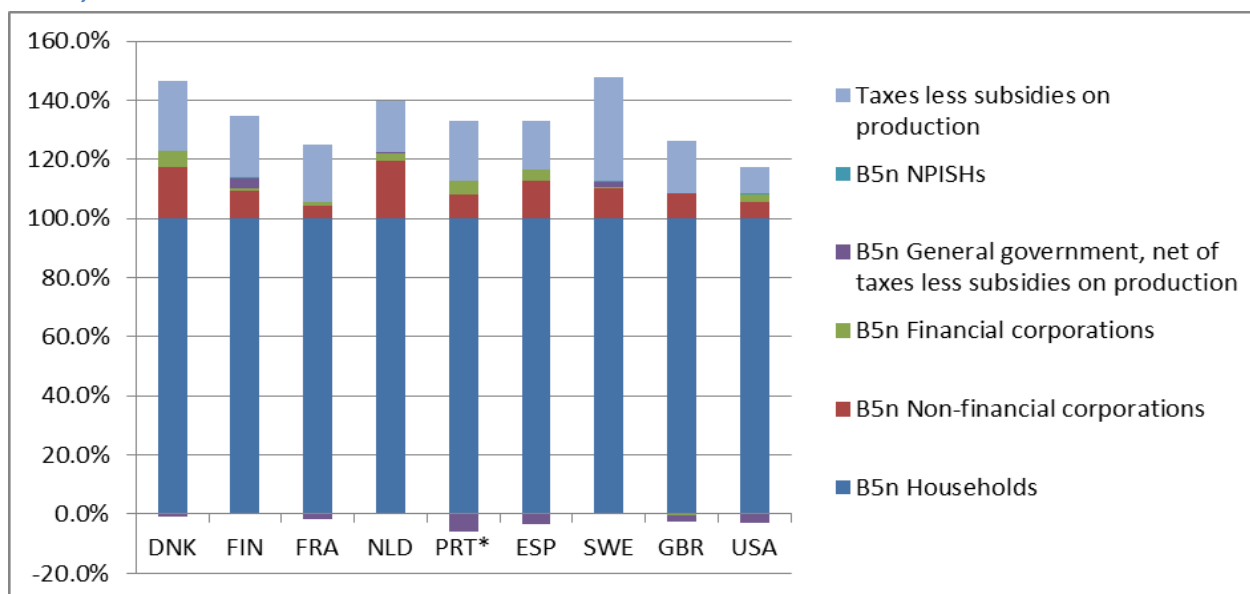
30. The pre-tax factor income concept is thus broader than net primary income of the household sector as recorded in the system of national accounts. Figure 3 presents to what extent it deviates by showing the composition of pre-tax factor income in percentages of net primary income of the household sector for a couple of countries. Results show that pre-tax factor income exceeds household net primary income in all countries, the difference ranging from 14% in the United States to 48% in Sweden. The main drivers for this difference are the net primary income of the non-financial corporations' sector (i.e., the undistributed profits as it is referred to in the DINA project) and the adjustment to correct for the paid taxes (less subsidies) on production. The impact of the net primary income of the NPISHs is negligible in all countries, whereas also the impact of the net income of the financial corporations' sector is relatively small in most of them.

⁵ As a correction is made to treat taxes (less subsidies) on production as not being paid yet, a small deviation may occur from NNI for the relevant amounts that relate to the rest-of-the-world (i.e., taxes (less subsidies) on production paid and received by the rest of the world) which need not necessarily cancel out.

⁶ It is explained in the DINA Guidelines that "the key reason for adding production taxes to personal factor income is because the frontier between production taxes (D2) and direct income and wealth taxes (D5) is somewhat arbitrary, i.e. it is unclear why we should deduct the former and not the latter. For the purpose of making comparisons over time and across countries, it makes more sense to look at the distribution of income before the deduction of any tax, either production taxes or other taxes". This correction shifts the taxes (less subsidies) on production back from the net primary income of the government sector to the sectors that paid and respectively received these taxes (less subsidies).

⁷ An overview of the terms used in the formulas is presented in Annex 2.

Figure 3: Composition of pre-tax factor income in percentages of net primary income of the household sector, 2015.



* Results for Portugal refer to 2014.

Source: OECD.stat: National accounts.

31. As explained in the DINA Guidelines, the main argument for taking into account national income for the economy as a whole is that in the end any income in the economy will benefit domestic households. It is argued that they are the ultimate owners of the corporations' sectors (S11 and S12) benefiting from any profits (or losses) made by these corporations, and that they will also benefit from or be responsible for any surplus or shortfall of the government sector (S13) and of NPISHs (S15).

32. Looking at the first part of this rationale, there are indeed arguments to assign undistributed profits of non-financial and financial corporations to their owners, and treat them as being reinvested in the corporation, similar to the recording of reinvested earnings on foreign direct investment (D43) in the 2008 SNA. Paragraph 7.140 of the 2008 SNA also explains that "a suggestion has been made to extend the treatment of distributing retained earnings to the owners of other corporations [...]. Investigation of this suggestion is part of the research agenda". However, in allocating undistributed profits to the owners of corporations one should bear in mind that not all portfolio equity of domestic corporations is held by domestic households and that, on the other hand, domestic households also own portfolio equity in foreign corporations. In that sense, the assumption that all undistributed profits related to portfolio investments into the equity of domestic corporations' sectors can be attributed to domestic households seems somewhat overstretched. Moreover, a proportional allocation of undistributed profits to domestic households and to the rest of the world on the basis of portfolio equity holdings would not solve this problem either, as undistributed profits may differ significantly across corporations and across countries, leaving the question which part of domestic profits should be allocated to foreign holders of domestic portfolio equity, and which amount should be assigned to domestic holdings of foreign portfolio equity. A correct recording and allocation of undistributed profits would therefore require much more detailed information.

33. Furthermore, it is argued in the DINA Guidelines that including undistributed profits would be more in line with Hicks' measure of income. However, this income measure does not specifically refer to undistributed profits in relation to their potential impact on the value of equity holdings, but to all holding gains and losses for households. Hicks defines income as the maximum amount that can be consumed in a given period while keeping real wealth unchanged. Therefore, incorporating information from the revaluation account (or the other changes in financial assets account⁸), which includes information on holding gains and losses earned by the household sector on their assets and liabilities, would come closer to Hicks' income measure than only considering undistributed profits. Moreover, using this information has the benefit that it provides direct information on holding gains and losses for the relevant households, instead of having to rely on various assumptions about the link between undistributed profits and holding gains and losses, and about its distribution across its owners. It also has to be borne in mind that undistributed profits may not always provide a good proxy for holding gains and losses. In this respect, Annex 3 provides a comparison of net primary income of domestic corporations after taxes ($(B5n - D5)_{S11+S12}$) with holding gains and losses for the household sector on their financial assets (as derived from the 'other changes in financial assets' account) over a period of twenty years. The results show that the differences between the two are in some cases very large. Also when looking at average amounts over longer time periods, most countries show significant gaps between the two flows. When focusing on the last 10 years (i.e., the period 2005-2015), the differences between the average net primary income of domestic corporations after taxes and average holding gains and losses for the household sector range from 11.6% of average after-tax net primary income of domestic corporations in Denmark to minus 127.3% in the United States⁹. This raises the question whether undistributed profits can indeed be regarded as a good proxy for holding gains and losses.

34. The other important, and generally most substantial, addition to pre-tax factor income in comparison with household net primary income is the value of taxes (less subsidies) on production. The main reason for the DINA project to include these is to arrive at a measure before any re-distribution has taken place. In theory, this means that the amounts should be added back to the net primary incomes of the sectors that paid and received these taxes and subsidies. However, as most countries do not have information on the sectoral distribution of taxes (less subsidies) on production, but only have information at the level of the economy as a whole, DINA attributes the full amount directly to households. Although this sounds like a valid approach in case additional information is missing, the direct allocation of the full amount to households is likely to lead to different results than when the amounts would first be allocated to the various (sub)sectors and subsequently attributed to the household sector. In the latter case, a significant part would still be attributed to the household sector directly (i.e., in their role as consumers and consequently payers of taxes (less subsidies) on final consumption expenditure, and in their role as producers responsible for taxes (less subsidies) related to the production process), but the other part (allocated to the corporations' sectors, therewith increasing their undistributed profits) would be

⁸ In addition to revaluations, this account also includes other changes in the volume of assets, such as write-offs of bad debt by a creditor and reclassification of assets due to migration.

⁹ Results for the other countries displayed in the figures are: Finland: 22.5%; France: -30.0%; Netherlands: 25.2%; Portugal: 70.8%; Spain; 74.4%; Sweden: -41.0%; and United Kingdom: -61.3%.

allocated to households indirectly, only benefiting those households that own portfolio equity, and consequently leading to a different distribution across individuals. In addition, the distribution will largely depend on the methodology that is used to allocate the relevant amounts to underlying individuals. This will be discussed in more detail in subsection 4.3. In any case, it has to be understood that the correction will only affect pre-tax measures, as the relevant taxes (less subsidies) on production will be treated as being paid and received in the post-tax measures. The corrections made to arrive at pre-tax income measures will then be offset to arrive at post-tax income measures, the only difference being caused by the taxes (less subsidies) paid/received by the rest of the world, and vice versa¹⁰.

35. Finally, pre-tax income also includes net primary income of general government (net of taxes (less subsidies) on production) and of the NPISH sector. The rationale applied by the DINA project is that any surplus or deficit will in the end be passed on to households. Although this may generally be the case over a longer period of time where these sectors have to balance their finances (still bearing in mind that part of the revenues and payments will relate to the rest of the world), the question is whether the amounts should indeed be fully attributed to the current population. In that sense, it is clear that, in practice, any balancing of surpluses or deficits will be spread over time, most probably involving future generations. Furthermore, the allocation of surpluses and deficits to current populations would imply bringing the actual settlements forward in time, possibly creating the risk of double counting and of constructing artificial results at the micro level that may deviate largely from individuals' perceptions. For example, the allocation of a government deficit in the current period on the basis of assumptions on who is going to pay for it in the future via increased taxation, in effect brings this future tax payment forward in time, thus already artificially lowering the income level of the relevant individuals in the current period. Then, at the time of the actual tax payment (which cancels out the relevant deficit), the increased taxation would again have a negative impact on the income of these individuals. To avoid any double counting and incorrect income results at the individual level, this should then be offset by allocating the relevant part of the surplus (i.e., the part that cancels out the past deficit) to these same individuals, leaving them with an artificial income that exceeds their actual income¹¹. Only in this way, consistency can be maintained at the micro level over longer time periods, not influencing distributional results over time. However, due to the variation of surpluses and deficits over time, the various generations involved, and the difficulty to predict who in the end is going to pay for a deficit or benefit from a surplus, it seems almost impossible to maintain this consistency over time. As a consequence, it is questionable whether the inclusion of government and NPISHs surpluses and deficits would improve the income measures. It is more likely that it will hamper a proper analysis of distributional results.

¹⁰ In this respect, one has to make sure that in going from pre-tax to post-tax income the amounts on taxes (less subsidies) on production are allocated in the same way as in the correction to arrive at pre-tax factor income. As part of the taxes (less subsidies) may relate to the rest of the world, the only difference in the amounts will be caused by payments and receipts to/from the rest of the world.

¹¹ The allocation of the deficit to specific individuals in the current period could be regarded as the creation of a financial claim of the government against these individuals (as an account payable/receivable), which is subsequently cancelled out by an actual tax payment in the future period. Part of the future tax payment should then be regarded as actual current taxation and part of it as redemption of the claim, the latter thus not affecting the income level.

Pre-tax national income

36. Pre-tax national income is “equal to the sum of all pre-tax income flows accruing to the individual owners of the production factors, labour and capital, before taking into account the operation of the tax/transfer system, but after taking into account the operation of the pension system”. This means that pensions “which are counted on a contribution basis by pre-tax factor income” are treated “on a distribution basis by pre-tax national income”. Consequently, when calculating pre-tax national income, pension contributions ($D61AP_{S14}$) are deducted from pre-tax factor income and pension benefits ($D62AR_{S14}$) are added. Furthermore, as contributions and benefits may not be equal, the resulting gap is also attributed to households to arrive at the same values as pre-tax factor income (see also Table 4 of the DINA Guidelines):

$$\begin{aligned} \text{Pre - tax national income} &= (Y_{n,pretax}) \\ &= \text{pre - tax factor income after operation of the pension system} \\ &= Y_{f,pretax} + D62AR_{S14} - D61AP_{S14} + (D61AP_{S14} - D62AR_{S14}) \end{aligned}$$

37. Although it makes sense to show the impact of pension contributions and benefits on income levels, which is also done in the system of national accounts when moving from net primary income to disposable income, it is questionable whether it also makes sense to attribute the gap between the two to specific individuals. Especially as it often concerns re-distribution in time at the individual level, in which an individual makes contributions to save for his own retirement, the correct allocation would in that case often imply offsetting the initial pension transactions, returning to income on a contribution basis. In this regard, it would work in the same way as the adjustment for the change in pension entitlements in the national accounts (item D8 in the 2008 SNA), which reflects the fact that pension transactions are on the one hand recorded in the secondary distribution of income account affecting the level of disposable income, whereas on the other hand they are also regarded as (dis)saving of the relevant households. Therefore, to the extent that these transactions imply a re-distribution in time at the level of the individual, it may be better to only record the benefits received and the contributions paid, and to not correct for any gaps that may remain between the two, if one indeed wants to record the amounts on a distribution basis. Any other allocation of this gap to individuals would otherwise lead to incorrect results, the problem most likely becoming more prominent in case of ageing societies.

38. The only re-distribution that would make sense to show with regard to pension transactions, at least from a national accounts perspective, is the re-distribution that takes place in the case of a difference between the payments of pension contributions and the actual accrual of pension entitlements. This starts from the assumption that re-distribution does not take place at the time of receiving the pension benefit, but at the time of its accrual. Whereas a certain part of the population pays pension contributions, more people may actually accrue an entitlement, either via employment-related schemes or implicitly via social security schemes, implying a form of re-distribution. This re-distribution would at the individual level be equal to the gap between the pension entitlement accrued and the pension contribution actually paid. It would make sense to show this re-distribution in pre-tax national income, in addition to showing the impact of receiving pension benefits and paying pension contributions

that do not concern any form of re-distribution across individuals. However, for this approach to be applied, it would be necessary that the accrual of all pension entitlements is explicitly recorded in the system of national accounts. Currently only the accruals of employment-related pension entitlements are included in the central framework. As social security pensions are treated as pay-as-you-go systems for which only the contributions actually paid are recorded, and not the accrual of future pension entitlements, the accruals are often unknown. Additional data will however become available by the end of 2017, as part of the calculation of a supplementary table on pension schemes. Furthermore, it is currently being discussed whether the implicit pension entitlements related to social security pension systems should also be included in the central framework, in which case it will become easier to assess the re-distribution that actually takes place in the accrual at the individual level, and to include its impact as described above in certain income measures.

Post-tax disposable income

39. Post-tax disposable income is defined as “pre-tax national income, minus all taxes on production, income and wealth, plus social assistance benefits in cash”. As it focuses on national income of the domestic economy as a whole, not only taxes paid by households ($D5P_{S14}$) should be deducted, but also taxes paid by other domestic sectors (i.e., $D5P_{S11+S12}$ and $D5P_{S15}$). Furthermore, as taxes (less subsidies) on production ($(D2P - D3R)_{S1}$) were treated as not being paid yet in the pre-tax income measures, they should also be deducted in this step. These will need to be allocated in the same way (corrected for taxes (less subsidies) on production paid/received by the rest of the world) as in the derivation of pre-tax income. Furthermore, non-pension social insurance contributions ($D61BP_{S1}$) should be deducted, whereas non-pension social insurance benefits ($D62BR_{S1}$) and social assistance benefits ($D623R_{S1}$) should be added.

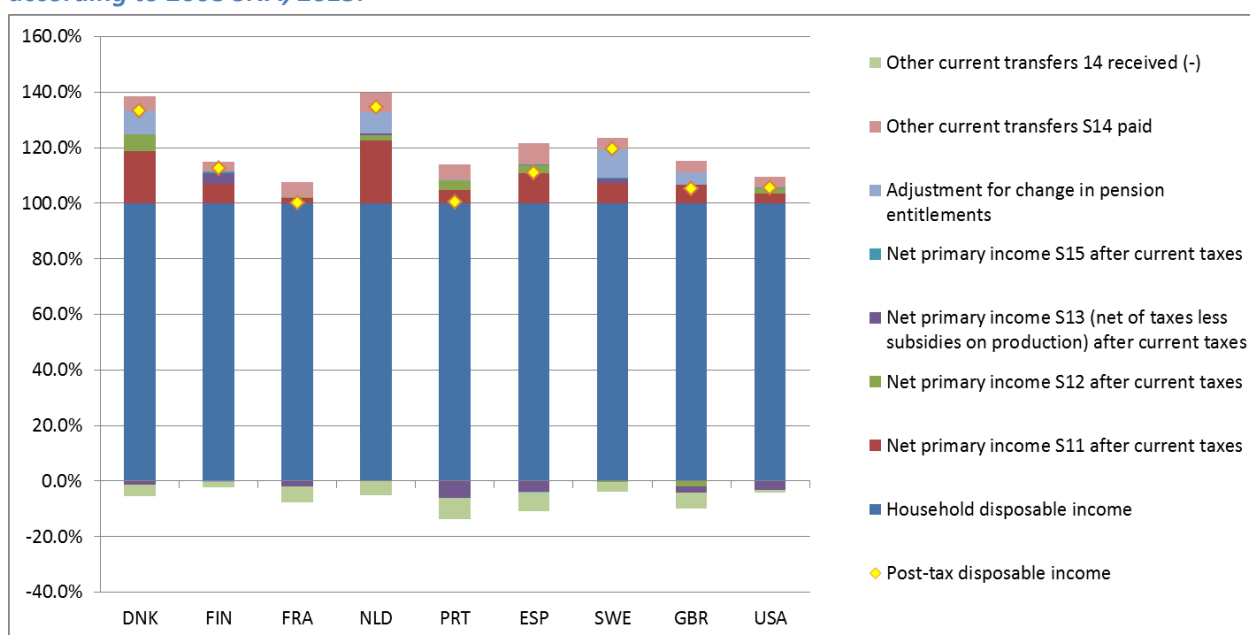
40. Under the assumption that the gap between pension benefits and contributions is equal to the adjustment for the change in pension entitlements¹², i.e., $D8R_{S14} = D61AP_{S14} - D62AR_{S14}$, post-tax disposable income can be written as:

$$\begin{aligned}
 & \text{Post - tax disposable income } (Y_{disp,posttax}) \\
 &= Y_{n,pretax} - (D2P - D3R)_{S1} - D5P_{S1} - D61BP_{S1} + D62BR_{S1} + D623R_{S1} \\
 &= (B5n - D5P - D61P + D62R)_{S14} + (B5n - D5P)_{S11+S12} + (B5n - D5P)_{S15} \\
 &+ B2n_{S13} + D4n_{S13} + D8R_{S14} \\
 &= (B6n - D7N + D8R)_{S14} + (B5n - D5P)_{S11+S12} + (B5n - D5P)_{S15} + B2n_{S13} \\
 &+ D4n_{S13}
 \end{aligned}$$

¹² This assumption will hold as long as social security pension contributions and benefits will cancel out at the level of the household sector. As most social security systems are set up as fully pay-as-you-go systems, this will indeed be the case for most countries.

41. The formula shows that post-tax disposable income is equal to disposable income of households ($B6n_{S14}$) as defined in the 2008 SNA, but excluding the impact of other current transfers ($D7N_{S14}$) and including the gap between pension benefits and contributions (here set equal to item $D8R_{S14}$), plus net primary income net of taxes of the corporations' sectors ($(B5n - D5P)_{S11+S12}$) and of NPISHs ($(B5n - D5P)_{S15}$), plus net primary income of government net of taxes and subsidies on production ($B2n_{S13} + D4n_{S13}$). Figure 4 shows how these differences lead to different income levels, by presenting the elements of post-tax disposable income in terms of net disposable income as defined in the 2008 SNA (please note that the EGDNA project currently applies a gross instead of a net approach, also leading to a deviation between the two measures¹³). In addition to the differences that were already distinguished when comparing pre-tax factor income with net primary income of households, the measures also differ due to a different treatment of the pension surplus/deficit (here set equal to item $D8R_{S14}$) and the different treatment of other current transfers. These are included in the disposable income measure used in the EGDNA project, but excluded from post-tax disposable income as defined in the DINA project.

Figure 4: Composition of post-tax disposable income in percentages of net household disposable income according to 2008 SNA, 2015.



* Results for Portugal refer to 2014.

Source: OECD.stat: National accounts.

42. When taking a closer look at Figure 4, it shows that the results are quite similar for some countries, although it has to be borne in mind that the underlying items that lead up to these results can differ significantly. Consequently, for some time periods and/or countries the results may still differ considerably, whereas it will almost certainly affect the distribution across household groups depending

¹³ As net income provides an economically more relevant indicator than gross income, the EGDNA is going to discuss whether 'consumption of fixed capital' can be included in the EGDNA template, to arrive at net disposable and net adjusted disposable income for the household sector.

on the distribution of the underlying items. For example, whereas for Portugal the difference between post-tax disposable income as defined in DINA and household disposable income as defined in 2008 SNA is only 0.3%, this is the result of an addition of 13.9% related to the inclusion of the net primary incomes of other domestic sectors (net of taxes) and the exclusion of other current transfers paid, and a deduction of 13.6% because of the inclusion of negative net primary income of the government sector (excluding the impact of taxes (less subsidies) on production) and the exclusion of other current transfers received. As these items most probably have different distributions across households, the distributional results on the basis of both measures will probably also be quite different.

43. One of the deviations from disposable income according to the 2008 SNA that has not yet been discussed, concerns the treatment of other current transfers. As explained in paragraph 8.113 of the 2008 SNA, these transfers do not only include non-life insurance premiums and claims, but also transfers between households, such as remittances, which may be an important form of income for certain groups of households in some countries. For example, in some countries low income households very much depend on income transferred by family members working abroad. That is why other current transfers are included in household disposable income as defined in the 2008 SNA and as used in the EGDNA, whereas they are not being taken into account in the post-tax disposable income as defined by the DINA project. No rationale is given in the DINA Guidelines on why these transfers are excluded, but one of the underlying reasons may be that relevant information is not available in tax data, particularly on transfers between households. In that case one has to rely on survey data or other data sources to arrive at the relevant amounts and at the allocation across households, which often is not that straightforward. However, excluding these amounts may provide an inaccurate picture of the distribution of household disposable income, as for some households they may form an important income source (especially the non-insurance related transfers). For the countries that were included in Figure 4, the share of other current transfers paid as percentage of household disposable income ranges from 3.6% for the United States to 7.8% for Spain, whereas the share of other current transfers received varies from 1.0% in the United States to 7.5% in Portugal. Furthermore, as these ratios concern the household sector as a whole, the shares may be (substantially) higher for households with lower income levels. Moreover, as other current transfers paid are usually distributed differently from transfers received, this may further affect the income distribution. When looking at the results of the 2015 exercise conducted by the EGDNA (see Zwijnenburg et al (2017)), it can be observed that net other current transfers in cash (i.e., transfers received minus transfers paid) constitute a substantial part of disposable income for the lowest income quintile in most countries. For example, the share in Mexico was 20.8% of disposable income, in Israel 16.1%, and in Portugal 8.8%. Not including the impact of net current transfers may thus lead to an overestimation of inequality.

Post-tax national income

44. The DINA Guidelines explain that post-tax national income is equal to post-tax disposable income plus social transfers in kind ($D63R_{S1}$), collective consumption expenditure ($P32P_{S13+S15}$) and government primary surplus ($surplus_{S13}$). Although it is not explicitly mentioned in the Guidelines, any remaining surplus or deficit for the other domestic sectors ($surplus_{S13}$ and $surplus_{S15}$) should also be

included if one wants to ensure that “aggregate post-tax national income again coincides with aggregate national income” (except for flows with the rest of the world)¹⁴. This leads to the following formula:

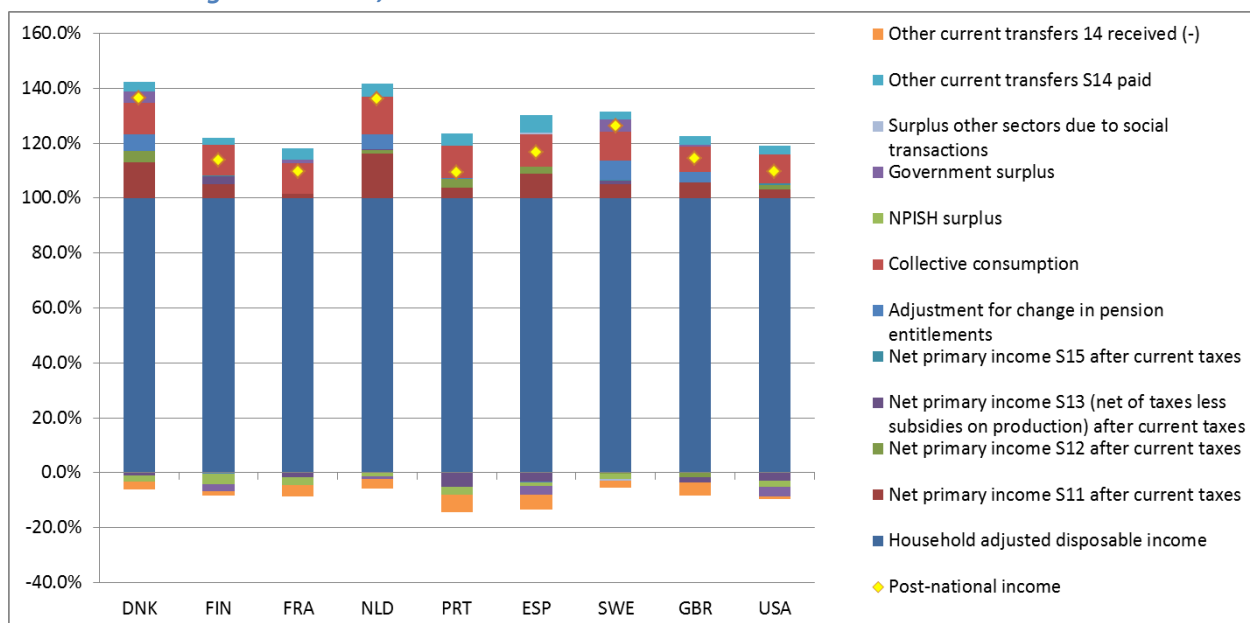
$$\begin{aligned}
 & \textit{Post – tax national income } (Y_{n,posttax}) \\
 &= Y_{disp,posttax} + D63R_{S1} + P32P_{S13+S15} + surplus_{S11+S12} + surplus_{S13} + surplus_{S15} \\
 &= (B5n - D5P - D61P + D62R + D63R + D8R)_{S14} \\
 &+ (B5n - D5P + D61R - D62P - D8P)_{S11+S12} \\
 &+ (B5n + D5R + D61R - D62P - D63P - D8P - P32P)_{S13} \\
 &+ (B5n - D5P + D61R - D62P - D63P - D8P - P32P)_{S15} \\
 &+ P32P_{S13+S15}
 \end{aligned}$$

45. While post-tax disposable income is comparable to the disposable income concept used in the EGDNA exercise, post-tax national income comes close to the adjusted disposable income concept. However, where adjusted disposable income only adds social transfers in kind in comparison with the disposable income measure, the post-tax national income also includes collective consumption expenditure and government primary surplus, as well as any additional surplus or deficit that may have occurred for other domestic sectors as a consequence of social transfers.

46. Figure 5 provides an overview of the differences between adjusted disposable income according to 2008 SNA and post-tax national income, by presenting the elements of the latter in percentages of the former. As the additional items that are included may concern substantial amounts, for most countries the gaps between post-tax national income and adjusted disposable income are larger than for post-tax disposable income versus disposable income as used in the EGDNA. The differences for the former two aggregates range from 9.3% in Portugal to 36.3% in Denmark. Furthermore, it should again be taken into account that the aggregated difference consists of different, partially neutralising items, which may be distributed quite differently across household groupings.

¹⁴ Social contributions and benefits (in combination with the adjustment for the change in pension entitlements) do not always cancel out for the other domestic sectors. Especially NPISHs appear to play an important role in the provision of social transfers in kind in some countries, leaving them with substantial deficits according to the DINA approach.

Figure 5: Composition of post-national income in percentages of net household adjusted disposable income according to 2008 SNA, 2015.



* Results for Portugal refer to 2014.

Source: OECD.stat: National accounts.

47. The main additional items that lead to differences between post-tax national income as defined in the DINA-project and adjusted household disposable income as defined in the system of national accounts, concern collective consumption and government surplus. The Guidelines explain that the main rationale for including collective consumption is “to make income levels comparable across countries”, although it is also acknowledged that “it is extremely difficult to do this type of imputation, and it is not even clear whether it really makes any sense to attribute public spending such as roads or police to individuals”. In that regard, it should also be borne in mind that different countries may have different needs, leaving people with a larger amount of collective consumption not necessarily better off than people with lower amounts of collective consumption. Furthermore, as it is explained by the Guidelines, it is not clear whether it makes sense to allocate collective consumption to individuals, as it concerns consumption that benefits the community at large. This issue will be further discussed in the next subsection.

48. The second item that leads to differences in the income measures concerns the inclusion of government surplus or deficit (and for some countries also the surplus or deficit of NPISHs). As was already explained in discussing pre-tax factor income, the attribution of these surpluses or deficits to specific individuals would require several assumptions and complicated techniques to keep consistency in income levels at the individual level over time, and would also give rise to counterintuitive results, as a consequence of which, in the opinion of the author of this paper, it is preferable to exclude them from income measures.

4.3 Differences in methodology

49. From the previous subsection, it will have become clear that the use of different income concepts will most probably give rise to differences in distributional results from both projects. In addition, differences in the methodology may also lead to different outcomes. The latter may not only concern the use of different data sources, but also relate to different techniques to correct for any gaps between the micro data and the national accounts aggregates, and to the methods applied for the allocation of amounts related to items for which micro data are missing. On the basis of the step-by-step approach that is applied in the EGDNA project, this subsection explains the possible impact of differences in methodology on the distributional results, and where both projects differ in this respect.

Step 1: Adjustment of national accounts totals

50. When looking at the first step, i.e., adjustment of national accounts aggregates – for which both projects already start from different aggregates due to the differences in income concept – to correct for the part of the population that falls outside the scope, both projects seem to apply a different approach. As the EGDNA project specifically focuses on domestic private households, it recommends correcting for the part of the relevant national accounts aggregates that does not relate to these households. On the other hand, the DINA project seems to take the national accounts aggregates as they are, raising the question how the project deals with the income and wealth of the group that falls outside the scope of the project, i.e., all individuals below 20 years old. It may be assumed that the amounts related to this group are relatively small at the level of the household sector as a whole, but when deriving distributional results at the percentile level and sometimes even at a more detailed level, the amounts may become more relevant. ILO data for example show that in Mexico and the Netherlands 6.2% of total jobs are held by people below 20 years old. Although these will not all concern full-time jobs, and wages may be expected to be lower than for most persons of 20 years and above, the amounts involved may still be significant. Not correcting for this, implies that the related amounts will be allocated to adult individuals, most likely having an upward effect on inequality when this is done in a proportional way. Alternative would be to allocate the related amounts to the households to which the individuals below 20 years old belong to (and subsequently to the adult individuals in that household), but the question is whether the necessary information is available to do this in a correct way and whether this would not also require correcting for the additional consumption needs of these additional household members to arrive at homogenous results at the individual level. As it will most likely also affect other income items as well, the overall impact of not correcting for this part of the population on distributional results may turn out to be significant.

Step 2: Determining relevant variables from micro data sources

51. The second step in the compilation process concerns the selection of the transaction items for which data from micro data sources will be aligned to the relevant national accounts aggregates. In several cases the data sources used by both projects are the same, but this may not always be the case. In this respect, it is known that the DINA project relies heavily on tax data, accompanied by information from surveys and 'rich lists'. In the EGDNA project it largely depends on the data availability in the various

countries, many countries using administrative data in combination with survey data for items for which either no tax information is available or for parts of the population that may be excluded from administrative data (e.g., because they are exempted from taxation). Moreover, some countries still rely predominantly on survey data in deriving their distributional results.

52. The use of different data sources may give rise to differences in distributional results, also depending on the coverage of the micro data, their underlying concepts, and the quality of the data. In that regard, adjustments may be needed to correct for conceptual or classification issues, as the concepts in micro data may not always be in line with national accounts concepts. To the extent in which assumptions are needed to bridge these gaps, these may affect distributional results. Furthermore, micro data may suffer from estimation and measurement errors which need to be corrected before aligning them to the national accounts aggregates. In this regard, most of the micro data underlying the EGDNA results have been subject to profound consistency and plausibility checks, and may have undergone editing. This can significantly affect distributional results, as is shown in the case of France, where consumption results are analysed in conjunction with income (see Bellamy et al. (2009)). In case that consumption is exceeding income without households mentioning that they have to reduce their financial wealth or incur liabilities, the income is adjusted upwards to bring it in line with consumption. In 2011 this correction led to an upwards correction of the savings ratio of the first quintile from -7.6% of disposable income to -0.5% (see Zwijnenburg et al. (2017)). It is not clear to what extent micro data are edited in the DINA project, but it is clear that any differences in the approaches to check and edit the data may also affect distributional results.

Step 3: Imputing for missing elements and scaling micro data to national accounts totals

53. In the third step, imputations have to be made for items for which micro data are lacking, and micro data have to be aligned to the national accounts aggregates. How this step affects distributional results largely depends on the size of the imputations and of the gaps between the micro data and the national accounts aggregates, as well as on the available information on how to allocate the amounts to the relevant individuals or households. In this respect, Figure 6 presents information from the recent EGDNA exercise on the size of imputations and of the alignment of micro-macro gaps as percentage of adjusted disposable income for the household sector as a whole for various EGDNA countries¹⁵.

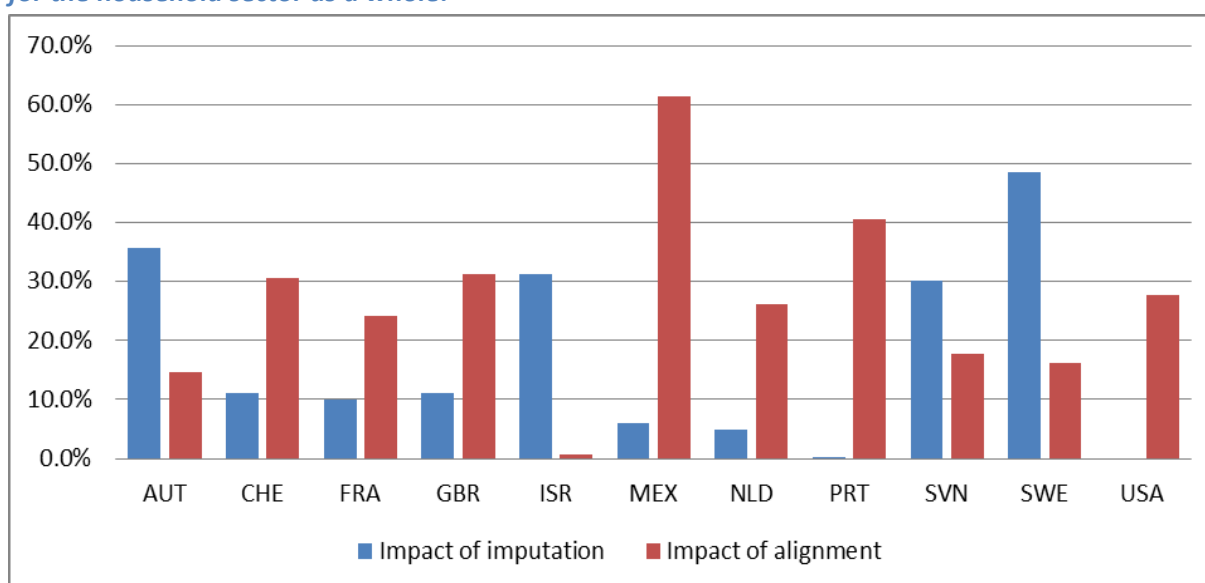
54. For most countries the size of alignments is larger than that of the imputations. This is related to the fact that most countries have micro data available for the majority of items and only need to rely on imputations for few of them¹⁶. Whatever the case, the size of the imputations and alignments appears to

¹⁵ The impact of imputations and alignments on distributional results can best be reviewed by presenting the size of these adjustments in absolute terms as percentage of the balancing item. This provides insight in the maximum amount that has to be allocated to households. Whereas positive and negative adjustments may (partly) cancel out at the level of the household sector as a whole, their overall impact on distributional results may be significant, especially when they are allocated to households at the opposite end of the spectrum.

¹⁶ Please note that the number of items for which countries report imputations and alignments varies across countries. As a consequence, the exact allocation of both adjustment needs to be interpreted with care.

be significant in all countries, with both adjustments adding up to 25% of adjusted disposable income in the United States and to almost 70% in Mexico. When bearing in mind that these amounts need to be allocated to underlying individuals or households, it is clear that the way in which this is done may significantly affect distributional results. Allocating all positive imputations and alignments to households with the highest incomes and negative ones to households with the lowest incomes, will lead to much higher inequality than applying a proportional allocation¹⁷. Ideally, additional information is available for the correct allocation of the amounts to the relevant individuals or households, but often (part of) the allocation needs to be done on the basis of assumptions. It depends on the degree of information and on the robustness of the assumptions, how this will affect distributional results and to what extent this may increase the margin of uncertainty surrounding the results. Because of the importance of these two steps, they are discussed in more detail below.

Figure 6: Size of the absolute alignments and imputations in percentages of adjusted disposable income for the household sector as a whole.



Source: Zwijnenburg (2016).

Step 3A: Scaling micro data to national accounts totals

55. Figure 6 showed that the alignment of gaps between the micro data and the national accounts aggregates can have a significant impact on the distributional results within the EGDNA project. This implies that some items show relatively large gaps that need to be bridged in the compilation process. To gain more insight in the relevant items, Table 1 provides an overview of the adjustments coefficients for the main income components in the EGDNA exercise conducted in 2015. This coefficient shows by how much the micro results need to be adjusted to align them with the corresponding national accounts

¹⁷ Of course, such an extreme allocation would only be possible from a theoretical point of view, as there are several links between items that will enforce a combined allocation. Moreover, more generic causes are assumed to underlie some of the gaps, thus leading to a more balanced allocation.

aggregate (calculated as the national accounts aggregate divided by the micro aggregate), a coefficient close to 1 implying good alignment. The table shows the number of countries for which an adjustment coefficient could be calculated (i.e., for which micro data were available in relation to the relevant national accounts item), the average value across countries, as well as the minimum and the maximum value.

Table 1. Adjustment coefficients for a selection of income components, from the 2015 EGDNA exercise.

NA-Code	Item	Number of countries	Average	Minimum	Maximum
B2	Operating surplus	6	1.47	0.47	2.43
B3	Mixed income	9	2.69	1.30	5.24
D1R	Compensation of employees	9	1.15	1.01	1.38
D41R'	Interest received (not adjusted for FISIM)	8	2.08	0.66	6.40
D42R	Distributed income of corporations	7	5.06	0.70	17.76
D41P'	Interest paid (not adjusted for FISIM)	9	3.58	1.02	11.31
D5P	Current taxes on income and wealth	10	1.18	0.78	1.54
D62R	Social benefits other than STiK	10	1.22	0.97	1.55

Source: Zwijnenburg (2016).

56. The table shows that the gaps between the micro data and the national accounts aggregates are often quite large. The average adjustment coefficients substantially differ from 1 for most of the items, national accounts data significantly exceeding the micro aggregates. Distributed income of corporations turns out to have the highest adjustment coefficient on average (5.06), followed by interest paid (3.58), mixed income (2.69), and interest received (2.08). Distributed income of corporations also records the highest maximum value, with an adjustment coefficient of 17.76 for one specific country, implying that the micro results had to be multiplied by 17.76 to arrive at the adjusted national accounts aggregate. It is obvious that the way in which this gap is allocated to underlying households significantly affects distributional results. Table 1 also shows that in some cases the adjustment coefficient is below 1, implying that the micro aggregate is higher than the national accounts total. This may also cause a challenge for compilers in aligning the data to national accounts totals.

57. When looking at the alignment of the micro-macro gaps, it is clear that the more information is available on the exact reasons for these gaps, the better the allocation to the underlying households can be done, and the better the resulting distributional results will be. For this purpose, a framework has been developed by the EGDNA, on the basis of which experts can attribute the gaps to the main underlying reasons and then allocate them to the relevant household groups. Possible reasons that are distinguished in the framework are as follows: i) quality issues regarding the national accounts totals; ii) quality issues regarding the adjustment to correct for the part of the population that falls outside the scope; iii) errors in the corrections for conceptual and classification differences between micro and national accounts items; iv) errors in the correction for elements that may be missing from the micro data (such as underground economy and illegal activities); v) quality issues with the micro data due to estimation errors; and vi) quality issues with the micro data due to measurement errors. Results from an exercise in which some EGDNA countries applied this framework for the items that showed the largest

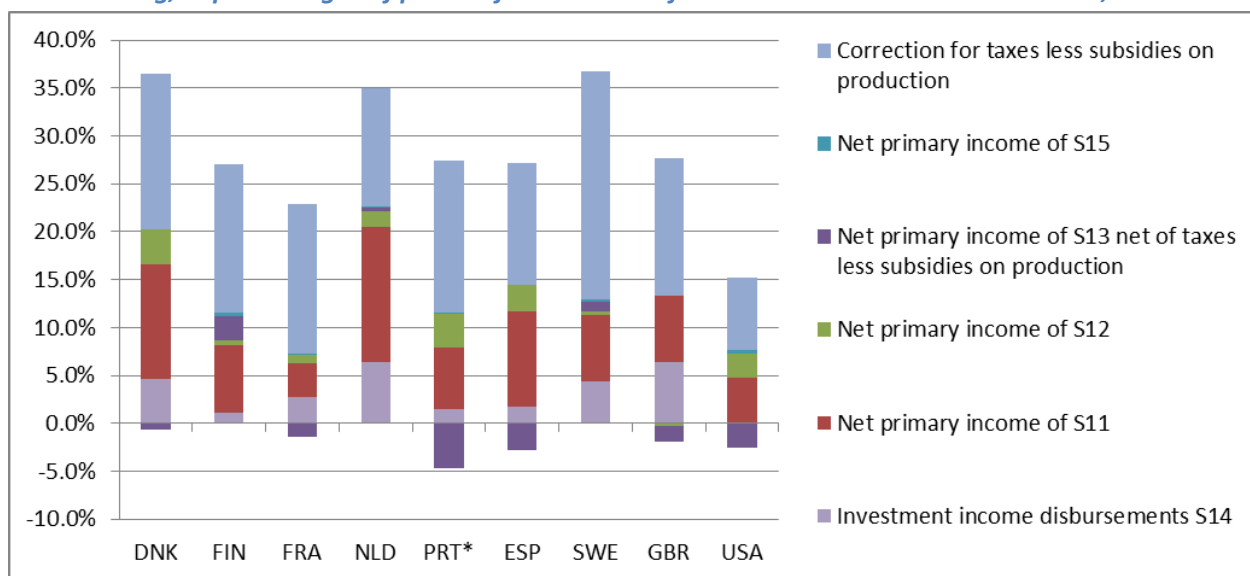
gaps in their countries showed that the reasons for the gaps usually differ across items, and that the allocation to the relevant households often depends on the underlying reasons for the gaps. In practice, the allocations often differed significantly from a simple proportional allocation (for more information see Zwijnenburg (2016)), implying that the allocation of micro-macro gaps on the basis of information on their main underlying reasons may significantly improve distributional results.

58. No information is available on the size of the gaps that the DINA project has to deal with in aligning micro data with the relevant national accounts aggregates. However, when looking at the size of the adjustment coefficients in the EGDNA exercise and the possible impact of aligning these gaps on distributional results, more insight in the size of these gaps in DINA and in the methods applied to allocate them to individuals would be very useful. It seems that part of the micro-macro gaps is solved by applying Pareto-tail analyses for the top incomes, but it is expected that this will not explain all gaps between the micro aggregates and the national accounts totals, and that it will still leave amounts that need to be allocated in different ways. For these remaining gaps, DINA seems to apply a proportional allocation. As this proportional allocation may in the end constitute a significant part of the incomes underlying the distributional results, it would be interesting to know what share of the final results is in the end derived from actual micro data and what share concerns the allocation of micro-macro gaps. That will provide more insight in the robustness of the results.

Step 3B: Imputing for missing elements

59. Figure 6 showed that also imputations may have a large impact on distributional results. Here, it should be noted that the DINA results contain more items for which the allocation cannot be derived from underlying micro data, as a consequence of which the impact of imputations on distributional results may be even larger than for the EGDNA project. Figure 7 provides an overview of the size of the components of pre-tax factor income for which micro data are most likely to be lacking, as a percentage of pre-tax factor income for the household sector as a whole. For pre-tax factor income the assumption has been made that this will concern *investment income disbursements, net primary income of non-financial corporations and financial corporations, net primary income of general government net of taxes (less subsidies) on production, net primary income of NPISHs, and taxes (less subsidies) on production*, although it may concern other items as well, depending on the availability of micro data in specific countries.

Figure 7: Size of the components of pre-tax factor income for which direct micro-information is assumed to be missing, in percentages of pre-tax factor income for the household sector as a whole, 2015.



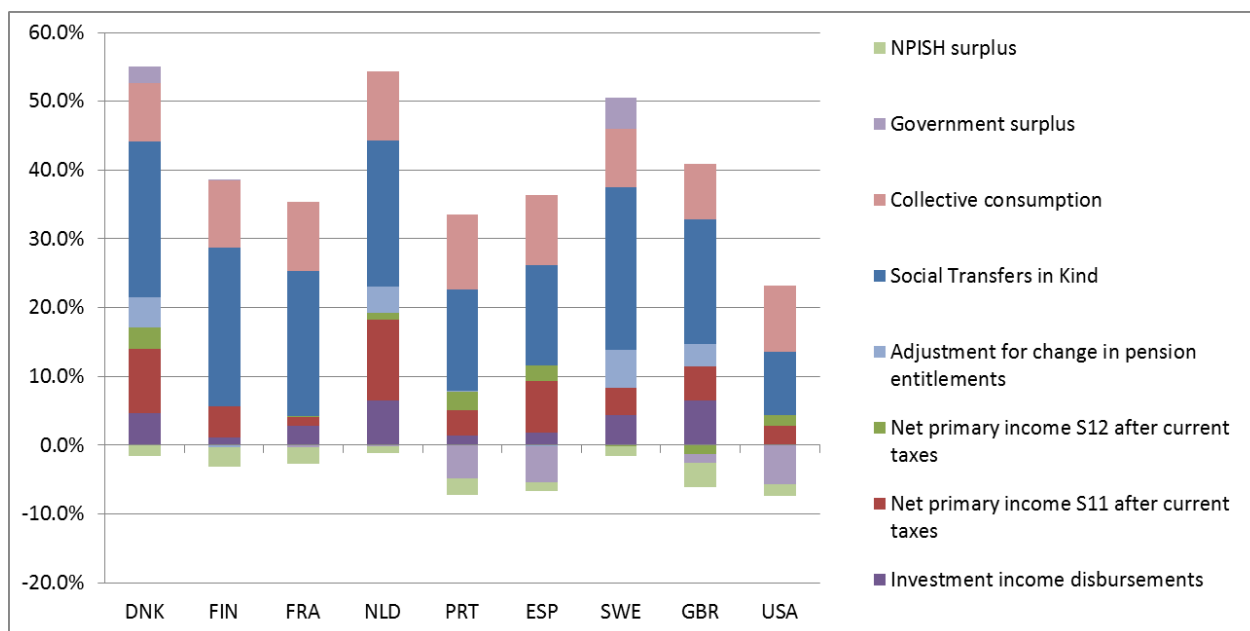
* Results for Portugal refer to 2014.

Source: OECD.stat: National accounts.

60. It shows that the size of the items for which direct information is assumed to be missing, is quite significant. The absolute total is lowest for the United States, for which still an amount equal to 17.7% of total pre-tax factor income can probably not be allocated on the basis of direct micro data, but needs to be attributed to individuals on the basis of assumptions. It will then depend on the robustness of these assumptions how this will affect the quality and the reliability of the distributional results.

61. Figure 8 provides a similar overview for post-tax national income, for which the assumption has been made that micro data are most likely to be lacking for *investment income disbursement, net primary incomes after taxes of non-financial corporations and financial corporations, pension surplus* (approximated by the adjustment for the change in pension entitlements), *social transfers in kind, collective consumption, government surplus* (including net primary income net of taxes (less subsidies) on production), and *NPISH surplus* (including net primary income). It shows that the size of the items for which direct information is assumed to be missing, is even larger than for pre-tax factor income. The absolute total is again lowest for the United States, but the absolute total now amounts 30.5% of post-tax national income, implying a larger impact on distributional results, again depending on the robustness of the assumptions and underlying information to allocate the relevant amounts to underlying individuals. Denmark and the Netherlands record the highest percentages, with the absolute size of items for which direct micro data are likely to be missing exceeding 55% of post-tax disposable income. This means that the distributional results on the basis of post-tax national income will be highly dependent on how these items are allocated to the underlying individuals for these countries.

Figure 8: Size of the components of post-tax national income for which direct micro-information is assumed to be missing, in percentages of post-tax national income for the household sector as a whole, 2015.



* Results for Portugal refer to 2014.

Source: OECD.stat: National accounts.

62. As the items for which micro data are probably lacking seem to play an important role in the DINA results, it is interesting to have a closer look at the methodology that is used to allocate the amounts to underlying individuals for the most relevant items. Looking at the two figures, the most substantial items seem to be the correction for *taxes (less subsidies) on production, net primary income of non-financial corporations and financial corporations* (both before and after taxes), *social transfers in kind, government surplus, and collective consumption*.

63. To start with the correction for taxes less subsidies on production to arrive at pre-tax factor income, Figure 7 showed that this ranges from 7.5% of pre-tax factor income in the United States to 23.9% in Sweden. When looking at the allocation methodology applied, the Guidelines recommend “simple imputations in proportion to the different pre-tax national income flows (except for property taxes, which to the extent possible should be imputed in proportion to housing wealth)”. It is also explained that “one may also be tempted to use more sophisticated tax incidence assumptions and associated imputation techniques”, for example looking at production but also at consumption flows, in relation to different VAT rates for different consumption items. The latter seems quite relevant as there seem to be three underlying routes via which taxes (less subsidies) on production can be allocated to individuals (see also subsection 4.2.2): i) via their final consumption expenditure, ii) via their production activities, and iii) via undistributed profits of corporations. Therefore, ideally proxies are found in direct accordance with these routes. In that regard, it would make sense to distribute the first part on the basis of consumption expenditure data, the second part on the basis of mixed income data, and the third part on the basis of data regarding the distribution of portfolio equity. It is likely that this would lead to a

different distribution than on the basis of income only. It would be interesting if sensitivity analyses could be conducted to see how these different allocations would affect the distributional results.

64. With regard to undistributed profits of corporations, some caveats for its inclusion in measures of household income have already been discussed in subsection 4.2.2. When zooming in on the approach to allocate these undistributed profits to underlying individuals, two additional reservations can be made. For a proper allocation, ideally information is available on the individual equity holdings of individuals so that undistributed profits can be attributed to the relevant individual. However, as this information is often lacking, the DINA Guidelines apply an alternative approach in which undistributed profits are allocated on the basis of the distribution of wealth¹⁸. A first caveat with this approach is that it assumes equal rates of return on wealth, which would generally imply the assumption of more or less equal amounts of undistributed profits across corporations. This is very unlikely, as corporations usually show a large dispersion in profits and will also differ in dividend policies, some corporations distributing all profits while others retaining all or part of it. These differences may perhaps partly cancel out when looking at results at more aggregated levels, but when looking at very granular results these differences are expected to have a larger impact, the proportional allocation possibly leading to quite misleading results. Secondly, it should be noted that in the DINA project the distribution of wealth itself is to a large degree derived on the basis of the underlying capital income flows (also known as the capitalization method¹⁹). Any errors in the assumptions to derive wealth results on the basis of capital income flows, as well as any errors in the underlying micro data, will automatically lead to errors in the wealth distribution, and consequently also affect the allocation of undistributed profits²⁰. Bearing in mind the gaps between the micro data and national accounts totals in the EGDNA exercise for items such as distributed income of corporations and interest received (see Table 1), it would be interesting to have more insight in how large these gaps are for the DINA project and how these might affect the distribution of wealth according to the capitalization method. Together with the already mentioned caveat that the inclusion of undistributed profits in household income does not consider the fact that some of these profits are earned by non-residents and that domestic households will also benefit from undistributed profits of foreign corporations, these issues raise concerns about the reliability of the distribution of undistributed

¹⁸ Depending on the availability of underlying information, the allocation is linked to the distribution of i) equity and investment fund shares, ii) the sum of equity, investment fund shares, and life insurance and pension entitlements, or iii) the sum of all financial assets.

¹⁹ In the simplest form this method relies on the assumption of fixed rates of return by asset class (distinguishing at the minimum housing assets, business assets, financial assets, and financial liabilities, and their corresponding capital income flows) and in more sophisticated versions it introduces different rates of returns within each asset classes (see section 5.2 of the DINA Guidelines).

²⁰ In this regard, the DINA Guidelines already make reservations about this method, stating that the income capitalization method is not regarded “as a magic bullet” and that “it is always necessary to supplement the income capitalization method with household wealth surveys, thereby making it a “mixed method”” (see section 5.2 of the DINA Guidelines). It is also explained that information from billionaires lists and generalized Pareto curves are used to correct for any missing information at the top, although it is not fully clear how this affects the results, also in relation to applying fixed rates of returns to capital income reported in fiscal data to arrive at wealth distributions in line with national accounts totals.

profits in the DINA project. In that sense, as was already argued in subsection 4.2.2, it may be better to use information from the revaluation accounts of the household sector to obtain more insight in the holding gains and losses of households, especially when reliable distributional information can be obtained by linking financial accounts data with micro data. The plans by the ECB, Eurostat and the OECD to develop methodology for the compilation of distributional information on household wealth are very encouraging in that regard. Also the inclusion of this information in the DINA database would be very welcome, although in that case it would be preferable to derive this information from independent wealth estimates instead of wealth estimated via the income capitalization method.

65. For social transfers in kind and for public spending on collective goods and services, the DINA Guidelines explain that there are generally two ways to allocate the amounts to individuals. The first method is to attribute all in-kind transfers and collective expenditures in proportion to post-tax disposable income. The second method is a lump-sum method in which the same average monetary value is attributed to each adult individual. In their benchmark series, social transfers in kind related to health are distributed according to this latter method, whereas the proportional method is used for all other in-kind transfers and collective expenditures. When comparing these methods with the approaches applied in the EGDNA project for the allocation of social transfers in kind, the differences in results are expected to be relatively small for transfers related to health care. For these transfers the EGDNA recommends an insurance value approach in which the allocation is based on deriving an equivalent of the insurance premium that households would have to pay on the market, usually leading to a relatively flat distribution across households. For the other types of social transfers in kind, differences are expected to be much higher. For these transfers the EGDNA project recommends an actual use approach in which the values are allocated to those household groups that directly benefit from the relevant goods and services, such as education and housing services. The difference in allocation technique may have a significant impact on overall distributional results, as the actual use approach usually leads to a relatively flat distribution across income quintiles in contrast to the proportional allocation method that simply adopts the distribution of post-tax disposable income. Furthermore, as in most countries these transfers constitute an important part of household income, a different allocation may significantly alter inequality measures.

66. The proportional allocation method is also applied for the distribution of collective consumption expenditure across individuals. Aside from the reservations already mentioned in subsection 4.2.2 on its inclusion in income measures in general, it is also questionable whether a proportional allocation would be most the appropriate one. The Guidelines rightfully explain that not everyone will probably benefit to the same degree, also depending on the specific types of collective consumption, but whether post-tax disposable income would in that sense be a better proxy for its allocation than a flat distribution, is highly debatable. Especially as collective consumption usually concerns items that benefit the community as a whole, a more flat distribution seems to be more reasonable.

67. The last item to be addressed concerns government surplus. Looking at the way in which such a surplus or deficit is allocated to individuals in the DINA project, the simplest solution as described in the Guidelines is to allocate it in proportion to income. More sophisticated rules are distinguished as well, such as allocating the surplus or deficit on the basis of taxes paid and benefits received. However,

whichever method is applied, it always has to be borne in mind that, as explained in subsection 4.2.2, the allocation is highly complicated if one would like to maintain consistency at the micro level over time. It also raises questions about its interpretability, as it may lead to counterintuitive results in moving the settlement of deficits and surpluses forward in time. In this regard, one may wonder whether the inclusion of this item will lead to a better overview of income inequalities in countries.

Step 4: Clustering households

68. In the fourth step of the methodology, information needs to be linked across households. In case of the use of administrative data that include unique identifiers this will probably not be too complicated, but in case of the use of various survey data sources, it may be more troublesome, possibly requiring some assumptions to arrive at full sets of accounts at the individual level. Here, the incorrect linking of records may give rise to errors in the distributional results.

Step 5: Deriving relevant indicators

69. At the end of the step-by-step approach, inequality measures can be derived on the basis of the underlying data. As already explained, both projects have a different focus in that regard. The DINA project focuses on inequality on the basis of income of adult individuals, whereas the EGDNA project focuses on inequality on the basis of equivalized household income. This difference in focus may also give rise to different inequality results.

5. Conclusions

70. This paper has explained that, whereas both the EGDNA and the DINA project aim to compile distributional results in line with national accounts aggregates, they may end up with significantly different results, due to differences in scope, the use of different concepts in measuring inequality, and possible deviations in methodology to arrive at the distributional results. By focusing on the main differences, this paper has tried to broaden the knowledge on both projects, and to initiate a discussion on the pros and cons of certain choices in compiling distributional results. The latter is important with regard to further improving the methodologies used in both projects and to properly explain the main strengths and weaknesses of the specific indicators.

71. When looking at the main issues that may give rise to differences in distributional results, this mainly concerns the use of different units of analysis and differences in the income concepts applied. With regard to the unit of analysis, the paper showed that it makes a difference whether one focuses on the individual or on the (equivalized) household. It depends on the specific needs of users whether one or the other is preferable, but at least users should be aware of the impact the choice may have on the distributional results. Particularly in analysing changes in inequality over time and in performing cross-country comparisons, a different unit of analysis may significantly alter the results.

72. The paper also showed that both projects apply rather different income concepts, the EGDNA project specifically focusing on the income of the household sector as defined in the system of national

accounts, and the DINA project applying a much broader definition, also including income of other domestic sectors, under the assumption that this will in the end benefit domestic households. As this assumption is quite debatable and as the inclusion of the various items (such as undistributed profits of domestic corporations, government surplus, gaps between pension contributions and benefits, and collective consumption) may have a large impact on distributional results, the paper has raised some questions related to the usefulness and appropriateness of the inclusion of these items. Hopefully, this will initiate a further discussion on a proper definition of household income to be used in inequality analyses, possibly leading to the formulation of a small set of income measures serving different user needs. In the meantime, users should be aware of the differences in coverage of the various income concepts and of the possible impact of the inclusion or exclusion of certain items on the distributional results.

73. In discussing the methodology, the paper showed, on the basis of data available from the EGDNA project, that - in addition to the choice of the specific underlying concepts - distributional results are also highly dependent on the quality and coverage of the underlying micro data, as well as on assumptions to allocate amounts for items for which micro data are lacking (such as investment income disbursements and DINA specific items such as government surplus and collective consumption). The larger the gaps between the micro data and the national accounts aggregates, and the larger the amounts related to the imputed items, the larger the impact on distributional results of the necessary assumptions to allocate these amounts to the relevant units. This has to be borne in mind when analysing the results, especially when looking at results at very granular levels of detail. Because these allocations may have a large impact on distributional results and, depending on the robustness of the assumptions, may be surrounded by large margins of error, more information on their role in the compilation process is regarded as essential for a proper interpretation of the results. Especially when monitoring changes in inequality over time and when conducting cross-country comparisons, more information on how the underlying results have been affected by alignments of micro-macro gaps and by allocations of imputed items, possibly also conducting sensitivity analyses how different assumptions would have affected the results, is deemed crucial for a proper understanding of the results and to arrive at statistically sound conclusions. For that reason, the EGDNA project has included meta data in its working papers presenting the experimental results of the two exercises (see Fesseau and Mattonetti (2013) and Zwijnenburg et al. (2017)). With regard to the DINA project it is not clear whether such information is already available or is planned to be made available in the near future, but it is expected that this will greatly benefit its users.

74. In conclusion, EGDNA and DINA are both important initiatives in the development of distributional results consistent with national accounts concepts, that are both likely to benefit from a better understanding of the similarities and differences between the two projects. In this respect, this paper hopes to have provided more insight in the main differences and to have initiated a further discussion on the pros and cons of choices that can be made to the compilation process of distributional results. Furthermore, it hopes to have provided a clear explanation on the need for more information on the different aspects of the compilation process in disseminating distributional results.

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ANNEX 1: The composition of adjusted disposable income as used in EGDNA

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
D4N	Net property income	= Property income received minus paid minus adjustment for FISIM
	Property income received (not adjusted for FISIM)	
D41'	Interest (not adjusted for FISIM)	
D42	Distributed income of corporations	
D44	Investment income disbursements	
D441	<i>Investment income attributable to insurance policy holders</i>	
D442	<i>Investment income payable on pension entitlements</i>	Part of D614
D443	<i>Investment income attributable to collective investment funds shareholders</i>	
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 + D4N
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
D62	Social benefits other than STiK	
D7N	Other current transfers (net)	= (D72-D71) + D75N
D72-D71	Net non-life insurance claims minus premiums	
-D71	<i>Non-life insurance premiums</i>	
D72	<i>Non-life insurance claims</i>	
D75N	Net miscellaneous current transfers received – paid	
D75	<i>Miscellaneous current transfers received</i>	
-D75	<i>Miscellaneous current transfers paid</i>	
B6	Disposable income	= B5 - D5 - D61 + D62 + D7N
D63	Social Transfers in Kind	
D63A	Education	
D63B	Health	
D63C	Other	
B7	Adjusted disposable income	= B6 + D63

ANNEX 2: List of items used in formulas

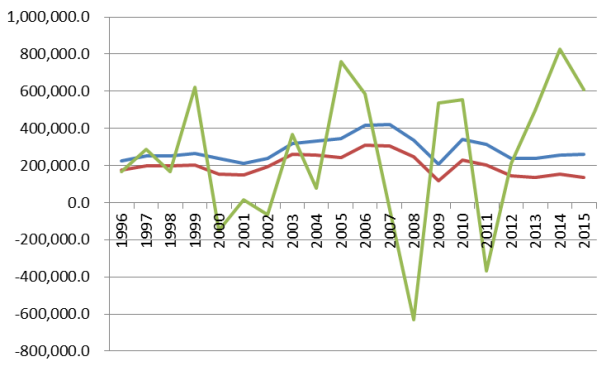
Code	Description	Explanation
<i>S11</i>	Non-financial corporations sector	
<i>S12</i>	Financial corporations sector	
<i>S13</i>	General government sector	
<i>S14</i>	Household sector	
<i>S15</i>	Non-profit institutions serving households sector (NPISH)	
<i>S1</i>	Total economy	= <i>S11</i> + <i>S12</i> + <i>S13</i> + <i>S14</i> + <i>S15</i>
<i>S2</i>	Rest of the world	
<i>Y_{f,pretax}</i>	Pre-tax factor income as defined in the DINA project	
<i>Y_{n,pretax}</i>	Pre-tax national income as defined in the DINA project	
<i>Y_{disp,posttax}</i>	Post-tax disposable income as defined in the DINA project	
<i>Y_{n,posttax}</i>	Post-tax national income as defined in the DINA project	
<i>R</i>	Received	
<i>P</i>	Paid	
<i>N</i>	Net	= Received - Paid
<i>B2n</i>	Net operating surplus	
<i>D2</i>	Taxes on production	
<i>D3</i>	Subsidies on production	
<i>D4n</i>	Net property income received	
<i>B5n</i>	Balance of primary income, net	
<i>D5</i>	Current taxes on income, wealth, etc.	
<i>D61</i>	Net social contributions	= <i>D61A</i> + <i>D61B</i>
<i>D61A</i>	Social insurance pension contributions	= <i>D6111</i> + <i>D6121</i> + <i>D6131</i> + <i>D6141</i>
<i>D61B</i>	Social insurance non-pension contributions	= <i>D6112</i> + <i>D6122</i> + <i>D6132</i> + <i>D6142</i>
<i>D6111</i>	Employers' actual pension contributions	
<i>D6112</i>	Employers' actual non-pension contributions	
<i>D6121</i>	Employers' imputed pension contributions	
<i>D6122</i>	Employers' imputed non-pension contributions	
<i>D6131</i>	Households' actual pension contributions	
<i>D6132</i>	Households' actual non-pension contributions	
<i>D6141</i>	Households' pension contribution supplements	
<i>D6142</i>	Households' non-pension contribution supplements	
<i>D62</i>	Social benefits other than social transfers in kind	= <i>D62A</i> + <i>D62B</i> + <i>D623</i>
<i>D62A</i>	Social insurance pension benefits	= <i>D6211</i> + <i>D6221</i>
<i>D62B</i>	Social insurance non-pension benefits	= <i>D6212</i> + <i>D6222</i>
<i>D6211</i>	Social security pension benefits	
<i>D6212</i>	Social security non-pension benefits in cash	
<i>D6221</i>	Other social insurance pension benefits	
<i>D6222</i>	Other social insurance non-pension benefits	
<i>D623</i>	Social assistance benefits in cash	
<i>B6n</i>	Disposable income, net	
<i>D63</i>	Social transfers in kind	
<i>D7</i>	Other current transfers	
<i>D8</i>	Adjustment for the change in pension entitlements	
<i>P32</i>	Collective consumption expenditure	
<i>surplus_{S11+S12}</i>	Non-primary income surplus of non-financial and financial corporations	= (<i>D61R</i> - <i>D62P</i> - <i>D8P</i>) _{<i>S11+S12</i>}
<i>surplus_{S13}</i>	Government non-primary income surplus, including taxes (less subsidies) on production	= (<i>D2R</i> - <i>D3P</i> + <i>D5R</i> + <i>D61R</i> - <i>D62P</i> - <i>D63P</i> - <i>D8P</i> - <i>P32P</i>) _{<i>S13</i>}
<i>surplus_{S15}</i>	Non-primary income surplus of NPISHs	= (<i>D61R</i> - <i>D62P</i> - <i>D63P</i> - <i>D8P</i> - <i>P32P</i>) _{<i>S15</i>}

ANNEX 3: Comparison between undistributed profits and revaluations of household financial assets.

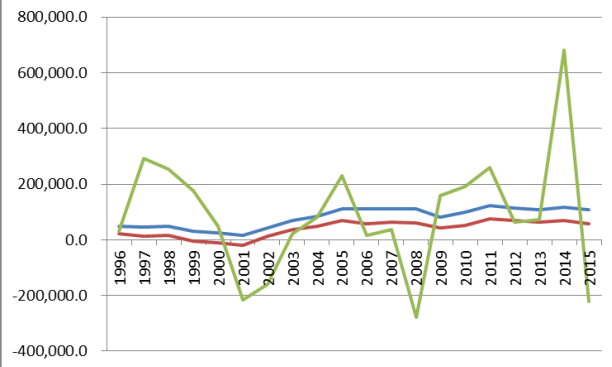
The figures present three lines, i.e., the values of 'net primary income of non-financial (S11) and financial (S12) corporations' before and after taxes, and the value of 'other changes in financial assets' for the household sector (S14). The latter consists for the largest part of revaluations but also includes 'other changes in the volume of assets'.



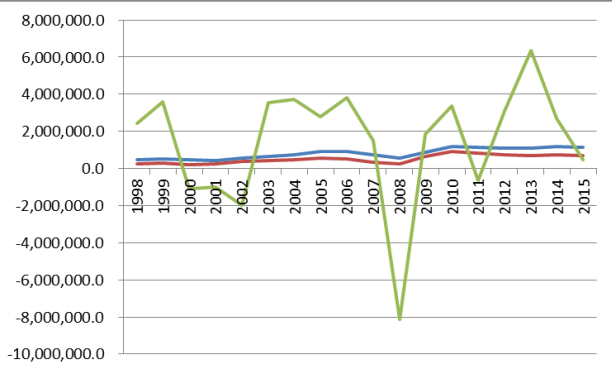
Sweden:



United Kingdom:



United States:



— Primary income S11 and S12 — Primary income S11 and S12 after taxes — Other changes in financial assets S14