Expert Group Report on the Measurement of Inequality and Redistribution

Insee Methods

2021 EDITION

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Executive summary

This report on the measurement of inequality and redistribution is the result of the work of some forty experts, brought together at the initiative of INSEE (French National Statistics Institute) on the basis of a mission statement from its Director General, dated 19 March 2019. This group was established in response to two key drivers. On the one hand, the publication, in late 2018, of studies conveying seemingly different messages regarding the comparative extent of redistribution in France and in a number of other developed countries. On the other hand, faced with growing sentiment within society that people are not getting a "fair return on their taxes", the need to inform the public debate with regard to what taxes are actually used for. Who pays what and how much? Who receives what and in what form?

It is not just monetary transfers that people receive in return for tax and social security deductions, they also receive social transfers in kind such as free access to health and education, and collective expenditure that benefits the whole population: assessing who benefits from redistribution and who finances it requires a broad overview of what is offered in return for the contributions.

In order to examine these issues, the expert group was comprised of members from the following institutions: the relevant INSEE directorates (Director of Economic Studies and Reports and Demographic and Social Statistics Directorate); the main academic teams that had fuelled the debates at the end of 2018 or that make regular contributions to the findings on redistribution; the *World Inequality Lab* (WIL) at the Paris School of Economics; the Institute of Public Policies (IPP); the French Economic Observatory (OFCE); the Laboratory for Interdisciplinary Evaluation of Public Policy (LIEPP) at Sciences-Po; several Ministerial Statistical Offices (DREES, DEPP and SIES); the Directorate-General of the French Treasury; and, on an ad hoc basis, the OECD, where an *Expert group on Distributional National Accounts* (EG DNA) has been working in recent years on the standardisation of national accounts by household category, as regularly published by INSEE.

The report begins with a systematic examination of the factors that may explain why different teams come to different findings: (i) differences in the sources used; (ii) selection of analytical units (individuals *versus* households, with different ways of taking account of economies of scale within those households); (iii) selection of inequality indicators (indices evaluating distribution as a whole, such as the Gini and Atkinson indices, or the use of different types of ratio indicators for the incomes or standards of living of different population categories); (iv) and, last but not least, the question regarding the scope of redistribution.

The comparisons drawn by the working group allow the first two sources of

discrepancy to be put into perspective. In the case of identical concepts, the findings are similar regardless of the sources used (i). And the selection of the analytical unit, although not completely without effect, does not explain the discrepancies (ii). On this second point, however, the report highlights the need for a precise rule for the grouping of the elementary units into stable population subgroups. In fact, the indicators make use of average incomes or standards of living for more or less fine bands of the population: inter-deciles, inter-centiles or even finer bands are used to explore the high end of redistribution, subject to the representativeness of the sources at these fine levels. It is essential that the comparisons of distribution before and after transfers are based on a stable classification of the individual units within these various groups.

The question of indicators (iii) then becomes crucial: each indicator represents a specific way of exploring the distribution of incomes and standards of living, each weighting the various bands of this distribution in its own way. The report offers a comparative assessment of the properties of these indicators and argues that every study should make use of at least one global indicator and one ratio indicator, and also that the information needed to calculate the other indicators should be made available.

The final question (iv) concerns the definition of the scope of redistribution. This is the main area in which the various approaches differ from one another. The usual studies looking into redistribution, conducted by DREES or the OFCE and INSEE's annual publications alike, focus on transfers, including direct taxes, social security contributions and cash benefits. The work carried out by the WIL on distributional accounting also adds taxes on production and products to this. The other public transfers are included in principle; however, their effects are neutralised pending future studies, by a normative assumption of proportionality. The OECD (EG DNA) excludes taxes on products and production, but takes account of social security benefits in kind and public services that can be individualised, which INSEE also includes in its analyses but on a more ad-hoc basis. None of these approaches take account of the redistributive aspect of fully collective public expenditure.

This situation poses several overlapping problems. Different definitions inevitably lead to different assessments of the extent of redistribution. The fact that the coverage is only partial leads to "unbalanced" sets of transfers being taken into account, which distorts the analyses, since we are led to consider either services for which there is no mention of how and therefore by whom they are financed, assuming they are financed upstream of the field in question, or deductions that will be described as being "at a loss", since they are used to finance services positioned downstream of the field in question.   At the same time, partial coverage lends bias to international comparisons given the highly variable nature of social protection, public policy and the financing thereof from country to country, with proportions of out-of-scope coverage that will vary greatly from one country to the next.

In an ideal world, it would therefore be desirable to adopt a comprehensive overview of redistribution that includes all modes of financing and all types of public benefits or services: this is the only way to take account of the fact that everything provided by the community is financed directly or indirectly by the population and ultimately benefits that population, again either directly or indirectly. Nevertheless, adopting such a broad view then raises questions of imputation as soon as you start examining transfers beyond the traditional scope of directly measurable redistribution.

It involves quantifying all that individuals or households receive for free or are able to buy in the observed state of the world, compared with what they would have been able to or would have needed to buy in a world without government intervention. The performance of an evaluation of this type relies on the imputations that the report is striving to substantiate from an economic point of view. Who ultimately pays the VAT or production taxes? What market income would individuals have if these taxes did not exist and what pricing system would be in place? Which households benefit from retained company earnings? Which key should be used to distribute the benefits of collective public spending to individuals?

The report answers these questions by making some twenty recommendations to practitioners and proposes a structured response in the form of "distributed national accounts" (DNA), the purpose of which is to integrate the international standards for national accounting. Using the rows in the table of integrated economic accounts (TIEA) for national accounting as a starting point, the report builds a table of integrated distributional accounts (TIDA), each row of which breaks down income and transfers by ascending standard of living bands. The standard of living concept used to enable classification into these bands is disposable income per consumption unit. This reference classification is used since it is both the closest to the way that households feel and, being directly observed, is independent of the breakdown and imputation assumptions used for the exercise. The selection of this standard, which forms an essential basis for international comparisons, does not detract from the relevance of work based on other classifications, such as primary income.

The proposed tool can be used in a number of different ways: its intermediate rows, which correspond to the usual scope of redistribution, can be used with the above-mentioned limitations, or it can be considered in its entirety. For the rows most likely to be affected by imputation, for example the distribution of non-individualizable collective expenditure or taxes on products and production, the underlying micro founded data are made available to allow other variants to be explored.

The report concludes by illustrating the approach by applying it to France, using the Tax and Social Incomes survey and INES micro-simulation model imputations for the majority of the rows in the table, with the remaining rows being supplemented by the assumptions detailed in the report, which may, of course, be subject to debate. As it stands, the result shows that, while only 40% of the least privileged households are net beneficiaries of redistribution in the traditional sense that INSEE lends to this term, i.e. monetary, the proportion increases to two-thirds when you look at a broader standard of living.

A comparison with the United States is also proposed based on WIL data. It reveals lower levels of inequality in France than in the United States, both before and after transfers. The findings regarding the intensity of redistribution are linked to the position on the income scale and on whether reasoning takes place on the basis of absolute transfers or as a percentage of income prior to redistribution. However, the discrepancy does not lie in the tax system, but in the benefits system, which, in France, is targeted more towards persons on low incomes in the case of cash benefits, and offers greater amounts for benefits in kind such as education, health or even housing.

Introduction: the Challenges of Distributional Accounting

Background

The issues of income inequality and the redistribution that takes place by virtue of public policies is featuring more and more in the public debate, both in France and internationally. Fed into by both the academic world and official statistics systems, the findings are sometimes hotly debated and the "messages not always convergent"[2].

Therefore, when the work on this report was started, several recent studies on France and the United States presented apparently contradictory findings when it came to the comparison of redistribution within the two systems, with Causa and Hermansen (2017) and Guillaud, Olckers and Zemmour (2019) in particular concluding that the effects were more distributive in France than in the United States, while Bozio *et al.* (2018) found the opposite to be true[3].

These discrepancies can, of course, be explained by differences in sources, scope, concepts or a differing emphasis on the various standard of living distribution bands. Going beyond the scientific exchanges brought about as a result of the richness and high importance of these works, the working group was born of the desire to bring these to their conclusion and to establish, in so far as is possible, shared conventions and practices to better inform and fuel the public debate (see mission statement annexed

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2 Mission statement from INSEE's Director-General, dated 19 March 2019, provided as an appendix on page 126.

3 INSEE, LIEPP and IPP study all age groups, whereas the WIL focuses on adults and the OECD focuses on 18 to 65-year-olds. The definition of income before redistribution includes pensions in the case of LIEPP and pensions and unemployment in the case of INSEE, the WIL and IPP; however, the OECD excludes these. The disposable income profile differs from study to study. The wealthiest 10% (T10) represent 24% in the OECD, LIEPP and INSEE studies, but 28.8% in the DINA study, a discrepancy of 4.6 points, which equates to 60 billion euros. INSEE estimates that the poorest 50% (B50) represent 20.6%; however, DINA's estimate of 26.4% presents a difference of 4.3 points, which equates to 55 billion euros. In addition, the usual T10/B50 indicator (see Section I.4) is therefore estimated at 3.9 and 5.5, respectively.

hereto on page 127).

The measurement of inequality and redistribution is a long-standing concern. It has found its way back into the spotlight over the last decade, most notably as a result of the Stiglitz-Sen-Fitoussi Commission on the Measurement of Economic Performance and Social Progress, which called for the distribution of national income to be documented in the same way as GDP in order to better guide public decisions. Early on, this translated into a commitment to go beyond the simple use of aggregates and averages and to establish detailed distributions, particularly at the extreme ends of the income scale.

In addition to the above-mentioned studies, many other studies have been produced by international institutions (UN, OECD, Eurostat), as well as in France by INSEE and the Ministerial Statistical Offices, and also by research laboratories such as the *World Inequality Lab* (WIL), the French Economic Observatory (OFCE), the Laboratory for Interdisciplinary Evaluation of Public Policy (LIEPP) and the Institute of Public Policies (IPP), and that is just the organisations involved in the working group that produced this report. The group is comprised of some forty experts in the field and it carried out its work between March 2019 and April 2020 in a collegial setting and in a spirit of consensus.

Objectives of the Working Group

In accordance with the objectives set out in the above-mentioned mission statement, by deepening the links between research and official statistics, the working group committed to:

- ➢ Examining the discrepancies between sources, scopes or concepts and explaining the differences seen in the work carried out by different teams.

- ➢ Bringing the concepts used for income in national accounting closer to those used in microeconomic approaches.

- ➢ Adopting common conventions and proposing a compatible approach for the survey data, the administrative sources and the national accounting work in order to establish pre- and post-transfer analyses.

- ➢ Proposing a methodology for breaking down national income in its entirety, which involves going beyond the components of disposable income and distributing expenditure in kind, as well as collective expenditure and taxes on consumption and production.

- ➢ Issuing recommendations with a view to establishing a recurrent distributional accounting publication and proposing a methodological guide for France that brings together shareable practices for the study of redistribution performed by means of distributed national accounts in particular.

- ➢ Identifying study and research priorities in order to improve the study of

inequality and the impact of public transfers.

By seeking to identify best practices in the study of inequality where they exist, or by proposing best practices for new areas of redistribution that have thus far been little explored or completely unexplored, the report leads to a series of practical recommendations in the form of common conventions for terminology, practices and the documentation of assumptions. It does not aim to eliminate the differences in analysis; on the contrary, it seeks to remove the artificial discrepancies by reaching an agreement with regard to the technical aspects, in order to better concentrate on the fundamental discussions.

We would like to emphasise one of the recommendations made here, as it is so important to the approach that the working group took to the issue of measuring redistribution. The report calls for the establishment of distributed national accounts as an extension to national accounting; these break down national income in its entirety, together with all its various components, by income group. The underlying logic is that studies looking at redistribution present an additional requirement when compared with studies looking at inequality: the need for comprehensiveness. It is possible and useful to study inequality in health, income, wages, gender, etc. Conversely, evaluating the extent of redistribution linked to public policies means that all income and all transfers need to be taken into account.

Deductions are made and, in the vast majority of cases, are not earmarked for specific policies. They are used to finance both cash benefits and benefits in kind, as well as non-individualizable public services (see Section I.2 for definitions). Even the Social Security schemes, which benefit from deductions, no longer present an exception: their financing, which was originally based on social security contributions and deductions, has diversified and they now receive fractions of deductions that finance other public expenditure (e.g. VAT or the Generalised Social Contribution (CSG)). It is therefore not strictly possible to study all of the redistribution operations separately by looking at the various transfers (education, health, pension, etc.) in isolation.

Likewise, examining the transfers received separately from the transfers paid out would only deliver a partial result. Indeed, in order to judge the redistributive nature of a public policy, it is important to include the nature of the deductions made in order to finance it in view of the profile of the benefits provided. For example, an income-based benefit funded by a proportional deduction is not redistributive; however, it is considered to be redistributive if the deduction is more progressive than income; a flat-rate benefit financed by a proportional tax (flat tax) is redistributive; however, if it is financed by a flat-rate deduction, it is not redistributive.

Without going into detail here, pursuing such an objective of exhaustiveness means that the final beneficiaries of income and transfers must be sought, going beyond the mere aggregates assigned to households in the national accounts. As a result, the income and savings of companies, financial and non-financial businesses and individual entrepreneurs are assigned to the households that receive them, including retained earnings since, as we will discuss in the second part of the report, these constitute capitalised household savings. The revenues and expenditures of public bodies and non-profit institutions are also distributed to households. Finally, accounting transactions with the rest of the world and transactions involving product taxes and subsidies are

taken into account under certain assumptions (see below).

With this principle in mind, the distributed national accounts are based on the table of integrated economic accounts (TIEA), assigning all of the income and transfers that constitute national income across the entire standard of living scale. Once the primary incomes have been identified, the application of public transfers (deductions and benefits) makes it possible to redistribute the national income in the form of a table of integrated distributional accounts (TIDA), which breaks down the effect of these market income based transfers (Income Before Transfers, IBT) on a step-by-step basis. The various transfers then result in redistribution towards a broader disposable income known as Income After Transfers (IAT), see Figure 1 below and Section III.1.f).

Figure 1: Simplified table of distributed national accounts in 2016 (France, in billion euros)

	All	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P100	M1000
IBT: Income Before Transfers	**1881**	**39**	**66**	**94**	**115**	**140**	**161**	**187**	**224**	**280**	**576**	**406**	**183**
IBD: IBT + Deferred Incomes	**1881**	**46**	**72**	**100**	**123**	**141**	**160**	**182**	**217**	**274**	**576**	**389**	**174**
TCP: Tax on Cons&Prod	-300.1	-17.3	-19.5	-22.1	-24.2	-26.9	-28.7	-30.9	-34.2	-40.9	-55.3	-35.2	-13.0
TIW: Tax on Inc. and Wealth	-276.6	-2.3	-3.9	-6.6	-9.6	-12.4	-15.5	-19.9	-27.4	-40.4	-138.5	-109.1	-60.7
TSC: Social Security Contributions	-471.2	-5.4	-15.4	-22.6	-30.0	-38.1	-45.1	-53.8	-64.4	-77.6	-118.8	-74.6	-22.3
BCA: Social Security Benefits in Cash	486.4	25.2	35.4	40.6	45.6	45.3	46.8	50.4	54.4	62.9	79.9	41.4	8.5
IDI: Disposable Income	**1320**	**40**	**64**	**83**	**97**	**108**	**119**	**132**	**152**	**184**	**341**	**231**	**97**
BKI: Social Security Benefits in Kind	394.3	54.5	52.0	45.4	41.5	37.0	36.0	31.9	33.1	32.3	30.6	15.3	3.1
BCO: Collective Consumption	182.9	23.0	20.9	18.6	18.1	17.2	16.4	17.2	16.9	17.4	17.2	8.6	1.7
MBT: Balance of Transfers	-15.9	1.0	0.5	0.2	-0.1	-0.4	-0.7	-1.1	-1.9	-3.0	-8.7	-4.3	-0.9
ATI: After Transfer Income	**1881**	**118**	**137**	**148**	**157**	**161**	**170**	**180**	**200**	**230**	**380**	**251**	**100**
NWE: Net wealth	10,783	120	232	308	398	520	662	837	1,074	1,526	5,106		
	All	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P100	M1000

Sources: prototype distributed national accounts for 2016, authors' calculations.
Notes: the amounts are expressed as a percentage of NNI (see below).
Reading note: the income before transfers (IBT) of the households in D10 amounts to 576 billion euros and the after transfer income (ATI) 380 billion. The deductions that they pay amount to 55.3 billion for taxes on consumption and production (TCP), 138.5 billion for taxes on income and wealth (TIW) and 118.8 billion for social security contributions (TSC). Those same households receive 79.9 billion in social security benefits in cash (BCA), 30.6 billion in benefits in kind and 17.2 billion in collective consumption expenditure (BCO).

Taking such a comprehensive approach to accounting offers a view of redistribution that differs from and complements the traditional approach, as is illustrated by the graph in Figure 2. In particular, when viewed from a broader angle that includes a monetary valuation of benefits in kind and collective expenditure on the one hand and the allocation of taxes on products and production on the other hand, the amounts resulting from the redistribution that takes place via public transfers are larger. Indeed, the wealthiest third of households belong to standard of living categories that are net contributors under expanded redistribution, whereas this proportion is 60% under the usual approach to redistribution.

This initial exploration, at this experimental stage, illustrates the potential of

distributional accounting for a rigorous evaluation of our redistributive system. The report also stresses the need for distributional accounting that is not only based on precise statistical conventions, but also shared by experts, for the purposes of international comparison. This is why the working group felt it necessary to integrate such distributional accounting into the international conventions that govern the establishment of public accounting (*System of National Accounts*, SNA – the set of accounting rules defined by *UNStats*), for which a new revision process has just begun.

Figure 2: Breakdown showing the redistribution of national income in 2016 (in euros per CU)
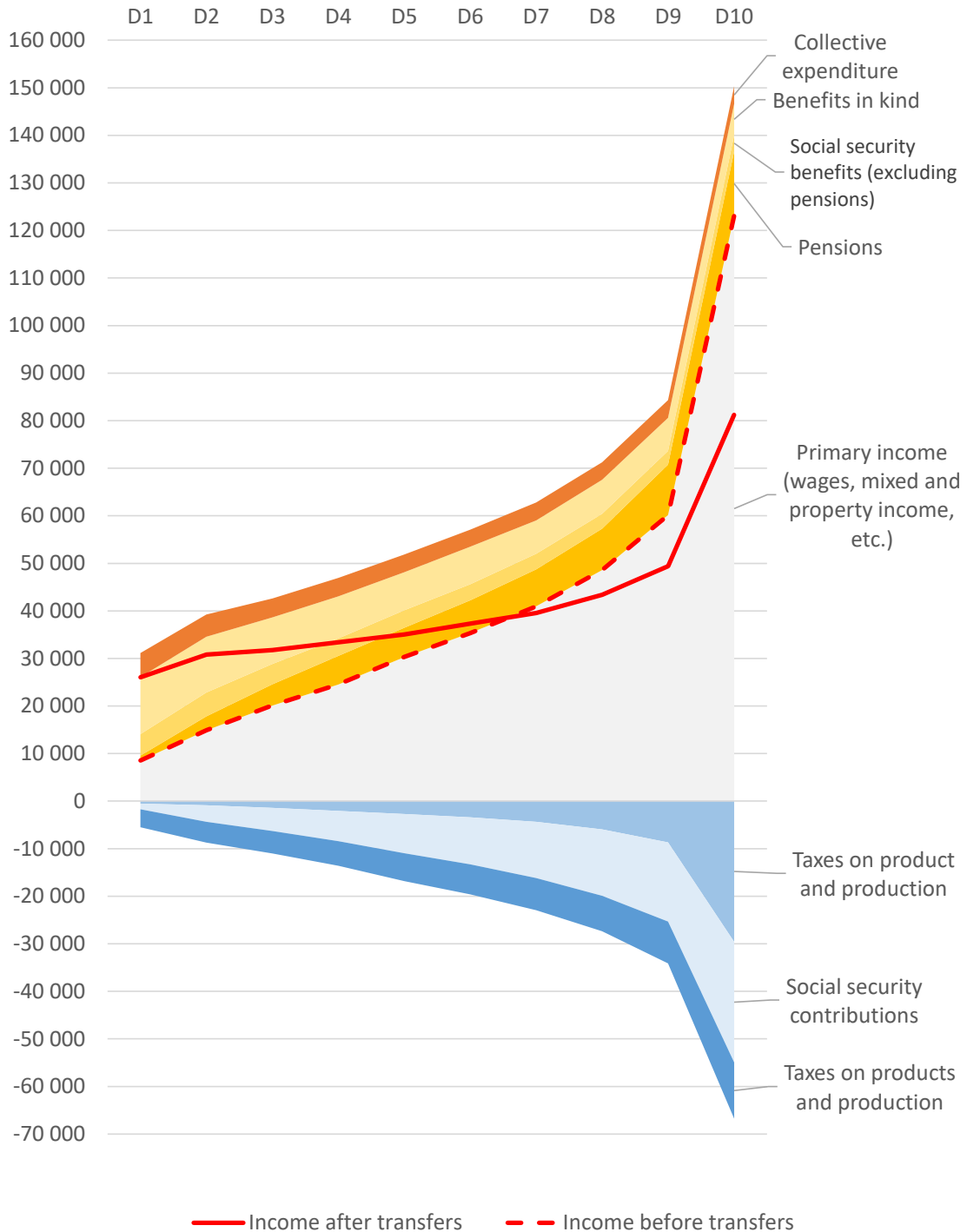
This is not a question of proposing a completely new way of measuring inequality, but of developing a methical approach in order to study all of the various dimensions of redistribution and its impact on inequality. Distributed national accounts are the instrument that will allow the two usual approaches to be brought into line with one another: the macroeconomic approach, which is based on national accounts, aims to describe how income and production are divided; and the microeconomic approach, which is based on data regarding individuals or households and details the specific effect of the transfers at the individual level in the greatest possible detail. Far from replacing one or the other, the challenge is to ensure that they reinforce one another and therefore provide new and more robust knowledge on redistribution in France and across the globe.

Links with Previous Studies

As we have already touched upon, the studies carried out in connection with this report can be linked to several other initiatives, both from the academic world and from national and international statistical institutes. There are three objectives related to these approaches. The first is to establish a set of common and precise statistical conventions with a view to harmonising definitions and concepts of income and to enabling improved comparability over time and between countries. The second seeks to bring the microeconomic data on the distribution of income into line with the concepts and estimates made through national accounting. The third concerns improvements in the quality of the measurement of income and wealth distribution, particularly at the top and bottom ends of distribution.

The *Luxembourg Income Study* (LIS) was the first large-scale initiative aimed at harmonising micro-data on income. The project was launched in 1983 at the initiative of several researchers in the fields of sociology and economics.[4] It aimed to collect and harmonise survey data from as many countries as possible and to make them available to researchers *via* a shared interface.

Today, the project includes some 300 surveys covering around 50 countries and spanning five decades. It has also been expanded to cover the distribution of wealth in addition to that of income. As part of this harmonisation work, the LIS has created a set of variables used to define and break down income in a consistent manner across countries.[5]

The LIS performs *ex post* harmonisation work, which results in the availability of data being dependent on the level of detail present in the source survey. The *Canberra Group*, established in 1996 at the initiative of the Australian Bureau of Statistics, aims

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4 Lee Rainwater, Robert Erikson, Tim Smeeding, Serge Allegrezza, Marc Cigrang, Gaston Schaber, and John Coder.

5 See https ://www.lisdatacenter.org/wp-content/uploads/files/data-lis-variables.pdf.

to ensure the *ex ante* harmonisation of data gathered by the statistical institutes. In 2001, the working group produced the initial version of its recommendations in the form of *The Canberra Group Handbook* (2001). Those recommendations were most notably adopted by the International Labour Organization in 2003 (ILO, 2003). A second version of the handbook was published in 2011 under the auspices of the Conference of European Statisticians and the United Nations Economic Commission for Europe (Canberra Group, 2011). The recommendations issued by the *Canberra Group* primarily relate to household surveys. They define basic rules (use of annual income, use of purchasing power parities for comparisons between countries) and a definition of income components that have been widely adopted by EU-SILC, the official source for harmonised income statistics at European level.

A similar initiative, the *OECD Expert Group on Micro Statistics on Income, Consumption and Wealth* (EG ICW), published two guides in 2013, which served as a basis for the publication of the *Income Distribution Database* – an OECD database on income distribution. The EG ICW has expanded upon the work carried out by the *Canberra Group*, particularly that involving the distribution of wealth. The EG ICW primarily focuses on the microeconomic coherence of data, but also works in conjunction with the *Expert Group on Disparities in National Accounts* (EG DNA), another OECD initiative that focuses on the microeconomic and macroeconomic coherence of distributional statistics. A new report is currently being finalised by the EG DNA. Several statistical institutes produce experimental statistics on this subject (*Statistics Netherlands*, 2014; *Eurostat*, 2018; *Statistics Canada*, 2018; *Australian Bureau of Statistics*, 2019). At this stage, the majority of these statistics are based on surveys and only cover a part of national income.

As regards the social statistics calculated at INSEE, the main concept used to calculate the poverty rate and measure inequality is standard of living. In France, it is usually estimated on the basis of the Tax and Social Incomes survey (ERFS). Many studies carried out within official statistics have sought to complement the microeconomic approach to monetary redistribution by breaking down the national accounts; Accardo (2019) and Accardo (2020) provide a historical overview of these. Between 1980 and 1985, INSEE published an annual income account for several dozen types of households in order to paint a picture of the budget of a household based on its socio-demographic characteristics. During the 1990s, work was carried out in the National Accounts Department with a view to establishing a complete household account broken down by socio-professional category. This work, which was the subject of a study that took place from 1995 to 1997, covering income, consumption and wealth, was ceased in order to give priority to the implementation of the Base 95 system for national accounts. Only the income account part, which was in line with those produced until 1985, was published in Fall (1997).

More recently, Accardo *et al.* (2009) proposed that household accounts be broken down by category for the year 2003 by combining the national accounting approach with the microeconomic statistics on inequality. This is linked to the working document by Bellamy *et al.* (2009) and breaks down disposable income and consumption in the national accounts according to four socio-economic criteria: standard of living, household composition, age or socio-professional category of the reference person. This makes it possible to infer the saving rate for each of these various characteristics. This was the approach taken by Le Laidier (2009) and, more recently, by Billot and

Bourgeois (2019), with a view in particular to comparing the annual changes in the accounts for each household category and specifying the various concepts relating to the perception of household income. A breakdown of the wealth account by household category was also proposed for the year 2003 by Durier, Richet-Mastain, and Vanderschelden (2012). Accardo, Billot et Buron (2017) suggest breaking down the household accounts for 2011 according to standard of living, age, the socio-professional category of the reference person and household composition on the basis of 2010 accounting standards.

In parallel, several studies that chose to adopt a microeconomic approach, i.e. based on household data, have broadened the concept of disposable income by including different types of public transfers. Amar *et al.* (2008) therefore add the public services of health, education and housing to the scope of monetary redistribution. This study was continued in the annual redistribution report produced by the INSEE and DREES teams working on the INES microsimulation model by Bonnefoy *et al.* (2010) This extension of the analytical framework for the redistribution of adjusted disposable income was a recent development at the time of its publication, although some studies had explored certain aspects of it previously. Hugounenq (1998) and the French Council for Employment, Income and Social Cohesion (CERC)[6] (2003) chose to concentrate on education.

Other studies focused more specifically on the redistributive effects of the public health system, following on from Caussat *et al.* (2005) and Marical (2007). The *Omar* model developed by DREES (Lardellier *et al.*) (2011)therefore not only allows for the study of the distribution of the cost burden according to standard of living, but also the redistributive effects of the health system. Several DREES studies document these effects in particular: Caussat *et al.*, (2005)Duval and Lardellier (2012), Jusot *et al.* (2016)

Studies have also been conducted into the ERFS production process in order to bring the measurement of disposable income into line with the concept used in national accounting, with the integration of non-imputed financial income from 2005 onwards and the backcasting of this to 1996; the calculation of an income variant with imputed rent from 2007 onwards and the change to the tax data in 2013 as a result of switching from the tax paid in N+1 on income from year N to the tax paid in year N.

Recent studies by Liepp, Guillaud, Olckers and Zemmour (2019) and Amoureux, Guillaud and Zemmour (2019) contribute to this field of literature by proposing an analytical table to study the reduction of inequality brought about by socio-fiscal systems. Based on the breakdown of household disposable income according to data from the LIS survey, which was conducted in 22 OECD countries between 1999 and 2016, these analyses measure the extent to which mandatory deductions and benefits in kind reduce inequality. By processing 80% of mandatory deductions and all of the cash transfers together, they highlight in particular the fact that the structure and level of taxation, as well as the form and volume of social security benefits, do not contribute to reducing inequality in the same way. Guillaud, Olckers et Zemmour (2019) demonstrate

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6 This report was updated in 2011 in note no. 2497/DG75-F120 by Fabrice Langumier "La répartition des dépenses publiques de l'enseignement supérieur et des aides associées" [The distribution of public expenditure on higher education and associated assistance].

that the degree of social redistribution is overdetermined by the average rate of benefits, with the degree to which they are targeted at the poorest being of little importance. As regards tax redistribution, this depends on a combination of the rate and progressiveness of the deductions: several countries achieve identical redistributions with very different configurations.

Amoureux, Guillaud and Zemmour (2018), and Ben Jelloul *et al.* (2019) reveal that social security contributions are responsible for the squeezing of income at the bottom end of the distribution, while income tax is responsible for squeezing income in the top half of the distribution. Rather than progressive taxes and anti-redistributive social deductions, the authors observed complementarity between the two types of deductions.

In parallel to all of these studies, academic literature has made increasing use of comprehensive administrative data to complement survey data. This development began with the work of Piketty (2003) in France, and Piketty and Saez (2003) in the United States, which provided an update to the work by (1953) and Atkinson and Harrison (1978) in order to analyse the development of high incomes over the very long term. Their methodology has been extended to many countries by several researchers, whose studies have been collated in two works, edited by Atkinson and Piketty (2007; 2010). Those estimates were used as the basis for the *World Top Income Database* (WTID) in 2011.

The WTID provided two key advantages over the existing sources. The first is its historical depth, made possible by the existence of tax sources dating back more than a hundred years in many countries, unlike surveys, which only cover recent decades. The second benefit is the ability to cover very high incomes, which surveys have difficulty in capturing. In contrast, the WTID was limited to the use of raw tax data, with no adjustment to take account of differences in statistical units or differences in taxable income. In addition, this project was limited to the distribution of income and did not provide any information regarding the dynamic of the concentrations of wealth. In order to overcome these limitations, the *World Inequality Lab* launched the DINA (*Distributional National Accounts*) project. The WTID was renamed the *World Inequality Database* (WID) to indicate the extended scope of the database, and the first DINA handbook was published in Alvaredo *et al.* (2016) That handbook stressed the need to combine the various sources in order to obtain satisfactory estimates. Indeed, relying solely on administrative data does not allow certain socio-economic characteristics of households to be gathered, particularly with regard to their structure, since these form part of the survey data (see Section I.5.c.). Conversely, the sample size for the survey data presents limitations for studies carried out at a fine level of granularity or those looking into geographical heterogeneity or the economic sector, for example. In September 2020, the most recent guide by Alvaredo *et al.* (2020) updated the recommendations regarding the DINA project methodology.

Unlike the former WTID, the DINA project aims to measure the distribution of national income in its entirety, making use of income (before and after transfers) and wealth concepts that are harmonised and coherent with national accounting, while maintaining the focus on the top end of the distribution with the use of tax sources in addition to surveys and national accounts. Two DINA "pilot" projects have been launched in France (Bozio *et al.*, 2018; Garbinti *et al.*, 2018) and in the United States

(Piketty, Saez and Zuman (2018)). Similar studies are being carried out in several other countries in both the developed world and in emerging economies. The *World Inequality Lab* also produces inequality estimates for major regions (Europe, Asia, Latin America, Africa, etc.) by drawing upon the various existing sources (which can sometimes be sparse) in order to apply the principles of the DINA methodology to the world as a whole. The recent publication by Alvaredo *et al.*, (2020) which appeared in the special edition of *Économie et Statistiques* dedicated to national accounting provides a description of the method and summarises the empirical findings.

In France, the TAXIPP model developed by the Institute of Public Policies (IPP) is also seeking to combine a range of complementary sources (Ben Jelloul *et al.*, (2019)Bach *et al.*). (2019) This model pairs administrative income tax data with survey data in order to have both a good representation of high incomes and all of the information necessary in order to simulate the socio-fiscal system. This model has been used in particular for the *ex ante* and *ex post* analyses of capital tax reforms (Bach *et al.,* (2019)) and of the structure of social security benefits (Ben Jelloul *et al.*, (2018)). The long-term objective is to gather the greatest possible amount of administrative data regarding redistribution.

While there are similarities between the two approaches, there are also significant conceptual differences that must be highlighted. As a result, the notion of pre-tax income may or may not include pensions or unemployment benefits, imputed rents or retained earnings. Depending on whether those income components are included in the analysis (see Section III.1.e. for a discussion regarding pension schemes), the conclusions regarding the level of inequality, the trend or the level of redistribution for a given country may vary widely. It is therefore necessary to produce a general framework and to formalise a common language for distributional analyses. The table in Figure 41 annexed hereto shows different income concepts used by international databases that allow for the measurement of inequality and redistribution.

More generally, the annual publication of a series of distributional national accounts requires extensive international collaboration with both the academic world and official statistics offices. The methodological principles put forward will be revised as and when new data and issues emerge. This report also aims to contribute to this long-term collaborative process.

One of the objectives of the work carried out by the WIL, or other similar work, is to produce analyses, proposals and rules that can feed into the process of revising the System of National Accounts. The revision of the System of National Accounts standards, which is planned for 2022-2024, follows a complex process, the result of which must be validated by the United Nations Statistical Commission (StatCom), founded in 1947 and composed of representatives from the statistical institutes of all UN member countries. StatCom has, for many years, tasked a working group (*Intersecretariat Working Group on National Accounts,* ISWGNA) with leading the said revision. The ISWGNA is therefore responsible for establishing methodological and conceptual recommendations with regard to distributional national accounting, which will then be submitted for approval to all countries sitting on StatCom[7].

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7 The mandate of the ISWGNA is based around four elements: "*(a) to provide strategic vision, direction and*

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Since the 1980s, the ISWGNA has been headed up by five institutional members (the United Nations Statistics Division – UNSD, the OECD, Eurostat, the World Bank and the IMF) and several other entities, as defined in Figure 3. The ISWGNA secretariat is provided by the UNSD, which is leading the revision process in conjunction with the institutional members, national accountants and technical experts involved in the revision.

Figure 3: Structure of governance of the ISWGNA

Table 1   ISWGNA governance structure
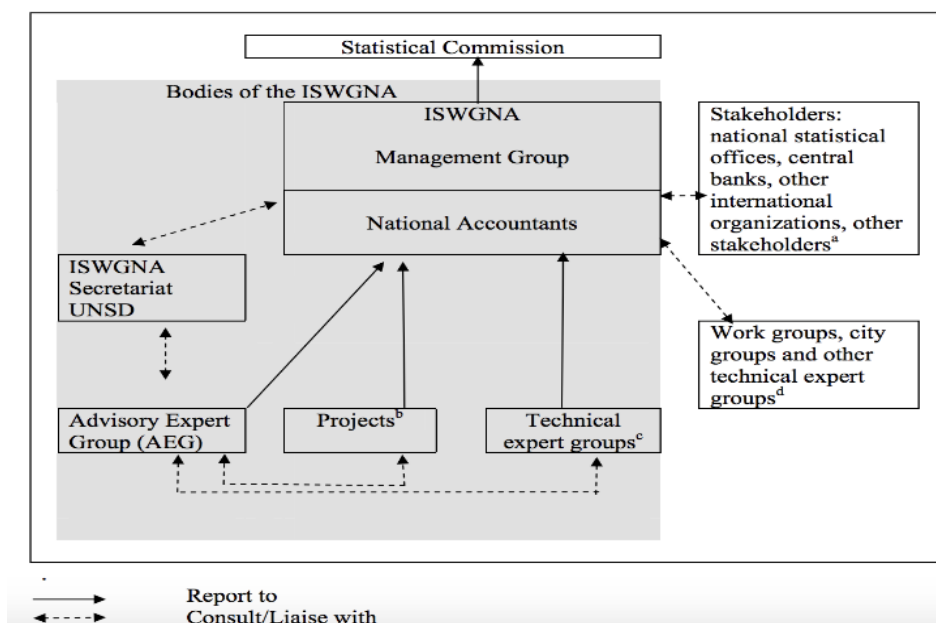
Sources: ISWGNA

In order to prepare for the revision, the ISWGA secretariat and the UNSD have commissioned an *Advisory Expert Group* (AEG) for national accounts. This expert group is itself made up of thematic sub-groups, one of which (the *Sub-Group on Wellbeing and Sustainability*) is tasked in particular with establishing precise recommendations with regard to distributional accounting. The OECD provides the secretariat for this group. In parallel with this process, the UNSD is also organising a series of regional consultations with national accountants. These are known as the *Friends of the Chair meetings*, and they aim to provide information to and hold discussions with national statistical institutes on the upcoming revision of the System of National Accounts. Two have been organised so far, covering Asia and Latin America.

coordination for the methodological development and implementation of the System of National Accounts (SNA) in national, regional and international statistical systems; (b) to revise and update the SNA and develop supporting normative international statistical standards and other methodological documents on national accounts and supporting statistics; (c) to promote the development of databases at international, regional and national level on national accounts statistics; (d) to promote the implementation of the SNA and supporting statistics in policy formulation".

Content of the Report

The remainder of this report is structured as follows.

The first part examines the conceptual framework for measuring redistribution. It presents the concepts and vocabulary used and discusses the conventions for allocating income between households by income level and for measuring the redistribution performed by means of public transfers. It proposes an analysis of inequality indicators and their use in measuring redistribution. It then goes on to discuss the scope and limitations of the exercise carried out within the adopted framework of an accounting-based approach to direct or indirect transfers.

The second part aims to reconcile the micro and macroeconomic studies on redistribution. Since it is essential that transfers are fully taken into account in order to provide a coherent vision of redistribution, it describes in detail a micro-founded methodology for the distribution of all income and transfers that make up the national income. Having presented the general framework, it goes on to review sources of income and transfer categories, formulating methodological recommendations for each of them for distribution along the income scale and discusses the underlying assumptions.

The third part proposes a coherent analytical framework for measuring broad redistribution in the form of methodological principles for establishing a distributional economic table as a counterpart to the table of integrated economic accounts (TIEA). The selected conventions are applied experimentally to France and the United States to illustrate, on the basis of this prototype, the potential offered by distributed national accounts, to allow for a better understanding of the nature of inequality and redistribution mechanisms.

The conclusion summarises the main recommendations and identifies courses of action and studies aimed at extending and sustaining this work, for the benefit of the scientific community.

I. Conceptual Framework for Redistribution Statistics

Based on a detailed comparison of studies into inequality, the working group set out to agree upon precise and shared statistical practices for the study of redistribution, which are described in this first part of the report. The first section argues that the broadest analytical framework should be adopted in order to perform a comprehensive comparative analysis of the effect that transfers have on inequality. The second defines the main income concepts used as a reference when studying redistribution. The third section examines the statistical conventions governing the positioning of individuals on the income scale, while the fourth looks at inequality indicators and their use in measuring redistribution. Finally, this part discusses the limitations inherent in the statistical study of redistribution within the accounting framework, i.e. annual and static.

I.1. The Need for a Comprehensive Approach to Income and Transfers

The analyses conducted by the working group show that the main factor behind the differences in the studies that it is examining is the scope of redistribution that they consider (see Figure 4). INSEE's annual publications and the studies looking into redistribution by DREES or the OFCE usually focus on transfers, including direct taxes, social security contributions and cash benefits. The work carried out by the WIL on distributional accounting (DINA project) adds taxes on production and products to this. The OECD (EG DNA) excludes the latter, but takes account of social security benefits in kind and public services that can be individualised, which INSEE also includes in its analyses but on a more ad-hoc basis. The work carried out under the DINA project aims to integrate benefits in kind but, by assuming them to be proportional pending further studies, cancels out their effects on redistribution at this stage. None of these approaches take account of the redistributive aspect of fully collective public expenditure.

Figure 4: Difference in the scope of redistribution

Transfer categories
TCP: Taxes on products and consumption
TIW: Taxes on income and wealth
TSC: Social security contributions and deductions
BCA: Social security benefits in cash
BKI: Social security benefits in kind
BCO: Collective consumption
M: Balance of transfers

1: Scope of monetary redistribution (ERFS, INES, accounts by category)
2: Scope of the DINA studies
3: Scope of the OECD (EG DNA) studies
4: Scope of the distributed national accounts

This situation poses several overlapping problems, which have already been mentioned in the foreword. By their very nature, different definitions lead to different assessments of the extent of redistribution. The fact that the coverage is only partial leads to the consideration of "unbalanced" sets of transfers, which distorts the analyses, since we are led to consider either services for which there is no mention of how and therefore by whom they are financed, assuming they are financed upstream of the field in question, or deductions that will be described as being "at a loss", since they are used to finance services positioned downstream of the field in question.

At the same time, partial coverage lends bias to international comparisons given the highly variable nature of redistribution and the financing thereof from country to country, with proportions of out-of-scope coverage that will vary greatly from one country to the next. As a minimum, a comprehensive analysis of redistribution should be based as far as is possible on balanced transfers and, where this is not practicable[8], the extend to which the results are dependent on the transfers that have not been taken into account should be discussed (see **Recommendation 13**).

In particular, studies conducted into household income often present two blind spots, which we will attempt to address: taxes on production and consumption on the one hand and public expenditure in kind on the other hand, i.e. the contribution made by public services towards reducing inequality.

The table in Figure 5 applies orders of magnitude to the mechanisms described in these two examples to enable comparison between France and the United States. It describes the variation in the Gini index between pre-transfer income and post-transfer income, and also provides a breakdown of the reduction in inequality subsequently

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8 For example, when analysing a benefit, the financing of which is not known, or a decrease or increase in tax, the use or financing of which has not been defined.

measured, according to the type of transfer[9].

Figure 5: Contribution of transfers to reducing the Gini indicator (in percentage points)

Distributional accounts	France (DNA-INES)	USA (DINA-WIL)
IBT: Income Before Transfer	38.3%	58.3%
TCP: Tax on Cons&Prod	3.1%	-0.2%
TIW: Tax on Inc. and Wealth	-3.0%	-2.3%
TSC: Social Security Contributions	0.3%	0.6%
BCA: Social Security Benefits in Cash	-5.9%	-2.1%
BKI: Social Security Benefits in Kind	-10.5%	-6.0%
BCO: Collective consumption	-4.3%	-1.0%
MBT: Balance of other transfers	-0.6%	-2.1%
IAT: Income After Transfer	17.5%	45.1%
Tax redistribution (TCP+TIW+TSC)	0.4%	-2.0%
Benefits redistribution (BCA+BKI+BCO)	-20.7%	-9.1%
RDN: Net Redistribution	-20.9%	-13.2%

Notes: the nomenclature is described in Section III.1.f. Collective expenditure for the United States is allocated here in proportion to income after transfers. Assuming that their distribution is flat increases the Gini index by 5.8 points (see III.2.d).
Sources: 2016 DNA table, authors' calculations.

According to this breakdown, transfers reduce inequality by about twenty Gini index points in France and by about ten in the United States. In terms of deductions, France appears to be more redistributive than the United States if we do not take account of taxes on consumption and production (TCP). However, the result is reversed if those taxes are taken into account, since the deductions in question contribute to lowering the Gini index by 2.3 Gini index points in the United States, but increase it by 3 points for France. France is widening the gap on benefits, partly as a result of cash benefits being more concentrated on low and very low incomes and partly as a result of better developed public services (education, health, etc.). Cash benefits contribute to lowering the Gini index by 5.9 points in France, compared with 2.1 points in the United States, a difference of 3.8 points.

Public services in kind (BKI) bring about a decrease of 10.5 Gini index points in France compared with 6.0 points in the United States, and collective expenditure a further 4.3 points compared with 1 point in the United States.

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9 The results are obtained by applying the Kakwani breakdown to the prototype distributional accounting table developed by the authors of the report in accordance with the methodology drawn up by the working group.

It is therefore desirable to adopt a comprehensive overview of redistribution including all modes of financing and all types of public benefits or services. Everything that is provided by the community, directly or indirectly, is directly or indirectly financed by the population. The full comparison of one against the other therefore allows an unbiased assessment to be made of the redistribution performed by means of the transfers.

Of course, adopting such a broad view then raises questions of imputation as soon as you start examining transfers beyond the traditional scope of directly measurable redistribution. It involves quantifying all that individuals or households receive for free or are able to buy in the observed state of the world, compared with what they would have been able to or would have needed to buy in a world without government intervention. It must specify who ultimately pays the VAT or production taxes; how much market income individuals would have if these taxes did not exist and what pricing systems would be in place; which households benefit from retained company earnings, and which key should be used to distribute the benefits of collective expenditure to individuals.

The working group offers a structured, micro-founded response to these questions in the form of the "distributed national accounts" (DNA) mentioned previously, to which the third part of this report is devoted. Using the rows in the table of integrated economic accounts (TIEA) for national accounting as a starting point, this involves building a table of integrated distributional accounts (TIDA), each row of which breaks down income and transfers in accordance with standard of living bands, arranged in ascending order.

> **Recommendation 1:** Establish distributed national accounts that meet the standards of coherent international accounting standards based on those governing national accounts (*System of National Accounts*).

It should be noted at this point that distributional accounting seeks to distribute net national income to all resident individuals or households (whether in ordinary housing or not), which represents the same coverage as that of national accounting (ONU, 2008). The coverage here is significantly broader than that of standard inequality statistics, which raises specific methodological issues (see Part III).

I.2. The Different Income Accounting Concepts

Based on this objective of comprehensiveness, the working group looked at different concepts of income and transfers and considered it necessary to agree upon a shared vocabulary to facilitate comparisons and public debate. With regard to nomenclature, three-letter acronyms are also proposed, which are the same as the English-language acronyms. In this shared lexicon:

"Transfers" refer to both the "deductions" paid by individuals or companies and the "benefits" received by households, whether directly or indirectly.

"Deductions" include taxes on different types of income or wealth (hereinafter referred to as TIW, which stands for *Tax on Income and Wealth*), taxes on consumption or production (TCP: *Tax on Consumption and Production*), and contributions on wages or self-employed income used to finance Social Security (TSC: *Tax as Social Security Contribution*).

"Benefits" consist of monetary allowances (BCA: *Benefits in Cash*), transfers in kind (BKI: *Benefits in Kind*) and non-individualizableindividualizable collective expenditure (BCO: *Benefits from Collective expenditures*).

When we talk about income, we are referring to a number of concepts that the working group has endeavoured to clarify, in terms of both outline and denomination:

"Disposable income" is a well-established concept with a widely shared denomination. The concept used in national accounting most closely resembles the income assessed within the scope of social statistics, although there are still some differences (see below) and, in this regard, it plays a key role in reconciling macro and microeconomic data. The concept involves income after transfers, but only takes account of cash transfers. It offers the advantage of being measured in a very direct manner; however, the disadvantage is that it excludes several types of large-scale transfers. It is possible to choose whether or not to include retained earnings in the same way as for national accounting. Where necessary, we distinguish between the two by referring to the latter as "household disposable income" and the former as "extended household disposable income" or "disposable income", hereinafter referred to by its three-letter acronym, IDI, which stands for *Income Disposable*.

Net National Income Before Transfers (NNIBT) and *Net National Income After Transfers* (NNIAT) will be referred to in the three-letter nomenclature as IBT and IAT (*Income Before Tax* and *Income After Tax*). Overall, since the transfers received mirror the transfers paid, it goes without saying that NNIBT and NNIAT are identical and correspond to net national income (NNI), as per national accounting. The same is of course not true when this national income is broken down into different strata. Income after transfers is deducted from the primary income and is calculated by adding the various social security benefits, transfers in kind and collective expenditure and deducting social security contributions and taxes on income and wealth.

The "expanded standard of living" is national income after transfers and is related to the number of individuals, possibly corrected to take account of scale effects (see below). It measures the real standard of living, in the broadest sense of the term, i.e. by integrating a monetary valuation of services provided by public authorities and non-profit organisations.

"Expanded primary income" is the national income before transfers, scaled down to the individual level, which serves to demonstrate the standard of living each individual would have in the absence of public transfers; income that the economic literature generally describes as "market income".

"Expanded redistribution". Having established these two concepts of income before and after transfers, both at the individual and aggregate levels, redistribution can be measured by comparing them with one another. By design, this represents an accounting approach to redistribution. It does not prejudge any behavioural adjustments

(see Section I.5) to take account of the fact that market income and pre-transfer income only coincide perfectly if the former has not been modified by public transfers.

"Individualizable income" is obtained by adding transfers in kind to disposable income. This concept relates to a notion that is somewhere between disposable income and income after transfers and is equivalent, in the vocabulary of national accounting, to the concept of "adjusted disposable income". It is also a concept of income after transfers, but one that does not completely follow through with the logic of valuing public services, with the exception of those classified as non-individualizable (justice, police, research, etc.). As is the case for disposable income, we refer to household or private sector income depending on whether or not retained earnings are included. A concept of "individualizable income before transfers" can also be defined in the same spirit, allowing for the measurement of "individualizable redistribution". This concept is less broad than the previous one, but offers the advantage of reducing the imputation assumptions in areas where the exercise is less easy.

"Net national wealth": this concept relates to wealth rather than income. In other words, it relates to stock rather than flows. It measures the assets of households, net of their debts. Just like in national accounting, where the table of integrated economic accounts compiles income and wealth data, it is important that it is integrated with distributional income accounting, since wealth inequality is even greater than income inequality. Wealth accounts distributed in accordance with income level and their variation from one year to the next also allow for the calculation of rates of return on wealth based on income. Their integration will be facilitated by the ongoing work of the Monetary and Financial Account Statistics Directorate at the Banque de France within the scope of the recommendations made by an ECB expert group, and should lead to the establishment of distributional wealth accounts.

> **Recommendation 2:** Integrate the distribution of wealth into distributional national accounting in order to guarantee its overall consistency.

It should be emphasised that all income aggregates listed here – and in the rest of this report are, unless otherwise stated – net income concepts, which means that they are given less of fixed capital consumption (FCC). The working group therefore endorses the recommendation made by the Stiglitz Commission, which noted that, while gross values are useful concepts for macroeconomic modelling, it is actually net income and transfers that best capture redistribution.

It should also be noted that disposable income is the concept that most closely approximates the income actually received by households, even more so now in France that deduction takes place at the source. It is also within disposable income that the trade-off between consumption and savings or debt is determined, taking account of the now well-documented issue of constrained spending. Retained corporate income and collective public expenditure are less tangible concepts that may be far from the thoughts of households, particularly the poorest among them. NNIBT and, to a lesser extent, NNIAT are aggregated and more abstract interpretations that are specific to distributional accounting. This is why it is advisable to use the broad concepts defined

above, whether it be primary income, standard of living or redistribution, particularly in publications aimed at a wide audience.

Household disposable income is also the simplest income variable to establish using traditional sources, as well as being the most commonly used by statistical institutes, particularly for calculating the standard of living of the persons making up those households. In this report, we use standard of living to classify individuals and to divide them into different groups. This choice means that we avoid having to take account of any reclassification effects brought about by other forms of income or transfers.

Nevertheless, there is no consensus in the literature at this stage as to the "right" way of classifying individuals: the method may vary from one study to the next depending on the topic of research. Other concepts may be considered, such as national income before or after transfers. For example, in the same way as a tax rate is usually calculated on the basis of pre-tax income, one may wish to calculate average tax rates on pre-transfer income by category and, on that basis, to classify individuals based on their pre-transfer income (see **Recommendation 5**).

Another oft-debated issue, which is likely to have a strong influence over the outcome for the structure of pre-transfer income, concerns the inclusion of deferred income such as unemployment benefits and pensions (see **Recommendation 22**). Indeed, it is possible to imagine several concepts involving income before transfers. Factor income is the income received by individuals as a result of their possession of factors of production (labour or capital). It excludes all forms of public transfers, regardless of whether they take place via the social insurance system or by means of other social transfers. This factor income includes in particular all "super-gross" labour income (including employers' contributions) and self-employed income. It is similar to the concept of market income, which is sometimes found in the literature (see Section I.5) and therefore excludes deferred income.

However, the relevance of any comparisons based on this concept is subject to debate. Indeed, in countries with a pay-as-you-go pension scheme, the retired population often receives factor income of close to zero (see Section III.1.e). Considering such income as almost zero gives a distorted view of the standard of living or the social category of the individuals concerned. This complicates the international comparison with countries with funded pension schemes, within which this income is considered as factor income from savings. Furthermore, this approach makes the structure of inequality particularly dependent on the age structure of the population[10].

The working group therefore agreed to introduce, as an alternative, the additional concept of **income before transfers including deferred income** (or replacement income). This is factor income plus replacement income (pensions and unemployment benefits), less the associated social security contributions. In order to ensure that the impact of this transformation does not bring about any changes to aggregate primary

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10 It is possible to partially get around these problems by limiting the comparison to the employed or working age population. However, this approach does not allow for the distribution of national income in its entirety, nor does it allow for the comprehensive estimation of inequality and redistribution.

income, where necessary, the balance between these deferred incomes and the deductions used to finance them is subtracted, with that balance then being distributed among the individuals[11].

Integrating deferred income as opposed to limiting the research to factor income corresponds to an insurance-based approach to the pay-as-you-go pension system. Social insurance systems are primarily based on a contributory logic: at some point in my life, I will receive the sums that I have paid in or the social rights that I have gained at another point in time. For various reasons that we will not go into here, particularly with regard to demographics, but also as a result of successive decisions by the authorities governing these schemes, they nevertheless almost always include, to a greater or lesser extent, a redistributive dimension. Ideally, it would be desirable to distinguish between these two components to ensure that only the contributory element is taken into account (see Cheloudko, Martin and Tréguier (2020)). On the contributions side, for example, this involves separating the contributions made before the application of exemptions from the exemptions from contributions themselves[12].

The report has chosen to use the first of these two approaches as a reference in order to ensure the best fit with national accounting and to measure the redistributive effects of public transfers. Net national income before transfers therefore does not include pensions paid or unemployment benefits received. However, the working group recommends that, as far as possible, the indicator that takes account of pensions and unemployment benefits as primary income be produced as a variant in order to test and comment on the sensitivity of the results to this fundamental choice. In practice, if individuals are not reclassified as part of the process of breaking them down by income type or transfer category, but are always kept in the same standard of living band, the before and after differences seen in the inequality indicators are small.

I.3. How Should Individuals be ordered?

Having defined the various concepts associated with income and transfers, since the study of redistribution involves quantifying who pays and who receives what based on their position on the income scale, it is appropriate to consider the relevant methods for performing this classification. The issue is as simple as the solution is complex, since it is clear, for example, that a couple with two children and a monthly income of 2000 euros cannot be considered to be richer than a single person earning 1500 euros. There are several important points when it comes to establishing or comparing income distributions:

1. What is the composition of the entities (households, housing units or individuals)?

2. What assumption has been made regarding "economies of scale" within the

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11 In this report, this distribution takes place on the basis of a weighted average of individualizable taxes.

12 This part is, for example, balanced by deductions that may be more or less progressive, as is the case in France, where the State reimburses the Social Security system for all or part of the amount of the exemptions.

household and how is the associated statistical unit defined?

3. Which income concept is used as a basis for classifying individuals, and if individuals are reclassified, what are the Noria effects?

4. What is the relevant granularity for the quantiles based on the precision of the data, how are these quantiles composed and how are the quantile variables (means, masses) calculated?

We will return to look at this in more detail, but first, we would like to highlight that a potential source of differences in the measurement of income redistribution through inequality indicators or the comparison of pre- and post-transfer distributions may arise as a result of the distinction between the tax household, i.e. the legal unit that declares and pays taxes jointly, and the household that is used in statistics to define the aggregation of transfers. There are also discrepancies in the delineation of social housing according to the benefit received, for example, the age of dependent children differs between the definition of housing for recipients of RSA (a statutory minimum income) and that of the tax household.

The results produced specifically by the working group[13] have revealed that the distributions of standard of living are fairly close where the tax household or the household is considered as the statistical unit, even if the household distribution is more spread out. While not significant, the differences in the inequality and poverty indicators are far from negligible. There are no significant differences in the way they develop over time. The basic entity considered, be it an individual, a housing unit or a household, nevertheless constitutes a possible first dimension for the differences between the various studies, which should be taken into account.

Household are themselves made up of individuals. Resources are generally considered to be shared between the individuals living within the same household, both for conceptual reasons concerning the actual sharing of resources within a household and for practical reasons, since certain types of income are difficult to attribute to just one member of the household. In certain cases, particularly labour income, it may be appropriate to distribute such income individually to those who receive it, without sharing it with dependants within the household. In other cases, income may be non-individualizable, such as household income from land or savings. For the purposes of this report, we consider income to be shared between the members of a household. The way in which income is distributed within households revolves around equivalence scales, which we will discuss in detail in Part I.3.a.

An additional question, which is not studied here, could, for example, be the subject of future developments: with the introduction of withholding tax in France, data are now available in our country that will allow us to examine the distribution of income

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13 A short note entitled "distribution des niveaux de vie : foyer *vs* ménage" [Distribution of living standards: housing unit vs household] was produced by Jérôme Accardo in May 2019. It draws upon the Tax and Social Incomes survey (ERFS) to compare different indicators using the conventions for allocating income within housing units and the distribution of standards of living. The differences seen in the traditional indicators are, for example, 2 Gini points higher in the case of distribution by household and + 1.2 points for poverty.

within households.

I.3.a. Income Standardisation Scales

During the preparatory work for this report, the working group noted that the choices made with regard to standardisation or equivalence scales can play a key role in measuring income and can therefore have an impact on inequality. Indeed, the needs of a household increase if its size increases; however, as a result of economies of scale for consumption, the increase in expenditure that this brings about is not proportional. For example, requirements with regard to housing space, electricity or individual transport, particularly cars, are not three times higher for a household of three people than for a single person. A monthly income of four thousand euros therefore provides a higher standard of living for a couple with two children than a monthly income of one thousand euros would for a single person without children.

In many cases, in particular when analysing poverty, it is essential that such effects are taken into account. Therefore, an indicator such as the INSEE, Eurostat or OECD standard of living is standardised in order to take account of these disparities. This involves dividing the calculated household income by a coefficient measuring economies of scale, referred to as the standardisation scale. The studies aiming to measure inequality have made many uses of this, most often for reasons of interpretation of these equivalence scales, and sometimes as a result of constraints associated with the availability of data.

An initial approach involves measuring comparable situations between households of different sizes and compositions. INSEE and the official statistics institutions therefore use consumption units (CU). This concept, used to calculate standard of living, is based on the "OECD-modified equivalence scale", which was introduced in the 1980s and which assigns a weighting of 1 to the first adult in the household, 0.5 to any other persons aged 14 or over and 0.3 to other members of the household (Hourriez & Olier, 1998). Where it does not have access to the ages of individuals in the household, the OECD uses a "*square root*" (SQR) scale, which standardises disposable income to the square of the number of individuals in the household.

Figure 6: Comparison of standardisation scales by type of household

Type of household	Standardisation weighting applied to the household				
	Non-corrected income	CU	ESA	SQR	Per capita
1 adult	1	1	1	1	1
2 adults	1	1.5	2	1.4	2
2 adults, 1 child	1	1.8	2	1.7	2
2 adults, 2 children	1	2.1	2	2	4
2 adults, 3 children	1	2.4	2	2.2	5
1 adult, 1 child	1	1.3	1	1.4	2
1 adult, 2 children	1	1.6	1	1.7	3
1 adult, 3 children	1	1.9	1	2	4

Notes: it has been assumed that children under the age of 14 are present for the calculation of CU.

A second approach divides the income between the individuals in the household who are the direct recipients of that income, either equally or in accordance with the observed distribution where data are available[14]. The World Bank's *PovcalNet* data are therefore provided on a "*per capita*" basis, i.e. by dividing the household income equally among all its members, without taking into account any economies of scale. The WIL, which forms part of the DINA project, uses the "*equal-split adults*" (ESA) scale, which assigns equal weight to each adult in a couple, with minors in the household not being taken into account as a result of them not earning their own income. Adult dependants are individualised with their own income.

This section will compare the different practices and will measure the resulting differences for France. In order to achieve this, the analysis must be performed using the same income basis[15], in this case, disposable income according to the Tax and Social Revenues Survey (ERFS). In theory, the discrepancies could be significant if the distribution of standards of living is heavily dependent on the configuration of families. In practice, the differences between the conventions differ according to the indicators, the angle of analysis adopted and the granularity of the breakdown.

Therefore, to summarise the main conclusions of the explorations made by the working group in this area, the ESA and CU analyses are close in terms of the distributions of income variables, but diverge when it comes to studying poverty, family configurations and the extremes of distribution. The SQR approach differs from the previous two in that it has a smaller "population", i.e. a smaller total number of units, and higher income variables. The differences are partly due to demographic effects and increase with the standard of living. The distribution of family configurations in accordance with standard of living is fairly similar for the CU and SQR approaches.

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14 Withholding tax data provide information on income sharing within households in the United States and in France, dating back to 2018.

15 This section is taken from a May 2019 note by Jorick Guillaneuf entitled "Impact du choix d'une échelle de standardisation du revenu disponible sur les indicateurs d'inégalité" [Impact of the choice of a standardisation scale for disposable income on inequality indicators]. It contains the series and graphs discussed in this section. Additional elements provided by Jérôme Accardo during the second meeting of the working group are also available.

However, for the ESA approach, couples with children are more heavily represented towards the top end of the distribution obtained.

The per capita income approach offers the same advantages as the ESA approach in terms of its simplicity in switching from income measured at the individual level to the aggregated income pool. In addition, it offers the advantage of including children in the analysis, who represent a significant proportion of the population, which can vary greatly from country to country, and the number and age of whom is taken into account when calculating numerous types of benefits. However, it also offers the disadvantage of not taking account of the effects of economies of scale. For the sake of simplicity and because it is not widely used in redistribution studies, we have not included this approach in the below comparisons.

As regards the three other uses, the indicators calculated on the basis of the ERFS reveal discrepancies between the distributions of disposable income depending on the standardisation scale used: these are fairly small between the deciles calculated using CU and ESA approaches (always less than 1% in absolute terms), but significantly larger with the SQR scale (between 8 and 10%). These differences in levels remain relatively stable over time, such that the evolution of inequality would retain a similar profile no matter which scale is used, as is demonstrated by the following findings:

- The median standardised disposable income for 2016 is €20,520 for the CU approach, €20,370 for the ESA approach and €22,420 for the SQR approach. However, the changes to the median over the last 10 years are very similar for the different scales.

- At the extreme ends of the distribution (1st tenth and 95th hundredth), the differences are slightly more pronounced: The ESA and CU approaches are very similar; however, the SQR approach is consistently around 10% higher. Nevertheless, the trends remain broadly similar.

- The Gini index calculated on the basis of the SQR scale is also slightly higher (0.291 compared with 0.288 for the CU approach and 0.287 for the ESA approach), but the variations of the three indicators are very similar.

The poverty rates calculated on the basis of the three scales differ more, however, while remaining relatively similar for most of the commonly used indicators: in 2016, the 60% poverty rate calculated on the basis of the CU scale usually published by INSEE was 14.0%; had it been calculated using the ESA scale, it would have been lower (13.2%), and it would have been slightly higher if calculated using the SQR scale (14.4%).

The trends in the indicators also differ significantly, with the gap widening over five years: had the fall in the poverty rate between 2012 and 2016 been calculated using the ESA scale (-0.6 points), it would have been much more pronounced than if it had been calculated using the other two scales (-0.2 points). The differences may be even more pronounced for sub-populations, for example for certain types of households, such as single-parent families. These differences can largely be explained by differences in weightings depending on the configuration of the household (see Figure 6) and by differences in the sizes of the populations (see Figure 7 below).

Figure 7: Changes to the total standardised population according to the equivalence scale in France, 2006-2016
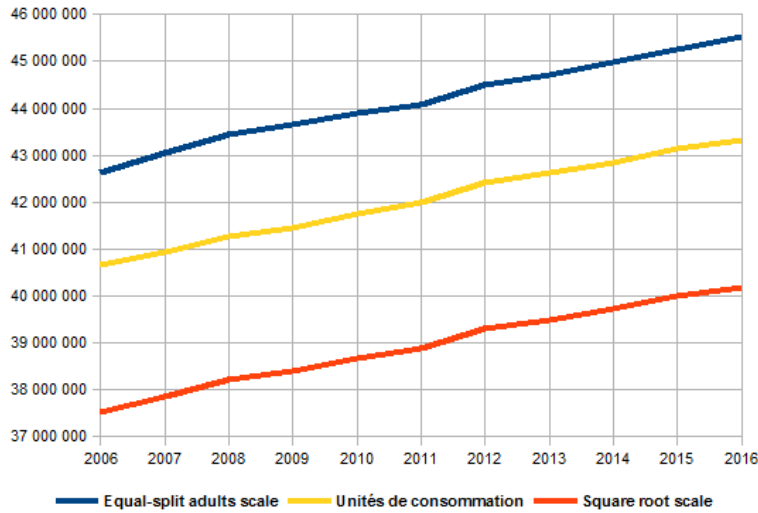
Coverage: Metropolitan France, individuals living in a household for which the declared income is positive or nil and where the household reference person is not a student.
Sources: INSEE-DGFiP-CNAF-CNAV-CCMSA, Tax and Social Income Surveys 2006 to 2016.

A more detailed comparison of the CU and ESA approaches shows that, ultimately, there is only a slight difference in the total number of units. When performing the calculation on the basis of the ERFS 2016, there are 43.8 million CU compared with 45.2 million adults. As a first approximation, the distribution of disposable income using the ESA approach will, on average, be around 3% lower than that for standard of living. However, this difference varies substantially along the standard of living scale, particularly at the very bottom end of the income scale (see Figure 8).

Figure 8: Difference between the disposable income centiles by ESA and by CU in France
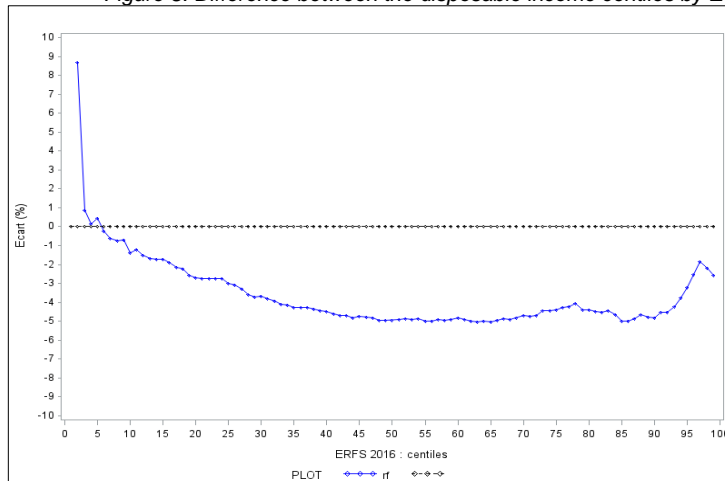
Coverage: Metropolitan France, individuals living in a household for which the declared income is positive or nil and where the household reference person is not a student.
Notes: centiles of households; the difference for the 1ˢᵗ hundredth (>70%) is truncated on this graph.

These differences can be explained in particular by the differences in the

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composition of households along the standard of living scale under the two conventions. Figure 9 shows that the number of ESA increases in accordance with standard of living when individuals are classified according to the standard of living of their household.

Figure 9: Average number of units by standard of living centile in France
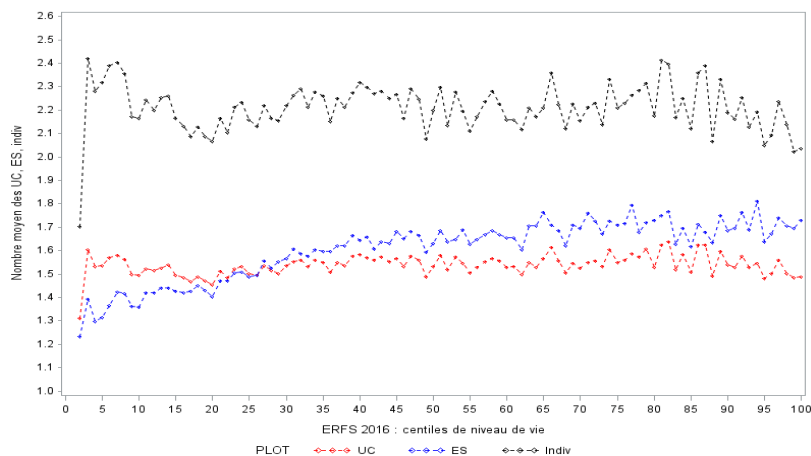
Coverage: Metropolitan France, individuals living in a household for which the declared income is positive or nil and where the household reference person is not a student.
Notes: household standard of living centiles = disposable income per CU.

Recommendation 3: Present the choices regarding the equivalence scales used to compare the different types of household composition in an explicit manner and, in so far as is possible, detail the consequences of the choices made, taking account of limitations associated with the availability of data (household composition, age of children, etc.). Several complementary approaches exist, one more oriented towards the study of the standard of living of households and its distribution (number of consumption units), another geared more towards the distribution of primary income (number of adults or number of individuals); they are used and interpreted in different ways.

Recommendation 4: Consistently adopt the convention of equivalence scales, i.e. do not change them to compare the redistributive effects of transfers.

The relative stability of CU across the distribution of standards of living results from two demographic effects that counterbalance one another in France. The households at the bottom end of the distribution tend to be single-parent families and single people. The households at the top end of the distribution tend to be couples with few or no children. The median households tend to be couples with children.

Figure 10: Family configurations according to standard of living

Number of people

Legend	
1. Single	2. Single-parent family
3. Couple without child.	4. Couple with 1 or 2 child
5. Couple with 3 or more child	
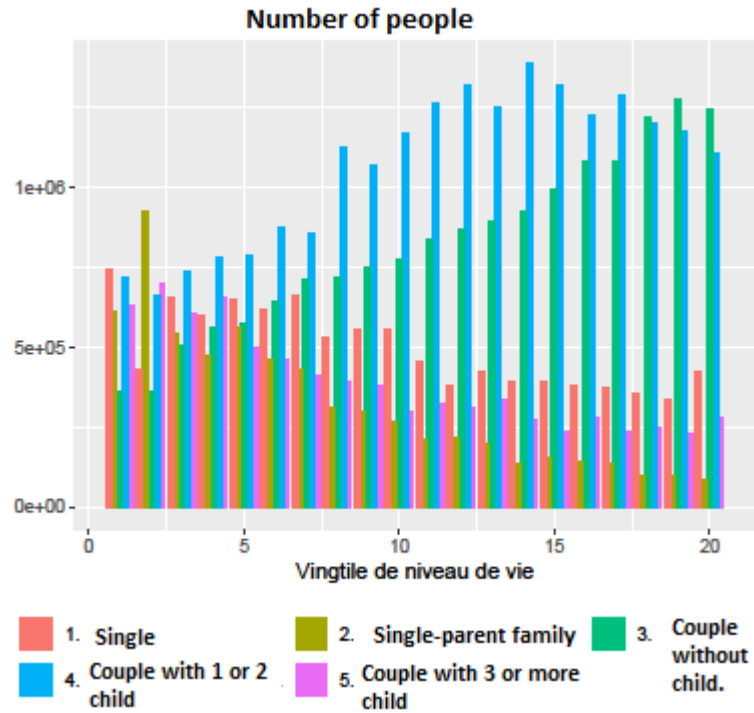
Sources: 2016 INES model, graph taken from (André & Sireyjol, 2019)

The use of CU differs from that of ESA in another important respect. By assigning notional income shares, the aggregate accounting amounts do not equal the sum of the individual amounts. Therefore, for example, the per tenth average is not equal to the aggregate divided by the number of CU. For the same reason, the total income per CU for each individual does not correspond to the national accounts aggregate (the difference is linked to the number of CU). Consequently, simply knowing the aggregate and the number of CU per tenth is not sufficient to allow for an exact calculation of the average equivalised income for that tenth.

Conversely, if we add up the income for each individual using the ESA or per capita income, we arrive at the national accounts aggregate. If we then divide this by the number of individuals, we find the average (i.e. the aggregate divided by the size of the population), which is especially useful within the scope of a distributional accounting exercise.

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Figure 11: Classification within a standard of living decile according to the equivalence scale

EQUAL-SPLIT ADULTS

CONSUMPTION UNIT	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
D1	7.5	1.5	0.5	0.3	0.2	0.1	0.1	0.0	0.0	0.0
D2	2.3	3.1	2.6	0.6	0.4	0.3	0.2	0.1	0.0	0.0
D3	0.5	2.7	2.5	3.3	0.4	0.5	0.3	0.2	0.1	0.0
D4	0.1	1.7	1.9	1.8	3.8	0.4	0.4	0.3	0.1	0.0
D5	0.1	0.4	2.2	1.2	1.3	3.7	0.5	0.4	0.2	0.1
D6	0.0	0.2	0.5	2.7	0.9	1.3	3.3	0.5	0.3	0.1
D7	0.0	0.2	0.1	0.6	2.7	1.1	1.5	2.9	0.5	0.1
D8	0.0	0.0	0.2	0.1	0.5	2.4	1.7	1.9	2.6	0.3
D9	0.0	0.0	0.0	0.2	0.2	0.3	1.6	2.7	3.0	1.9
D10	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	2.6	6.8

Reading Note: 3.1% of households belong to D2 when classified by both CU and by ES.
Sources: INES 2018 (ERFS 2016), authors' calculations.

The table in Figure 11 shows changes to the tenth as a result of the two classifications, CU and ESA. The elements are primarily diagonal in the sense that there are very few households where the difference between the two types of equivalence scale amounts to more than a tenth.

Based on the INES model and making use of the ERFS data, the difference in the number of ESA-CU units falls into a bracket of [min = -2.3; max = 5.0] (minimum value and maximum value), which gives an average value for this difference of 0.22. The distribution of the two equivalence scales is fairly similar: P01 = -0.9 and P99 = 1.5, which gives a median of 0 and a third quartile (P75) of 0.5.

CU are useful for measuring how redistribution to children and families affects their standard of living. By calculating disposable income using the ESA approach, we change the composition of the lower end of the distribution, particularly the area occupied by single-parent families. Nevertheless, without this limitation presenting a barrier, aside from the abstract nature of the concept, classification by CU relies on consumption data, the measurement of which is, by its very nature, imprecise (see Accardo (2007), Hourriez and Olier (1998) or Lechene (1993) for a literature review). Estimates may also vary over time or in space (see, for example, Martin (2017), Martin and Périvier (2018) and Martin (2015)). The weightings assigned to individuals on the basis of age and family composition are the subject of debate.

I.3.b. Which Income Concept Should be used to Order Households?

Once the question of the denominator – i.e. the number by which household income is to be divided – has been clarified, the question of the numerator arises. Which of the various income concepts selected should be used (I.2)? Before we make a choice, a distinction must be drawn between the income used to classify individuals and the income used to measure redistribution. These two concepts are often used interchangeably. However, it is often useful to separate them in order to rule out reclassification effects when comparing two distributions. Indeed, if the result of the measurement of the distribution between two income concepts is first linked to the contour of the incomes being compared and therefore to the transfers that may or may

not have been taken into account, the classification method chosen does actually make a difference.

A first option would be to perform the classification according to income before transfers on the one hand and income after transfers on the other hand. By standardising where appropriate, individuals are ordered in accordance with the value of this income in order to compare the two distributions by tenth, twentieth or hundredth, for example. This is what actually happens when the Gini coefficient is calculated before and after transfers on the basis of microeconomic data. The difficulty lies in the fact that households do not always belong to the same income group; the transfer effects are not directly comparable due to reclassification effects, which can be significant. This is the case, for example, with pensions (see Section III.1.e). If we consider pensions to be a benefit, as is the case in national accounting, wealthy pensioners would find themselves at the bottom of the income scale before transfers and at the top of the scale after transfers. Therefore, comparing incomes at the bottom of the scale before and after transfers becomes meaningless, since it is no longer the same individuals who are present.

For the purposes of measuring "who pays what" and "who receives what", it is imperative that the classification of individuals remains fixed throughout the distribution. Returning to the example of the Gini index calculation, we will not reclassify individuals in order to move them from one income dimension to another. Once the principle of a fixed classification has been accepted, three main options can be envisaged, which the group discussed in detail: classification according to income before transfers, classification according to income after transfers and classification according to disposable income or standard of living.

The group agreed that, if a UN accounting standard were to be defined, the disposable income per consumption unit, i.e. the standard of living, is the classification variable most likely to favour robust international comparisons, both as the most tangible concept for citizens and as the type of income that is least dependent on imputation standards. However, this choice of standard does not detract from the relevance of other options, in particular classification according to income before transfers for the purpose of studying the behavioural effects of the elasticity of labour input and capital on the transfers performed, for example.

Recommendation 5: For the purposes of producing distributed national accounts, and within the scope of international accounting standards, prioritie disposable income per consumption unit as the primary classification variable.

Recommendation 6: For research purposes, other classification options may be considered; in this case, the classification variable and the method for calculating the amount received or paid must be clearly shown for each transfer (aggregation at household level, for example).

Recommendation 7: Once classification has been carried out according to one of the income concepts, the standard of living bands must remain fixed (in order to prevent reclassifications and the resulting bias); focus on an identical number of individuals for each band (rather than an identical number of households) and, failing that, indicate the number of individuals in each band.

I.3.c. What Degree of Granularity Should be Used for Income Groups?

In the interests of avoiding a misuse of common parlance, the words decile, centile and millile will be used solely to designate quantiles (distribution thresholds). The words tenth, hundredth or thousandth will be used to designate the groups of individuals classified using these quantiles. Therefore, the final centile of the distribution refers to the minimum income that would place people in the richest 1% of people. The final hundredth refers to the group of individuals comprised of that richest 1% of people.

In Alvaredo *et al.*, (2016)the top hundredth is divided into thousandths, the top thousandth into ten thousandths and the top ten thousandth into hundred thousandths in order to obtain the greatest possible precision at the top end of the distribution. This approach can be explained in particular by the high concentration of wealth within the top tenth. Therefore, the richest tenth accounts for almost three quarters of the wealth in the United States (WID.world, 2020), and the top hundredth accounts for almost 40% of total wealth. When looking at the redistribution of wealth, it becomes essential to use a fine scale.

In the case of variables with unbounded variance at the top end of the distribution, as is the case for income or wealth, for example, the granularity with which such estimates are made plays an important role. If the source data includes too few people at the top end of the distribution, a variation seen from one year to the next may therefore be purely the result of a sampling bias rather than an actual variation. This is the case, for example, where the richest person is present in the survey one year and is no longer present the following year.

In the case of the INES model or the ERFS data (130,000 individuals), it is possible to perform an analysis of discrete variables (bounded by construction) by hundredth, but for concentrated continuous variables (such as income or wealth), the

robustness of the results is rather limited where the analysis is performed by tenth (top 10%) or twentieth (top 5%).

It is important to always pay attention to the size of the cells being studied: cross-referencing by twentieth, employment status and family type, for example, may not be sufficiently robust. The use of comprehensive tax files is the most direct means of gaining an accurate picture of inequality, right up to the very top end of the distribution. This is why INSEE makes use of resources such as the comprehensive social and fiscal localised income system, FILOSOFI, to study the very top end of income distribution.

Recommendation 8: Make a linguistic distinction between quantile (lower threshold) and fraction (group) by using the terms deciles/tenths or centiles/hundredths, for example.

Recommendation 9: Always indicate the number of entities within the band (households, individuals, children, number of equivalence scales, etc.) in order to facilitate comparisons between the different approaches.

Recommendation 10: Wherever possible, describe the top end of the distribution to the hundredth and thousandth by making use of comprehensive data; failing that, it should be described by the tenth or twentieth for the usual household survey data. Results should only be presented to the extent that they are statistically robust, or accompanied by their margins of error.

Recommendation 11: Ensure consistency of use when calculating the amounts of transfers within the groups, either by calculating the total transfers or by calculating the transfers per unit, but retaining the same scale as was used to establish the groups.

I.4. How Can Redistribution and Inequality be Measured?

Once the before and after transfer distributions have been established, it is customary to measure redistribution by comparing the inequality indicators for these two distributions. As was highlighted in the previous section, the way in which income is defined and distributed has an impact on the redistribution measurement shown. This section stresses the fact that the choices made with regard to inequality indicators have a heavy influence on the messages that emerge as a result of their use.

I.4.a. The Main Existing Indicators

The main inequality indicators can be broken down into two categories[16]. The first serves a mainly descriptive purpose. It includes indicators such as:

- the Gini coefficient, based on the Lorenz curve;

- the shares of total income going to each income group (the wealthiest 1%, the wealthiest 10%, the poorest 50% and the 40% falling between these two groups);

- or the different income ratios per population quantile or group, such as the interdecile ratio, the (100-S80)/S20[17] ratio used by the UNDP and by INSEE in France, the Palma ratios, which focus on the gap between the wealthiest 10% and the poorest 40% and the T10/B50, M40/B50, T10/M40 and T10/B90 series of ratios[18];

- or the Hoover index, which measures the sum of the deviations from the egalitarian distribution for below-average incomes.

The second category aims not only to measure inequality, but also to quantify its consequences in terms of welfare. It draws upon the studies by Dalton (1920), Atkinson (1970) and Sen (1973). In order to achieve this, the link between the distribution of income and the collective welfare gained as a result of that income must be specified. These studies work on the assumption that there is a function that relates collective welfare to the distribution of individuals' income, an additive function in the case of Atkinson.

The Dalton index therefore measures the difference, as a welfare percentage, between the actual distribution and the egalitarian distribution; the Atkinson and Sen indices offer a monetary quantification of welfare based on the notion of equivalent equal income. Equivalent equal income is the egalitarian income that provides the same level of welfare as the actual distribution of income.

For balanced redistribution operations, first of all, the variation in equivalent income measured as a percentage of net national income is proportional to the change in welfare. For that reason, this equivalent equal income can also be referred to as *monetary welfare*.

The Atkinson inequality index[19], which measures the percentage difference

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16 This Section draws upon the ongoing studies collated in André M. and Germain J.-M. (2021).

17 Which provides the ratio of the average income of the richest 20% to the poorest 20%, known as the QSR (*Quantile Share Ratio*).

18 T10, M40, B50 and B90 represent the average income of the wealthiest 10%, the middle 40%, the poorest 50% and the poorest 90%, respectively.

19 The Sen index is a generalised version of this where the utility function is not additive. The Dalton index directly compares the welfare associated with the actual distribution with that of the egalitarian distribution.

between the equivalent equal income and average income, therefore possesses an important property, particularly when it comes to studying the redistributive nature of a socio-fiscal system: its variation can be directly interpreted in terms of welfare.

I.4.b. Gini Indicator: Welfare and Redistribution

In reality, the boundary between the descriptive and welfare approaches is not fixed. Yitzhaki (1979) has highlighted an interpretation of the Gini coefficient for monetary deprivation, as described by Runciman (1966). In this regard, differences in income bring about a feeling of deprivation that is equal to the average of the differences at higher incomes. As for collective welfare, this is equal to average income minus average deprivation. Yitzhaki (1979) demonstrates that the Gini coefficient is equal to the ratio of average deprivation to average income. The Gini coefficient does not fit into Atkinson's analytical framework, since its utility does not just depend on one's own income, but also on that of others. It falls within the more general framework proposed by Sen (1973).

The underlying welfare function defined in this way presents a number of interesting properties: in particular, as is the case for the Atkinson index, its variation in terms of average income points is equal to the variation within the Gini index, as long as the transfers are balanced in terms of income and expenditure. Indeed, the welfare gap is calculated on the basis of the variation within the difference in the welfare function.

These theoretical considerations help to guide practices in the sense that it is preferable to compare inequality indices before and after redistribution as a level rather than a percentage; the values obtained in this manner are interpreted in terms of net national income points.

> **Recommendation 12:** When interpreting the impact of redistribution on welfare via the national income scale, the commentary should preferably discuss the inequality indicators before and after transfers in terms of a difference in level rather than a ratio.

This interpretation of index variations in terms of monetary welfare is only valid when the before and after incomes are deducted from one another by balanced transfers. Conversely, where the redistribution in question is not balanced in terms of expenditure and income, the comparison of the Gini coefficient before and after redistribution provides a biased measurement of the impact of the transfer system on welfare; moreover, it is possible to demonstrate that this bias is negative[20], and all the more negative when the country concerned offers a high level of public services.

In general, a number of different practices exist within the studies in these areas, for example, the decision as to whether or not to include pensions in the income before

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20 See the studies currently under way in André, Germain (2021), op. cit.

transfers (see I.3.b), and each of these conventions provides additional information. However, if an assumption leads to an imbalance between two different income concepts, as a result of the integration of a portion of the deductions that are used to finance a certain non-zero balance benefit, for example, the redistributive effect may be reduced or increased.

A stylised example shows the importance of paying attention to the balance of a set of transfers. Consider a country that finances a universal flat-rate benefit with a tax proportional to income. Now imagine that this country were to change the financing of that benefit by proceeding to base it solely on a tax on products, proportional to consumption. In such a case, the tax would weigh more heavily on the bottom end of the income scale, where people have very little or often even nothing at all in the way of savings: this change would therefore increase inequality. However, if we were to only take account of the benefits and direct taxes, as is usually the case in redistribution statistics, therefore excluding taxes on products, the second system would appear to be more redistributive than the first. It is therefore only possible to perform an unbiased comparison of the two situations by including both expenditure and income and direct and indirect taxes.

In practice, if two countries finance the same benefits, one by means of VAT and the other by means of income tax, the failure to integrate taxes on consumption would provide a distorted picture of the redistribution of public transfers, but with an identical public expenditure profile. The example given here is stylised, but it reflects a reality that skews the usual international comparisons: the fact that taxes on products are high in Europe, whereas they are almost non-existent in the United States.

> **Recommendation 13:** The assessment of the redistributive impact of a transfer system should, in so far as is possible, focus on zero-sum transfer packages (i.e. those where there is a balance between income and expenditure), particularly where comparisons are being made internationally or over time and within the context of distributional accounting. Failing that, discuss the potential consequences of an unbalanced analysis and, where possible, show the accounting balance of the package in question.

I.4.c. Comparison of Inequality Indicators

What is true for Gini is generally also true for other positive or descriptive inequality indicators: they underpin an implicit collective preference, which is often explicit at the outset, and which can sometimes be forgotten over time. Therefore, the Palma ratio, which establishes a ratio between the richest 10% and the bottom 40% of the distribution, is based on an analysis that combines statistics, sociology and political economy. Palma observes that the two income groups are of the same order of magnitude in many countries. Redistribution would take place between the wealthy households represented in the first group (the richest 10%) and the working classes, the majority of whom fall within the second group (the bottom 40%). According to his vision, redistribution increases when the middle classes are combined with the working classes and decreases when they are not.

This underlying collective preference can be clarified with a view to clarifying the choice of indicators and facilitating the interpretation of the results and the comparison of the various studies. This reconstitution makes it possible, by means of linearisation, to assign implicit weightings, which the various indicators in fact attribute to the various distribution quantiles as soon as they are used to measure redistribution. In order to simplify the above, we will consider here six of the indicators most commonly used by practitioners:

- three indicators that we will refer to as the *dispersion index*: the Gini index and the Atkinson index, together with the Hoover index, which measures the billions that need to be moved in order to achieve an egalitarian distribution;

- three *gap indices* between the top and bottom ends of the distribution: the Palma ratio (T10/B40), the 20-20 ratio (T20/B20) and the T10/B50 ratio.

The graphs in Figure 12 below represent, first of all, the weightings per tenth of income for the implicit monetary welfare associated with the various indicators, as evaluated by André and Germain (2021). A higher value for a given tenth is interpreted as a higher implicit preference given to that tenth by each indicator.

It is possible to demonstrate that marginal monetary welfare is not dependent on the underlying income distribution for the Gini index. It shows a linear decrease in two-point steps, falling from 19% for the first tenth to 1% for the final tenth. For the other indices, the weightings are dependent on the income distribution[21]. The Atkinson index corresponds to an implicit monetary welfare that weights the first groups more heavily; the marginal utility then decreases more rapidly than is the case with Gini. Finally, the deviation indices show constant marginal implicit welfare across the first tenths (the first two for T20/B20, the first four for Palma and the first five for T20/B50), which are slightly positive for middle incomes and negative at the top end of the distribution (the last two for B20/T20 and the last one for the Palma and T10/B50 indices).


Figure 12: Weighting of implicit welfare by tenth
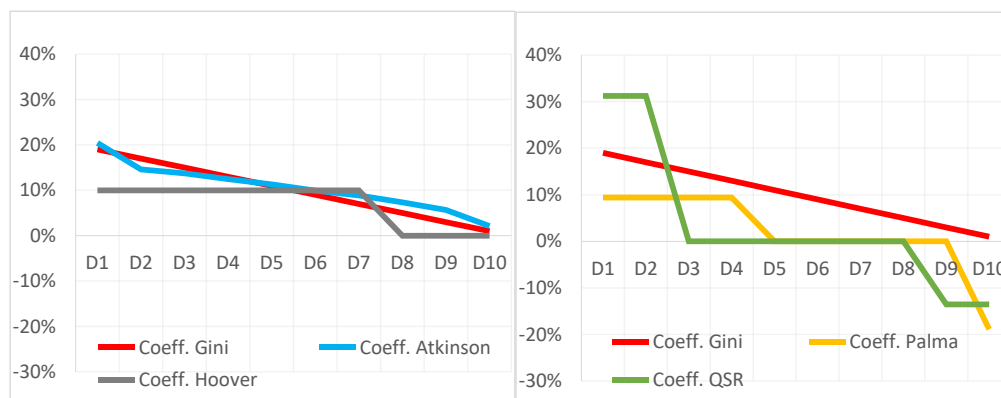
Sources: authors' calculations.
Reading note: the implicit welfare assigned by the Palma coefficient amounts to 9% for the first standard of living tenth compared with 19% for the Gini coefficient.

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21 Figure 12 and **Erreur ! Source du renvoi introuvable.** (annexed hereto) are based on numerical estimates associated with French distribution after transfers.

These simple developments make it possible to specify and quantify the characteristics of the various inequality indices used to measure redistribution, which are well-known to practitioners. The Hoover indicator is interpreted in billions of euros moved between the groups. However, it is the furthest from the concept of welfare, since it is neutral throughout the distribution. As a result, it tends to underestimate the contribution made by redistribution as it fails to take account of the fact that €100 received by the poorest households provides them with greater welfare than €100 received by median or average households (due to the concave nature of the utility of income).

The Gini coefficient is more consistent with the principle of the decreasing marginal utility of income. However, its robustness, which is so appreciated by statisticians, is also its downfall, since it leads to an underestimation of the welfare impact of redistributions among those with the very highest and very lowest incomes. Indeed, it offers little sensitivity when it comes to changes at the extreme ends of the income distribution scale.

The Atkinson index comes closest to the concept of welfare, on which it is directly based. It places great value on redistribution targeted at the poorest people. Therefore, a transfer of €100 from tenth number 10 to tenth number 1 would have a greater impact if it is measured using the Atkinson index than it would if measured using the Gini index. Potentially sticking to the curvature of the utility function underlying the income distribution, it is dependent on a parameter that can be provided with an empirical basis in order to best match the elasticity of income-based welfare[22]. In the following, we will use the value estimated for this parameter on the basis of French data from the life satisfaction surveys conducted by Germain (2020), namely 2. Therefore, the Atkinson index seems to be the most appropriate to use for cases where the redistribution performed by means of transfers is to be interpreted in terms of welfare. Nevertheless, as is the case with the Gini index, it is not especially sensitive at the very top end of the distribution, which does not present any limitations when studying balanced transfers, but may do where this is not the case.

The gap indicators are the most readable and are more sensitive to variations at the very top end of the redistribution. The Palma index and the B50/T10 index are based on a breakdown of the population into groups, which, unlike the groups used for the other indices, are close to the social reality in the sense that they can be interpreted: the working classes, the middle classes, the upper classes, etc. They also present an accounting reality, since redistribution effectively takes place primarily between the wealthy households, which are net contributors, and the working classes, which are net beneficiaries, pivoting around the middle classes.

By transforming these indicators into a ratio, one euro taken from the top end and given to the bottom end counts for double that of a euro taken from the middle and given to the bottom end, or taken from the top end and given to the middle. They therefore

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22 $1 - [1/n \sum_{i=1}^{n} [r_i/\overline{r}]^{1-\tau}]^{1/(1-\tau)}$ or r_i represents the income of an individual i, $\overline{r}$ the average income, n the number of individuals and τ a parameter (set at 2 for the purposes of this report).

place more value on redistribution operations from the top to the bottom than they do for those involving the middle class. They present the disadvantage of being less sensitive to redistributions aimed at the very poorest households. However, they offer the advantage of being robust at the extreme ends of the distribution scale in the event that the statistical sources used are less reliable for the poorest or richest households; this is particularly true of the Palma and T50/B50 indices.

Other studies, which focus on localised measurements of income redistribution, consist of comparing the income distributions with one another (Chauvel, 1995). Amoureux, Guillaud and Zemmour (2019) suggest, for example, that the reduction of inequality should be measured according to three criteria. The first criterion identifies the target area for redistribution, within which income densification takes place. This area of income gap reduction is fairly limited around the median. The second criterion captures the intensity of redistribution, the measure of which is the share of households affected. The third criterion measures the polarisation of the redistribution according to whether it is performed "from the bottom up" (by reducing the poverty rate) or "from the top down" (by reducing the share of high incomes). This analytical framework highlights the fact that one of the more notable effects of redistribution policies is to increase the share of the population whose standard of living lies around the median.

Figure 13: Characterisation of the practical use of the main inequality indicators to measure distribution

	Indicator	Characteristic	Cautionary note
Dispersion	Hoover	Simple interpretation in billions of euros moved during the transfer operations	The furthest from the concept of welfare (marginal utility virtually constant)
	Gini	Closer than the Hoover index to the concept of welfare, but difficult to interpret	Underestimates the impact of targeted redistributions on the poorest households (marginal utility decreasing in a linear manner)
	Atkinson	The closest to the concept of monetary welfare	Like the Gini and Hoover indices, less sensitive at the top end of the distribution
Ratio	Palma (B40/T10)	Very simple to read and interpret within social groups: inequality and redistribution play out between the working classes and wealthy households	Underestimates the impact of targeted redistribution on the welfare of the poorest households and the negative impact of the deductions on the middle classes
	T10/B50	Same benefit as the Palma index, with working classes making up half the population	Underestimates the impact of targeted redistribution on the welfare of the poorest households. B10/B50 allows for a focus on median households
	20-20 or QSR ratio (T20/B20)	Easy to read, places greater emphasis on redistributions targeted at the poorest households than the Palma and B50/T10 indices	No interpretation within social classes, and no account taken of redistribution operations benefiting the upper working classes
	Interdecile ratio (D9/D1)	Easy and logical to read, similar to the 20-20 ratio, the decile threshold can be interpreted as a particular individual	Does not take account of the extreme ends of distributions and provides an especially poor measurement of the concentration of high incomes

In light of the above, none of these indicators, when used in isolation, can correctly shed light on the impact of the redistributive effects of transfers. Any choice of indicator

corresponds to specific weightings and therefore implies an underlying normative convention if interpreted in terms of welfare. This observation leads to a fairly obvious recommendation, but one which the observation of practices compels us to reiterate: in order to correctly measure the impact of redistribution on inequality, it is preferable to shed light on the issue from several angles and therefore to make use of several indicators to ensure the robustness of the results.

The median or intermediate population could be studied by defining it as being neither poor nor wealthy. In order to achieve this, it may be useful to define a wealth threshold as a proportion of the median standard of living, in the same way as the poverty threshold has been set at 60%. In the introduction to the insights detailed in *France, Social Portrait*, dedicated to median households (*Insee Références*, 2017 issue), wealthy persons are defined as those whose standard of living exceeds 180% of the median standard of living. This threshold therefore defines a wealth rate, measured at 10.9% in this publication, while the poverty rate is estimated at 14.1%. This means that 75% of people are neither poor nor wealthy. This indicator measures the concentration of the distribution of standards of living around the median and can be used as a tool for performing international comparisons. Similarly, the OECD report (2019) on the middle classes defines middle-income households as those situated between 75% and 200% of median income. This category represented 64% of the population in OECD countries in the 1980s, compared with 61% in the 2010s. These incomes grew a third less quickly than the highest 10% and even stagnated in some countries.

> **Recommendation 14:** In order to reach robust conclusions, describe the entirety of the distribution (by tenths, hundredths, etc.) of income and wealth; make use of at least one dispersion indicator and one ratio indicator, rather than concentrating on a single indicator.

I.4.d. Comparison of the Redistribution Systems

The comparison of redistribution systems appears to be a simple question with an answer that can be difficult to obtain. The difficulties raised in the previous sections must be addressed and the choices made in order to achieve this need to be clarified. The question itself is worth looking into further, since we are interested in making international comparisons. So far, by comparing the income before and after transfers at the individual level or by category, we have measured the observed impact of redistribution on standards of living, aggregated where appropriate by applying a greater or lesser weighting to the bottom end of the distribution in order to more closely approximate the concept of an impact on collective welfare.

Another related, yet different question revolves around the evaluation of the effect of the socio-fiscal system itself on standards of living in the form of calculation rules, i.e. answering the question "are the tax and social laws of country A more redistributive than those of country B?". It is no longer sufficient in this case to compare the inequality indices before and after transfers in the same way as before; ideally, the entire set of rules governing the socio-fiscal system of country A should be simulated in advance in

country B and vice versa in order to construct comparable counterfactual situations. This being the case, if a part of system A applied to income in country A reduces inequality to a greater degree than when system B is applied to country A, and if the other part of system A applied to country B reduces inequality to a greater degree than when system B is applied in country B, it is reasonable to conclude that one system is more redistributive than the other. If this is not the case, the redistributability of the two systems cannot be clearly classified.

Such an exercise goes far beyond the scope of distributional income accounting, but it allows for a close approximation of this by estimating, through the calculation of appropriate ratios, a "reduced version" of the rules of the transfer system. As an initial approach, two specifications are possible to achieve this. The first approach involves calculating the net transfer amount for each tenth as a fraction of the income of that tenth. This is based on the assumption that the apparent rates of transfers paid and received are proportional to the primary incomes within each tenth. The second approach involves calculating a net transfer amount for each tenth as a fraction of national income, and comparing that profile with other countries. This implicitly assumes that the transfers within each tenth take place as a lump sum.

In practice, the socio-fiscal systems obey both logics simultaneously (benefits are closer to the flat-rate model, while deductions more closely match the proportional model), which makes the results difficult to interpret. This suggests that a third approach is needed, which consists of calculating an average apparent tax rate, as a proportion of primary income, and an average amount of transfers received, expressed as a level, with this combination of apparent rate and apparent flat-rate allocation acting as a *proxy* for the fiscal-social system and therefore providing the basis for international comparisons (see André-Germain (2021)).

> **Recommendation 15:** The comparison of the redistributive effect of two socio-fiscal systems with "all else being equal" ideally requires the application of transfer rules to the same primary income distribution. In practice, several complementary approaches can be taken on the basis of the same distributional accounting in order to address this theoretical case. *A fortiori*, it is necessary to explain the approach followed and to discuss its implications.

I.5. Possible Limits and Extensions

This final section collates the points for discussion regarding the framework generally adopted for the study of inequality. It highlights in particular the fact that the measurement of redistribution from an accounting point of view inevitably remains partial, as is the case with any analytical accounting exercise, since it is situated upstream of the consideration of any possible looping effect or the behaviour of economic agents. The final paragraph deals with issues related to the data sources on which the analyses are based.

I.5.a. Inequality, Life Cycle and Mobility

The usual approach to measuring redistribution, which is based on the classification of households by standard of living, then on the basis of the distribution of all of the public transfers paid and received, known as distributional accounting, provides a cross-sectional view of the distribution of income, transfers and wealth for a given year. This "snapshot" provides a necessary basis for understanding the issue of inequality, but is not the be-all and end-all. The working group identified five main limitations presented by the annual nature of distributional accounting.

Firstly, the observation of inequality at a given point in time does not correct for life-cycle effects. A share of the individuals at the bottom end of the income distribution scale could be made up of young households – students or those just starting their careers – whose current income is low, but whose future income prospects are higher. Albis et Badji (2017) found that the incomes of individuals within each cohort follow an inverted U-shaped curve throughout their life cycle, which peaks at around 55-59 years of age. The difference in income between the youngest (25-29 year olds) and the top end of the life cycle (55-59 year olds) is around 30-40% for each cohort. However, this difference, although significant, is small when compared with the differences in income between the top tenth and the bottom tenth, which can exceed a factor of 10. According to Garnero et al. (2019), the majority of labour income inequality at a given point in time is permanent in OECD countries. Indeed, almost 80% of inequality between individuals measured at a given point in time persists throughout their life cycles. Furthermore, the distributional accounting exercise is not fundamentally incompatible with a breakdown by age, provided the underlying data are suitable for this. As part of the DINA project, Garbinti, Goupille and Piketty (2018) found that labour income rises from around 70% of average income for 25-29 year olds to 120% for 55-59 year olds.

Secondly, cross-sectional inequality includes any short-term variations in income that individuals may experience. These variations do not properly reflect changes in their standards of living. Those same individuals are able to smooth out their consumption during times when they do not have any liquidity constraints. When income inequality is looked at over a period of several years, it is therefore lower than the annual inequality. Such a measure of income mobility is particularly demanding in terms of data quality, since it requires individuals to be followed over time. In the United States, and based on Social Security data, Kopczuk, Saez, and Song (2010) found that the Gini coefficient falls by around 2pp when looking at income over a period of five years as opposed to annual income. This change is quite small compared to the value of the Gini coefficient for annual data, which is around 0.44 for the early 2000s (most recent available data). Moreover, the difference remains stable over time and does not significantly change the trends. In France, Accardo (2016) highlights that, when averaged over a period of five years, inequality in the distribution of standards of living is only very slightly lower than the inequality currently observed in standards of living. Recent studies (Roux & Magnac, 2020) have been breaking down the variations in life cycle salaries and have found that short-term wage inequality is 20-80% higher than long-term inequality. Permanent individual heterogeneity would account for between 60 and 90% of the variance in salaries.

Thirdly, income inequality also fails to take account of intergenerational mobility. However, this mobility appears to be limited. In the United States, Chetty et al. (2014)

show a linear relationship between the ranking of parents within the income distribution and the ranking of children: a 10 per cent increase in one corresponds to a 3.4 per cent increase in the other. According to the OECD (2018), intergenerational mobility is no higher in France, where it takes six generations for a family in the poorest 10% to reach the average (compared to five in the United States). Although it is conceptually distinct from cross-sectional income inequality, this intergenerational mobility appears to be linked to the latter by the *Great Gatsby curve* (Corak, 2013): across countries, there is a negative correlation between intergenerational mobility and inequality.

Fourthly, transfers of capital between households – in the form of gifts or inheritance – together with maintenance payments or informal transfers – between parents and children, the payment of rent or pre-committed expenses – are an important form of transfer that are not taken into account in current income. Nevertheless, these transfers play an important role in the creation of wealth and the transfer of inequality between generations. Piketty and Zucman (2015) find that the share of the French national wealth that is inherited has increased in recent decades to around 65% as at 2010, with similar trends being seen in other developed countries. Arrondel, Garbinti and Masson (2014) show that gifts and inheritances increase the probability of a person buying their own home and that gifts in particular increase the probability of an individual starting or taking over a business. These transfers are not taken into account in national accounting. Only inheritance taxes are included in capital transfers (D9). In so far as these data exist, it is still possible to measure these transfers within a sub-account.

Fifthly, income inequality also fails to take account of inequality in health and life expectancy. According to INSEE (2016), between 2009 and 2013, the life expectancy of a 35-year-old executive male was a further 49 years, compared with 42.6 years for male blue-collar workers. This inequality is notable in itself, but it also has repercussions for income distribution and redistribution throughout the life cycle: blue-collar workers have less time to accumulate wealth and, on average, benefit less from the pensions system, etc. Health inequality can therefore have an amplifying effect on income inequality.

To summarise, the distributional data presented in this report provide a snapshot of the impact of social, fiscal and in-kind transfers on inequality, which cannot claim to cover the whole issue. However, they are no less essential than the financial evaluations of the measures set out in finance laws, for example.

I.5.b. Elasticity of Factors and Fiscal Impact

Distributional income accounting is still an accounting exercise. In other words, it is a case of describing the way in which income is paid out and distributed within the economy at a given moment using a common language and in accordance with established conventions. The exercise is carried out with *all else being equal*, so to speak, and therefore without taking account of behavioural, dynamic or general equilibrium effects.

It is generally accepted in economics that the question of "who ultimately pays the tax?" is separate from the question as to who is legally obliged to pay the amount to

the administration: this is the issue of fiscal impact. National accounting already recognises this principle, in a sense. For example, social security contributions are always included in the remuneration received by employees (D1), regardless of whether they are employee or employer contributions. Although employers' contributions are technically paid by companies, they are considered to be a deduction from labour income that is paid by employees, unlike corporate income tax. All this has consequences for the calculation of the division of value added between capital and labour, for example. However, this represents the agreed approach.

These choices can be justified by means of the fiscal impact. In a standard partial equilibrium model, if the labour and capital supply elasticities are low compared to the elasticity of the substitution of labour and capital for one another, then the levies on labour are paid by the workers and the levies on capital are paid by the holder of that capital. However, while it is useful, the use of the principles of tax impact does present certain problems.

Indeed, in standard neoclassical models, deductions from capital are partly – or even entirely – paid by workers. Following this principle, it would appear that there is justification for allocating those deductions to employees, which would have major consequences for pre-tax inequality and the redistributive nature of the system. This raises at least two problems. Firstly, this result is controversial and relies on specific assumptions: there is a vast array of literature that demonstrates how such estimates will vary depending on the assumptions made (Saez and Stantcheva, 2018). Secondly, even if we take this result at face value, it should be noted that the chain of reasoning that leads to it is complex: taxing capital reduces its after-tax return, which discourages investment, thereby reducing the capital stock and, in turn, making workers less productive, resulting in downward effects on their wages or upward effects on their risk of unemployment. Taking account of such a chain of reasoning goes far beyond the objectives of distributional accounting.

These are issues that have arisen during the *Distributional international accounts* (DINA) project, particularly with regard to the impact of corporate income tax. The initial approach consisted of following the principles of fiscal impact as put forward by Harberger (1962). According to these principles, corporate income tax is paid by all holders of capital, regardless of whether that holding is in the form of shares or bonds. This can lead to a number of inconsistencies: corporate income is attributed to shareholders (since they are the ones who control the company and who benefit from the capital gains derived from this income), but corporate tax, although paid on this income, is attributed to a wider group of individuals. The new DINA practices now tend to make the owners of companies, i.e. their shareholders, pay the corporate tax. This orientation is based on a distinction between the analysis of the distribution of taxes on the one hand and the analysis of the effects of a tax reform on the other hand (Saez and Zucman, 2019). The first concept is primarily descriptive, while the second aims to establish a counterfactual.

In our view, distributional income accounting falls under the first type of exercise. The second type – more speculative in nature – is useful, but needs to be carried out within a different framework. Although descriptive, the analysis of the tax distribution is not limited to observing the nominal incidence. The following is a general principle: *the factor that pays a tax is the one on which the amount of the tax depends*. Although

employers' contributions are nominally paid by employers, the amount depends on the company's payroll. They are therefore allocated to the employees. Conversely, corporate tax depends on the profit of companies and is therefore paid on that profit. A simple economic logic underlies this approach: if the aim is to model the decision of an agent with regard to the use of a resource (for the purposes of production or consumption), the only taxes that directly influence that decision are those that depend on the resource in question. Therefore, the analysis of the distribution of taxes provides data of relevance for the modelling of certain behaviours by agents, but does not comment on the behaviours themselves. There is no consensus on how to model such behaviour, which is also likely to vary over time and between countries. The inclusion of these behaviours in inequality statistics would pose significant problems in terms of robustness and comparability.

By concentrating on the distribution of deductions (taxes and levies), we also ensure the consistency of the distributional accounting exercise with itself. By design, the assumptions made with regard to their distribution therefore leave the total national income or the share of value added unchanged. However, these values will generally change if we consider the impact of a socio-fiscal reform incorporating the reactions of agents, which is problematic for an accounting exercise.

The redistribution or tax progressivity measures emerging as a result of distributional income accounting should therefore not be interpreted as a counterfactual in the strict sense of the word. More specifically, these analyses of socio-fiscal arrangements are based on an assumed counterfactual with no behavioural effects. They are intended to describe which groups pay which taxes, but only represent what the distribution of income would look like without a particular tax with a certain margin of error. However, they should make it possible to inform the debate on the modelling of behavioural responses to taxation.

In addition, the distributional accounting framework assumes that the generation of primary income happens independently of socio-fiscal policies. In reality, the distribution of primary income can be directly modified by the legal or regulatory framework, without going through monetary transfers between agents. This is the case, for example, for the introduction of a minimum wage or low rates of taxation for very high incomes. Benefits for the poorest employees are likely to be higher in a country where there is no such minimum wage or where it is low. In addition, a fiscal system that is more heavily concentrated on high incomes, since high primary incomes are mobile, can potentially lead to an increase in such incomes in order to preserve net incomes. In other words, the distribution of "market" income is linked to the "before/after" profile of transfers.

I.5.c. Differences Between Statistical Sources

When studying redistribution, particular attention should be paid to the data being used. Various sources exist: the LIS (*Luxembourg Income Study*) database mentioned above, INSEE's ERFS survey and FIDELI register, and Eurostat's EU-SILC system. Contrary to what you may think, the production processes for sources may be relatively similar; however, the poverty and inequality indicators calculated on the basis of those various sources can vary significantly and can sometimes present divergent temporal

dynamics. A comparison between ERFS and FILOSOFI showed, for example, that the assumptions regarding the evolution of financial income alone could have a significant influence on the level and development of inequality indicators.

Recommendation 16: For the purposes of comparability and replicability, clearly specify the simulation and imputation methods used, drawing a distinction in particular between income observed within the central source (including by means of matching) and those simulated on the scale, or even imputed and adjusted.

Recommendation 17: In the interests of readability, indicate the methodological breaks in the series. In the event of a change to the calculation method (simulations, imputations, new sources, etc.), present long back series of data wherever possible.

In practice, there is no single source that allows all transfers covered by national accounting to be taken into account. It is therefore necessary to combine several sources. Two situations may arise. In the first, household or individual identifiers allow for the direct matching of sources. This is the case, for example, for certain comprehensive administrative bases. In the second situation, those identifiers are not available. This is the case in particular when comparing administrative data with survey data. Statistical matching must therefore be performed.

In general, the validity of statistical matching methods relies on the assumption of conditional independence: comparing a source A with a source B assumes that the variables associated with A are independent of the variables associated with B and conditional on the variables shared by the two bases. This assumption is restrictive if the aim, for example, is to run a regression between the variables of A and B. It is less restrictive in the context of the studies included in this report. Indeed, let us assume that we observe an income concept X, which is shared by both A and B. Two different transfers, Y and Z, are observed in A and B respectively. Although there is no way of knowing with certainty the joint distribution of Y and Z, it is easy to estimate the expectation of $X + Y + Z$ conditional on X. Provided the reclassification effects between X and $X + Y + Z$ are small, a reasonable measure of the total income $X + Y + Z$ is also obtained. More problems arise where the data are to be broken down by family structure, for example, where this is not observed in both A and B, where it is weakly correlated with X and where Y and Z are heavily dependent on it. These problems remain relatively limited, provided the sources used are reasonably comprehensive. It is this type of imputation that is commonly used in practice: for example, the INES model, which serves as a basis for this report, imputes consumption data on the basis of the family budget survey, or household wealth on the basis of the Wealth survey.

In other words, the distribution of the various transfers along the standard of living scale is correlated in the sense that the core redistribution for a household is based on a set of demographic, social and fiscal characteristics that can only be determined if they are observed simultaneously. *A fortiori*, "superimposing" the distributions of different bases by imputing the transfers, group by group, on the basis of a ranking for each

transfer, can only provide an approximation of the actual situation: the first tenth of a pension is not necessarily paid to the first tenth on the standard of living scale. Likewise, the distribution of capital income does not perfectly match that of labour income[23].

> **Recommendation 18:** Start from a central source with a broad coverage of income when studying redistribution through a set of transfers. In general, you should prioritise sources that include a large number of income components simultaneously.

A further point to be aware of is linked to breaks in the availability of administrative data over time, particularly where transfers are removed or reconfigured. The examples of the abolition of housing tax and the change from the ISF [solidarity tax on wealth] to the IFI [tax on real estate assets] highlights the importance of having autonomous statistical registers in order to measure redistribution and inequality, in particular for wealth and savings, and for defining the central units used to analyse inequality: households.

However, administrative data present the advantage of containing information with the same structure as that used in the socio-fiscal systems with which they are associated. In other words, for each socio-fiscal system that we wish to simulate, the management database used for that system contains all of the information required for its precise calculation, which is not necessarily the case for survey data. For example, the resources used for some social security benefits are provided on a quarterly basis. The CNAF's administrative data contain this infra-annual information. The incomes contained within the survey data are often annual, which can result in prediction discrepancies in the case of monthly or quarterly variations in household income. This therefore necessitates the use of quarterly modelling. However, the administrative bases may not cover the entire population, for example where the scope is limited to the beneficiaries of the benefits in question, which implies that an extrapolation exercise is required.

> **Recommendation 19:** Guarantee the consistency of statistics on redistribution and inequality over time by developing and disseminating statistical registers, bringing together data that are additional to those provided by the management databases alone, in particular for the study of wealth.

I.5.d. The Broader the Scope, the More Necessary Imputations Become

The usual scope of monetary redistribution, which extends as far as household disposable income, is a pivot point common to both microeconomic analysis and the accounting approach, with a few different conventions. As we have already pointed out,

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23 See box 2 "43% of the 1% of households with very high income are also in the top 1% of wealthiest households" in (Cazenave-Lacrouts, 2018).

as the concept that comes closest to the households' perception of "arbitrable" income, it forms the basis for the usual calculation of inequality in standards of living.

If we wish to broaden this scope, the public transfers that are to be added to the analysis are not, strictly speaking, monetary payments with a redistributive purpose. They correspond to services provided by the public sector, qualified by national accounting as transfers in kind, such as expenditure on education or the allocation of reimbursements from the health branch of Social Security. They do actually perform transfers between different categories of the population, such as by standard of living band, as well as by age bracket or social and professional categories.

The information required in order to place a monetary value on these transfers to households is not always available. As a result, statistical imputations should be carried out in order to finely distribute these transfers. Generally speaking, the further the expenditure deviates from the usual scope of monetary redistribution, the less informative the existing data. In order to achieve full comprehensiveness, additional assumptions are required when compared with the usual work carried out, which makes all of these studies all the more complementary. As a result, the distribution of taxes on products requires data to be gathered on consumer expenditure, distributed, for example, by pseudo-matching with the family budget survey. Similarly, health expenditure benefits in kind are allocated to households by requesting health insurance reimbursement data.

A second category of estimates relies on microeconomic information from tax and social security databases in order to distribute income and transfers. These are, on the one hand, education expenditure, which is based on the family composition of households and, on the other hand, business-related income and taxes, which are based on the professional income of households. They are, by their very structure, less precise than if they had been directly present within the databases or matched, but the micro-founded estimate provides the best possible accuracy with regard to existing work and data.

Finally, a third type of transfer requires more direct imputations, such as non-individualizable collective expenditure or taxes on production. To ensure the proper interpretation of the results, it is important that the conventions used are clearly described, that the sensitivity of the results is documented and that intermediate data are produced to allow the user to test their own assumptions.

II. Ensuring the Consistency of Micro and Macroeconomic Approaches

The first part of this report was dedicated to clarifying the conceptual framework of distributional accounting, which involves the classification of households according to their income and identifying the transfers they receive or contribute to. It stressed the importance of adopting a comprehensive approach to transfers in order to achieve a coherent view of redistribution.

However, redistribution measures are generally based on microeconomic data that only cover a part of income and transfers. Therefore, in order to achieve the objective of exhaustiveness, we propose starting with the broadest scope, i.e. the macroeconomic aggregates of national accounting, and to make use of the various sources of microeconomic data to distribute them, while looking to fill in the missing information. In other words, identifying these differences in scope assumes that the components of national income will be distributed "row by row".

This is the purpose of this second part, which aims to reconcile the microeconomic and macroeconomic approaches to the study of redistribution by means of a method that distributes 100% of national income based as closely as possible on the practices of social statistics and microeconomic studies. Having established the general framework (II.1), the various components of national income are reviewed, starting with disposable income (II.2), the keystone of microeconomic data, followed by adjusted disposable income, i.e. including individualizable collective consumption expenditure such as health and education (II.3), before studying other transfers such as taxes on production and products, followed by non-individualizable public expenditure (II.4). A final section (II.5) then focuses on specific issues relating to the extremes of distribution, very high and very low incomes.

II.1. General Framework

This section presents the conventions proposed by the working group that will allow all income and transfers that make up national income to be distributed to households.

II.1.a. Usable Sources of Information

In order to distribute national income in its entirety, it is necessary to begin with two main sources: on the one hand, there is national accounting data, which are summarised in a table of integrated economic accounts (TIEA), to which are added further outflows from national accounting and, on the other hand, there are various sources of information that micro-found the distribution of income and transfers (see **Recommendation 18**).

The TIEA is based on an international framework of conventions, which allows the exercise to be replicated in other countries. Additional sources may be derived from national accounting satellite accounts, or even taken from the sources used to establish the TIEA. They can be adapted in each country according to the information available. The more detailed the information, the more robust the microeconomic foundations. The TIEA is arranged in institutional sectors (S), non-financial corporations (S11), financial corporations (S12), public authorities (S13), households (S14) and non-profit institutions (S15). In this report, we also make use of the distribution operations identified in the national accounts by the letter D (for example D1 for employee remuneration) and the rows referring to balances associated with the letter B (such as B5n for NNI, which is equal to the balance of net primary income for the various sectors).

Although the national accounts offer a unified and comprehensive framework in line with UN standards, the same cannot be said for microeconomic data. Nevertheless, numerous national initiatives are moving in this direction. In France, for example, the Tax and Social Revenue Survey (ERFS) brings together socio-demographic information from the Labour Force Survey, administrative information from the CNAF, CNAV and CCMSA, and details of income declared to the tax authorities for the purposes of calculating income tax. The ERFS is based on a sample of approximately 50,000 households, which is equivalent to 130,000 individuals and representative of the population living in ordinary housing in metropolitan France. Detailed documentation of the model exists, including in particular deviations from external targets, in terms of both the number of households affected and the total transfers simulated.

The INES[24] open-source microsimulation model draws upon ERFS data in order to microsimulate French social and fiscal legislation. Other databases are also used to allow for the sound simulation of a large number of transfers[25]. This model allows disposable income to be calculated on the basis of labour income and replacement income (unemployment benefits and pensions) by applying the legislation governing social and fiscal transfers (taxes, contributions, benefits and minimum social security benefits). It simulates the majority of direct social and fiscal deductions – social security contributions, the Generalised Social Contribution (CSG), the Social Debt Repayment Contribution (CRDS), income tax, the solidarity tax on wealth/tax on real estate assets (ISF/IFI), payroll tax, etc. – and indirect social and fiscal deductions – VAT, domestic

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24 See https://www.insee.fr/fr/information/2021951 for a brief description and https://adullact.net/projects/ines-libre for more details.

25 The model also makes use of data from INSEE's family budget survey, wealth survey and housing survey, as well as DGFiP data on housing tax and the solidarity tax on wealth.

duty on consumption of energy products (TICPE), excise duty – and social security benefits – housing benefits, main minimum social security benefits, employment incentive, family benefits, grants and certain allocated benefits (supplementary universal healthcare coverage (CMUC), supplementary health insurance (ACS) voucher, access and benefit sharing (APA)). The diversity of the variables from the Labour Force Survey that are integrated into the ERFS allows for the fine simulation of socio-fiscal transfers, particularly:

- social security benefits at the bottom end of the distribution, thanks to variables on housing, family situation and the infra-annual employment calendar;

- social security contributions, thanks to employment status (public or private) or hours worked and other corporate deductions based on the company's payroll, thanks to the link between the household and the company in which the individual works, where applicable.

Thanks to its representativeness and the richness of the transfers that it is able to simulate, the INES model forms the basis for the exercise involving the distribution of national income and its components by stratum, which is described below. For this exercise, the data used in the model as inputs are those from the 2016 ERFS, which will allow for the simulation of the various transfers that took place in 2016, the year to which these studies relate.

Other methods can be used to overcome certain shortcomings, in particular to measure the income of the top hundredths and thousandths in detail. Like the data on which the model is based, the simulations concern a particular field, that of ordinary households in metropolitan France (see Section II.5.b). Its sampling does not allow for accurate results beyond the vigintiles in the case of variables with a continuous basis, such as income or wealth, the concentration of which is very high in the uppermost bands. We therefore supplement the ERFS data with comprehensive administrative sources, Garbinti *et al.* (2018) in order to obtain the distribution of income within the final tenth. The FILOSOFI system could also be used in future studies for certain income or transfers at the top end of the distribution (see II.5.a).

It should also be noted that it would not have been possible to use the ERFS to carry out the entirety of the national income distribution exercise. Although the survey is well-suited to the fine measurement of disposable income, direct taxes and benefits-in-kind received, unlike the INES model, it does not allow for an understanding of the distribution of deductions, such as contributions or indirect taxes. In order to retain the same central source, in so far as is possible (see **Recommendation 16**), the distributions on which this report is based are based on the outputs of the INES model.

Finally, the INES model offers the advantage of producing more recent results than the ERFS thanks to recalibration and ageing. When used for its usual purpose, INES makes use of the ERFS for a given year, N, and simulates the transfers for year N+2 by "ageing" the incomes by two years based on aggregated auxiliary information from other sources, and by recalibrating the socio-demographic structure to that of year N+2 in order to reflect the structure and incomes of the population in year N+2. In order to perform this exercise, the INES model has been modified to ensure that the year for which the legislation is being simulated corresponds to the year of the ERFS database

being used. The working group encourages the use of these *nowcasting* methods (see Fontaine and Sicsic (2015)), which are possible with INES-type models, in order to ensure the best match with the publication schedules of the national accounts.

> **Recommendation 20**: Wherever possible, make use of early estimation methods for the present (*nowcasting*) in order to match the dissemination of distributional accounts with that of the national accounts.

II.1.b. From Principles to Practice

The general logic consists of distributing, by standard of living band, the total amounts in billions of euros shown in the rows of the table of integrated economic accounts, in accordance with the proportions estimated by the INES model and the tax data. As was the case with **Recommendation 3** and **Recommendation 5**, the classification variable is household disposable income per consumption unit, i.e. the standard of living of the households, and the tenths are tenths of individuals (the total population is divided into ten equal parts), while the top end of the distribution is divided into twentieths, hundredths and thousandths.

In order to facilitate the definition of reproducible standards, the working group endeavoured to establish a general nomenclature, while adopting a comprehensive overview and a systematic declination. Each income or transfer item in this table is indicated by a DNA.X nomenclature, where X is the row within the complete table. The labour income row (DNA.3.1), for example, is structured as follows:

- Net wages amounted to 712 billion euros in the TIEA in 2016;

- The net wages of the first standard of living tenth in INES correspond to 1.1% of the total net wages, those of the second tenth correspond to 3.4%, through to 25.8% for the final tenth;

- By multiplying the total amount by these distribution coefficients, it is possible to estimate the total amount received by each tenth: the first tenth received 8 billion euros in net wages, the second 24 billion euros, etc.

The broad aggregates of the table of integrated economic accounts are then calculated in the same way for each standard of living band, adding up each of the sub-categories where applicable. This operation does not just apply to household income and transfers, but also to those imputed to other institutional sectors and not usually allocated to households in national accounting, such as retained earnings.

This general method offers several advantages. Firstly, it makes it possible to compensate for the imperfection inherent in surveys or microsimulation models, in which the total of each simulated transfer, deduction or benefit, never matches the amounts in the national accounts to the nearest euro. In general, corrective coefficients are applied in order to perform the recalibration, which works on the assumption that the difference between the simulated amounts and the real amounts is distributed in the

same way. In particular, if the scope of the data source or microsimulation model is limited, the assumption is made that the out-of-scope profile is identical to the data source or microsimulation model (see the discussion in Section II.5.c). Distributional accounting, however, calls for the out-of-scope data to be limited as far as possible by establishing a distributional profile for wider standard of living components that are not usually included.

Secondly, the method can be rolled out to other data or models, such as those with a larger sample size or data from different sources. Although the method used for the DINA exercise in France (Garbinti *et al*, 2018) makes use of different sources and imputations, it produces similar results to those obtained using the INES microsimulation model described in this report.

However, this approach allows for the mixing of different sources in the case of fragmented information within a single source. Indeed, it is preferable to favour a single "core" that brings together as much statistical information as possible on the same households. The underlying correlation between socio-demographic variables (age, family type, employment status, etc.), income and transfer categories, which are primarily based on income and family configuration conditions, is therefore preserved. This approach minimises the imputation assumptions and the statistical matching processes required in order to distribute all of the transfers. In particular, the correlation between wealth distribution and the position on the income scale is often country-specific and difficult to impute if it is not measured. Having all income in a single database, including that associated with wealth and capital stock, ideally arranged by type of asset, is the best way to distribute the most concentrated aggregates, such as retained earnings (RE, see Section 0).

Finally, the approach is modular in the sense that the transparency of its assumptions allows it to be adjusted, transfer by transfer, depending on the country in which it is being applied or even the categories of transfers involved. For example, collective expenditure (see Section II.4) may be distributed uniformly or in proportion to a specific income category, or even in accordance with methods that use information on the actual or potential beneficiaries of the associated public services, and such assumptions can easily be modified. A country that does not have such fine data sources available can adopt profiles taken from the literature, an external database or even another country. In this sense, it allows international comparisons to be made by enabling the application of reasoning such as "what would the redistributive profile of country A look like if it had the same distribution of transfers in kind according to standard of living as country B?" (see Section I.4.d).

These virtuous properties are thanks in particular to the fact that all of the calculations of the various distributions of income and transfers are established with a fixed classification of individuals, in this case according to their standard of living, defined as disposable income per consumption unit. We will therefore begin our exercise of distributing the rows of the table of integrated economic accounts with this notion of disposable income.

II.2. Household Disposable Income

Let us recall at this point the reasons why the working group identified disposable income as a good candidate to form the backbone of distributional accounting (without excluding other approaches, see Section I.2). This quantity is the one that comes closest to the "monetary" income available to households each year: it does not include non-monetary transfers in kind, but does include deferred or replacement income. It is for that very reason that the concept of income is used to define income poverty or to measure actual inequality. It is a concept that is common to both the microeconomic and accounting approaches.

The concept of disposable income in social statistics differs from gross disposable income in national accounting in a number of respects, such as the inclusion of rents (actual and imputed) in the latter and not in the former and the inclusion of housing allowances in the former and not in the latter. In order to reduce this gap, INSEE regularly publishes estimates of the standard of living in social data, which include, as an alternative, an estimate by stratum of imputed rents; in order to complete this reconciliation, it would be appropriate to re-examine the SNA's decision to link housing allowances to transfers in kind, since their amounts depend on an expenditure in the form of rent paid, but, *a contrario*, they are actually paid in cash in the form of benefits, in the same way as minimum social security benefits.

With this in mind, this section describes the various stages of the distribution of the components making up disposable income (DNA.B), starting with the primary income of households and sole proprietorships (II.a), followed by a review of the various deductions, as well as secondary income resulting from public transfers (II.b), before ending with disposable income itself (II.c).

II.2.a. Household Primary Income

The distribution of primary income in the S14 account is made up of two components. The first part corresponds to the wage income of S14.D1, distributed according to the sum of gross wages (DNA.11) and contributions (DNA.7). The information required in order to estimate the distribution can be found in the ERFS data and the INES model. The net salary is taken from tax returns, which are one of the sources for the ERFS data. It is not simulated by the INES model, but is observed within the ERFS.

Next, both employee and employer contributions are finely simulated by the INES model using information available from the Labour Force Survey, another source used by the ERFS. They take account in particular of the characteristics involved in the calculation of exemptions (public/private, hours worked, remuneration amount, etc.). All of the different rates for old age, sickness, family and unemployment benefit contributions are well integrated in the INES model.

	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P95	P99	P99.9
Billion euros	1,183	13	39	59	77	97	113	133	158	190	302	188	59	12
Thousand euros per CU	25.7	2.9	8.9	12.7	16.4	21.1	24.9	29.2	34.3	40.8	64.6	100	140	265

Sources: prototype distributed national accounts for 2016, authors' calculations.
Reading note: in 2016, the wages of the wealthiest 10% amounted to 13 billion euros and 2,900 euros per consumption unit.

The second part is made up of net mixed income and wealth (DNA.2, namely the sum of the net mixed income of self-employed persons, including autoentrepreneurs (DNA.2.1), net property income (DNA.2.2) and actual rents paid and imputed by owners net of depreciation (DNA.2.3).

All of these types of income are present in the ERFS data and are recovered within INES in the same way as labour income (administrative tax sources matched to ERFS households). A specific module for the production of the ERFS allows for the estimation of imputed rents on the basis of actual rents and dwelling characteristics (number of rooms, type of dwelling, surface area, etc.). These are the variables that are carried over to the households in the INES model.

Figure 15: Distribution of mixed income and wealth (16% of NNI)

	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P95	P99	P99.9
Billion euros	300	8	9	13	15	16	19	22	28	42	126	99	49	14
Thousand euros per CU	6.5	1.8	1.9	2.8	3.2	3.6	4.3	4.9	6.2	9.0	27.0	52.5	117	305

Sources: prototype distributed national accounts for 2016, authors' calculations.
Reading note: in 2016, the mixed income and wealth of the wealthiest 10% amounted to 126 billion euros, i.e. 27,000 euros per consumption unit.

II.2.b. Monetary Transfers and Secondary Incomes

The following four sections describe the breakdown of transfers that allow net disposable income (DNA.B) to be established on the basis of income from labour and capital factors (DNA.A). This relates, on the one hand, to deductions corresponding to taxes on income and wealth, as well as social security contributions and, on the other hand, monetary benefits and allowances and other transfers.

Taxes on Income and Wealth (DNA.6)

They correspond to the S11+S12+S14.D5 accounts of the TIEA. Composed primarily of the Generalised Social Contribution (DNA.6.1), income tax (DNA.6.2) and housing tax (DNA.6.4), these deductions are distributed on the basis of the INES model and in accordance with the general logic of the table.

Income tax is simulated within the INES model on the basis of the tax cells present in the ERFS, which are derived from administrative data. The majority of tax credits and reductions are simulated in this way. The same is true of the Generalised Social

Contribution and other social security contributions. Housing tax is not simulated, but is present within the ERFS data during matching with the tax data.

Corporate tax (DNA.6.3 is distributed in the same way as retained earnings in the absence of reconciliation between the data at the level of households and companies (see below). The remainder (DNA.6.5) is distributed at this stage in the same way as the other deductions and may be distributed on the basis of the INES model in the future (the Social Debt Repayment Contribution and solidarity tax on wealth in particular).

Figure 16: Distribution of taxes on income and wealth (15% of NNI)

	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P95	P99	P99.9
Billion euros	-277	-2	-4	-7	-10	-12	-16	-20	-27	-40	-138	-109	-61	-24
Thousand euros per CU	-6.0	-0.5	-0.9	-1.4	-2.1	-2.7	-3.4	-4.4	-5.9	-8.7	-29.6	-58.1	-144	-510

Sources: prototype distributed national accounts for 2016, authors' calculations.
Reading note: in 2016, the wealthiest 10% paid 138 billion euros in taxes on income and wealth, i.e. 29,600 euros per CU.

Social Security Contributions (DNA.7)

Social security contributions correspond to account S14.D61 in the TIEA and their distribution also follows the overall logic of the table. As a result, pension contributions (DNA.7.1), sickness contributions (DNA.7.2), family contributions (DNA.7.3) and unemployment contributions (NDA.7.4) are based on the distribution obtained by the INES model thanks to the richness of the Labour Force Survey variables and, in particular, the reconstitution of an infra-annual employment calendar.

The profile of contributions for additional organisations (DNA.7.5) is obtained from the INES-OMAR model developed by DREES.

Figure 17: Distribution of social security contributions (25% of NNI)

	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P95	P99	P99.9
Billion euros	-471	-5	-15	-23	-30	-38	-45	-54	-64	-78	-119	-75	-22	-4
Thousand euros per CU	-10.2	-1.2	-3.5	-4.9	-6.4	-8.3	-9.9	-11.8	-14.0	-16.7	-25.4	-39.7	-52.9	-77.2

Sources: prototype distributed national accounts for 2016, authors' calculations.
Reading note: in 2016, the wealthiest 10% paid 119 billion euros in social security contributions, i.e. 25,400 euros per CU.

Monetary Benefits and Allowances (DNA.8)

Likewise, the transfers of S14, D62 (DNA.8.1 to DNA.8.6) are obtained thanks to the INES model: retirement pensions, unemployment benefits, family benefits, minimum social security benefits and disability pensions. Deferred income from pensions, unemployment benefits and disability benefits is declared income, upstream of the INES model. This is not simulated, but obtained from the ERFS databases. Conversely, family benefits and minimum social security benefits are simulated on the basis of the socio-demographic characteristics, incomes and social scales within the legislation. They could be read out directly from the ERFS database, but the INES model

simulations appear to more closely match the aggregate accounting amounts.

Pending further calculations, daily allowances and compensation for accidents at work (CND.8.7) are distributed in the same way as other benefits. The reimbursements paid by additional organisations are distributed to them using the INES-OMAR model.

Figure 18: Distribution of monetary benefits and allowances (26% of NNI)

	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P95	P99	P99.9
Billion euros	486	25	35	41	46	45	47	50	54	63	80	41	8	1
Thousand euros per CU	10.6	5.6	8.0	8.7	9.7	9.8	10.3	11.1	11.8	13.5	17.1	22.0	20.1	20.5

Sources: prototype distributed national accounts for 2016, authors' calculations.
Reading note: in 2016, the poorest 10% received 25 billion euros in benefits in kind, i.e. 5,600 euros per CU.

Other Transfers (DNA.9)

In order to arrive at net household disposable income (S14.B6n), the other transfers (S14.D7) still need to be distributed, particularly the other current transfers paid by households (-26 billion in 2016, made up of fines, fees, permits and payments to non-resident households), and income from public authority property (S13.D4) to be paid to households (26 billion in 2016). Since these represent small amounts relative to the other transfers (less than 1% of NNI), the distribution assumption for these adjustments has little effect on the results. The suggested prototype distributes the amount of these evenly for the other current transfers and retains the mix of benefits and deductions in row DNA.4.2 for DNA.9.2. Other assumptions could be adopted, which would not change the redistribution patterns.

II.2.c   Distribution of Disposable Income by Standard of Living Tenth

Disposable income, formed in this manner, displays a ratio of 1 to 8.3 between the standard of living of the wealthiest 10% (72,900 euros per CU) and that of the poorest 10% (8,800 euros per CU).

Figure 19: Distribution of net disposable income (including RE, 70% of NNI)

	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P95	P99	P99.9
Billion euros	1,320	40	64	83	97	108	119	132	152	184	341	231	97	32
Disp. income per CU	28.7	8.8	14.3	17.9	20.7	23.4	26.0	29.0	33.0	39.4	72.9	123	229	676

Sources: prototype distributed national accounts for 2016, authors' calculations.
Reading note: in 2016, the wealthiest 10% had a net disposable income, including RE, of 341 billion euros, i.e. 72,900 euros per CU.

Based on much more significant primary inequality (1 to 22 for wages and 1 to 15 for mixed income and wealth), these gaps are reduced by taxes on income and wealth and social security contributions (1 to 60 and 1 to 21, respectively), as well as social security benefits paid in cash (including pensions and unemployment benefits), which amount to 5,600 euros per consumption unit for the poorest 10% and 17,100 euros for the wealthiest 10%.

II.3. Household Net Adjusted Disposable Income

In national accounting, adjusted disposable income is a quantity that is deducted from disposable income by adding public transfers in kind. These are valued by means of public collective consumption expenditure, referred to as "individualizable", such as health, education and even housing.

Health Expenditure

The distribution of health expenditure presents a significant challenge, due to the high level of reimbursement expenditure (€176 billion in 2016, i.e. 9% of NNI) as well as the degree to which health care systems are public depending on the country in question.

The French health insurance system is divided between compulsory health insurance (AMO, 78% of consumption of medical care and products (CBSM)) and supplementary health insurance (AMC, 13.4% of CBSM), as per Gonzalez *et al.* (2019) Contributions for compulsory health insurance are based on income, while the rate of reimbursement differs according to the type of care or patient. In addition, assistance such as supplementary universal healthcare coverage (CMUC) and supplementary health insurance (ACS) are aimed at the poorest households. The poorest households may have poorer health, implying that the healthcare profile varies with standard of living. This has the potential to have a significant impact on income, and it is important that any such impact is measured accurately.

The INES-OMAR[26] model allows health expenditure to be broken down and finely distributed to households. Developed and maintained by DREES, it is based on the Health, Health Care and Insurance Survey (ESPS) (IRDES, DREES). This database provides a representative sample of households in ordinary housing in metropolitan France and contains socio-demographic information (income, health status and type of supplementary coverage). The survey is matched with administrative data regarding health insurance reimbursements (National Health Insurance Fund (CNAM), National Health Data System (SNDS)), which provide expenditure presented for reimbursement and AMO reimbursements. The model is based on the survey regarding the most popular contracts with supplementary health insurance organisations (DREES), which provides cover broken down by type of care, as well as the amount of the premiums and the number of beneficiaries. Health expenditure data are taken from the 2017 version of the OMAR model.

This provisional version of the INES-OMAR 2017 model is primarily based on the 2017 Statistics on Income and Living Conditions (SILC), a representative sample of households in ordinary housing in metropolitan France, which contains a great deal of socio-demographic information, including income and type of supplementary cover. Health expenditure is imputed on the basis of the ESPS-EHIS 2014 matched to the SNDS and covers the scope of individualizable services presented for reimbursement in the community and in healthcare establishments (public and private hospitals,

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26 A presentation was given by the Bureau of National Health Insurance and the DREES studies on health expenditure in September 2019, for which more precise information is available.

medicine/surgery/obstetrics, psychiatry, follow-up and rehabilitation, home-based care), excluding welfare. The premiums and reimbursements for supplementary insurance are taken from the survey of the most popular contracts taken out with supplementary insurers in 2016. Therefore, the distribution of expenditure by standard of living tenth relates to 2014, while the distributions of contributions and reimbursements for supplementary health care correspond to 2016.

These studies allow AMO expenditure to be distributed according to standard of living (DNA.10.1). This model also allows for the distribution of contributions and reimbursements from supplementary health care organisations (DNA.7.5 and DNA.8.6, respectively).

The resulting profile of reimbursed expenditure decreases slightly overall on the basis of standard of living (see Figure 20 below), with this effect being amplified when hospital reimbursements for long-term psychiatric stays (PSY), home-based care (HAD) and follow-up and rehabilitation care (SSR) are included. The aim here is not to provide an interpretation of welfare, but to provide a breakdown of public transfers according to standard of living.

Education and Higher Education

The other main type of individualizable transfers in kind is education expenditure (€101 billion, 5% of NNI). This relates to primary and secondary education on the one hand and higher education on the other hand.

There is little data available that would allow this educational expenditure to be compared with the standard of living of households. To the best of our knowledge, there is no model that simulates educational benefits at the microeconomic level.

The general principle applied for the distribution of educational expenditure is to establish an educational benefit for each child within a household, the value of which is linked to the level and nature of the education they are receiving. The more detailed the data on children's education, the more precise this method proves to be. As a minimum, children's ages can be used to differentiate between primary, secondary and higher education.

In practice, this involves using data on pupil and student numbers that are considered homogeneous in terms of educational costs and then multiplying them by the average costs found in the education accounts. For the prototype distributed national accounts referred to in this report, two types of calculation are made, one for primary and secondary schooling and the other for higher education.

As regards primary and secondary education, the age and number of children in the ERFS data is used to assign a per-child cost to each household where applicable (taking the average cost per level – primary and secondary – according to the education account). This then allows costs to be distributed by standard of living tenth by aggregating the data for all households in each band.

Two different situations exist for students.

- If they are cohabiting (i.e. living in the same household as their parents),

higher education expenditure is allocated to the household to which they belong;

- If they are not cohabiting, the usual scope of monetary redistribution excludes households in which the reference person is a student (see Section II.5.b). Furthermore, the studies carried out on the basis of the ENRJ survey by INSEE and DREES have shown that it is inappropriate to consider them as separate households in their own right. They would then be considered as having no income, even though they receive private transfers and are mainly from the wealthiest households. Therefore, at this preliminary stage of the prototype distributed accounts, the population of non-cohabiting students, and therefore the related expenditure, is distributed by standard of living tenth, as per the ENRJ survey.

The average cost per student is assumed to be the same across all types of higher education, so no distinction is made between universities, preparatory classes and technological courses. There is considerable room for improvement in this respect by making this distinction of average cost in accordance with the education account and by making use of the variables from the Labour Force Survey.

Educational expenditure is then aggregated by standard of living band by adding together the amounts obtained in this manner for primary, secondary and higher education. The profile obtained for educational expenditure is redistributive and decreases from 14% for the first tenth to 9% for the final tenth. This effect is based on the demographic profile and the composition of the families within the tenths.

Social Welfare and Other Cultural and Associative Activities

These two entries in account D63 are less important and represent €63 billion (3% of NNI) and €38 billion (2% of NNI), respectively. The first, which includes in particular the care package received in retirement homes or long-term care units, the childcare supplement (CMG) and non-profit medico-social accommodation is therefore distributed as a weighted average between the transfers simulated in INES (APA and CMG) in the absence of additional data, and the missing amounts are distributed as family benefits (with a redistributive profile). Non-profit cultural and associative activities, which include in particular sporting, creative, artistic and performing arts activities, are uniformly distributed (i.e. 10% for each tenth).

Housing

The final type of individualizable social transfers in kind is housing expenditure (€16 billion, 1% of NNI). This relates to housing allowances paid to households that are renting their property and are dependent on household income, geographical area and partly on the cost of the rent. The amounts of the allowances are simulated in the INES model based on information present in the ERFS. Like the principle adopted for the other transfers in the table, accounting expenditure is distributed according to the simulated profile, which is heavily concentrated on the first standard of living tenths.

Distribution of net adjusted disposable income

Finally, adjusted disposable income stood at 37,200 euros in 2016 and ranged from 20,800 euros for the 10% of people with the lowest standard of living to 79,400 euros for the wealthiest 10%, 236,000 euros for the top 1% of the distribution and 682,000 for the top thousandth (*top 0.1%*).

Benefits in kind demonstrate a decreasing profile. They increase within the first standard of living tenth (compared with the top tenth), amounting to 4,200 euros per consumption unit for health (compared with 3,300), 3,100 euros for education (compared with 2,000), 2,200 for social welfare (compared with 400) and 1,600 euros for housing (compared with 0).

Figure 20: Distribution of net adjusted disposable income (incl. RE, 91% of NNI)

	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P95	P99	P99.9
Billion euros	1,714	94	116	129	139	145	155	164	185	216	372	247	100	32
Adjusted disposable income (thousand euros/CU)	37.2	20.8	26.0	27.7	29.6	31.4	33.9	36.0	40.1	46.3	79.4	131	236	682
Of which disposable income	28.7	8.8	14.3	17.9	20.7	23.4	26.0	29.0	33.0	39.4	72.9	123	229	676
Health	3.8	4.2	4.7	4.2	4.2	3.7	3.8	3.0	3.6	3.7	3.3			
Education	2.2	3.1	2.7	2.3	2.0	2.1	1.9	1.9	1.9	1.9	2.0			
Social welfare	1.4	2.2	2.4	1.9	1.6	1.3	1.3	1.2	0.9	0.5	0.4			
Housing	0.4	1.6	1.0	0.5	0.2	0.1	0.1	0	0	0	0			

Sources: prototype distributed national accounts for 2016, authors' calculations.
Reading note: in 2016, the adjusted disposable income, including RE, of the wealthiest 10% amounted to 372 billion euros (79,400 euros per consumption unit).

II.4. Other Components of National Income

We have so far detailed the income that the national accounts attribute directly to the household sector, as well as individual consumption expenditure by the public authorities (also attributed to households by means of the concept of adjusted disposable income). This income does not cover national income in its entirety: the remaining fraction is assigned to the public authorities, to companies and to non-profit corporations.

One of the most interesting things about national income is that it is the income indicator most directly linked to GDP, which is the most commented on aggregate in national accounting. Indeed, the following equation can be written:

NNI = GDP – fixed capital consumption + net income from the rest of the world

In order to calculate net national income on the basis of GDP, one must first subtract fixed capital consumption (i.e. capital depreciation). We have previously

provided justification for measuring income net of capital depreciation, and we continue to follow that principle here.

The net income from the rest of the world (RoW) must then be added, i.e. the income produced in France but held abroad must be subtracted and the income produced abroad but held in France must be added. French GDP amounted to 2,234 billion euros in 2016. In comparison, net national income was 1,881 billion euros. In order to get from one to the other, 400 billion euros of fixed capital consumption are subtracted and 48 billion euros of net income from the rest of the world are added.

Therefore, in order to establish the distribution of national income before transfers by standard of living stratum, account must be taken of the following value added components, which are added to the primary income of households:

- Taxes on production and consumption (300 billion euros) and the net operating surplus and net property income of the public authorities (-26 billion euros)

- Net primary income of companies (124 billion euros, 55 billion of which are paid in corporate income tax).

Finally, the distribution of national income after transfers is deducted from that of disposable income by adding the following, stratum by stratum:

- Gross collective consumption expenditure of FCC (183 billion euros).

- Net savings of the public authorities (-60 billion euros).

With the exception of corporate income (financial and non-financial corporate sectors)[27], these items fall under the public authorities sector and are discussed in the following section.

II.4.a. The Public Authorities Sector

National accounting adds the primary income of public authorities to the primary income of households or the private sector. Indeed, part of their value added to market prices is constituted in resources by levies on production and products and in uses by means of production subsidies (see the detailed discussion in Section III.1.d). In national accounting, factor income is established by deducting taxes on production and products from the value added to the market prices. In distributional accounting, the opposite reasoning is applied: the distributional profile of value added is established by adding a distributional profile of taxes on products and production, which is simulated on the basis of tax incidence assumptions (essentially the assumption of proportionality to

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27 In the interests of simplicity, we are including the primary income of non-profit institutions (very small) in primary corporate income here. Public authorities receive a primary income that is primarily made up of taxes on production and consumption, net of the production subsidies that they pay.

consumption, see below) to the distributional profile of factor income, which is observed.

The distribution of income in the public authorities sector is broken down into two stages. These resources are calculated within the scope of the TIEA distribution operations, within rows D2 and D3. Each of the available deductions is distributed by standard of living group, following the distribution observed in the INES model data as far as is possible. As regards VAT, TICPE and excise duties, these are distributed as observed consumption (see the discussion in Section II.4.a). The remainder is distributed as the total of the rest.

In addition, the property income paid out and the net operating surplus (NOS) of the public authorities must be distributed before the NNI can be calculated. They are distributed as an average of deductions paid and benefits received. It is this distribution by standard of living group, and in particular of levies on production and consumption, that allows us to obtain a breakdown of income before transfers.

Finally, as is the case for the balance of income between resident and non-resident households (see below), it would, strictly speaking, be necessary to draw a distinction between taxes paid by non-residents, particularly VAT paid by tourists, and which may vary from one country to the next.

The public authorities have a primary income of 274 billion euros, of which -26 billion is net operating surplus and net property income of the public authorities. The bulk of this aggregate (300 billion) is comprised of taxes on products and production (minus subsidies, i.e. D2-D3): primarily VAT, but also property tax or payroll tax. The total of 300 billion is then equal to the sum of each of the deductions, both in terms of the aggregate amount and for each standard of living group. This gives the row, marked as DNA.4, for the primary income of the public authorities:

Figure 21: Distribution of the primary income of the public authorities (16% of NNI)

	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P95	P99	P99.9
Billion euros	274	16	18	20	22	25	27	29	32	38	50	31	11	3
Thousand euros per CU	6.0	3.5	4.0	4.4	4.7	5.4	5.8	6.3	6.8	8.1	10.6			

Sources: prototype distributed national accounts for 2016, authors' calculations.
Reading Note: The primary income of the public authorities amounts to 274 billion euros, 16 billion of which are received by the first standard of living tenth, with 50 billion being received by the wealthiest 10%.

Taxes on Production and Consumption

According to national accounting conventions, taxes on consumption are included in a separate institutional sector of consumption and goods and services, and not an income that is subtracted from household income after tax, as would be the case for a direct tax.

Two discussions are needed on the subject of the integration of product taxes, and therefore of VAT, in distributional accounting. On the one hand, which data form the basis for the distribution of these taxes and is this based on income or consumption? This is the subject of the following paragraphs, the outcome having been presented

earlier in the table in Figure 21. On the other hand, how can the amounts deducted in the form of consumption taxes be integrated into a national income that may be valued at basic prices or market prices? Section III.1.d details the associated challenges.

As regards the first aspect, the question can be rephrased as: what is the distributional impact of a change in prices following a change to VAT? There are two possible responses to this question. The first consists of stating that the reduction in prices benefits everyone: the nominal reduction in income is borne by the public authorities, while the fall in the deflator increases income for all. As a result, the impact on the distribution of incomes is neutral and the VAT is to be distributed proportionally.

Alvaredo *et al.* (2016) adopts this first approach as a reference assumption: taxes on production are distributed in proportion to factor income (labour and capital), with the exception of those with a clearly identified taxable base (for example property tax, which is distributed in proportion to rental income, both actual and imputed). This solution has the benefit of being simple and not especially demanding in terms of the data required.

The second approach that we take involves stating that the reduction in prices primarily benefits consumers (since VAT generally excludes capital goods) and distributing VAT in proportion to consumption. This second solution offers the advantage of being consistent with the standard approaches, which interpret VAT as a consumption tax.

If VAT is allocated on the basis of consumption, it is desirable to take account of the way in which the effective VAT rate varies according to the basket of consumer goods, which will itself vary depending on income. It should be noted that, if we were to follow this logic to its logical conclusion, we would have to systematically distribute inflation differently to individuals, even though this difference is, in principle, of secondary importance. This is possible in theory, but, as was demonstrated in the study by Jaravel (2019), would require highly detailed data in order to be performed to a satisfactory level.

Recent studies by INSEE on the redistributive effects of an increase in VAT make use of consumption data gathered by the family budget survey. André and Biotteau (2019) make use of the INES model and its indirect taxation module in order to integrate the delayed effects of a price increase following an increase in VAT. This approach allows for a detailed breakdown of changes in income and transfers, particularly social security benefits.

As part of a study into inequality in Europe, Blanchet, Chancel and Gethin (2018) tested a number of alternative hypotheses and found that, at the European level, distributing taxes on products in proportion to consumption changes the share of income held by the richest 10% by around 2 to 3 percentage points, without having any significant impact on the trend. Distributing VAT in proportion to consumption makes the poorest people pay more tax in proportion to their income. This has the effect of reducing inequality in income before tax. Since income after tax is not affected, this also has the effect of rendering the tax system less progressive overall.

However, studies of this type rely on microeconomic data that are not always available. As was demonstrated by the studies by Blasco, Guillaud and Zemmour (2020)

on international data, the share of income consumed varies across the income distribution scale: 100% for D1 compared with 50% for D10. Based on a distributional model of household consumption, these studies suggest that it is not necessary to know the basket of goods consumed by households based on their income in order to capture the most significant part of the redistributive effect of VAT. They demonstrate that the differences between countries are primarily explained by variations in the average VAT rates applied.

In the prototype distributed national accounts proposed by the working group, VAT and TICPE are distributed by means of the indirect taxation module of the INES model (André, Biotteau and Duval (2016)). The distribution is therefore based on consumption data taken from INSEE's Family Budget Survey, which have been statistically matched to the ERFS data (DNA.5.1 and DNA.5.2).

In addition, property tax on built properties (TFPB) is distributed according to preliminary studies carried out within INSEE's studies department (DNA.5.3). Other taxes (DNA.5.4) adopt the profile of the previous ones in the absence of available additional information.

Other Primary Incomes

The other component making up the primary income of the public authorities (-26 billion) is property income of the public authorities (D4). This component is generally negative, as it includes the payment of interest on national debt (41.5 billion in 2016).

What role does this component play in the distribution of income? At the aggregated level, the impact of interest on debt is relatively neutral with regard to national income, since it is primarily a transfer between the public authorities sector and the households sector. From a distributional point of view, this relative neutrality disappears. Indeed, the entire community pays interest, but it benefits the – generally wealthy and non-resident – households that hold (most often indirectly) the debt securities. The convention in DINA (Alvaredo *et al.*, 2016) is to allocate this income proportionally to factor income. However, since the distribution of debt securities is generally less equal than that of income, the payment of interest on debt increases inequality and there may be justification for distributing it more than proportionally. Nevertheless, given the amounts involved, the impact of any particular assumption is small.

In practice, there is also a small, but not non-existent component referred to as net operating surplus of the public authorities. The convention in national accounting is to consider the net operating surplus of the public authorities to be zero. This convention was adopted because it is impossible to directly ascertain the market price of government activities, which are, by definition, carried out at prices that are not economically significant. Nevertheless, some public authority activities are still carried out in a market setting, for example when local authorities engage in market production in connection with transport, water or sanitation, which contributes to their non-zero net operating surplus. The contribution that this element makes to the primary income of the public authorities is negligible in practice.

In the prototype distributed national accounts proposed by the working group, this component of primary income is distributed as the average between benefits and deductions (DNA.4.2). The property income of the public authorities (14.8 billion in 2016) could also be distributed differently, for example in accordance with the contributory capacity of households as measured by net savings. As regards the debt burden, it might be more accurate to separate out interest paid in the rest of the world in order to distribute this differently to the interest paid by resident households.

Collective Consumption Expenditure

In 2016, the collective consumption expenditure of the public authorities amounted to 183 billion euros (gross FCC accounts). This component includes expenditure such as defence, police, justice and the operation of the government. The distribution of this expenditure raises more conceptual issues than that of individualizable consumption expenditure (see Section III.2.b).

At this stage, the suggested approaches remain exploratory. There is no consensus on the issue, nor have there been any research studies that we are aware of that explore this in detail. Two polar normative assumptions can be considered: flat-rate distribution or distribution in proportion to income.

Flat rate distribution suggests that each individual benefits equally from collective consumption expenditure: it therefore has a strong equalising effect on the distribution of income after transfers. Conversely, proportional distribution considers public goods to be neutral from the point of view of distribution. The latter approach can be interpreted as a service rendered in proportion to income[28].

Is it possible to refine these two approaches using microfounded methods? One option explored in this report involves valuing public services according to their geographical accessibility. The territorial distribution of expenditure by the public authorities can be used for this purpose. In particular, it is possible to know how the civil service payroll is distributed across the national territory, and to use that data to modulate the distribution of collective consumption expenditure. This approach raises some questions, and it is certainly more appropriate for some types of expenditure (such as the police) than others (such as government operating expenditure).

All of these approaches are still preliminary. There is no doubt that it is desirable at this stage to test several hypotheses in a simple and transparent manner to see the extent to which they affect inequality levels and trends. This could allow for a better understanding of how public consumption expenditure affects citizens differently.

The average salary of government and local authority employees is calculated for each living area (department, living zone, etc.). This average expenditure is then allocated to each household in the INES model and then averaged by standard of living tenth (DNA.11.1 and DNA.11.2). It is notable that, in spite of marked geographical

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28 Taking this logic further, a specific approach for certain items of expenditure, such as for the national policing budget, one of the missions of which is to protect property, would consist of distributing them in proportion to the value of that property, i.e. to the wealth. That would have the effect of making such expenditure anti-redistributive. This goes beyond the scope of a distributional accounting exercise without substantially changing its overall results.

disparities, the distribution obtained is close to the uniform distribution[29].

Figure 22: Distribution of collective expenditure (16% of NNI)

	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10		P99	P99.9
Billion euros	183	23	21	19	18	17	16	17	17	17	17			
Geographically microfounded method *	4.0	5.1	4.7	4.0	3.9	3.7	3.6	3.8	3.7	3.7	3.7			
Flat rate method *	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Proportional method *	4.0	2.5	3.0	3.1	3.3	3.4	3.7	3.9	4.2	4.8	7.9		23.3	66.8

Sources: prototype distributed national accounts for 2016, authors' calculations. (*) thousand euros/CU
Reading note: in 2016, collective expenditure represented 183 billion euros, 23 billion of which was for the poorest 10%, i.e. 5,100 euros per CU.

Net Savings of Public Authorities

The gross savings of the public authorities (B8g, 14.6 billion euros in 2016) corresponds to the difference between their revenue and their expenditure, excluding investment expenditure. The net savings of the public authorities (B8n) is equal to the gross savings minus fixed capital consumption (FCC), which measures the investments that will need to be made in order to reconstitute the capital (in this case, public assets). Negative net savings means that the primary balance of the public authorities (revenue minus current expenditure) is not sufficient to maintain public assets at the same level.

This net savings balance of the public authorities must be included if you are looking to ensure that income after transfers is equal to national income. Otherwise, the underinvestment by the public authorities would result in the economy as a whole being richer after transfers than before transfers. This negative balance only represents a small proportion of total transfers, so the impact of the imputation assumptions is limited.

Alvaredo *et al.* (2016) allocate the balance of transfers, which can be considered as a deficit or surplus of fixed capital investment capacity[30], at 50% in proportion to taxes and 50% in proportion to allowances and transfers in kind. This choice is based on the idea that, in the absence of provisions governing the way in which a deficit is to be remedied, the assumption that this will be achieved through a combination of increased deductions and reduced benefits is the most likely. A neutral approach to redistribution could also be based on proportional distribution. In the prototype distributed national accounts proposed by the working group, the net savings of the public authorities is distributed as the average between deductions and benefits

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29 In the prototype distributed national accounts proposed by the working group, the distribution of collective expenditure is based on the ERFS data for each department. An identical study was carried out on the basis of the DADS administrative data by disaggregating the total salaries paid to government employees to the households in each department. The profile obtained by further aggregating by tenths of households is similar to that obtained with the ERFS. Robustness studies have shown that the distribution by tenths is also similar when carried out at the level of living zones, departments or prefectural districts.

30 The deficit within the meaning of the Maastricht criteria regarding imbalance in public accounts is shown in B9NF in the TIEA (79.1 billion in 2016).

(DNA.13.1).

II.4.b. Corporate Income and Retained Earnings

The business sector has 124 billion euros in net primary income. Companies pay 55 billion euros in corporate income tax on that income. Net of corporate income tax, this represents 3% of national income (69 billion). There are several reasons why it is of interest to distribute any income beyond that amount to households. Firstly, this income forms part of the national income; it must therefore be distributed to allow for an understanding of how the wealth produced is used and distributed among the population.

Secondly, the boundary between the household sector and the corporate sector is porous. Some tax incentives may result in corporate income remaining within the companies or even being redistributed to shareholders without bringing about any change in the standard of living of the individuals concerned. One of the best examples of this is the 1986 tax reform in the United States. In the United States, the owner of a company can choose between two legal forms: *S-corporations* and *C-corporations*. Large companies tend to choose to be *C-corporations*. This means that they are subject to corporate income tax. They can pay dividends to shareholders, which are then subject to federal income tax. Small companies generally choose to be *S-corporations*. In this case, they are not subject to corporate income tax. Instead, the profit made by these companies is directly included in the taxable income of their owners, who must pay federal income tax. There are many reasons why a company would choose one legal form over another. However, for marginal companies, it is mainly a question of tax arbitrage. The 1986 tax reform brought the marginal income tax rate to below the corporate income tax rate. As a result, many business owners have been prompted to change the legal form of their companies from *C-corporations* to *S-corporations*. During the two years that followed, a large amount of capital income appeared in the tax statistics as a result of this change. This brought about a significant increase in inequality with regard to taxable income during those two years. A change of this nature in the corresponding series is the result of a legal change without economic significance and is therefore not desirable.

One of the objectives pursued by Piketty, Saez and Zucman (2018) was to correct for these effects by taking account of the retained earnings of companies. More recently, in 2005, Norway underwent a similar reform. Alstadsæter *et al.* (2016) performed a detailed analysis of the impact of this reform on inequality, taking advantage of the highly detailed administrative data available in Norway. They show that, around the time of the reform, significant breaks are seen in the series concerning the level of inequality (share of the richest 0.1%) and mobility at the top end of the distribution (probability of remaining in the richest 0.1% from one year to the next). By allocating retained earnings to the individuals who own the corresponding companies, these effects disappear. In France, Boissel and Matray (2019) demonstrate that, in response to an increase in taxes on dividends for some firms, those firms have significantly reduced their dividends, but only a fraction of the additional savings are actually used for further investment.

Thirdly, where companies retain their profits rather than redistributing them, they

increase their assets, which mechanically contributes to increasing the company's value. This increase in the value of the company constitutes an unrealised gain for its owners. This increases their wealth and therefore constitutes income in the Hicksian sense of the word. It should be noted at this point that national income in the sense of national accounting does not directly include capital gains. Although they are of interest, these capital gains are highly volatile and difficult to measure, and their inclusion in inequality statistics raises a number of challenges (see Robbins (2018) for a discussion regarding the situation in the United States). The price of the assets can vary massively in the short term, sometimes without any real reason. The retained earnings of companies are more stable in comparison. Their inclusion makes it possible to take account of an important structural factor in the increase in the value of companies without having to deal with variations in market prices, which are often erratic and excessive.

Fourthly, it is desirable to take these profits into account if corporate income tax is also to be included in the redistribution analysis. Corporate income tax constitutes a significant part of the taxation of capital within the economy. It is also a tax that is largely paid by the wealthiest people. Excluding corporate income tax from the redistribution analysis would result in the progressiveness of the tax system being underestimated. However, it would not be consistent to make individuals pay this tax without also assigning the income on which the tax is paid to those same individuals.

A distinction must be made between two issues underlying the distribution of retained earnings. On the one hand is the issue of knowing who to assign these profits to. On the other hand is the issue of knowing how to perform this distribution in practice, given the limitations of the data. As regards the first issue, the consensus seems to be that these profits should be distributed to the owners of the companies in question (see also Section II.5.2). One aspect that has been raised involves knowing whether it is desirable to distribute the retained earnings in their entirety. Indeed, the tax arbitrage effects discussed above with regard to the taxation of companies and dividends must be observed at the margin. In other words, it could be considered that part of the cash flow of companies is treated by shareholders as part of their own income, while the rest is considered as belonging more fundamentally to the company. Following this principle, only the first aggregate would be attributed to individuals. In practice, distinguishing between these two aggregates raises significant technical and conceptual difficulties. Moreover, it is not uncommon for the retained earnings of companies (following the payment of corporate income tax) to be close to zero (or even negative in extreme cases), which suggests that the aggregate to be distributed is largely dominant. Finally, this raises the question as to what happens to the aggregate that is not distributed. As things stand, it is more simple and more direct to distribute retained earnings in their entirety.

As regards the second question, a number of issues have been raised. In an ideal world, it would be possible to link individuals' tax revenues with the accounts of the companies they own (see Alstadsæter *et al*. (2016) for such a case in Norway). The data do not currently allow for such a degree of precision. Alvaredo *et al*. (2016) distribute these profits in proportion to the value of the shares held in companies (directly or indirectly). However, these company shares are themselves imputed on the basis of the dividends received (due to the use of the capitalisation method, Saez et Zucman (2016)). In practice, retained earnings are therefore imputed in proportion to distributed profits, i.e. the dividends received by households in the ERFS data of the INES model.

Figure 23: Distribution of retained earnings net of corporate income tax (2% of NNI)

	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P95	P99	P99.9
Billion euros	44	0	0	0	0	0	1	1	2	4	35	31	22	11
Thousand euros per CU	1.0	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.5	0.8	7.4	16.7	53.2	239.1

Sources: prototype distributed national accounts for 2016, authors' calculations.
Reading note: in 2016, retained earnings net of corporate income tax amounted to 44 billion euros, 35 billion of which were paid out to the wealthiest 10% (7,400 euros per CU).

Without making any claim that such an assumption is systematic at the individual level, the question surrounds the extent to which it provides plausible distribution results. The main effect of this is that corporate ownership is highly concentrated, which results in these retained earnings making up a large share of the profits of the wealthiest people. It would be worthwhile exploring this issue in the future and seeing whether improved data would allow it to be handled in a more satisfactory manner.

Another issue concerns the allocation of capital depreciation to individuals. The calculation of this depreciation in national accounting is based on conventions that are sometimes arbitrary, and that are not always directly comparable from one country to the next. By distributing the *net* primary income of companies directly to individuals, it is implicitly assumed that the overall depreciation rate applies uniformly to all companies. It would be desirable to explore opportunities for improvement here too. However, this would require precise data on companies' balance sheets.

Alvaredo *et al*. (2016) also take account of the fact that, in certain countries at least, the public authorities hold a significant share in national companies. A fraction of the retained earnings is therefore allocated to the government and handled in the same way as government property income from a distributional point of view. This fraction is calculated on the basis of the proportion of shares owned by households and the public authorities within the wealth accounts. In France, it is therefore estimated that 25% of retained earnings can be allocated to the public authorities. The corresponding income is therefore reallocated to them and is handled similarly to the property income of the public authorities.

This is a case of distributing national corporate income to "national households", in other words there may be a balance between resident households when it comes to corporate savings (shares owned by non-resident households on the one hand and shares owned abroad on the other hand). This amounts, for example, to allocating retained earnings from foreign pension funds that are to be paid out to non-residents to resident households. Likewise, this convention fails to take account of the fact that French households hold shares in non-resident companies, either directly or *via* investments. For a country like France, this framework is a priori relatively neutral, but for other countries, such as Ireland, this convention must be interpreted with caution.

In order to develop international accounting conventions that are suitable for all situations, it is therefore necessary to allocate to the rest of the world the retained earnings of companies according to the national economy that they fall under. Conversely, the retained earnings from abroad must also be repatriated and distributed to resident households. This only concerns portfolio investments in shares, since a D43

transaction imputes the property income associated with foreign direct investment (FDI).

Assuming that the profitability of portfolio investments in shares is the same as the profitability of FDI[31], it is possible to deduce the imputed income related to portfolio investment stocks on the basis of data from Banque de France[32]. Therefore, in 2016, for the D43 transaction, the use of S2 = 14.2 billion corresponds to the imputed income for French households from retained earnings from FDI abroad; for the D43 transaction, the resource of S2 = 7.9 billion corresponds to the imputed income for foreign households of retained earnings from FDI in France. The imputed income for French households in connection with retained earnings from portfolio investments abroad therefore amounts to 5.7 billion euros and the imputed income for foreign households in connection with portfolio investments in France amounts to 8.1 billion euros.

This provides two options for taking account of this reality. The first method may consist of modifying the total distributed national income by adding the balance of retained earnings from the rest of the world (8.1 - 5.7 billion euros for France in 2016). However, the disadvantage of this is that it departs from the international accounting framework by relying on a new concept of national income. A second possibility could be based on a different distribution of retained earnings to be paid out to those to be received. Given the lack of available information and the negligible amounts involved in the case of France (0.1% of NNI), the prototype proposed does not specify the origin of ownership of retained earnings from portfolio investments of resident enterprises.

II.5. Extremities of Distribution and Precision

II.5.a. Very High Incomes

The inclusion of very high incomes raises specific methodological issues. These very high incomes can have a significant impact on the estimates of the concentration of distributions, particularly in countries with a high degree of inequality. However, the survey data that is traditionally used to measure the distribution of income often have difficulty in capturing these very high incomes correctly.

There can be a number of reasons for this. The first is linked to the limited size of the survey samples: therefore, the number of observations present within the wealthiest 5% or 1% is often not sufficient to obtain an adequately precise statistical analysis. It is even more true that income (and *a fortiori* wealth, which is more concentrated) has a thick distribution tail, which means that the empirical averages can become unstable from one year to the next. Surveys can also suffer from bias associated with the issue of

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31 The profitability of outward FDI (from France to abroad) is equal to the ratio of the D43 paid by the rest of the world to France and the stock of outward FDI. Likewise, the profitability of inward FDI (from abroad to France) is defined at the ratio of the D43 received by the rest of the world to the stock of inward FDI.

32 This information is provided by the document published by Banque de France in July each year, entitled "France's balance of payments and international investment position".

non-response, or reporting bias, which can result in the under-representation of the wealthiest people and the under-estimation of their income. A great deal of progress has been made recently with regard to this last aspect in some countries thanks to the integration of administrative data in household surveys. However, the situation remains much more problematic in other countries.

In order to counteract these limitations, INSEE uses comprehensive tax data to measure very high incomes (RFL system, then the FILOSOFI system, also making use of comprehensive social data) with effect from the 2012 incomes and each year publishes the share of declared income per consumption unit received by the wealthiest 1% of individuals.

Likewise, Alvaredo *et al.* (2016) primarily make use of tax sources that are statistically reconciled with survey data (ERFS, Wealth, etc.) to take account of income that is not included in the tax sources. In comparison, this report is primarily based on the ERFS, which forms the basis of the INES model. In practice, the differences between the results of this report and the results of the studies by Garbinti, Goupille-Lebret and Piketty (2018) and Bozio *et al.* (2018) are relatively small. This result can undoubtedly be attributed to the quality of the underlying survey data and the relatively low levels of inequality in France. It provides justification for allocating the top 5% of the distribution in the results of this report using tax data from the DINA project rather than the survey data.

Indeed, performing a breakdown beyond the richest 5% based on INES/IRFS data still remains problematic. In order to provide an overview of the role of the richest 1% and 0.1% with regard to inequality, we have chosen to make use of the comprehensive data from the DINA project and to combine them with the INES/ERFS data from this report as described below. The FILOSOFI system is a comprehensive matching of social and tax sources and may also allow the top end of the distribution of transfers to be supplemented. The share of the wealthiest 5%, 1% and 0.1% within the wealthiest 10% is estimated in the DINA data. These shares are applied to the wealthiest 10% as calculated in the INES/IRFS data. This allows the two sources to be combined to ensure the consistency of the resulting distributions.

In the future, it would be desirable to directly link the INES *open source* model with the comprehensive tax data by using them to improve the top end of the distribution and therefore directly obtaining the desired results. Although tax sources allow for a better measurement of the highest incomes and the deductions at the top end of the distribution, they do not include all of the information required in order to simulate social security benefits at the bottom end of the distribution, and the social security contributions and deductions across the distribution as a whole. Following on from the studies by Sicsic, Schmitt and Paquier (2019), reviews must be conducted into the proper measurement of the advantages and disadvantages of using tax sources and to test how best to reconcile ERFS and the INES model with the comprehensive sources.

There are several avenues to explore. In order to limit matching problems, particularly at the bottom end of the distribution, tax data may only be used at the top end of the distribution, for example by adequately concatenating the last tenth with the bottom 90% of the ERFS.

Recommendation 21: Directly link household data (survey or microsimulation model) to comprehensive tax sources in order to produce a breakdown of high incomes within the distributed national accounts.

II.5.b. Out-of-Scope Data: Low Incomes and France's Overseas Territories

The scope of dissemination of the ERFS on which the INES model is based is incomplete[33]. For reasons of survey method or statistical methodology, it actually excludes a fraction of the population resident in France where the poorest people are *a priori* over-represented. More precisely, of a resident population in France of 66.9 million in 2016, the scope of dissemination of the ERFS only covers 62.6 million or 93.5%.

The persons who fall outside of the scope of dissemination of the ERFS, i.e. around 4.2 million people (in 2016), are broken down as follows:

-   P0: 0.3 million living in Mayotte;
-   P1: 1.9 million residing in the overseas departments, excluding Mayotte[34];
-   P2: 1.4 million residing in households in metropolitan France in non-ordinary housing;
-   P3: 0.6 million residing in a household within the scope of the ERFS, but outside of the scope of dissemination;
    -   P3a: 0.5 million in a household where the reference person is a student;
    -   P3b: 0.1 million in a household that declares a negative income for taxes.

In particular, among those persons who are not living in ordinary housing (P2):

-   P2a: 375,000 young people between the ages of 18 and 24 whose habitual residence is communal accommodation (2014 figure);
-   P2b: around 80,000 are incarcerated;
-   P2c: around 140,000 are homeless (2012 INSEE figure);
-   P2d: around 700,000 are residing in residential care facilities for the elderly (2015 DREES figure).

Outside of the scope of dissemination of the ERFS, there is no estimate of household incomes and characteristics (wages, pensions, socio-demographic variables, etc.) that is as reliable and as detailed as the ERFS. Nevertheless, there are sources that

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33 The "ERFS field" refers to persons residing in metropolitan France in ordinary housing, i.e. excluding communal accommodation, mobile homes and makeshift housing (as defined by the population census). Within this framework, the "scope of dissemination of the ERFS" corresponds to the individuals living in a household in which (i) the income declared to the tax authorities is not negative and (ii) the reference person is not a student. In these two cases, the income indicated by the ERFS is considered to be a partial indicator of their actual resources, which justifies their exclusion from the disseminated standard of living statistics. This restriction excludes 0.6 million people.

34 However, due to the poor quality of administrative data in Guadaloupe and French Guyana, INSEE only disseminates data relating to metropolitan France, Martinique and Reunion.

allow some of the P0 to P3 populations to be placed on the standard of living scale and the impact that the restriction of this scope of dissemination has on the estimation of the distribution to be assessed:

- The FILOSOFI file provides coverage for persons residing in the overseas departments, excluding Mayotte (P1);

- The National Survey on the Resources of Young People (ENRJ) performed in late 2014 allows for the coverage of young adults (18 - 24 years) living in communal accommodation (P2a).

The resulting distribution covers around 65 million people, i.e. 97% of the population. If we assume that the distribution of standards of living observed in the ENRJ applies to the student households in the ERFS (P3a), we can add a coverage point.

The ENRJ measures the support that young adults receive from their parents and shows that it represents a very important element of the overall resources. The true distribution of standards of living must take account of this: it only brings about a small increase in the average standard of living (€72) to €23,271 (€23,580 within the scope of dissemination of the ERFS), but it results in 40% of the people living in a student household within the scope of the ERFS and 14% of young people living in collective housing being reclassified from the first tenth to higher tenths.

In addition, more than a quarter of people living in the overseas departments are in the first tenth.

There are no sources detailing the incomes of senior citizens living in the community. To allocate the average distribution of living standards to them would probably represent a heavily biased estimate. However, since this group only represents 1% of the population, the impact of this assumption regarding overall standard of living is very small. On the other hand, given the high health care costs involved, the absence of detailed information on their income may hamper redistribution analyses.

II.5.c. Information Regarding the Precision of Estimates

Due to the microfounded distribution method, the precision depends on the representativeness of the data used. The two previous sections detailed possible improvements to the scope of the usual household databases. However, even if incomes and transfers are present within the data, the estimates may also include coverage inaccuracies. For example, a microsimulation model may provide more or less precise aggregated results when compared with the accounting quantities it simulates. It is also recommended that information is provided regarding the coverage rates for the categories of income and transfers. This is calculated as the ratio between the amounts for which the distribution is microfounded on the basis of tax and social security data on the one hand and the corresponding national accounting aggregate on the other hand. **Erreur ! Source du renvoi introuvable.** annexed hereto details the precision of the estimates within the prototype DNA, together with various sources and methods used for the distribution of income and transfers.

III. Distributed National Accounts, a Tool for Measuring Expanded Redistribution

The previous section proposed a framework reconciling the micro and macroeconomic studies on the subject of redistribution. This comprehensive approach paves the way to the structuring of true "distributed national accounts", establishing, by standard of living band or according to other categories, the various components that make up national income, from primary income to transfers received and paid out. They make it possible to measure who benefits from and who contributes to public redistribution. In this sense, this framework complements the usual studies carried out into inequality and redistribution, which it is aiming to encompass rather than to replace.

Section III.1 builds upon the general principles for establishing accounts of this type, which may be synthesised, to act as a counterpart to the table of integrated economic accounts (TIEA) and in a table of integrated distributional accounts. It discusses the particularities associated with taking account of taxes on products and transfers linked to pension schemes. It then details the steps that make it possible to establish the distributions before transfers and after transfers, distributed by standard of living stratum, both overall and from a slightly narrower viewpoint by reducing the imputations (individualizable income).

Section III.2 applies these guidelines to France and the United States via an approach that is intended to be experimental at this stage. The aim is to shed light on the potential offered by distributed national accounts, both nationally and in international comparisons, as an appropriate framework for studying expanded redistribution, by comparing all transfers received, regardless of whether they are in monetary form or in kind, and the transfers paid that are used to finance them.

III.1. From the Table of Integrated Economic Accounts to the Table of Integrated Distributional Accounts

III.1.a. General Principles

Once the incomes and transfers have been allocated to households and distributed by standard of living band (part II), the table of integrated distributional accounts (TIDA) can then be defined, which is the counterpart to the table of integrated economic accounts (TIEA) in conventional national accounting.

The development of this table of integrated distributional accounts follows a two-step logic, which is shown in Figure 24. The first step is to establish conventions that assign the amounts from the various institutional sector accounts of the TIDA to households. In the second step, these incomes and transfers are distributed by micro founded bands, i.e. by standard of living tenth in the context of this report. The challenge posed by this step is its reliance on household or individual databases and the establishment of robust and consistent distribution methods. This has previously been described in Section II.2 et seqq.

Figure 24: Moving From the Table of Integrated Economic Accounts to the Table of Integrated Distributional Accounts

III.1.b. Allocation of the Income and Transfers Making up the TIEA to Households

The first stage consists, on the one hand, of allocating the income and transfers that belong to the other institutional sectors (S11, S12 and S15) in the tables of integrated economic accounts to households (S14 in the SNA) and, on the other hand, of merging the uses and resources components by subtracting the former from the latter. Therefore in the TIDA, the headings include a plus symbol for net resources (income and transfers received) and a minus symbol for transfers paid out (deductions).

The following two tables collate the accounting rules that allow this initial contraction of the TIEA to be performed.

A "DNA" (distributed national accounts) nomenclature has been established to facilitate comparisons. The capital letters indicate the different income concepts: DNA.A is income before transfers (NNIBT), DNA.A.fact is the labour and capital factor income, DNA.B is disposable income, DNA.C is adjusted disposable income and DNA.D is income after transfers (NNIAT), which has also been referred to as expanded income above.

The figures represent the rows in the table of integrated economic accounts in the order in which the economic accounts appear. However, while the production account, which, by its nature is not distributable by category, is at the top of the TIEA, the TIDA starts with the operating and allocation of primary income account. Income before transfers is calculated by adding the primary income of the public authorities (DNA.4), which is primarily comprised of taxes on products and production, to factor income – remuneration for labour (DNA.1), property (DNA.2) and retained corporate income (DNA.3).

Figure 25: Structure of the primary distribution account

DNA.1	Gross labour income	S14	D1
1.1	*of which net wages*	S14	D1 - D61
DNA.2	Net mixed income and income from wealth	S14	
2.1	*of which net mixed income*	S14	B3n
2.2	*of which net property income*	S14 net	D4
2.3	*of which actual and fictitious rents, net of charges*	S14	B2n
DNA.3	Corporate income and NPISHs gross before taxes	S11+S12+S15	B5n
3.1	*of which retained earnings net of corporate income tax*	S11+S12+S15	B5n-D5-D6-S7
3.2	*of which corporate income tax*	S11+S12	D5
3.3	*of which other corporate transfers (fraud)*	S11+S12 net	D6+D7
DNA.A.fact	Factor income (= 1+2+3)	S1	
DNA.4	Primary income of the public authorities	S13	
4.1	*Levies on production and consumption*	S13	D2+D3, res.
4.2	*Property income and net EBITDA (of which interest paid)*	S13 net	D4+EBEn
DNA.A A.def.	Net national income before transfers NNIBT (= 1+2+3+4) NNI before transfers including deferred income	S1	B5n

Since the key objective of this distributional accounting is to document the transfers performed by means of redistribution, the rows of the TIDA that relate to transfers are broken down into sub-headings, each identified by a second number (e.g. DNA.2.1 refers to the mixed income of the self-employed within the DNA.2 group). The working group recommends that a threshold be set of 2-5% of NNI, above which the subheadings are automatically displayed.

As with the TIEA, the sequence of accounts in the TIDA continues, from the top to the bottom of the table (Figure 26) with the secondary distribution of national income account. The deductions taken from primary incomes, i.e. taxes on income and wealth (DNA.6) and social security contributions (DNA.7) are subtracted. As has already been pointed out, since a single column is used to represent both resources and uses, where

the amounts appearing here relate to transfers paid out, they include a minus symbol.

Figure 26: Structure of the secondary distribution account

			D2+D3, res.
5	**Levies on production and consumption**	**S13**	
5.1	*of which VAT*	S13	D211
5.2	*of which TICPE and excise duties*	S13	D214
5.3	*of which TFPB and registration fees*	S13	D21, D292
5.4	*of which payroll taxes and other employer taxes*	S13	D291
5.5	*of which other taxes*	S13	D21
6	**Taxes on income and wealth**	**S14+S11+S12**	**D5**
6.1	*of which Generalised Social Contribution*	S14	
6.2	*of which income tax*	S14	
6.3	*of which corporate income tax*	S11+S12	
6.4	*of which housing tax*	S14	
6.5	*of which Social Debt Repayment Contribution, Solidarity and Autonomy Contribution, Solidarity Tax on Wealth, fees*	S14	
7	**Social security contributions**	**S14**	**D61**
7.1	*of which pensions*		
7.2	*of which sickness*		
7.3	*of which family*		
7.4	*of which unemployment*		
7.5	*of which specific welfare schemes*		
8	**Monetary benefits and allowances**	**S14**	**D62**
8.1	*of which pensions*		
8.2	*of which unemployment*		
8.3	*of which family*		
8.4	*of which poverty*		
8.5	*of which disability*		
8.6	*of which mutual*		
8.7	*of which daily allowances and compensation for accidents at work*		
9	**Other transfers**	**S13**	**D4 + B2n**
9.1	*of which other current transfers*	S14	D7
9.2	*Property income and net EBITDA (of which interest received by the public authorities)*	S13 net	D4+EBEn
B	**Net disposable income incl. RE (= A+5+6+7+8+9)**		
B.sna	Net disposable income excl. RE (A+5+6+7+8+9-5.1)	S14	B6n
B.BT	Disposable income before social security transfers		
10	**Individualizable social security transfers in kind**		**D63**
10.1	*of which health*		
10.2	*of which education*		
10.3	*of which social welfare*		
10.4	*of which cultural and associative activities*		
10.5	*of which housing*		
C	**Net adjusted disposable income incl. RE (= C+10)**		**B7n**
C.sna	Net adjusted disposable income excl. RE (C.2+10)	S14	B7n
C.BT	Individualizable income before transfers	S14	B6n
11	**Collective expenditure and FCC**	**S13**	**P32 net**
11.1	*of which general administration*		
11.2	*of which defence, police, justice*		
11.3	*of which others (dissemination of research)*		
12	**Net adjusted disposable income of other accounts**		
12.1	*of which net adjusted disposable income of NPISHs*	S15	B7n-B5n
12.2	*of which RoW Use-Resources balance (of which EU)*	S2	B6n-B5n
13	**Savings of public authorities**	**S13**	
13.1	*of which savings of public authorities net of FCC*	S13	B8n
D	**Net national income after transfers NNIAT (= D+11+12+13)**	**S1**	**B5n**

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The sequence continues with the recording of transfers received, grouped into the "monetary benefits and allowances" (DNA.8) and other transfers (DNA.9) categories to arrive at net disposable income (DNA.B). This concept of net disposable income differs slightly from that of household disposable income in the national accounts, in so far as it includes retained company earnings. Since the decision to consider retained earnings as household income has been the subject of debate, the working group has requested that figures be produced that correspond to the scope of the SNA, designated by DNA.B.sna in the nomenclature established by this report.

We arrive at income after transfers by applying a monetary value to non-monetary services rendered by the public authorities, which fall under the use of income account as collective consumption expenditure in the TIEA:

- individualizable public services, such as health, education and social welfare in particular, grouped together in the national accounts in the category of "individualizable social security transfers in kind" (DNA.10);

- other services provided by means of public policy, described in non-individualizable national accounts as security, justice, national defence and general administration expenditure in particular (DNA.11).

The first of these two steps results in the concept of net adjusted disposable income, which is well known to national accountants (in this case DNA.C or DNA.C.sna depending on whether or not retained earnings are included). The allocation of collective expenditure to households, together with the net adjusted disposable income of other sectors (DNA.12), gives the net national income after transfers (DNA.D).

Since all income is allocated to households, and as all of the transfers paid out balance out the transfers received, modulo the deficit, which is itself distributed (see above), there is indeed accounting equality at the aggregate level of all households, NNIBT = NNIAT = NNI.

III.1.c. Table of Integrated Distributional Accounts

As each of the rows in the TIEA can be distributed by standard of living, as described in the second part of this report, the accounting operations discussed in the previous section can be repeated for each household category. The equality of NNIBT = NNIAT = NNI is therefore no longer verified for each standard of living band, since these transfers take place between households, and it is by studying these very differences that the assessment of the redistribution of transfer systems emerges.

DNA	Categories	Sector	Account	Billion €	NNI (%)	Ines	P0-P100	P0-P10	P10-P20	P20-P30	P30-P40	P40-P50	P50-P60	P60-P70	P70-P80	P80-P90	P90-P100
							Distribution of primary income acount										
1	Gross labour income	S14	D1	1 183	63%		1 183	13	39	59	77	97	113	133	158	190	302
1.1	of which net wages	S14	D1 - D61	712	38%	625	712	8	24	37	47	59	68	79	94	112	183
2	Net mixed income and income from wealth	S14		300	16%	319	300	8	9	13	15	16	19	22	28	42	126
2.1	of which net mixed income	S14	B3n	108	6%	71	108	2	2	4	4	3	4	5	8	15	61
2.2	of which net property income	S14 net	D4	78	4%	101	78	2	1	2	2	3	4	6		10	44
2.3	of which actual and fictitious rents, net of charges	S14	B2n	114	6%	147	114	5	5	8	9	11	12	13	14	17	21
3	Corporate income and NPISHs gross before taxes	S11+S12+S15	B5n	124	7%		124	1	1	1	1	1	2	3	6	11	98
3.1	of which retained earnings net of corporate income tax	S11+S12+S15	B5n-D5-D6-S7	44	2%		44	0	0	0	0	0	1	1	2	4	35
3.2	of which corporate income tax	S11+S12	D5	55	3%		55	1	0	0	1	1	1	1	3	5	44
3.3	of which other corporate transfers (fraud)	S11+S12 net	D6+D7	25	1%		25	0	0	0	0	0	0	1	1	2	19
A.fact	Factor income (= 1+2+3)	S1		1 607	85%		1 607	23	49	73	93	115	135	158	192	242	526
4	Primary income of the public authorities	S13		274	15%		274	16	18	20	22	25	27	29	32	38	50
4.1	Levies on production and consumption	S13	D2+D3, ress	300	16%	194	300	17	19	22	24	27	29	31	34	41	55
4.2	Property income and net EBITDA (of which interest paid)	S13 net	D4+EBEn	-26	-1%		-26	-1	-2	-2	-2	-2	-2	-2	-3	-3	-6
A	Net national income before transfers NNIBT (= 1+2+3+4)	S1	B5n	1 881	100%		1 881	39	66	94	115	140	161	187	224	280	576
A.diff	NNI before transfers including deferred income			1 881			1 881	46	72	100	123	141	160	182	217	274	576
							Compte de distribution secondaire										
5	Levies on production and consumption	S13	D2+D3, ress	-300	-16%	-194	-300	-17	-19	-22	-24	-27	-29	-31	-34	-41	-55
5.1	of which VAT	S13	D211	-154	-8%	-101	-154	-9	-10	-11	-12	-14	-15	-16	-18	-21	-29
5.2	of which TICPE and excise duties	S13	D214	-44	-2%	-34	-44	-3	-4	-4	-4	-5	-5	-4	-5	-5	-5
5.3	of which TFPB and registration fees	S13	D21, D292	-32	-2%	-19	-32	-1	-1	-2	-2	-2	-3	-3	-4	-5	-8
5.4	of which payroll taxes and other employer taxes	S13	D291	-25	-1%	-28	-25	0	-1	-1	-1	-2	-2	-3	-3	-4	-7
5.5	of which other taxes	S13	D21	-44	-2%	-14	-44	-4	-4	-4	-4	-4	-4	-5	-5	-5	-6
6	Taxes on income and wealth	S14+S11+S12	D5	-277	-15%	-191	-277	-2	-4	-7	-10	-12	-16	-20	-27	-40	-138
6.1	of which Generalised Social Contribution	S14		-97	-5%	-85	-97	-1	-2	-4	-6	-7	-9	-10	-12	-15	-29
6.2	of which income tax	S14		-79	-4%	-71	-79	0	0	0	0	-1	-2	-4	-8	-13	-50
6.3	of which corporate income tax	S11+S12		-55	-3%		-55	-1	0	0	-1	-1	-1	-1	-3	-5	-44
6.4	of which housing tax	S14		-19	-1%	-16	-19	0	-1	-1	-1	-2	-2	-2	-3	-3	-4
6.5	Solidarity and Autonomy Contribution, Solidarity Tax on Wealth, fees	S14		-26	-1%	-19	-26	0	-1	-1	-1	-1	-2	-2	-2	-4	-12
7	Social security contributions	S14	D61	-471	-25%	396	-471	-5	-15	-23	-30	-38	-45	-54	-64	-78	-119
7.1	of which pensions			-262	-14%	230	-262	-3	-8	-12	-16	-21	-25	-31	-37	-44	-65
7.2	of which sickness			-125	-7%	103	-125	-1	-3	-5	-7	-10	-12	-14	-17	-21	-35
7.3	of which family			-30	-2%	27	-30	0	-1	-1	-2	-2	-3	-3	-4	-5	-10
7.4	of which unemployment			-22	-1%	35	-22	0	-1	-1	-2	-2	-2	-3	-3	-4	-5
7.5	of which specific welfare schemes			-32	-2%		-32	-1	-3	-3	-3	-3	-3	-4	-4	-4	-4
8	Monetary benefits and allowances	S14	D62	486	26%	386	486	25	35	41	46	45	47	50	54	63	80
8.1	of which pensions			315	17%	277	315	5	13	21	28	28	31	35	40	49	64
8.2	of which unemployment			43	2%	33	43	5	6	5	4	5	4	4	4	3	4
8.3	of which family			38	2%	22	38	7	7	5	4	4	3	3	2	1	1
8.4	of which poverty			17	1%	24	17	6	4	3	2	1	1	0	0	0	0
8.5	of which disability			19	1%	7	19	1	2	2	2	2	2	2	2	2	2
8.6	of which mutual			32	2%		32	1	3	3	3	3	4	4	4	4	4
8.7	of which daily allowances and compensation for accidents at work			22	1%	22	22	0	1	1	1	2	2	2	3	4	6
9	Other transfers	S13	D4 + B2n	0	0%		0	1	1	1	0	0	0	0	0	-1	-2
9.1	of which other current transfers	S14	D7	-26	-1%		-26	-1	-1	-1	-2	-2	-2	-3	-3	-4	-8
9.2	...e and net EBITDA (of which interest received by the public authorities)	S13 net	D4+EBEn	26	1%		26	1	2	2	2	2	2	2	3	3	6
B	Net disposable income incl. DNP (= A+5+6+7+8+9)			1 320	70%		1 320	40	64	83	97	108	119	132	152	184	341
B.sna	Net disposable income excl. DNP (A+5+6+7+8+9-5.1)	S14	B6n	1 276	68%		1 276	40	64	83	97	107	118	131	150	180	306
B.BT	Disposable income before social security transfers			1 276	68%		1 276	40	49	64	73	84	94	106	128	170	467
10	Individualisable social security transfers in kind		D63	394	21%		394	54	52	45	41	37	36	32	33	32	31
10.1	of which health			176	9%	176	176	19	21	20	20	17	17	14	17	17	16
10.2	of which education			101	5%	124	101	14	12	11	9	10	9	9	9	9	10
10.3	of which social welfare			63	3%		63	10	11	9	8	6	6	5	4	2	2
10.4	of which cultural and associative activities			38	2%		38	4	4	4	4	4	4	4	4	4	4
10.5	of which housing			16	1%	17	16	7	5	2	1	0	0	0	0	0	0
C	Net adjusted disposable income incl. DNP (= C+10)		B7n	1 714	91%		1 714	94	116	129	139	145	155	164	185	216	372
C.sna	Net adjusted disposable income excl. DNP (C.2+10)	S14	B7n	1 670	89%		1 670	94	116	129	138	144	154	163	183	212	337
C.BT	Individualisable income before transfers	S14	B6n	1 670	89%		1 670	53	65	84	98	113	126	143	173	228	587
11	Collective expenditure and FCC	S13	P32 net	183	10%		183	23	21	19	18	17	16	17	17	17	17
11.1	of which general administration			115	6%		115	14	13	12	11	11	10	11	11	11	11
11.2	of which defence, police, justice			56	3%		56	7	6	6	6	5	5	5	5	5	5
11.3	of which others (dissemination of research)			12	1%		12	2	1	1	1	1	1	1	1	1	1
12	Net adjusted disposable income of other accounts			44	2%		44	4	4	4	4	4	4	4	4	4	4
12.1	of which net adjusted disposable income of NPISHs	S15	B7n-B5n	-3	0%		-3	0	0	0	0	0	0	0	0	0	0
12.2	of which RoW Use-Resources balance (of which EU)	S2	B6n-B5n	47	3%		47	5	5	5	5	5	5	5	5	5	5
13	Savings of public authorities	S13	B8n	-60	-3%		-60	-3	-4	-4	-5	-5	-5	-6	-6	-7	-13
13.1	of which savings of public authorities net of FCC	S13	B8n	-60	-3%		-60	-3	-4	-4	-5	-5	-5	-6	-6	-7	-13
D	Net national income after transfers NNIAT (= D+11+12+13)	S1	B5n	1 881	100%		1 881	118	137	148	157	161	170	180	200	230	380

Figure 27: Table of French DNA, in billion euros (prototype)

From a material point of view, the table of integrated distributional accounts

(Figure 27) takes the form of a spreadsheet that integrates the amounts from the TIEA and the annexed accounts on the one hand, and the results of the estimates of the microeconomic breakdowns on the other hand (for France these primarily come from the ERFS and the INES model). The final structure therefore provides a fine distribution for all incomes and transfers that complements the work of the OECD (EG DNA) and the literature (INSEE's household category accounts and the DINA project). The complete prototype of the DNA for France is detailed in the following section.

In the spreadsheet file attached to the report and included at the end of the appendix, a third part of the table comprises the transfer account and the redistribution account. These rows contain the distributed aggregates from the main table. This involves bringing together the three main categories of deductions (taxes, levies and contributions) and the three main categories of benefits (monetary allowances, individualizable transfers in kind, collective expenditure). The transfer account therefore reproduces the main steps of the transition from the NNIBT (DNA.A) to the NNIAT (DNA.D) by "descending" from one to the other in a balanced manner, before and after transfers. For each type of income, the comparison of the effects by standard of living band indicates the redistribution performed at this stage of the breakdown of national income.

III.1.d. On the Subject of Taking Account of Taxes on Products

In national accounting, and therefore in distributional accounting, there are two consistent ways of handling taxes on products. The first consists of excluding them from the definition of income, in the same way as by focusing on net income rather than gross income, we have deducted capital depreciation from the income being studied.

While it may appear more intuitive, this approach actually poses three difficulties. Firstly, it integrates a very significant part of the current tax systems differently by excluding them from the concept of income used to measure redistribution, and therefore does not allow for a comprehensive analysis of the redistribution performed by the tax system. Secondly, all else being equal, it changes the relative income levels between countries depending on whether they use direct rather than indirect taxation to finance public expenditure. Thirdly, it results in a significant share of mandatory deductions being ignored and therefore the assertion that the public authorities distribute far more (in the form of transfers in kind and in cash) than they collect in taxes.

The second approach, which is the standard approach in national accounting, consists of considering the amounts of these taxes as forming part of national value added. In distributional accounting, it therefore involves adding their distribution to the distribution of factor income in the same way as payroll taxes[35], taxes on production, taxes on income and wealth and social security contributions and deductions.

The difference between these two approaches is purely accounts-based. The national accountant reconciles the two by introducing a distinction between values at acquisition prices (commonly referred to as market prices or prices including tax) and basic prices (prices excluding tax). More specifically, the value added for the institutional sectors is calculated at factor prices, i.e. deducted from the taxes on products. It is that value added at factor prices that pays for income from labour and capital, the replacement of worn-out equipment (depreciation), taxes on production, etc. In order to calculate value added at market prices (without deducting taxes on products), national accounting considers value added to also pay for taxes on products within an

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35 Payroll tax is a substitute for sectors not subject to VAT, such as banking or insurance institutions and certain self-employed professions.

ad-hoc institutional sector.

In any case, whether reasoning takes place with or without taxes, this does not change the redistribution performed by means of public transfers. To illustrate this, let us return to the mechanics of constructing distributional accounts. It involves starting with the observed individual data – disposable income – in order to establish two unobserved quantities, income before transfers – which tends to be close to market income in the absence of transfers – and income after transfers, which takes account of indirect transfers, both deductions and benefits.

If reasoning takes place including taxes on products, i.e. including all taxes, the income before transfers is equal to disposable income plus monetary benefits, taxes on income and wealth and social security deductions and contributions, as well as taxes on production and consumption (therefore including taxes on products). The income after transfers is equal to disposable income plus benefits in kind and collective expenditure. The difference between income before transfers and income after transfers is equal to the total benefits and collective expenditure, minus taxes on production and contributions (taxes on products are simplified in the calculation). If reasoning takes place in a similar manner, but excluding taxes on products, i.e. excluding tax, the difference between the income before transfers excluding tax and the income after transfers excluding tax is equal to all of the benefits received and deductions paid, with the exception of taxes on products, i.e. the difference before and after all taxes are included.

The table in Figure 28 provides a summary of this inclusion of taxes on products in the accounting framework depending on whether national income is valued at basic prices (after the deduction of taxes on products) or at market prices (including all taxes). The appendix on page 141 details the entries in each of the systems using a stylised example.

Figure 28: Accounting conventions at basic prices or market prices

Distributional accounting at market prices	Distributional accounting at basic prices
National income <u>before</u> transfers **at market prices**	
- Taxes on products	
	National income <u>before</u> transfers **at basic prices**
- Taxes on production	- Taxes on production
- Taxes on income and wealth	- Taxes on income and wealth
+ Monetary benefits and allowances	+ Monetary benefits and allowances
= Disposable income	*Disposable income*
	- Taxes on products
	= Disposable income at basic prices
+ Individualizable transfers in kind	+ Individualizable transfers in kind
+ Collective expenditure	+ Collective expenditure
National income <u>after</u> transfers **at market prices**	
- Taxes on products	
=	National income <u>after</u> transfers **at basic prices**

Notes: For the sake of simplicity, not all of the rows of the TIDA are included in this simplified breakdown.

If the effects of redistribution are not changed, what happens with income before and after tax? Let us look specifically at its main component, VAT. It is widely accepted

that the amount of VAT is largely reflected in prices. It is possible to justify this in terms of fiscal impact, but it can be seen more simply as an automatic effect.

Let us first follow the convention of measuring the value added at market prices (i.e. including VAT). If we follow this convention, GDP is directly equal to the sum of the value added. The value added of a company is measured as the difference between its production and its intermediate consumption. However, the value of a company's production is measured at its sale price, which includes VAT: a reduction in VAT therefore automatically brings about a reduction in prices. This has the effect of lowering nominal GDP. By contrast, GDP in volume terms is always calculated on the basis of prices prior to the VAT reduction and therefore remains unchanged. The reduction of VAT therefore results in a decrease in the nominal GDP without bringing about any change in GDP in volume terms: in other words, it lowers the GDP deflator. The framework of calculations at basic prices involves defining and calculating a deflator for prices excluding tax, for example where the changes in disposable income at basic prices over time are being studied. By definition, this indicator would correspond to the ratio of nominal GDP to real GDP, but evaluated at basic prices.

We reach the same conclusion if we reason according to basic prices, i.e. at the factor prices deducted from the taxes on products. In this case, GDP is equal to the sum of value added and taxes on products. By design, VAT is excluded from value added, so its mechanical impact in this regard is zero. A reduction in VAT therefore reduces the value of taxes on products without changing the value added, which reduces nominal GDP. How does this affect GDP in terms of volume? National accountants calculate the VAT amount by applying the prices and VAT rate prior to the reduction to the volumes after the reduction. In other words, the VAT reduction has no impact on GDP in terms of volume. The mechanical impact of VAT is once again seen only on the deflator, i.e. the prices.

Furthermore, international comparisons make use of purchasing power parities, which are calculated on the basis of prices with all taxes included. In order to make international comparisons on the basis of income at basic prices, the way in which these purchasing power parity coefficients are calculated must be changed accordingly.

To ensure that the rows of the TIDA do not need to be multiplied, for the sake of simplicity, and because it coincides with the national income figures usually put forward and used in international comparisons, the first option has been adopted within the scope of the prototype presented in this report. The breakdown of taxes on products and production into taxes on production and taxes on consumption allows for the simple calculation of either concept, at market prices or at basic prices.

III.1.e. Focus on the Redistributive Nature of Pension Schemes

Deferred income, and pensions in particular, merit special treatment. Since this is a benefit paid by public bodies, the most natural reflex is to treat it like other public benefits. However, this would result in their redistributive effects being grossly overestimated.

For purely illustrative purposes, let us consider the case of a society made up of

50% working people with an income of 2r, who contribute r for half of their lives, and 50% retired people who receive a pension of r for the other half of their lives. *A priori*, the system is not redistributive since each person only receives what they paid in.

However, in this case, the distribution is perfectly egalitarian (Gini indicator equal to zero) after the pension system takes effect, but highly unequal before (Gini indicator equal to 0.5). In other words, in this stylised example, this fictitious pension scheme, which is completely neutral from a redistributive point of view, would have a massive impact on inequality.

The complete opposite option is to extend the concept of market income to include deferred income from labour in addition to income from capital and labour; to clarify, this would involve considering pensions as market income rather than public income. The first approach greatly overestimates the impact of pension schemes, while the second ignores them completely. Going beyond this requires the specification of a counterfactual situation.

It is therefore noted that distributional accounting is not the best analysis framework for studying the redistributive effects of pension systems or social insurance systems in general. Indeed, by definition, these systems carry out redistribution over the life cycle, whereas we are studying inequality "in a cross section" (see Section I.5). All studies that look at inequality at a given point in time suffer the same problem.

However, it is still possible to make recommendations as to the best way to integrate the pension system into our estimates and to avoid excessive bias in the estimates of redistribution and income before and after tax.

There are two possible approaches in the first instance. The one outlined above favours the use of income before transfers, but also includes transfers linked to deferred income (contributions and benefits) as a reference point for measuring redistribution. This is equivalent to considering, as a first approximation, the pension system as being fully contributory rather than fully redistributive.

Another approach, which is not incompatible with the first, involves assuming that the income classes into which individuals have been classified (tenths, hundredths, etc.) are sufficiently homogeneous to allow the income of working people within these groups as a *proxy* for the reference income of pensioners, taking account of the average replacement rate. This could be a case of defining an income before transfers based on the assumption of a uniform average replacement rate and measuring redistribution by comparing it with actual pensions. With this assumption, if we take all precautions for the interpretation and as long as we do not reclassify individuals in order to measure redistribution, the measurement of redistribution is valid.

> **Recommendation 22:** Distributional accounting is ill-suited to measuring the redistributive impact of social insurance schemes that guarantee replacement income, particularly pensions. The general study of redistribution needs to distinguish between the effects of social insurance systems (which may be highly redistributive when looked at in cross-section, but not over time) and other transfers.
>
> **Recommendation 23:** Pension-related transactions can be taken into account, only on the condition that the sequencing of individuals remains unchanged throughout the transfer imputation process and subject to the interpretation precautions set out in **Recommendation 22**.

The ideal approach, but which goes beyond the scope of this report, would be to reconstitute a reference income by actual or statistical matching on the basis of socio-professional criteria and positioning as a counterfactual for income before transfers, a pension that is proportional to that income. This would make it possible to distinguish between the contributive and redistributive parts of the pension system in inequality statistics.

Based on a breakdown of the decline in inequality measured by means of the Gini index, the studies by Guillaud, Olckers and Zemmour (2019) separate amounts imputable to pensions and other transfers. For the majority of countries studied, the impact of pensions is comparable to that of taxes, but greater than that of other benefits. However, the considerable redistributive impact of pensions is not mechanical. Many public pension schemes offer replacement income that is proportional to wages, such that the households that earn more have larger pensions. Given the negative correlation between wage levels and life expectancy, there is nothing to suggest that pensions do not increase rather than reduce inequality. In addition, in all of the countries analysed, pensions are more evenly distributed than labour and capital income and therefore contribute to reducing inequality.

Similarly, a question arises as to whether or not unemployment insurance should be included in income before transfers. The recommendations made with regard to pensions are also largely valid for unemployment insurance. Unemployment insurance generally follows a contributory logic – in the sense that the benefits received are more or less proportional to the contributions made. Including it allows some of the impacts that unemployment has on equality to be corrected in the same way that including pensions corrects some of the effects associated with age. Since the working poor also face an increased risk of unemployment, it also introduces a form of redistribution. The DINA methodology ((Alvaredo *et al.*, 2016) therefore introduces two concepts of income before transfers: a broad definition that includes unemployment and retirement, and a narrow definition that only includes pensions. One of the reasons in favour of using the broad definition is access to data: the distinction between unemployment and retirement in the national accounts requires a very high level of detail that is not available in all countries. In practice, pensions constitute the main part of the social insurance system (17% of NNI compared with 2% for unemployment), so the

differences in the outcomes of the two concepts are limited.

III.1.f. Simplified Table of Integrated Distributional Accounts

In order to facilitate comparative analyses, the working group endeavoured to propose a simplified structure and nomenclature for the table of integrated distributional accounts, which takes the form of Figure 29. With a view to contributing to the production of international standards, a simple three-letter nomenclature has been established.

- The first letter refers to the nature of the income or transfer component (Ixx for income, Txx for tax, Bxx for benefits, Mxx for miscellaneous and WEA for wealth);

- and the two following letters relate to the nature of the income (BT for before transfers, DB for before transfers including deferred incomes, AT for after transfers), of the transfer paid (CP for consumption and production, IW for income and wealth, SI for social insurance), or received (IC for in cash, IK for in kind, CO for collective).

Figure 29: Structure of the simplified table of integrated distributional accounts

	All	D1	D2	…	D10	P100	M1000
IBT: Income Before Transfers							
IBD: IBT + deferred incomes							
TCP: Tax on Cons&Prod							
TIW: Tax on Inc. and Wealth							
TSI: Social Insurance							
BCA: Social Security Benefits in Cash							
IDI: Disposable Income							
BKI: Social Security Benefits in Kind							
BCO: Collective consumption							
MBT: Balance of Transfers							
IAT: After Transfer Income							
WEA: Net wealth							
	All	D1	D2	…	D10	P100	M1000

Sources: 2016 DNA table (TIEA and INES model), authors' calculations.
Notes: the amounts are expressed as a percentage of NNI (table identical to Figure 1).

III.2. Illustration: Prototypes for France and the United States

In order to enlighten the readers of the report with regard to the potentials and limitations of distributional accounting, the working group has endeavoured to implement the methods and recommendations put forward. This study, which has been conducted by INSEE on behalf of France and WIL on behalf of the United States has

led to the development of tables of integrated distributional accounts for both countries, which currently have prototype status. This section presents the results of this exploratory exercise for France (III.2.a, III.2.b, III.2.c) and the United States, and briefly revisits the question regarding the comparative redistributability of the two transfer systems (III.2.d), thereby resolving the apparent paradox that was partly behind the establishment of the working group that produced this report.

III.2.a. French Table of Integrated Distributional Accounts

To enable comparison with the United States, the results are presented in the form of the simplified table of integrated distributional accounts, as defined in III.1.f above. It differs from the one presented in the preliminary considerations of the report (Figure 1 included in the introduction on page 16) in that the figures are expressed as a percentage of net national income and not in billions of euros.

Figure 30: Simplified table of distributed national accounts in 2016 (France, % of NNI)
Sources: prototype distributed national accounts for 2016, authors' calculations.

	All	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P100	M1000
IBT: Income Before Transfers	**100.0**	**2.09**	**3.65**	**4.92**	**6.00**	**7.42**	**8.65**	**10.02**	**11.89**	**14.72**	**30.10**	**10.58**	**3.20**
IBD: IBT + deferred incomes	**100.0**	**2.48**	**3.97**	**5.25**	**6.39**	**7.50**	**8.56**	**9.79**	**11.51**	**14.40**	**30.08**	**10.10**	**3.11**
TCP: Tax on Cons&Prod	-16.0	-0.93	-1.07	-1.16	-1.26	-1.43	-1.54	-1.66	-1.82	-2.15	-2.89	-4.59	-7.52
TIW: Tax on Inc. and Wealth	-14.7	-0.12	-0.21	-0.35	-0.50	-0.66	-0.83	-1.07	-1.45	-2.12	-7.24	-3.52	-1.25
TSC: Social Security Contributions	-25.0	-0.29	-0.85	-1.19	-1.56	-2.02	-2.42	-2.89	-3.42	-4.08	-6.21	-1.29	-0.19
BCA: Social Security Benefits in Cash	25.9	1.36	1.95	2.14	2.38	2.40	2.51	2.70	2.89	3.30	4.17	0.49	0.05
IDI: Disposable Income	**70.2**	**2.15**	**3.51**	**4.39**	**5.07**	**5.71**	**6.36**	**7.10**	**8.07**	**9.64**	**17.83**	**5.59**	**1.65**
BKI: Social Security Benefits in Kind	21.0	2.93	2.86	2.39	2.16	1.96	1.93	1.71	1.76	1.70	1.60	0.18	0.02
BCO: Collective consumption	9.7	1.24	1.15	0.98	0.94	0.91	0.88	0.92	0.90	0.92	0.90	0.10	0.01
MBT: Balance of Transfers	-0.8	0.10	0.07	0.04	0.01	-0.01	-0.04	-0.07	-0.12	-0.19	-0.57	3.86	7.36
ATI: After Transfer Income	**100.0**	**6.37**	**7.54**	**7.77**	**8.17**	**8.57**	**9.13**	**9.68**	**10.62**	**12.09**	**19.87**	**5.82**	**1.67**
NWE: Net wealth	**573.2**	**6.4**	**12.7**	**16.2**	**20.7**	**27.6**	**35.5**	**44.9**	**57.0**	**80.1**	**266.8**	**51.2**	**11.8**
	All	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	P100	M1000

Reading note: the income before transfers (IBT) of the households in D10 amounts to 30.08% of national income (NNI) and the after transfer income (ATI) 19.87%. The deductions that they pay amount to -2.89% of NNI for taxes on consumption and production (TCP), 7.24% for taxes on income and wealth (TIW) and 6.21% for social security contributions (TSC). Those same households receive 4.17% of NNI in social security benefits in cash (BCA), 1.6% in benefits in kind and 0.90% in collective consumption expenditure (BCO).

The first row of this distributional table represents national income before transfers (IBT), which can also be referred to as expanded primary income. The wealthiest 10% receive 30.1% of national income, while the poorest 30% receive 10.7% of national income. The poorest 10% receive 2.1% of national income, which is a ratio of 1 to 14 when compared with the richest 10%.

At the other end of the table is income after transfers, both paid out and received,

and therefore including a monetary valuation of services rendered by the public authorities. In the broader sense, after redistribution, the wealthiest 10% receive 19.9% of national income compared with 6.4% for the 10% at the bottom end of the scale, which in this case equates to an inter-decile ratio of 3.

In the middle of the table, disposable income (IDI) is the point where the micro and macroeconomic analyses of household standards of living come together, for the reasons explained earlier, with retained earnings being considered as reinvested disposable income, which raises the top end of the scale somewhat. When calculated in this way, disposable income represents 70.2% of national income, with households in the first tenth benefiting from 3% (2.1/70.2) and those in D10 benefiting from 25% (17.8/70.2), which gives a ratio of 1 to 8.

III.2.b. Expanded Redistribution in France

If we now focus on redistribution within each household category, comparing the expanded incomes before and after transfers, it becomes clear that redistribution contributes 4.3 percentage points of NNI to the poorest 10% of households. For these households, net transfers contribute more to their standard of living than their primary income.

Figure 31: NNIBT and NNIAT on the basis of standard of living (France, 2016)
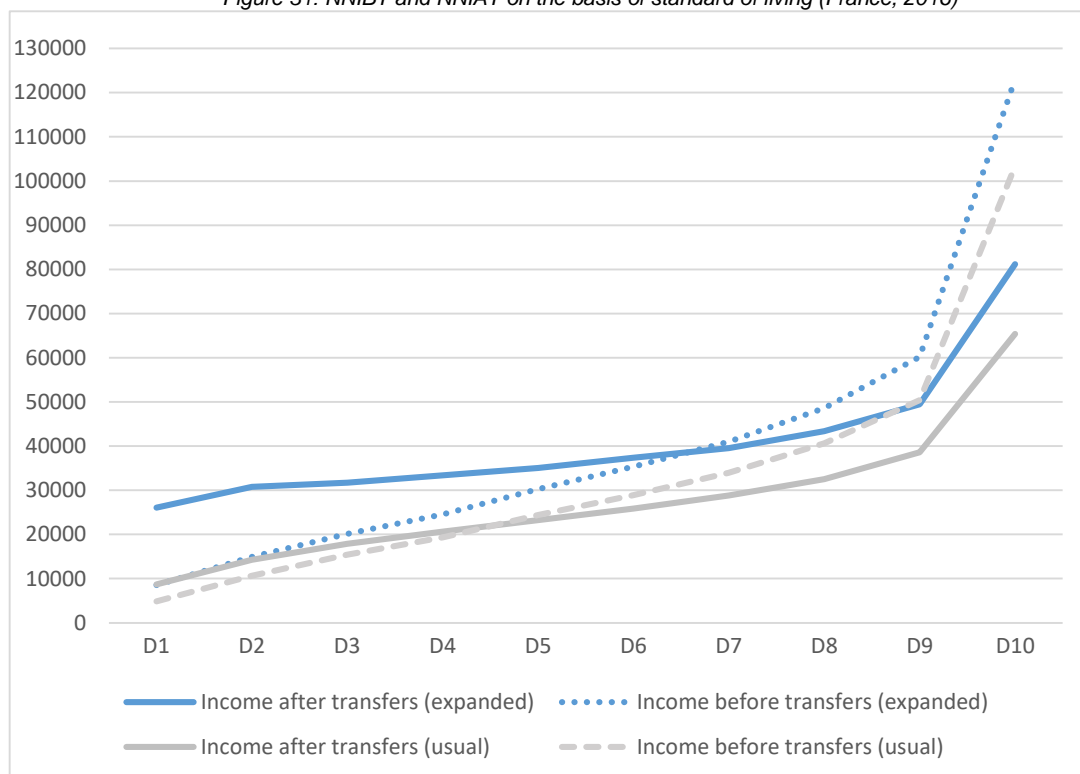
The decisive role of benefits in kind for these households should be noted:

according to the calculations in this report, they represent 2.9 NNI percentage points, or two-thirds of the net redistribution. This figure once again illustrates the importance of integrating the monetary valuation of public services to properly account for redistribution.

Households in the second tenth benefit from net redistribution of 3.9 NNI percentage points. This amounts to 2.8% of NNI for households in D3, 2.2% for those in D4, 1.2% for those in D5 and 0.5% for those in D6. Income before and after transfers are almost the same for D7. Households in D8 and D9 are net contributors with 1.3% and 2.6% of NNI, respectively. Finally, households in the final tenth, which benefit from 30.1% of primary income, pay back, in net terms, a third of this income to national solidarity (10.2 NNI percentage points).

Therefore, if we reason on the basis of the averages per tenth[36], two-thirds of households are net beneficiaries of the expanded redistribution (see the blue lines in Figure 31) and one third are net contributors. This result contrasts with the usual approach (see the grey lines in the same Figure), for which the proportions are almost reversed, with 40% of net beneficiaries and 60% of net contributors.

Finally, the report has previously discussed alternative assumptions for the establishment of NNIBT with regard to taxes on products and deferred income. As can be seen from the graphs in Figure 32, considering deferred income (pensions and unemployment benefits, see Section III.1.e) as primary income does not have any significant impact with respect to the central assumption on the one hand, provided that the individuals are not reclassified and the contributions are deducted; on the other hand, when income is calculated at market prices (including tax) or at basic prices (excluding tax), as discussed in Section III.1.d and in the appendix on page 141, the redistribution is identical in level and the income profiles are similar, except that primary inequality is slightly higher where tax is not included (Gini before transfers of 0.409 excluding tax and 0.383 including tax).

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36 This result, estimated as an average per tenth, is *a priori* similar to if it is calculated at the individual level, though, within each of the deciles that are "gaining", there could, in theory, be losers, and vice versa. When interpreting the results by tenth rather than at the individual level, it is important to bear in mind that not all of the households within each tenth are involved in all transfers. For example, in the first tenth, there are both working people who receive wages and pay contributions and non-working people who receive retirement pensions or unemployment benefits. And *a priori*, these are generally not the same individuals.

Figure 32: Effect of the alternative assumptions on taxes on products and deferred income
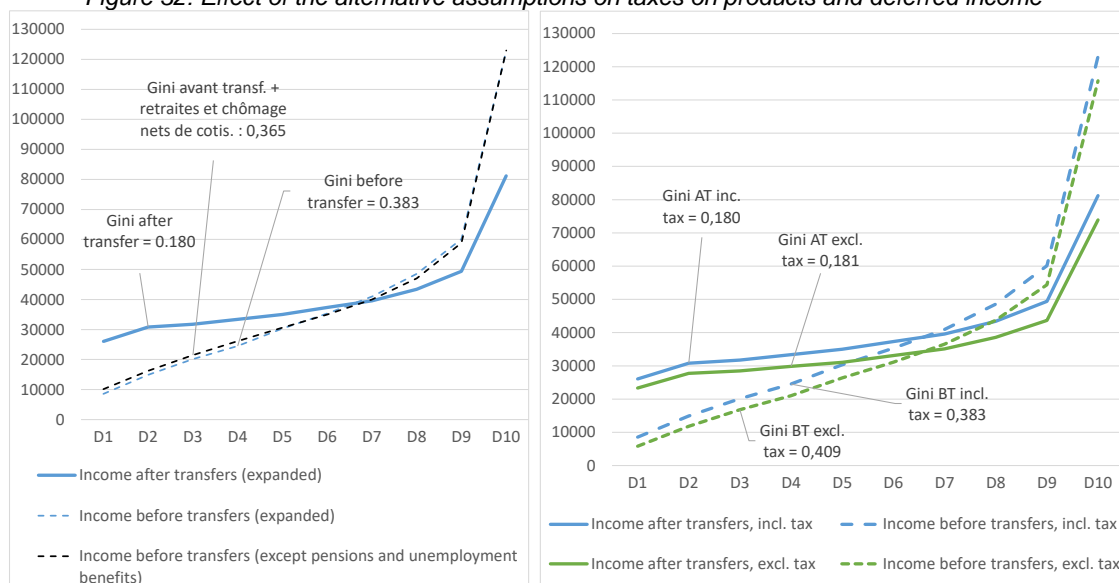
Sources: prototype distributed national accounts for 2016, authors' calculations.

III.2.c. Between Usual and Expanded Redistribution, Adjusted Redistribution

Between expanded redistribution and usual redistribution, the working group explored an intermediate concept referred to as adjusted redistribution or individualizable redistribution, but did not retain it as central.

Although this report insists on the necessity of an exhaustive approach to transfers, it has been stressed several times that following this exercise through to its conclusion requires imputation assumptions that become stronger the broader the concept of income used. The idea here is to reduce these imputation assumptions somewhat while keeping a broad focus.

In order to achieve this, we rely on a concept that is well-known to national accountants for income after transfers: adjusted disposable income. This is made up of disposable income plus transfers in kind, measured against the individualizable collective consumption expenditure. It represents 90% of national income (compared with 70% for disposable income), which places this concept at a level fairly close to the degree of exhaustiveness being sought.

In the same vein, adjusted income before transfers is obtained, not by adding all of the primary income of the public authorities (*i.e.* taxes on products and production) to the factor income, as is the case in the expanded approach, but by only adding taxes on products. The argument here is that the distribution of these can be microfounded on the basis of household consumption data. By applying the rule of balance between the transfers paid out and those received – an approach that is strongly recommended by this report for the study of redistribution – only a proportion of the adjusted deductions (*i.e.* the expanded deductions minus taxes on production) is taken into account to ensure that the average level of adjusted income before transfers corresponds to the average

level of adjusted disposable income.
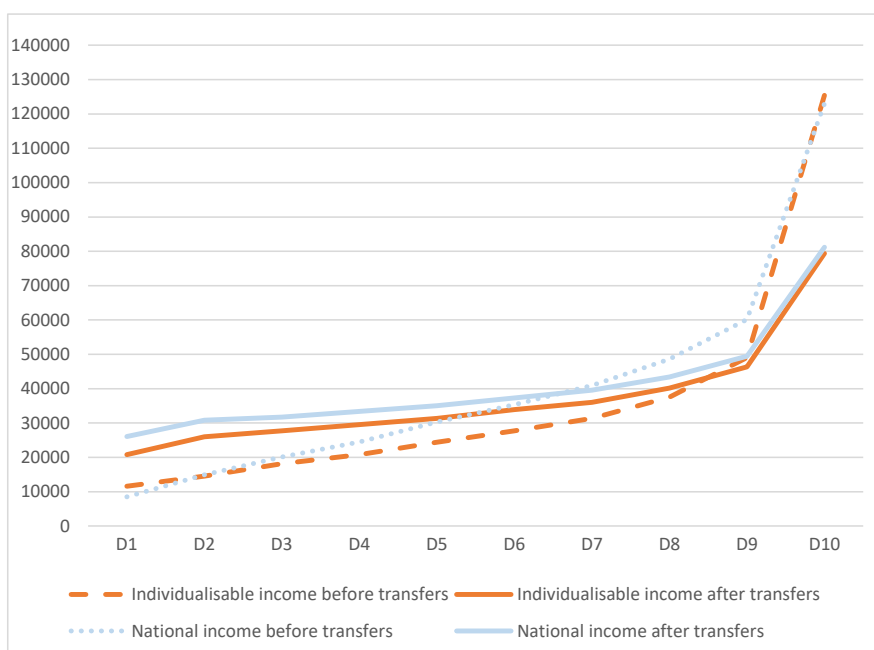
In both cases, transfers that can be attributed to individuals are added to the usual approach. This is why we will alternatively describe income before and after transfers and redistribution as individualizable rather than adjusted. As can be seen in Figure 33, which applies these concepts to France, under our assumption of evenly distributed collective expenditure, this approach that is adjusted to individualizable transfers alone tends to significantly underestimate redistribution in the broadest sense of the term.

These three concepts ultimately define three "halos" of redistribution:

- the usual approach, centred around cash flows, taxes on income and wealth, contributions and cash benefits;

- The adjusted or individualizable approach, which, in addition to the above, also includes the transfers in kind received from individualizable public services (education, health and housing, etc.), minus taxes on products;

- the expanded approach, which adds collective public services and deducts taxes on production.

III.2.d. United States Table of Integrated Distributional Accounts

For the purposes of international comparisons and in application of the recommendations set out in this report, the working group made use of the American data from the *World Inequality Lab* to apply the distributed national accounts approach

to the DINA project data for the United States. The table in Figure 34 shows the table of integrated distributional accounts that is obtained in this manner for the United States and therefore a view of expanded redistribution established on the basis of terms comparable to those obtained for France.

The result is significantly greater primary inequality than is seen in France, where the richest people hold 30% of the income; the figure for the United States is half as high again (46%). The poorest 30% only receive 3.6% of primary income, compared with 10% in France.

As a result, due to monetary benefits that are not especially redistributive, redistribution primarily takes place *via* progressive income tax (12% of national income paid by the top three deciles, with 9.6% being paid by the top tenth) and through public services. Since these are less well developed than in France, income inequality after transfers remains very high: the richest 10% still hold 40% of the national wealth compared with 8.5% for the poorest 10%, which is a ratio of 1 to 15. In France, after transfers, the wealthiest 10% receive 20% of national income, compared with 6.4% for the poorest 10% (a ratio of 1 to 3).

Looking beyond this focus on the extremes, it is recommended to compare redistribution across the entire spectrum of living standards. For the purposes of harmonisation, an example of good practice is to present income distribution graphs in proportion to the average income. The following graphs, which have been calibrated in this manner, allow us to visualise the characteristics illustrated above by a few figures, of a US system in which inequality in disposable income, adjusted or expanded, is largely the result of massive primary inequality that is difficult to correct by means of redistribution, not because of its profile, but because of its inadequate level.

Figure 34: Simplified table of United States DNA, 2016 (US, DINA, provisory)

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
IBT: Income Before Transfer	0.4	1.5	2.3	3.2	4.5	6.0	8.1	10.8	15.4	47.8
TCP: Tax on Cons&Prod	-0.04	-0.08	-0.15	-0.22	-0.31	-0.43	-0.58	-0.80	-1.17	-3.95
TIW: Tax on Inc. and Wealth	-0.09	-0.03	-0.04	-0.09	-0.20	-0.41	-0.74	-1.25	-2.15	-9.61
TSC: Social Security Contributions	-0.07	-0.22	-0.44	-0.67	-1.07	-1.58	-2.27	-3.16	-4.44	-8.59
BCA: Social Security Benefits in Cash	0.34	0.93	0.97	0.94	1.00	1.34	1.80	2.47	3.83	9.82
IDI: Disposable Income	0.53	1.87	2.69	3.43	4.30	5.47	6.95	8.94	12.28	34.92
BKI: Social Security Benefits in Kind	0.94	1.29	1.28	1.15	1.02	1.07	1.15	1.21	1.40	2.79
BCO: Collective consumption	0.08	0.30	0.43	0.54	0.66	0.82	1.01	1.27	1.70	4.83
MIS: Balance of Transfers	-0.09	-0.27	0.20	0.43	0.43	0.29	0.25	0.17	-0.31	-4.65
IAT: After Transfer Income	1.48	3.40	4.53	5.29	5.99	7.14	8.71	10.74	14.27	38.46

Simplified Redistribution Accounts (USA, DINA, Provisory)

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Tax (T1+T2+T3)	0.20	0.33	0.63	0.98	1.58	2.42	3.59	5.21	7.77	22.15
Tax rate (% BTI)	49.0	22.2	27.5	30.6	35.4	40.1	44.4	48.1	50.4	46.3
Benefits (B1+B2+B3)	1.4	2.5	2.7	2.6	2.7	3.2	4.0	5.0	6.9	17.4
R: Net Redistribution	1.16	2.18	2.05	1.66	1.11	0.81	0.38	-0.26	-0.83	-4.70
R1: Social Insurance Redistribution	0.23	0.71	0.54	0.27	-0.06	-0.24	-0.47	-0.69	-0.61	1.23
R2&3: Public Services Redistribution	0.89	1.47	1.51	1.39	1.17	1.05	0.85	0.44	-0.22	-5.93

Sources: DINA US, authors' calculations.

Comparing the two distributions as a proportion of primary income within each tenth highlights the different redistribution profiles in the United States and France, the latter being focused on reducing very high incomes and the former aiming to increase the lowest incomes (Figure 35).

Figure 35: Pre-transfer and post-transfer distribution in France and the United States (2016)
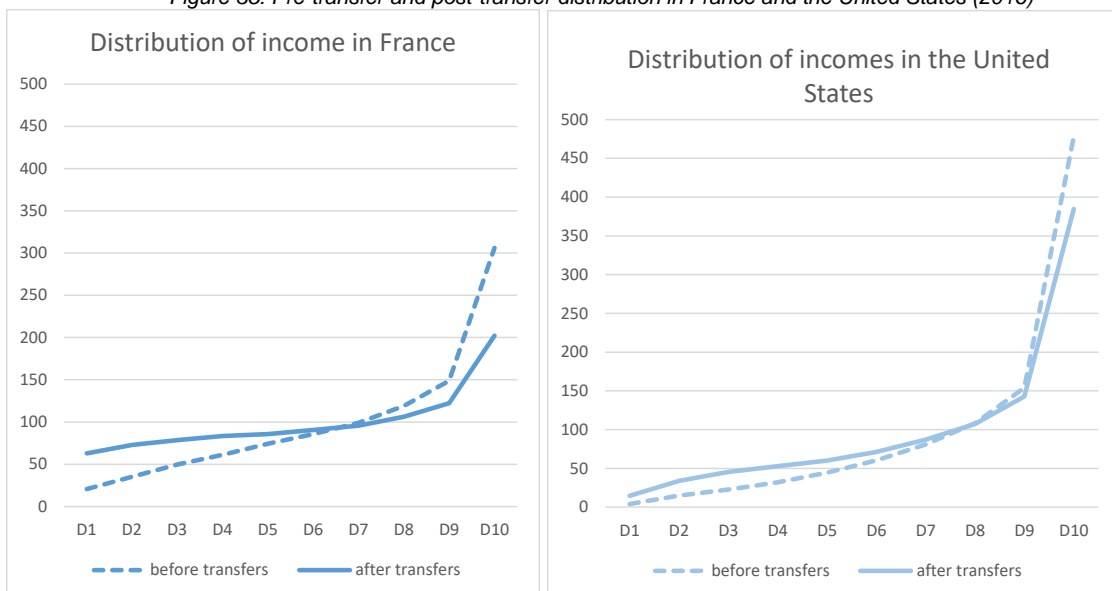
Sources: prototype distributed national accounts for 2016, DINA US 2016, authors' calculations.

The graph on the right-hand side of Figure 36 offers an apparently contradictory

observation. It displays redistribution as a share of income before transfers for both countries. The reason that these two profiles appear different is that the apparent transfer rates apply to very low primary incomes at the bottom end of the distribution for the United States (left-hand graph). The rates are therefore high, but do not correspond to high transfers.

Figure 36: Comparison of redistribution in France and the United States
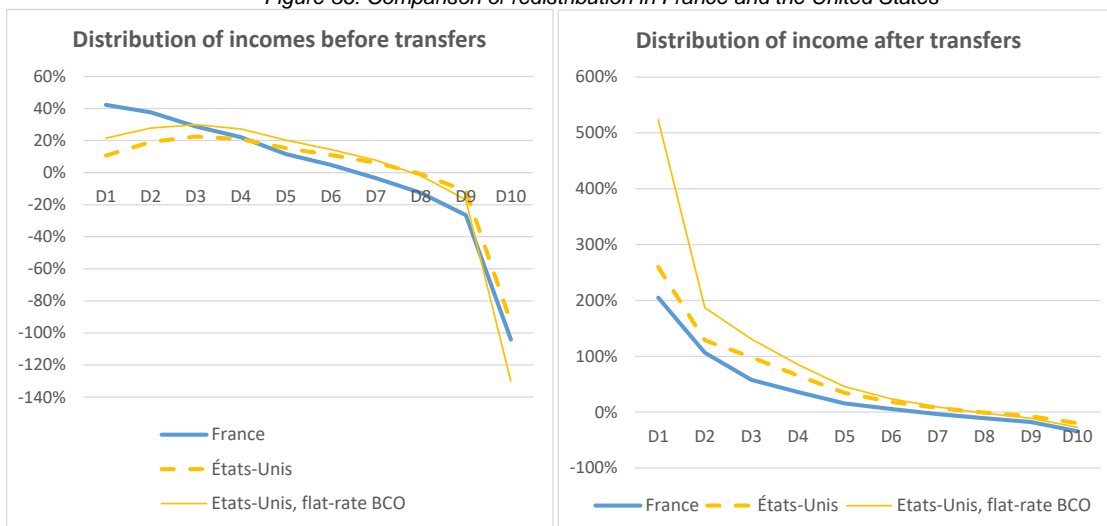
Sources: prototype distributed national accounts for 2016, DINA US 2016, authors' calculations.

The comparison of inequality indicators before and after transfers on given primary incomes by varying the transfer system illustrates **Recommendation 15**, which aims to take account of the differences in the distribution of primary incomes.

The graph in Figure 36 also incorporates a variant associated with the distribution assumption for collective consumption expenditure by no longer considering it as having a neutral effect on redistribution, but by distributing it as a flat-rate amount for the reasons of universality mentioned above. The profile obtained is similar to what is seen in France, but with a higher net transfer paid out at the bottom end and a higher net deduction received at the top end. Taking account of this alternative profile for collective consumption expenditure increases the effect of transfers on reducing inequality in the United States by 5.8 Gini points (Figure 37).

The table in Figure 38 applies the uses recommended in this report in order to compare the redistributive nature of the two systems (see Section I.4.d). If we set the primary distribution of the United States as measured according to DNA conventions, according to all of the usual indicators, the reduction of inequality is greater when the French tax system is applied than that of the United States.

Distributional accounts	USA - Basic	USA - flat-rate BCO
IBT: Income Before Transfer	58.3%	58.3%
TCP: Tax on Cons&Prod	-0.2%	-0.2%
TIW: Tax on Inc. and Wealth	-2.3%	-2.3%
TSC: Social Security Contributions	0.6%	0.6%
BCA: Social Security Benefits in Cash	-2.1%	-2.1%
BKI: Social Security Benefits in Kind	-6.0%	-6.0%
BCO: Collective consumption	-1.0%	-6.8%
M: Balance of other transfers	-2.1%	-2.1%
IAT: Income After Transfer	45.1%	39.3%
Tax redistribution (TCP+TIW+TSC)	-2.0%	-2.0%
Benefits redistribution (BCA+BKI+BCO)	-9.1%	-14.9%
RDN: Net Redistribution	-13.2%	-19.0%

Sources: DINA US 2016, authors' calculations.

Likewise, by setting the French primary distribution, a greater reduction is seen in inequality after transfers when applying the French socio-fiscal system than when applying that of the United States for the Gini, Atkinson and QSR indicators; this is not the case for the Palma indicator.

Figure 38: Before and after comparison of inequality indicators for France and the United States

	French primary income		US primary income	
	French system	US system	French system	US system
Gini	0.206	0.190	0.206	0.190
Atkinson	0.310	0.269	0.468	0.413
QSR	0.296	0.218	0.167	0.111
Palma	0.232	0.252	0.098	0.091

Sources: DINA US 2016, authors' calculations.

Conclusion and Outlook

Summary of the Report and the Principal Recommendations

This report presents the main findings of theworks lead by the expert group on the measurement of inequality and redistribution, between April 2019 and February 2020.

Starting with the analyses of the various studies around the same topic of a measuring inequalities and redistribution reaching opposite conclusions, the first task was to identify whether the differences come from data sources, concepts or methods.

Convinced that only common standards would allow for robust comparisons, the group then proposed conventions for distributing national income in its entirety, this being the broadest analytical framework possible.

More precisely, the expert group recommend, the establishment of distributional accounts based on a precise and complete method, which could integrate the upcoming new generation of international accounting standards.

It is not possible to perform any statistical comparison, regardless of whether they involve studies concerning the same country or international comparisons, unless a precise set of rules is adopted by the international community within the framework of *UNStats*.

The other major contribution of the expert group is to have established a set of "best practices for the study of inequality and redistribution.. These recommendation and conventions for practitioners rely on a collegial exchange and consensus-based conclusions between experts from the academic world and from official statistics.

The recommendations are detailed in the report and grouped in an appendix. We should here insist on four particular key points:

> ➢ The importance of the method used to classify individuals and to aggregate transfers.

➤ The necessity to use several indicators for the robustness of the results to be demonstrated.

➤ The exigence of a comprehensive overview is required in order to assess unbiased evaluation of the redistribution of an income and transfer system.

➤ A least, measuring the redistributive impact of transfer operations requires that the balance between taxes and benefits.

➤ Where this is not practicable, the dependence of the results on the transfers that have not been taken into account should be discussed where possible.

➤ Paying particular attention to the extreme ends of the distribution provides for a better understanding of inequality and the impact of the redistribution of created wealth, whether through the market or through transfers.

This report also a ready-for-use methodological guide for the establishment of distributional accounting in the form of a table of distributed national accounts (DNA). The method adopted is as robust as it is transparent, in the sense that it describes the data used and the underlying assumptions in fine detail and provides the tools to allow the method to be reproduced for (or adapted to) France.

A distributional accounting exercise primarily relies on a central data source in which a large number of incomes and transfers are observed or simulated. To allow them to be reproduced in other countries than France, the conventions adopted for the distributed national accounts are described in detail in the appendix.

The hope of the expert group is that they will fuel the debates and contribute to advance knowledge of redistribution and its impact on inequality, without replacing the rich body of work that already exists on the subject of inequality.

Further Studies and Study Priorities

Looking beyond the recommendations set out in this report, -and without encroaching on the study programmes of the member institutions they belong to, the experts agreed upon a study and research program aimed at improving the measurement of redistribution and the effect that public transfers have on inequality. The needs for further development identified by the working group are as follows:

➤ Supplement the INES *open source* model by making use of FIDELI or FILOSOFI in order to improve knowledge at the extreme ends of the distribution.

➤ Make use of EDP-santé (Permanent Demographic Sample – Health) and consider the opportunities for matching between the ERFS or FIDELI and the SNDS.

➤ Expand the uses of *nowcasting* in order to be able to establish distributed accounts within the same time frame as the national accounts.

➤ Improve the information available with regard to education by means of local

expenditure data for children and students, linked to their parents' household.

➢ Reconcile household and corporate data in order to better measure the impact of taxes on production (in particular corporate income tax) and to issue fewer imputation assumptions with regard to the distribution of retained earnings.

➢ Deepen the knowledge of data falling outside the usual scope of inequality analysis and incorporate improvements to the prototype distributed national accounts for low income households and those living in shared accommodation.

➢ Make use of the DSN in order to improve the distribution of local collective public expenditure.

➢ Establish a distributional account of household wealth by clarifying the coherence between the concepts and data within national accounting, tax data and the Wealth survey. It could be of use for these studies to draw upon those carried out within the scope of a joint mission by INSEE and *Banque de France*, which is currently in progress, and which is addressing in particular the issue surrounding the differences in concepts and data between national accounting, tax data and data from the Wealth survey (European HFCS survey), as well as issues relating to the distribution of individual returns by type of asset.

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Appendices

Direction générale

Insee
Mesurer pour comprendre

Note

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Montrouge, le 13 mars 2019
N°2019_10187_DG75-G001

Objet : Mise en place d'un groupe de travail : « Mesure des inégalités et de la redistribution : confrontation et mise en cohérence des approches »

Un grand nombre d'approches coexistent pour la mesure des inégalités et de la redistribution, portées soit par l'Insee et le SPP, soit par des institutions internationales, soit par des équipes de chercheurs.

Il en ressort des messages pas toujours convergents, et notamment pour ce qui concerne le classement relatif de la France par rapport aux autres pays développés.

Ces écarts peuvent s'expliquer par des différences de sources, de champ, de concepts, ou par un focus variable sur les différents segments de la distribution des niveaux de vie. Mettre à plat les raisons de ces écarts est indispensable pour la qualité du débat public.

Le groupe de travail aura pour objet d'examiner ces sources d'écarts, d'identifier les points sur lesquels ils pourraient être résorbés ou de proposer des éléments de langage simples pour justifier qu'une même question puisse recevoir des réponses différentes lorsqu'elle est explorée sous des angles variables.

Il s'agira plus précisément, en complémentarité des groupes d'experts initiés en ce sens par l'OCDE et Eurostat, et dans la mesure du possible :

- d'identifier, de qualifier et de quantifier l'origine des écarts pour la France entre les différentes mesures des inégalités et des effets redistributifs des transferts publics ;

- d'identifier des pratiques partageables pour concilier les approches sur données d'enquêtes, administratives et celles de la comptabilité nationale en matière d'inégalité de revenu disponible et de redistribution ;

- d'explorer les pistes d'élargissement de la comptabilité distributionnelle au revenu disponible ajusté (RDBA) en intégrant les prestations sociales en nature (santé, éducation, logement social...) ;

- d'étudier l'opportunité et la faisabilité d'un élargissement supplémentaire à l'ensemble du revenu national (RNB) pré et post-transferts, intégrant les dépenses collectives non directement individualisables et les impôts sur la consommation et la production ;

Translation :

Establishment of a working group: "Measuring inequality and redistribution: comparison and harmonisation of approaches"

A large number of approaches to the measurement of inequality and redistribution coexist, carried out by INSEE and the SPP, by international institutions or by teams of researchers.

The messages that emerge are not always consistent, particularly when it comes to the relative ranking of France compared with other developed countries.

These discrepancies can be explained by differences in sources, scope, concepts or a differing focus on the various standard of living distribution bands. It is essential that the causes of these discrepancies are smoothed out to ensure the quality of the public debate.

The aim of the working group will be to examine the sources of these discrepancies in order to identify where they could be resolved or to propose simple language to justify why the same question may result in different responses when it is looked at from different angles.

More specifically, and working to complement the expert groups established by the OECD and Eurostat in this area and in so far as is possible, it will be a case of:

• identifying, qualifying and quantifying the reasons for the discrepancies for France from among the various measures of inequality and the redistributive effects of public transfers;

• identifying shared practices for reconciling the approaches to survey, administrative and national accounting data with regard to inequality associated with disposable income and redistribution;

• exploring means of expanding distributional accounting to include adjusted disposable income (AGDI) by integrating social security benefits in kind (health, education, social housing, etc.);

• looking into the possibility and feasibility of a further extension to total national income (GNI) before and after transfers, integrating collective expenditure that is not directly individualizable and taxes on consumption and production;

• producing a guide that collates these various findings or recommendations;

• identifying study and research priorities in order to improve the measurement of inequality and the impact of public transfers.

The establishment and presidency of this group are entrusted to Jean-Marc Germain, INSEE administrator. The aim of the group is to bring together the main organisations or teams that are currently studying or have recently conducted studies on this subject: INSEE, DREES, OFCE, Directorate-General of the French Treasury, OECD, World Inequality Lab (WIL), Institute of Public Policies (IPP), Laboratory for Interdisciplinary Evaluation of Public Policy (LIEPP), etc. At INSEE, Jean-Marc Germain will be able to call upon the production or study departments of the Demographic and Social Statistics Directorate and the Economic Studies and Reports Directorate for support where required.

The group will return its findings in autumn 2019.

Chief Executive Officer
Jean-Luc Tavernier

- de produire un guide rassemblant ces divers constats ou recommandations

- d'identifier des priorités d'étude et de recherche pour améliorer la mesure des inégalités et de l'impact des transferts publics

La mise en place et la présidence de ce groupe sont confiées à Jean-Marc Germain, administrateur de l'Insee. Le groupe a vocation à rassembler les principaux organismes ou équipes travaillant ou ayant récemment travaillé sur ce thème : INSEE, DREES, OFCE, DG Trésor, OCDE, World Inequality Lab (WIL), Institut des Politiques Publiques (IPP), Laboratoire interdisciplinaire d'évaluation des politiques publiques (LIEPP)… A l'Insee, Jean-Marc Germain pourra solliciter en tant que de besoin l'appui des services de production ou d'études de la Direction des statistiques démographiques et sociales et de la Direction des études et synthèses économiques.

Le groupe rendra ses conclusions à l'automne 2019.

Le Directeur général

Jean-Luc TAVERNIER

Pour information :

- Les membres du comité de direction de l'Insee

- A la Direction des statistiques démographiques et sociales :
  Jérôme Accardo, Valérie Albouy, Sylvie Le Minez, Laurence Rioux

- A la Direction des études et synthèses économiques :
  Laurence Bloch, Guillaume Houriez, Julien Pouget, Sebastien Roux, Lionel Wilner

List of Recommendations

Recommendation 1: Establish distributed national accounts that meet the standards of coherent international accounting standards based on those governing national accounts (*System of National Accounts*).

Recommendation 2: Integrate the distribution of wealth into distributional national accounting in order to guarantee its overall consistency.

Recommendation 3: Present the choices regarding the equivalence scales used to compare the different types of household composition in an explicit manner and, in so far as is possible, detail the consequences of the choices made, taking account of limitations associated with the availability of data (household composition, age of children, etc.). Several complementary approaches exist, one more oriented towards the study of the standard of living of households and its distribution (number of consumption units), another geared more towards the distribution of primary income (number of adults or number of individuals); they are used and interpreted in different ways.

Recommendation 4: Consistently adopt the convention of equivalence scales, i.e. do not change them to compare the redistributive effects of transfers.

Recommendation 5: For the purposes of producing distributed national accounts, and within the scope of international accounting standards, prioritie disposable income per consumption unit as the primary classification variable.

Recommendation 6: For research purposes, other classification options may be considered; in this case, the classification variable and the method for calculating the amount received or paid must be clearly shown for each transfer (aggregation at household level, for example).

Recommendation 7: Once classification has been carried out according to one of the income concepts, the standard of living bands must remain fixed (in order to prevent reclassifications and the resulting bias); focus on an identical number of individuals for each band (rather than an identical number of households) and, failing that, indicate the number of individuals in each band.

Recommendation 8: Make a linguistic distinction between quantile (lower threshold) and fraction (group) by using the terms deciles/tenths or centiles/hundredths, for example.

Recommendation 9: Always indicate the number of entities within the band (households, individuals, children, number of equivalence scales, etc.) in order to facilitate comparisons between the different approaches.

Recommendation 10: Wherever possible, describe the top end of the distribution to the hundredth and thousandth by making use of comprehensive data; failing that, it should be described by the tenth or twentieth for the usual household survey data. Results should only be presented to the extent that they are statistically robust, or accompanied by their margins of error.

Recommendation 11: Ensure consistency of use when calculating the amounts of transfers within the groups, either by calculating the total transfers or by calculating the transfers per unit, but retaining the same scale as was used to establish the groups.

Recommendation 12: When interpreting the impact of redistribution on welfare via the national income scale, the commentary should preferably discuss the inequality indicators before and after transfers in terms of a difference in level rather than a ratio.

Recommendation 13: The assessment of the redistributive impact of a transfer system should, in so far as is possible, focus on zero-sum transfer packages (i.e. those where there is a balance between income and expenditure), particularly where comparisons are being made internationally or over time and within the context of distributional accounting.

Recommendation 14: In order to reach robust conclusions, describe the entirety of the distribution (by tenths, hundredths, etc.) of income and wealth; make use of at least one dispersion indicator and one ratio indicator, rather than concentrating on a single indicator.

Recommendation 15: The comparison of the redistributive effect of two socio-fiscal systems with "all else being equal" ideally requires the application of transfer rules to the same primary income distribution. In practice, several complementary approaches can be taken on the basis of the same distributional accounting in order to address this theoretical case. *A fortiori*, it is necessary to explain the approach followed and to discuss its implications.

Recommendation 16: For the purposes of comparability and replicability, clearly specify the simulation and imputation methods used, drawing a distinction in particular between income observed within the central source (including by means of matching) and those simulated on the scale, or even imputed and adjusted.

Recommendation 17: In the interests of readability, indicate the methodological breaks in the series. In the event of a change to the calculation method (simulations, imputations, new sources, etc.), present long back series of data wherever possible.

Recommendation 18: Start from a central source with a broad coverage of income when studying redistribution through a set of transfers. In general, you should prioritise sources that include a large number of income components simultaneously.

Recommendation 19: Guarantee the consistency of statistics on redistribution and inequality over time by developing and disseminating statistical registers, bringing together data that are additional to those provided by the management databases alone, in particular for the study of wealth.

Recommendation 20: Wherever possible, make use of early estimation methods for the present (*nowcasting*) in order to match the dissemination of distributional accounts with that of the national accounts.

Recommendation 21: Directly link household data (survey or microsimulation model) to comprehensive tax sources in order to produce a breakdown of high incomes within the distributed national accounts.

Recommendation 22: Distributional accounting is ill-suited to measuring the redistributive impact of social insurance schemes that guarantee replacement income, particularly pensions. The general study of redistribution needs to distinguish between the effects of social insurance systems (which may be highly redistributive when looked at in cross-section, but not over time) and other transfers.

Recommendation 23: Pension-related transactions can be taken into account, only on the condition that the sequencing of individuals remains unchanged throughout the transfer imputation process and subject to the interpretation precautions set out in **Recommendation 22**.

Composition of the Working Group

<u>DEPP:</u> Nathalie CARON, Mélanie DREGOIR, Aline LANDREAU, Fabienne ROSENWALD, Sylvie ROUSSEAU

<u>DGT:</u> Isabelle BENOTEAU, Cyril de WILLIENCOURT

<u>DREES:</u> Pierre-Yves CABANNES, Mathieu FOUQUET, Mathilde GAINI, Lucie GONZALEZ, Romain LOISEAU, Laure OMALEK, Catherine POLLAK, Lucile RICHET-MASTAIN

<u>INSEE:</u> Valérie ALBOUY, Mathias ANDRE, Jérôme ACCARDO, Sylvain BILLOT, Didier BLANCHET, Laurence BLOCH, Jorick GUILLANEUF, Sylvie LE MINEZ, Émilie RAYNAUD, Laurence RIOUX, Michaël SICSIC

<u>IPP:</u> Antoine BOZIO, BRICE FABRE, JULIEN GRENET, Claire LEROY

<u>LIEPP:</u> Elvire GUILLAUD, Michaël ZEMMOUR

<u>OFCE:</u> Pierre MADEC, Raul SAMPOGNARO

<u>OECD:</u> Marco MIRA

<u>WIL-PSE:</u> Thomas BLANCHET, Lucas CHANCEL, Bertrand GARBINTI, Jonathan GOUPILLE-LEBRET

<u>SIES:</u> Lionel BONNEVIALLE, Isabelle KABLA-LANGLOIS, Clotilde LIXI, Hery PAPAGIORGIOU

Schedule and Content of the Meetings

Meeting 1 – 15 May 2019: Objectives, Organisation, Existing work

- ➢ Presentation by Jean-Marc GERMAIN and Mathias ANDRÉ (INSEE): establishment and operation of the working group
- ➢ Presentation by Marco MIRA (OECD): "*OECD Measures of income redistribution*"
- ➢ Presentation by Thomas BLANCHET and Lucas CHANCEL (WIL): "Le projet DINA: Présentation, applications et perspectives" [the DINA project: presentation, applications and outlook]
- ➢ Presentation by Jérôme ACCARDO (INSEE): "Une comparaison entre les comptes nationaux et l'ERFS" [a comparison between the national accounts and the ERFS]

Meeting 2 – 12 June 2019: Concepts, Analysis of Discrepancies and Disposable Income

Measurement of redistribution:

- ➢ Presentation by Michaël ZEMMOUR and Elvire GUILLAUD (Liepp): "Mesurer les inégalités et la redistribution en comparaison internationale" [measuring inequality and redistribution in international comparisons]
- ➢ Presentation by Michaël SICSIC (INSEE): "La redistribution monétaire : concepts et mesure" [monetary redistribution: concepts and measurement"
- ➢ Presentation by Jean-Marc GERMAIN (INSEE): elements of international comparisons

Analysis of discrepancies:

- ➢ Presentation by Mathias ANDRÉ (INSEE): "À la recherche des sources d'écarts" [seeking out the sources of discrepancies]
- ➢ Presentation by Jérôme ACCARDO and Jorick GUILLANEUF (INSEE): "Travaux sur ERFS - Choix des UC - Foyers/ménages" [studies on ERFS – selection of CU – households]
- ➢ Presentation by Antoine BOZIO and Brice FABRE (IPP): "Comparaison TAXIPP 1.0 - ERFS" [comparison between TAXIPP 1.0 and ERFS]
- ➢ Presentation by Thomas BLANCHET (WIL): "Les revenus du patrimoine dans DINA - Méthodes et résultats" [wealth income in DINA - methods and results]

Meeting 3 – 18 September 2019: Health, Education and Outside of the Scope of the ERFS

Health:

- ➢ Presentation by Mathieu FOUQUET, Romain LOISEAU AND Catherine POLLAK

(DREES): "La redistribution des dépenses de santé: le modèle Ines-Omar" [the redistribution of health expenditure: the INES-OMAR model]

Education and higher education:

➢ Presentation by Sylvie ROUSSEAU (DEPP): "le compte de l'éducation" [the education account]
➢ Presentation by Valéry ALBOUY (INSEE): "Redistribution des dépenses publiques d'éducation" [redistribution of public education expenditure]

Distributed national accounts:

➢ Presentation by Mathias ANDRÉ (INSEE) and Thomas BLANCHET (WIL): presentation of the provisional detailed plan and first version of a DNA table

Outside of the Scope of the ERFS:

➢ Presentation by Jérôme ACCARDO (INSEE): "Complétion du champ de diffusion de ERFS" [completion of the scope of dissemination of the ERFS]

Meeting 4 – 6 November 2019: Indirect Taxes, Collective Expenditure and International Comparisons

➢ Presentation by Mathias ANDRÉ (INSEE): £Distribution des taxes indirectes avec le modèle Ines" [distribution of indirect taxes with the INES model]
➢ Presentation by Thomas BLANCHET (WIL): "Distribution des revenus atypiques" [distribution of atypical income]
➢ Presentation by Thomas BLANCHET (WIL): "Comparaisons internationales" [international comparisons]
➢ Presentation by Mathias ANDRÉ and Michaël SICSIC (INSEE): New version of the table of distributed accounts based on the INES model

Meeting 5 – 22 January 2010: Prototype DNA Table and Proofreading of the Report

➢ Presentation by Mathias ANDRÉ (INSEE), Thomas BLANCHET (WIL) and Jean-Marc GERMAIN (INSEE): results of the DNA, details of the table, report

Graphs and Tables

Figure 39: Weighting of implicit welfare by tenth

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Gini	0.19	0.17	0.15	0.13	0.11	0.09	0.07	0.05	0.03	0.01
Atkinson	0.20	0.15	0.14	0.12	0.11	0.10	0.09	0.07	0.06	0.02
Hoover	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00
Palma	0.09	0.09	0.09	0.09	0.00	0.00	0.00	0.00	0.00	-0.19
QSR	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	-0.14	-0.14

Notes: Figures evaluated for distribution after transfers in France (except Gini and Hoover)

Figure 40: Table of French DNA, in euros per CU (prototype)

CND	Catégories	P0-P100	P0-P10 D1	P10-P20 D2	P20-P30 D3	P30-P40 D4	P40-P50 D5	P50-P60 D6	P60-P70 D7	P70-P80 D8	P80-P90 D9	P90-P100 D10
						Compte de distribution des revenus primaires						
1	Gross labour income	25 703	2 911	8 869	12 709	16 390	21 088	24 860	29 218	34 319	40 783	64 551
1.1	of which net wages	15 466	1 724	5 410	7 858	10 011	12 825	14 964	17 419	20 335	24 122	39 180
2	Net mixed income and income from wealth	6 511	1 848	1 923	2 816	3 154	3 578	4 254	4 917	6 153	9 002	26 951
2.1	of which net mixed income	2 352	391	543	759	757	751	984	1 161	1 677	3 142	13 101
2.2	of which net property income	1 686	336	224	415	477	538	747	911	1 332	2 246	9 454
2.3	of which actual and fictitious rents, net of charges	2 473	1 120	1 157	1 643	1 919	2 288	2 522	2 845	3 145	3 613	4 397
3	Corporate income and NPISHs gross before taxes	2 697	303	120	234	240	248	410	565	1 273	2 271	20 923
3.1	of which retained earnings net of corporate income tax	959	108	43	83	85	88	146	201	453	807	7 437
3.2	of which corporate income tax	1 203	135	54	104	107	110	183	252	568	1 013	9 332
3.3	of which other corporate transfers (fraud)	536	60	24	46	48	49	81	112	253	451	4 155
A.fact	Factor income (= 1+2+3)	34 911	5 062	10 913	15 758	19 784	24 913	29 524	34 700	41 746	52 056	112 426
4	Primary income of the public authorities	5 961	3 478	3 989	4 366	4 746	5 394	5 819	6 261	6 839	8 097	10 612
4.1	Levies on production and consumption	6 521	3 802	4 371	4 754	5 163	5 839	6 300	6 783	7 424	8 784	11 814
4.2	Property income and net EBITDA (of which interest paid)	-560	-325	-381	-388	-417	-445	-480	-521	-586	-687	-1 202
A	Net national income before transfers NNIBT (= 1+2+3+4)	40 872	8 540	14 902	20 124	24 530	30 307	35 343	40 961	48 585	60 153	123 038
A.diff	NNI before transfers including deferred income	40 872	10 152	16 246	21 463	26 127	30 637	34 987	40 025	47 048	58 871	122 952
						Compte de distribution secondaire						
5	Levies on production and consumption	-6 521	-3 802	-4 371	-4 754	-5 163	-5 839	-6 300	-6 783	-7 424	-8 784	-11 814
5.1	of which VAT	-3 357	-2 018	-2 245	-2 423	-2 631	-2 937	-3 208	-3 476	-3 819	-4 590	-6 132
5.2	of which TICPE and excise duties	-962	-703	-828	-864	-902	-1 013	-996	-969	-1 022	-1 146	-1 169
5.3	of which TFPB and registration fees	-701	-258	-287	-352	-417	-521	-628	-743	-879	-1 111	-1 776
5.4	of which payroll taxes and other employer taxes	-541	-48	-162	-254	-317	-424	-495	-586	-679	-876	-1 536
5.5	of which other taxes	-960	-776	-850	-860	-896	-944	-973	-1 009	-1 025	-1 061	-1 201
6	Taxes on income and wealth	-6 010	-510	-872	-1 429	-2 051	-2 700	-3 401	-4 371	-5 939	-8 665	-29 577
6.1	of which Generalised Social Contribution	-2 099	-204	-556	-886	-1 276	-1 627	-1 923	-2 251	-2 653	-3 312	-6 173
6.2	of which income tax	-1 725	-14	-3	-46	-97	-273	-525	-960	-1 631	-2 887	-10 604
6.3	of which corporate income tax	-409	-76	-135	-210	-309	-372	-418	-481	-548	-647	-872
6.4	of which housing tax	-1 203	-135	-54	-104	-107	-110	-183	-252	-568	-1 013	-9 332
6.5	Contribution, Solidarity and Autonomy Contribution, Solidarity Tax on Wealth, fees	-574	-81	-124	-184	-262	-318	-353	-428	-539	-806	-2 596
7	Social security contributions	-10 238	-1 187	-3 459	-4 850	-6 379	-8 263	-9 895	-11 799	-13 984	-16 661	-25 371
7.1	of which pensions	-5 689	-555	-1 731	-2 548	-3 446	-4 541	-5 565	-6 728	-8 082	-9 551	-13 848
7.2	of which sickness	-2 709	-230	-749	-1 109	-1 536	-2 082	-2 532	-3 041	-3 639	-4 471	-7 538
7.3	of which family	-662	-51	-169	-252	-355	-478	-585	-706	-861	-1 063	-2 059
7.4	of which unemployment	-486	-62	-194	-277	-336	-429	-486	-554	-628	-761	-1 109
7.5	of which specific welfare schemes	-693	-287	-616	-665	-706	-733	-727	-775	-814	-817	
8	Monetary benefits and allowances	10 570	5 553	7 955	8 735	9 712	9 819	10 254	11 052	11 805	13 498	17 057
8.1	of which pensions	6 845	1 045	2 926	4 428	6 027	6 166	6 875	7 783	8 700	10 586	13 603
8.2	of which unemployment	928	1 010	1 261	1 094	952	1 008	854	775	765	689	885
8.3	of which family	834	1 594	1 662	1 181	922	811	741	631	453	259	130
8.4	of which poverty	364	1 232	859	633	328	202	150	90	73	57	43
8.5	of which disability	413	314	455	493	433	529	444	426	357	353	327
8.6	of which mutual	701	305	623	659	735	700	722	800	819	797	841
8.7	of which daily allowances and compensation for accidents at work	485	54	170	246	314	402	469	546	638	756	1 228
9	Other transfers	3	209	178	114	83	32	-1	-37	-76	-132	-475
9.1	of which other current transfers	-557	-116	-203	-274	-334	-413	-482	-558	-662	-820	-1 676
9.2	Property income and net EBITDA (of which interest received by the public authorities)	560	325	381	388	417	445	480	521	586	687	1 202
B	Net disposable income incl. DNP (= A+5+6+7+8+9)	28 676	8 802	14 334	17 939	20 731	23 356	26 000	29 023	32 966	39 409	72 858
B.sna	Net disposable income excl. DNP (A+5+6+7+8+9-5.1)	27 718	8 694	14 291	17 856	20 646	23 268	25 855	28 823	32 514	38 601	65 421
B.BT	Disposable income before social security transfers	27 719	8 694	10 902	13 797	15 647	18 291	20 679	23 253	27 831	36 414	99 842
10	Individualisable social security transfers in kind	8 567	11 978	11 686	9 768	8 830	8 024	7 896	7 002	7 181	6 929	6 543
10.1	of which health	3 835	4 154	4 678	4 249	4 209	3 676	3 793	3 021	3 600	3 676	3 317
10.2	of which education	2 194	3 131	2 707	2 330	2 021	2 118	1 935	1 932	1 850	1 915	2 035
10.3	of which social welfare	1 364	2 227	2 410	1 857	1 602	1 326	1 289	1 199	899	519	378
10.4	of which cultural and associative activities	816	826	844	807	800	815	824	824	815	806	802
10.5	of which housing	358	1 640	1 048	524	197	90	56	27	16	13	10
C	Net adjusted disposable income incl. DNP (= C+10)	37 244	20 779	26 020	27 707	29 561	31 380	33 897	36 026	40 147	46 337	79 400
C.sna	Net adjusted disposable income excl. DNP (C.2+10)	36 285	20 672	25 978	27 624	29 475	31 292	33 751	35 825	39 694	45 530	71 964
C.BT	Individualisable income before transfers	36 286	11 618	14 544	18 125	20 785	24 447	27 698	31 368	37 501	45 055	125 408
11	Collective expenditure and FCC	3 974	5 061	4 687	4 001	3 856	3 726	3 590	3 771	3 671	3 744	3 670
11.1	of which general administration	2 491	3 173	2 938	2 508	2 417	2 335	2 251	2 364	2 301	2 347	2 300
11.2	of which defence, police, justice	1 215	1 548	1 433	1 223	1 179	1 139	1 098	1 153	1 123	1 145	1 122
11.3	of which others (dissemination of research)	268	341	316	270	260	251	242	254	247	252	247
12	Net adjusted disposable income of other accounts	961	973	994	951	942	960	970	971	960	950	945
12.1	of which net adjusted disposable income of NPISHs	-65	-66	-67	-65	-64	-65	-66	-66	-65	-64	-64
12.2	of which RoW Use-Resources balance (of which EU)	1 027	1 039	1 061	1 016	1 006	1 025	1 036	1 037	1 025	1 014	1 009
13	Savings of public authorities	-1 306	-758	-889	-905	-972	-1 038	-1 120	-1 216	-1 367	-1 603	-2 803
13.1	of which savings of public authorities net of FCC	-1 306	-758	-889	-905	-972	-1 038	-1 120	-1 216	-1 367	-1 603	-2 803
D	Net national income after transfers NNIAT (= D+11+12+13)	40 872	26 056	30 812	31 753	33 386	35 028	37 337	39 552	43 412	49 427	81 213

Figure 41: Income concepts used in international databases
Sources: UNDP 2019 (Table produced by Nora Lustig)

INCOME CONCEPTS	Canberra Group Handbook (2011)	CEQ Data Center on Fiscal Redistribution[1]		Expert Group on Disparities in a National Accounts Framework	EUROMOD	LIS: DART[1]	OECD Income Distribution Database	World Inequality Database	
	Operational Definition	Contributory pensions as deferred income	Contributory pensions as government transfers		Baseline Scenario[1]			Fiscal Income[1]	National Income
INCOME CONCEPT 1: INCOME BEFORE TAXES AND GOVERNMENT SPENDING		Market income plus pensions	Market income	Equivalized Primary Income	Equivalized Market Income	Equivalized Market Income	Equivalized Market Income	Pre-Tax Income	Pre-Tax Income
The sum of:									
Personal Factor Income									
Gross earnings (net of employers' social insurance contributions)[1]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Income from self-employment	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Goods produced for own consumption net of input costs	Yes	Yes (if available)[2]	Yes (if available)[2]	Yes	No[2]	Yes	Yes[1]	No	Yes
Goods & services produced for barter net of input costs	Yes	Yes (if available)[2]	Yes (if available)[2]	Yes	No[2]	Yes	No	No	Yes (if available)
Capital income (excluding undistributed profits)	Yes	Yes	Yes	Yes*	Yes	Yes	Yes	Yes	Yes
Undistributed profits[2]	No	No	No	No	No	No	No	No	Yes
Imputed Capital Income[3]	No	No	No	No	No	No	No	No	Yes
Capital gains	No	No	No	No	No	No	No	No[2]	No
Net value of owner-occupied housing services	Yes	Yes[2]	Yes[2]	Yes[1]	No[2]	No[2]	No	No[3]	Yes
Employers' social security contributions	No	Yes	Yes	Yes	No	No	No	Yes	Yes
Imputed Employer's contributions	not specified	No	No	Yes[2]	No	No	No	No	No
Plus									
Old-age pensions from social security schemes	No	Yes	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	Yes	Yes
Unemployment compensation from social insurance schemes	No	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	Yes	Yes
Employment-related social insurance transfers received by households[4]	Yes	Yes	Yes	No (included in 2)	Yes	Yes	Yes	Yes	Yes
Transfers from other households (e.g., remittances)	No (included in 2)	Yes	Yes	No (included in 2)	Yes	Yes	Yes	Yes	Yes
Transfers from nonprofit institutions	No (included in 2)	Yes	Yes	No (included in 2)	Yes	Yes	Yes	Yes	Yes
Minus:									
Employees[5] social insurance contributions to old-age pensions	No (included in 2)	Yes	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	Yes[4]	Yes[4]
Employees[5] social insurance contributions to unemployment	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	No (included in 2)	Yes[5]	Yes[5]
Employers' social security contributions	No	Yes	Yes	No (included in 2)	No	No	No	Yes[5]	Yes
Contributions to employment-related social insurance transfers[6]	No	No (included in 2)	No (included in 2)	No (included in 2)	No	No[3] (included in 2)	No[2] (included in 2)	Yes	Yes
Transfers to other households (e.g., remittances)	No (included in 2)	Yes (if available)	Yes (if available)	No (included in 2)	Yes	No[4]	Yes	Yes (if available)	Yes
Transfers to nonprofit institutions	No (included in 2)	Yes (if available)	Yes (if available)	No (included in 2)	Yes	No[4]	Yes	Yes (if available)	Yes
INCOME CONCEPT 2: INCOME AFTER DIRECT TAXES AND DIRECT TRANSFERS		Disposable Income		Equivalized Disposable Income	Equivalized Disposable	Equivalized Disposable Income	Equivalized Disposable Income		Post-tax disposable
Start from: Income Concept 1									
Plus:									
Old-age pensions from social security schemes	Yes	No (included in 1)	Yes	Yes	Yes	Yes	Yes		No (included in 1)
Unemployment compensation from social insurance schemes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		No (included in 1)
Other cash benefits from social security	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Social assistance benefits (noncontributory transfers)	Yes	Yes	Yes	Yes	Yes	Yes	Yes[3]		Yes
Employment-related social insurance transfers received by households[4]		No (included in 1)	Yes	No (included in 1)	Yes				No (included in 1)
Transfers from other households (e.g., remittances)	Yes	No (included in 1)	No (included in 1)	Yes	No (included in 1)	No (included in 1)	No (included in 1)		No (included in 1)
Transfers from nonprofit institutions	Yes	No (included in 1)	No (included in 1)	Yes	No (included in 1)	No (included in 1)	No (included in 1)		No (included in 1)
Minus:									
Direct personal income taxes, net of refunds	Yes	Yes	Yes	Yes	Yes+G56+G57	Yes	Yes		Yes
Compulsory fees and fines	Yes	No	No	Yes	Yes	No	not specified[4]		Yes
Employees' social insurance contributions to old-age pensions	Yes	No (included in 1)	Yes	Yes	Yes[3]	Yes	Yes		No (included in 1)
Employees[5] social insurance contributions to unemployment	Yes	Yes	Yes	Yes	Yes[5]	Yes	Yes		No (included in 1)
Employees[6] contributions to other social insurance benefits	Yes	Yes	Yes	Yes	Yes[3]	Yes	Yes		Yes
Employers' social security contributions	No	No (included in 1)	Yes	Yes	No	No	No		No (included in 1)
Contributions to employment-related social insurance transfers[6]	No	Yes	Yes	Yes	No	Yes[3]	Yes[2]		No (included in 1)
Transfers to other households (e.g., remittances)	Yes	No (included in 1)	No (included in 1)	Yes	No (included in 1)	No[4]	No (included in 1)		No (included in 1)
Transfers to nonprofit institutions	Yes	No (included in 1)	No (included in 1)	Yes	No (included in 1)	No[4]	No (included in 1)		No (included in 1)
INCOME CONCEPT 3: INCOME AFTER DIRECT AND INDIRECT TAXES AND DIRECT TRANSFERS AND SUBSIDIES		Consumable Income							Post-tax national income
Start from: Income Concept 2									
Plus:									
Indirect subsidies		Yes	Yes						Yes
Minus:									
Indirect taxes (VAT, Excise, Other)		Yes	Yes						Yes
INCOME CONCEPT 4: INCOME AFTER DIRECT AND INDIRECT TAXES, DIRECT TRANSFERS, SUBSIDIES AND PUBLIC SPENDING ON EDUCATION, HEALTH AND OTHER PUBLIC SPENDING		Final Income		Equivalized Adjusted Disposable Income					
Start from: Income Concept Varies by Database		Income Concept 3		Income Concept 2					
Plus:									
Public spending on education		Yes[3]	Yes[3]	Yes[3]					Yes
Public spending on health		Yes[4]	Yes[3]	Yes[4]					Yes
Public spending on housing		Yes (if available)	Yes (if available)	Yes					Yes
Public spending on infrastructure		No	No	No					Yes
Public spending on defense and security		No	No	No					Yes
Other public spending		No	No	No					Yes
Redistributive effect is estimated by households ranked by		Market income plus pensions	Market income	Equivalized Disposable Income	Equivalized Market Income	Not applicable	Equivalized Disposable Income	Pre-Tax Income	Pre-Tax Income
Memo Items									
All values as implied by microdata and not matched to administrative totals		Yes	Yes	No	Yes	Yes	Yes	No	No
All items match administrative totals from tax records and National Income		No	No	Yes	No	No	No	Yes	Yes
Income		Yes	Yes	Yes[5]	Yes	Yes	Income	Yes[6]	Yes[6]
Consumption		Yes[1]	Yes[1]	Yes[2]	No[4]	Yes, when available	No	No	No
Per capita		Yes	Yes	Yes	No	No[5]	No	No[7]	No[7]
Equivalized[7]		Available upon request		Yes	Yes	Yes	Yes	No[7]	No[7]
Per adult individual		No[4]	No[4]	No (included in 1)	No	No[5]	No	Yes[8]	Yes[8]
Total population		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Working age population only		No[4]	No[4]	No	No	No[5]	Yes[5]	Yes[8]	Yes[4]

Taxes on Products and National Accounts

What the SNA Says about the Accounting Treatment of VAT

Basic Price, Producer Price, Acquisition Price

The **producer price** corresponds to the **buyer price**, less VAT. The latter is a hybrid concept, which excludes some, but not all taxes on products and production. This is why the SNA considers the **basic price**, which is reduced by any taxes that are to be paid on products, as a clearer concept, and recommends that it be prioritised in the evaluation of production.

VAT is Recorded as Being Payable by the Buyers

The SNA asks that the net system[37] be used to record VAT (Section 6.61). In this system, VAT is recorded as being payable by the buyers; the goods and services **produced** are evaluated **excluding the VAT** invoiced; the goods and services **purchased** are evaluated **including the VAT** that is non-deductible.

The Different Concepts of Value Added

Gross value added at basic prices (or **value added at producer prices**) is defined as production valued at basic prices (or at producer prices) less intermediate consumption evaluated at acquisition prices[38].

A Stylised Example of the Handling of VAT in Distributional Accounting

The Table of Integrated Economic Accounts

Let us consider here the production of goods and services amounting to 300 at basic prices without intermediate consumption; the primary income is limited to the remuneration of employees; transfers are made up of a tax on products amounting to 70 and social security benefits of the same amount; consumption is 350 and the savings are 20. These transactions are mapped in the table of integrated economic accounts as shown in Figure 1. The institutional sectors of companies and households have been aggregated.

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37 In the other system, known as the gross system, the buyer and the seller record the same price, regardless of whether or not the buyer can deduct this VAT later

38 Value added at factor cost can be deducted from value added at basic prices by deducting the taxes on production that are still to be paid on the value added at basic prices, such as other taxes on production (e.g. payroll tax). However, this is not a concept used explicitly by the SNA, since there is no observable price system that allows gross value added at factor cost to be directly obtained by multiplying quantities and prices. Strictly speaking, this is therefore not a value added, but an income.

In national accounting, taxes are considered a value added in the production account. In other words, **the act of consumption is implicitly considered to generate its own value added, independently of production, the amount of which is equal to the tax collected**. However, this value is not allocated to any institutional sector: it is shown as such in a column entitled "taxes on products" (D21N). The net value added is 370, 300 of which is from production and 70 from this specific transaction.

Figure 1 - Table of integrated economic accounts

	National economy	S11 to S15, except S13	S13	Taxes on products
Production account				
Production (P1)	300	300		
Taxes on products (D21N)	70			70
Net value added (B1N/PIN)	**370**	**300**		**70**
Operating and allocation of primary income account				
Taxes on products (D21)	70		70	
Remuneration (D1)	300	300		
Balance of primary incomes (B5N/NNI)	**370**	**300**	**70**	
Secondary distribution of national income account				
Social security benefits (D62)	70	70	-	
Net disposable income (B6n)	**370**	**370**	**-**	
Use of income account				
Individual consumption expenditure account (P3)	350	350		
Net savings	20	20		

This value added is allocated as a public administration resource in the allocation of primary income account (D21, S13). Net national income is made up of household income (in this case remuneration D1) and a primary income of 60 belonging to the public administrations.

Social security benefits appear as a household resource in the secondary distribution account. Net disposable income (B6n) is 370 and, in this case, is allocated in full to households. The net disposable income in S13 is actually zero, the 70 in taxes on products having been used to pay for social security benefits at this stage.

The Table of Integrated Distributional Accounts at Market Prices

The distributional table differs from the TIEA in that it distributes the primary income, transfers and disposable income of the national economy, not on the basis of institutional sectors, but by categories of households – ranked by increasing standard of living – which are the final beneficiaries. Here we consider two categories of household, M1 and M2, which obtain primary incomes of 100 and 200 respectively from their contributions to production, which are supplemented by social security benefits of 35 each, resulting in incomes after transfers of 135 and 235, respectively. The consumption expenditure of households in category 1 is assumed to be 280 before tax and 350 including tax, i.e. a VAT rate of 25%. This consumption is broken down into 108 excl. tax (132 incl. tax) for households in category 1 and 172 excl. tax (215 incl. tax) for households in category 2, and VAT is therefore paid at a rate of 27 for the former and 43 for the latter. The transfers are balanced, since the 70 paid in VAT finances the two social security benefits of 35 each. On that basis, two distributional tables can be established, depending on whether market or basic prices are to be used.

The first aligns with the logic applied by the SNA, where VAT in particular, and

taxes on products in general, are considered to be deducted from the value added associated with the act of consumption. The "national economy" column in the table in Figure 2 is exactly the same as that in the table of integrated economic accounts. However, in order to make it clear that VAT and other taxes on products are considered to be paid by households, row D21N in the TIEA is renamed value added on consumption in the TIDA at market prices. This value added is distributed among households in proportion to the amount that they actually pay – with companies in this case simply being entities for the collection of income tax, as is now the case with withholding tax – and therefore in proportion to consumption. In other words, in order to measure what the standard of living of households would be in the absence of transfers, in addition to their primary income, we "repay" them the amount that has been deducted from them to finance the benefits that they receive. To signify this, in the allocation account, this value added on consumption activities, which is allocated to S13 in the TIEA, is allocated to households in the TIDA in a row that can be renamed "primary purchasing power of taxes on products (D21N)".

Figure 2 - Table of integrated distributional accounts at market prices

	Nat. economy	Households cat. 1	Households cat. 2
Value added on production (P1-P2 at basic prices)	300		
Taxes on products (D21N)	70		
Net value added (B1N, PIN)	**370**		
Remuneration (D1)	300	100	200
Primary purchasing power of taxes on products (D21N)(*)	+70	+27 (*)	+43 (*)
Primary income = net income before transfers at market prices (I)	**370**	**127**	**243**
Taxes on products (D21)	-70	-27	-43
Social security benefits (D62)	+70	+35	+35
Disposable income = net income after transfers at market prices (II)	**370**	**135**	**235**
Individual consumption expenditure at market prices (P3)	350	135	215
Net savings (B8n)	20	0	20
Net redistribution (II – I)		**+8**	**-8**

(*)= 0.25*P3/1.25

The income before transfers of households in category 1 is therefore 127 at market prices, 100 of which is from production at basic prices and 27 from "primary purchasing power of taxes on products", whereas the net income before transfers of households in category 2 at market prices is 243 (200 at basic prices plus 43 from "primary purchasing power of taxes on products"). Therefore, disposable income, which here coincides with income after transfers given the assumption of no other public expenditure, is obtained by subtracting taxes on products and adding social security benefits.

Redistribution is then established in two ways, as the difference in net income before transfers and net income after transfers (II-I), or as the difference, for each category, between benefits (D62) and taxes on products (D21), in this case +8 for households in category 1 and –8 for households in category 2. The disposable income for each category corresponds to that established on the basis of social data (expanded where appropriate), and therefore the resulting inequality indices. In this example, the high/low index is 1.74 after transfers, compared with 1.91 before transfers.

The Table of Integrated Distributional Accounts at Basic Prices

The table of integrated distributional accounts at basic prices differs from national accounting in the way that it handles taxes on products. While they are still considered as being paid by consumers, they are no longer counted at the same time as the counterpart of a value added. Value added is limited to the value added at the basic prices of the institutional sectors, so 300 in our example (compared with 370 in option 1). The net income after transfers (135 at the bottom end, of which 100 is primary income and 35 benefits; 235 at the top end, of which 200 is primary income and 35 benefits) is reduced by the amount of the taxes paid, and no longer corresponds to the disposable income per income stratum usually calculated using microdata. The measurement of level redistribution is identical (+8 at the bottom end, –8 at the top end); however, the same is not true of the measurement of inequality before and after: in this case, the ratio of the top end to the bottom end increases to 2 to 1.78, compared with 1.91 to 1.74 under the alternative approach, but the difference does not have a decisive impact when it comes to evaluating the extent of inequality and the redistribution brought about by redistribution.

Figure 3 - Table of integrated distributional accounts at basic prices

	Nat. economy	Household cat. 1	Household cat. 2
Value added on production (P1-P2 at basic prices)	300		
Net value added at basic prices	**300**		
Remuneration (D1)	300	100	200
Primary income = net income before transfers at basic prices (Ib)	**300**	**100**	**200**
Social security benefits (D62)	+70	+35	+35
Disposable income	**370**	**135**	**235**
Taxes on products (D21)	-70	-27	-43
Net income after transfers at basic prices (IIb)	**300**	**108**	**192**
Individual consumption expenditure at basic prices (P3)	280	108	172
Net savings (B8n)	20	0	20
Net redistribution (IIb – Ib)		**+8**	**-8**

Advantages and disadvantages

The two approaches are neither contradictory, nor do they oppose one another since it is clearly specified whether the values being compared are at market prices or basic prices. In practice, the results are convergent and the orders of magnitude comparable.

	Market prices	Basic prices
Advantages	Consistency with national accounting, more usual handling of VAT	More intuitive method in the sequence of economic accounts
Disadvantages	As is the case in national accounting, the method is conceptually difficult to grasp, since taxes on products are apparently imputed at the top of the table as taxes on production (paid by companies), but distributed as a consumption tax, since they are assumed to be borne by households; a paradox reconciled by the basic price/market price clarification	- Less legible; in the daily life of French people, prices are inclusive of tax - Contradiction with choices made in national accounting; the sum of income is no longer equal to NNI - Requires the introduction of new concepts, such as disposable income at basic prices, adjusted disposable income at basic prices, consumption at basic prices - Requires the calculation of purchasing power with a consumer price deflator at basic prices
Equivalences	Level redistribution is the same in either method, and the redistribution rates are similar, as are the differences in the before/after inequality index	