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## **The Distribution of Household Income in the Framework of National Accounts: the Italian Experience, 2015-2020**

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# The distribution of household income in the framework of national accounts: the Italian experience, 2015-2020

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## 1. Introduction

Accurate and comprehensive estimates of household income distribution are essential for designing, implementing and evaluating economic policy measures to fight poverty and social exclusion. Since 2009, the Stiglitz - Sen - Fitoussi Commission<sup>2</sup> had highlighted that the production of distributive measures consistent with the estimates of the National Accounts (NA) could provide important contributions to the analysis and contrast of inequalities.

In 2011, OECD and Eurostat began to develop a methodology for compiling distributive estimates of income, consumption and savings consistent with NA<sup>3</sup>, within the “OECD-Eurostat Expert Group on Disparities in a National Accounts Framework (EG DNA)”<sup>4</sup>. The estimates produced by various countries in line with this methodology, including the Italian ones, were disseminated as experimental statistics in the public databases of the OECD and Eurostat, for the first time, starting from December 2020<sup>5</sup>. In 2021, Istat revised the methods used to estimate the distribution of some income components, to more accurately incorporate the data of the Italian Eu-Silc, which provides more detailed national variables than those disseminated at European level, and made experimental distributional estimates for the years 2015-2018.

The distribution of household income independently from National Accounts is estimated annually in Italy, and in a harmonized way in the other European countries, based on micro-data from Eu-Silc (European Union Statistics on Income and Living Conditions). Since the beginning of the project in 2004, the Italian survey has been characterized by a multi-source strategy for the joint use of individual income data, collected through the sample survey, and of administrative microdata.

Participation by Istat in the third exercise organized in 2019 – 2020 by the OECD/Eurostat Expert Group was made possible by an intensive collaboration between national accountants and micro statistics experts to define a methodology for reconciling micro and macro estimates on income aggregates. The reconciliation of micro and macro sources implied a complex analytical work aimed at examining the income components one by one to identify directly comparable components, those that required further estimates and adjustments and those missing in the micro source or more underestimated. This meant the identification and harmonization of the conceptual differences in micro and macro data arising from the reference regulations and from differences in sources and methods used to estimate observed and non-observed income components. This made it possible to allocate the micro-macro gap to the highest level of disaggregation permitted by the two domains with a careful choice of the method for each component of disposable income. Furthermore, it allowed to verify that in Italy the components for which a direct micro variable is available actually represent a significant share of disposable household income.

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The paper derives from the joint work of all authors. However, sections 2.3 and 3.1 have been written by Luciano Cavalli; sections 2.2.2 and 3.2.1 by Paolo Consolini; section 2.2.1 by Stefania Cuicchio; sections 2.2.2.3 by Gabriella Donatiello; sections 2.1 and 2.4 by Marina Sorrentino; section 2.2.2.1 by Paolo Consolini and Gabriella Donatiello; section 3.2.2 by Luciano Cavalli and Marina Sorrentino; sections 1 and 4 by Gabriella Donatiello and Marina Sorrentino.

<sup>2</sup> Stiglitz et al. (2009).

<sup>3</sup> This issue is at the heart of other international initiatives. It is one of the recommendations in the G-20 Data Gaps Initiative, and it is planned to be the subject of a dedicated chapter in the new System of National Accounts. See Financial Stability Board e International Monetary Fund (2016).

<sup>4</sup> See OECD (2020).

<sup>5</sup> See <http://www.oecd.org/sdd/na/household-distributional-results-in-line-withnational-accounts-experimental-statistics.htm> and <https://ec.europa.eu/eurostat/web/experimental-statistics/ic-social-surveys-and-national-accounts>. Methodology and main results are described also in: Zwijnenburg et al. (2021).

This paper is organised as follows: the next Section will provide a brief description of the OECD method of estimating the household income distribution in the framework of National Accounts. The analysis of the Italian Eu-Silc and the comparison with the macroeconomic aggregates will follow. The four gap allocation methods of disposable income components and the social transfers in kind distribution estimation method will be explained. Section 3 will present a detailed analysis of the results of the distribution of disposable income components and the adjusted disposable income by quintiles. In this section, a first distribution of disposable income in year 2020 with the effects of the COVID-19 pandemic will be presented. Finally, Section 4 will report some conclusions and the way forward.

## **2. Estimating the Household Income Distribution in the Framework of National Accounts: The Method**

### **2.1. - Brief Summary of the Method**

As mentioned in Section 1, the estimates of the distribution of household disposable income (and its components) presented in this paper have been produced partly in the context of the 3<sup>rd</sup> exercise coordinated by the OECD – Eurostat Expert Group on Disparities in a National Accounts Framework (EG DNA) and all according to the methodology developed in the Expert Group.<sup>6</sup>

Within this methodology, distributional estimates in line with National Accounts data are obtained using as much as possible the distribution of household income components in a micro source (mainly, a household survey), as long as the components are defined similarly in the micro source and in National Accounts.

More specifically, the methodology comprises five steps.

In the first one, the National Accounts totals are adjusted to exclude any amount that does not pertain to resident private households, which are the target population for the distributional results. This adjustment concerns amounts related to institutional households and irregular foreigners.

In the second step, the definitions and estimation methodologies used to estimate the various income components in the National Accounts and in the available micro source are compared, with the aim to find in the micro source a variable (or linear combination of variables) defined as an income component in the National Accounts and with a similar value, for as many income components as possible. This work benefits from a strong cooperation between National Accounts and micro statistics experts, as indicated in Section 1.

In the third step, the income components for which such a correspondence with a micro source variable could not be found are imputed. Furthermore, all the distributed components are scaled to the National Accounts totals adjusted for the population differences.

In the fourth step, households are clustered into groups, on the basis of their disposable income and socio-demographic characteristics (household type, main source of income).

Finally, in the fifth step, inequality indicators are estimated.

## **2.2 The OECD method and our implementation**

### **2.2.1. The household disposable income in the National Accounts.**

In the Italian National Accounts, the household sector is divided into two sub-sectors to separately represent the consumption and production activities carried out by households. Two complete sets of accounts for the households as consumers (CH) sub-sector and the households as producers (PH) sub-sector are compiled and disseminated at the national level. In the accounts of the subsectors of the households sector, an income flow distributed by the very small-unincorporated enterprises included and corresponding to the remuneration for work carried out in the enterprises by the owner or other family members is estimated. It

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<sup>6</sup> See Oecd (2020) and Zwijnenburg et al. (2021).

is thus possible to measure the disposable income allocable to consumption or saving by households as consumers and to more accurately calculate their gross saving rate. In addition, the contribution to the formation of disposable income from the remuneration of labour (employed and self-employed), property income generated by financial and real assets, and the impacts of government redistribution transactions can be analysed (Table 2.1).

*Table 2.1 – Gross disposable income of households in the Italian national accounts - Year 2019, million euros (current prices).*

Main components of Household Disposable Income	Year 2019		
	Households	of which: Households as consumers	of which: Households as producers
Gross operating surplus and gross mixed income	404,052	144,397	259,655
Wages and salaries received	531,912	531,912	0
Net Property income received	166,003	394,245	-228,242
Net interest received	13,753	12,977	776
Distributed income of enterprises	127,414	354,586	-227,173
Dividend	24,838	24,838	0
Withdrawals from income of quasi-corporations	102,575	102,575	0
Withdrawals from income of producers households	0	227,173	-227,173
Other investment income	26,295	26,154	141
Net rents received	-1,458	528	-1,986
Current taxes on income	220,412	216,740	3,672
Households' actual social contributions paid	-82,769	-82,769	0
Social benefits other than STIK received	392,252	392,252	0
Non-life insurance claims less net premiums	1,665	1,727	-62
Net miscellaneous current transfers received	-15,032	-13,938	-1,095
<b>Gross disposable income</b>	<b>1,177,908</b>	<b>1,150,815</b>	<b>27,093</b>
Social Transfers in Kind	203,714	203,714	0
<b>Adjusted gross disposable income</b>	<b>1,381,622</b>	<b>1,354,529</b>	<b>27,093</b>

Source: Istat, National Accounts

The availability of a complete set of separate accounts for the enterprises classified in the household sector makes it possible to recompose the macro-sector of market producers and comprehensively describe, by industry and by institutional sector, the behaviour of different types of enterprises in all phases of the economic process. This approach was stimulated also by the need to adequately represent the structural characteristics of the Italian production system, in which there is a significant presence of very small-unincorporated enterprises. Another peculiar feature of the Italian enterprises is the presence of self-employment in small and medium corporations, which has led to the identification of a specific distributed income of corporations, other than dividends and withdrawals, to properly represent the remuneration of work performed by partners in these enterprises.

The approach followed in estimating National Accounts is very analytical, mostly micro-based and, where relevant, separate estimates for the observable and unobservable parts (under-reporting, undeclared labour input, illegal activities) for each component of household disposable income are developed. This complex estimation system has made it possible to precisely identify all determinants of household disposable income that are directly and timely comparable with the indicators provided by the household surveys.

The remuneration of declared employees and self-employed workers working in unincorporated enterprises and non-financial corporations is estimated by institutional unit, as is the estimation of income generated by the under-reporting of value added. Otherwise, the remuneration of undeclared labour input (employed and self-employed) and income generated by the illegal activities are estimated by domain (industry and size).

Interests, dividends, other investment incomes are estimated using a whom-to-whom approach, in which matrices of property income flows are elaborated using the maximum available information detail on financial instruments provided by the Financial Accounts and all available data for specific institutional units<sup>7</sup>

Current taxes on income and wealth are estimated by type using detailed information available in the general government sector accounts while social benefits and social contributions are developed at the highest level of detail from the social protection account.

Net miscellaneous current transfers received by households are mainly estimated on information available for non profit institutions, government and non-resident units.

The granularity of national accounts estimates make it possible to take full advantage of the information detail of micro sources, enabling the identification of all income components defined at the macro level that can be directly compared with micro information.

To ensure comparability of the National Accounts and Silc estimates, as stated before, household disposable income in National Accounts has to be adjusted to exclude the income of the part of the population that does not relate to private households, such as institutional households and irregular foreigners.

In general, the underlying consistency of the National Accounts and Silc reference regulations ensures the consistency of the methodological approaches adopted and the absence of incompatible definitional differences. However, the information sources available at the national level may impose pragmatic choices in the estimation and classification of some household income components in the two domains that do not fully comply with the regulations even if they ensure the exhaustiveness and comparability of the total household income.

In the macro-micro reconciliation work, income components with definitional differences and/or differences due to the estimation methodologies used for the micro indicators were identified. The mapping work identified the components of household disposable income that were directly comparable and those that were comparable after eliminating definitional, classification, or implementation differences using the information available in the National Accounts and the corresponding micro indicator. For the income components for which differences could not be resolved because the necessary information was only available in one of the two domains, it was still possible to understand the reasons for the discrepancy between the macro and micro estimates.

In order to properly assess the level of coverage of the macro estimate, it was necessary to isolate in the National Accounts system all components for which micro indicators are not available. In addition, components included in the micro indicators that, for the reference standards, have to be classified in other aggregates were identified at the macro level and treated appropriately in the distributional estimation procedures.

Table 2.2 shows the reconciliation work between National Accounts aggregates and Silc indicators for the main components of household disposable income. All the sub-components of National Accounts aggregates analysed in the distributional estimates are highlighted, specifying for each macro data component the micro indicators used (both Eu-Silc target variables and variables collected in the national survey, i.e. It-Silc

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<sup>7</sup> Specifically, the information available in the supervisory reports for financial intermediaries; insurance companies; pension funds; balance of payments; information on listed non-financial companies; government accounts; balance sheets of corporations.

indicators), also those used as proxies. Corrections made to the micro and macro data to ensure their comparability are described. Any discrepancies due to different definitions, classifications or sources of data used that could not be resolved are highlighted.

The distribution of household disposable income is obtained summing up all the distributed components.

Table 2.2 - Macro-micro reconciliation for the main components of Household disposable income

National Accounts	SILC
<p><b>Wages and salaries (D.11)</b>  Wages and salaries received by resident households from resident and non-resident institutional units  Adjusted for:  - wages received by workers living in institutional households and illegal workers, to be excluded</p> <p>Differences not reconciled:  - some categories of wages in kind not included SILC data (only NA figure)  - the amounts of wages paid temporarily by employers to their employees in the case of sickness, maternity, industrial injury, disability, etc., that are treated as other social insurance non-pension benefits included in SILC data (only NA figure)</p>	<p>Gross employee cash or near cash income (PY010G) and Gross non-cash employee income (PY020G)  Adjusted for:  - cash-based recorded arrears or contract renewal, to be excluded  - wages of cooperative members on the payroll, to be included  - vouchers for occasional work services, to be included</p>
<p><b>Gross operating surplus (B.2G)</b>  Output of services of owner-occupied dwellings (imputed rents) net of intermediate costs other than Fisim (financial intermediation services indirectly measured)  Output of real estate services of dwellings net of intermediate costs  Output of real estate services of non-residential buildings net of intermediate costs  Intermediate cost charged for Fisim related to mortgage loans  Adjusted for:  - Imputed rents and rental from dwellings receivable by persons living in institutional households, to be excluded</p> <p>Differences not reconciled:  - intermediate costs by households for the production of rental services other than Fisim (only NA figure)  - output of real estate services of non-residential buildings (only NA figure)</p>	<p>Imputed rents of main households residence (HY030G) and other households owner-occupied dwelling (collected in the national survey (It-Silc indicator)  Rentals from dwellings (It-Silc indicator)  Interest paid on mortgage (HY100G), used as a proxy</p>
<p><b>Gross mixed income (B.3G)</b>  Income of self-employed workers in unincorporated enterprises of household sector (observed and unobserved component) and outworkers  Income from households' own-account production concerning production, storage and processing of agricultural products  Income from households' own-account production concerning extraordinary maintenance of dwellings  Income from illegal activities  Adjusted for:  - Income of illegal self-employed workers, to be excluded</p> <p>Differences not reconciled:  - Income from households' own-account production concerning construction of dwellings (only NA figure)  - Income from illegal activities (only NA figure)</p>	<p>Gross cash benefits or losses from self-employment (including royalties) (PY050G)  Net value of goods produced for own consumption (HY170N)  Adjusted for:  - wages of cooperative members on the payroll, to be excluded  - vouchers for occasional work services, to be excluded</p>
<p><b>Property income paid (D.4P)</b>  Interest on mortgage loans to consumer households, adjusted for Fisim  Interest on consumer credits and other loans to consumer households, Interest on loans of unincorporated enterprises, adjusted for Fisim  Interest on trade credits of unincorporated enterprises  Adjusted for:  - Property income paid by persons living in institutional households, to be excluded</p> <p>Differences not reconciled:  - Interest on consumer credits and other loans to consumer households (only NA figure)  - Interest on loans and trade credits of unincorporated enterprises (only NA figure)  - Fisim adjustment (only NA figure)</p>	<p>Interest paid on mortgage (HY100G)</p>

<p><b>Property income received (D.4R)</b> Interest Distributed income of corporations Other Investment income Rents</p>	<p>No comparable micro data</p>
<p><b>Current taxes on income and wealth (D.5P)</b> Personal income tax Withholding tax on interest and other property income Capital gains tax Withholding tax insurance technical provisions Withholding on distributed income of corporations Taxes on lottery winnings Substitute tax on rental income Motor vehicle duty paid by households Adjusted for: - Current taxes paid by persons living in institutional households, to be excluded</p> <p>Differences not reconciled: - Current taxes other than personal income tax (only NA figure)</p>	<p>Personal income tax and regional tax on productive activities paid by the self-employed (It-Silc indicator)</p> <p>Adjusted for: - Regional tax on productive activities paid by the self-employed, to be excluded - Tax balance (tax credit and debit HY145N), to be included - Tax refund related to the bonus provided by Decree Law No. 66/2014 (Renzi Decree), net of share of the Tax refund which does not find tax capacity of the taxpayer, to be included</p>
<p><b>Households' actual social contributions (D.613P)</b> Social contributions payable on their own behalf by employees to social insurance schemes Social contributions payable on their own behalf by self-employed or non-employed persons Adjusted for: - Actual social contributions payable by persons living in institutional households, to be excluded</p> <p>Differences not reconciled: - Actual social contributions payable by employees and self-employed to private social insurance schemes (only NA figure) - Actual social contributions payable by non-employed persons (only NA figure)</p>	<p>Actual social contributions payable by employees (It-Silc indicator) Actual social contributions payable by self-employed (It-Silc indicator)</p>
<p><b>Social benefits other than STIK received (D.62R)</b> Old-age benefits Survivors' benefits Disability benefits Unemployment benefits Family allowance benefits Social exclusion benefits Adjusted for: - Social benefits other than STIK receivable by persons living in institutional households, to be excluded</p> <p>Differences not reconciled: - Social benefits provided by private social insurance schemes (only NA figure)</p>	<p>Old-age benefits (PY100G) Survivors' benefits (PY110G) Disability benefits (PY130G) Unemployment benefits (PY090G) Family/children related allowances (HY050G) Social exclusion not elsewhere classified (HY060G) Adjusted for: - Tax refund related to the bonus provided by Decree Law No. 66/2014 (Renzi Decree), to be included</p>

## 2.2.2 The micro source

### 2.2.2.1 Introduction

Eu-Silc is a cross-sectional and longitudinal sample survey, coordinated by Eurostat, based on data from the European Union member states. Eu-Silc provides data on income, poverty, social exclusion and living conditions in the European Union. It represents the first example at European level of a harmonized survey with the aim of producing income data at individual and household levels, both net and gross of taxes and

social security contributions. The harmonized definition of income adopted in Eu-Silc is the internationally accepted one based on the economic definition of "disposable monetary income", in line with most of the recommendations contained in the Canberra manual (2011). The main components that contribute to the formation of disposable income, as defined in Eu-Silc, are labour income (employee, self-employed), capital income (i.e. rental income or money derived from financial assets, excluding capital gains), social security transfers (pensions benefits and other cash benefits) and private transfers (cash from other families or institutions).

### **2.2.2.2 The income estimation process in the Italian Eu-Silc**

The Italian experience (It-Silc) within the Eu-Silc project presents, in measurement of income variables and data capturing and processing, elements of originality that distinguish it from those of other National Statistical Institutes. The peculiarity of the Italian project consists in the combined use of administrative and survey information on incomes, through a strategy that exploits the record linkage of individual income data collected respectively by sample survey and admin data-sources (Social security and Fiscal Agency registers). The advantages achieved with this approach are mainly four: reduction of the response burden, better level of coverage of the data, greater accuracy in the measurement of the analysis variables and higher level of granularity in the information produced. As a counterbalance to the gain in terms of data quality, there is the need to make an important effort and investment of resources over time (time consuming), in order to guarantee the satisfaction of some important requirements, typical of the micro integration of information collected by multiple sources (van der Laan, 2000).

Estimating net income in It-Silc is a highly complex process, resulting from a sequence of interconnected phases. It can be schematized as a flow that starts from the definition and reconciliation of individual income profiles, captured with a multi-source strategy (survey data and administrative registers). The subsequent steps are the implementation of optimal methodological solutions for the harmonization of information content between the two kinds of sources, the editing and imputation procedures with the use of external auxiliary information and, finally, the setting/alignment of income levels for each distinct economic component (Consolini, 2009; Consolini and Donatiello, 2015).

Historically, the questionnaire on the income components in It-Silc is structured according to a battery of questions, with a sequence that firstly provides the mapping of the sources of income through a specific general prospectus, and secondly it moves to the sections dedicated to the collection of increasingly detailed information for each type of income.

Over time, several innovations and methodological enhancements have been made, the most relevant being the transition to the CAPI (Computer Assisted Personal Interviews) data collection technique, which took place in the 2011 edition, which allowed the implementation of confirmation checks from a longitudinal perspective<sup>8</sup>.

Furthermore, starting from the 2016 edition, a new version of the questionnaire was introduced, appositely designed for the new mixed mode CAPI/CATI (Computer Assisted Telephone Interviews) data collection system, which has benefited from developments in the acquisition and processing of databases from administrative registers. All items whose information was already present in administrative archives were therefore eliminated, provided that the content of the latter was not systematically affected by errors or under-declarations. Overall, 46 questions out of a total of 130 questions were suppressed. Among the items eliminated, there were all categories of public pension schemes, almost all of the non-pension cash benefits, income from copyrights, job vouchers, scholarships, tax balance of income tax return and Municipal tax on real estate (IMU).

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<sup>8</sup> See Donatiello (2014).



The collection of income information from administrative sources has shown a constant process of refinement and improvement over the years, with an increase in its relevance in quantitative and qualitative terms. New administrative databases have been added during the last decade, which have made it possible to cover a higher share of non-pension cash benefits (Consolini et. al., 2021), as well as to provide a better estimate of housing rental incomes and Irpef (Personal Income Tax) bonus (€80 tax bonus).

### 2.2.2.3 The reconciliation of micro macro income aggregates

In Eu-Silc, the gross employee cash or near cash income (variable PY010G) is the sum of net income, personal income tax and employee's social security contributions. The employer's imputed social contributions relating to sick pay for the first three days of absence, in the case of Italy, are up to now included in the remuneration of employees.

In order to calculate an aggregate corresponding to the National Accounts (NA) wages and salaries, the non-cash employee income (PY020G) was added to PY010G. Since the PY010G variable includes the wage arrears received in the reference year, this component has been separated from the total. Furthermore, the gross income received by the cooperative members and the amounts of the job vouchers which normally flow into the income from self-employment have been added to the employee income, as in NA they are classified as wages and salaries. All the adjustments introduced made it possible to realign the definitions, reducing the initial overestimation of Eu-Silc employee income. In Italy, the social security contributions are estimated using the SM2-Eu-Silc microsimulation model<sup>9</sup>. The employer's social security contributions correspond to the sum of the actual contributions and the provisions for severance pay (target variable PY030G). This variable has been estimated in the Italian Silc since 2004 but is still not included in the European definition of total gross household income (HY010). Moreover, the imputed social security contributions are partially covered by the variable PY020G (fringe benefits).

Gross income from self-employment (PY050G), like employee income, is the sum of net income, personal income tax<sup>10</sup> and social security contributions. Social security contributions also include the contributions of para-subordinate workers and job vouchers. As known, the self-employment income is a difficult component to collect due to the intrinsic fluctuations of the annual amounts, the reticence of the interviewees and the significant share of the undeclared income. The Eu-Silc income from self-employment can be classified in NA both as a share of mixed income of producer households and as income distributed by non corporations and quasi-corporations other than dividends. Eu-Silc self-employment income results significantly underestimated and it is comparable only with a part of the NA aggregates. In addition, in order to realign the Eu-Silc employee income to the macro item, the incomes of cooperative members and job vouchers, included in PY050G, have been subtracted from the total, further widening the gap with the macro aggregates.

The Eu-Silc personal income tax corresponds to the sum of direct taxes: Irpef and regional and municipal taxes, the flat tax on financial activities and the tax on income with separate taxation (arrears, lump sum, etc.). The personal income tax is then aggregated at the family level in the European variable HY140G, which also includes the social contributions paid by family members. At the national level, a variable on the total of individual taxes is estimated and made available, which is comparable with the aggregates of the NA relating to personal income taxes (Irpef) and withholding taxes on interest and capital income.

In order to align the Eu-Silc total tax with the NA aggregate, the estimated Irap (regional tax on productive activities) was subtracted from the total, the tax balances (tax credit and debit HY145N) added as well as the share of the "Irpef bonus", which does not find tax capacity of the taxpayer. In Eu-Silc the Irpef bonus is

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<sup>9</sup> See: Donatiello (2011) and Consolini and Donatiello (2013).

<sup>10</sup> The self-employment income tax includes a part of the Irap (Regional tax on productive activities). Irap is estimated by applying the Irap rate to the part of the taxable base of the self-employed, which corresponds to the Irpef taxable income. Being calculated on this base, the Irap is for this part assimilated to a personal income tax.

basically treated as a tax deduction and only the quota that is not covered by the tax is classified as social exclusion (HY060N), while in NA it is totally classified as social benefit.

Finally, to reduce the gap relating to the total disposable household income (HY020) and considering the availability of national data in Silc, also an “adjusted disposable household income” was estimated in addition to the HY020 variable, including imputed rents, goods produced for self-consumption, and the total of fringe benefits.

### 2.3 Gap allocation methods and components

The OECD guidelines (OECD, 2020) suggest four methods to distribute income components across households:

- Method A (direct method): micro source totals are scaled up or down so their totals match National Accounts totals; the distribution of the gap is made proportionally to the micro values of same indicator.
- Method B (indirect method based on proxies): a missing or unreliable micro component is estimated using the distribution of a different component as a proxy, i.e. it is assumed that the considered component can be distributed proportionally to a distinct and related component.
- Method C (indirect method based on external data): a missing or unreliable micro component is estimated using the distribution of exogenous information as a proxy, i.e. it is assumed that the component considered can be distributed proportionally to an external, distinct and related component (e.g. economic information from other sources).
- Method D (invariant method): the remaining components are distributed in proportion to the total of all the National Accounts components distributed with the previous methods; as a result, these components have no impact on the overall distribution of disposable income.

The above described methods are applied after the adjustment of National Accounts totals to exclude any amount that does not pertain to resident private households.

The shares of household disposable income distributed with the different methods listed above for the years from 2018 to 2020 are shown in Table 2.3. More than 85% of income is distributed using a direct method (A), only less than 10% is distributed using the invariant method (D). Furthermore, in the considered period the share distributed with the direct method (A) continuously improves and at the same time the invariant method (D) share progressively decreases.

*Table 2.3 Income components distribution by method – years 2018 – 2020 (percentage composition)*

	Method A	Method B	Method C	Method D
2018	85.1	2.8	2.6	9.5
2019	85.3	3.0	2.5	9.3
2020	85.9	3.2	2.3	8.5

The method used to estimate the distribution of each aggregate entering into the disposable income is shown in Figure 2.1. The color identifies the method defined above, as specified in the legend. The figure shows in

the rows the various components involved in the calculation of disposable income and in the columns the breakdown by direction of the flow (received or paid) and type of household (consumers and producers).

Figure 2.1 Methods used to estimate the distribution of income components

Disposable income					
		Received		Paid	
		Consumer households	Producer households	Consumer households	Producer households
Operating surplus	Imputed rents main dwellings gross of FISIM	Regular rents		FISIM on mortgages	
	Imputed rents other dwellings	Irregular rents			
Mixed income	Own account production: agricultural	Non-observed components: illegal activities			
	Own account production: major maintenance	Non-observed components: under-reporting			
		Non-observed: undeclared self-employment			
		Observed components			
Compensation of employee	Wages and salaries				
	Employers' actual social contributions				
	Employers' imputed social contributions				
Property income	Interest		Interest		
	Dividends				
	Withdrawals from income of quasi-corporations: Non-observed components				
	Withdrawals from income of quasi-corporations: Observed components				
	Other distributed income of corporations: Non-observed components				
	Other distributed income of corporations: Observed components				
		Other investment income			
		Rents		Rents	
Current taxes			Current taxes on income, wealth etc	Current taxes on income, wealth etc	
Social benefits other than STiK	Old-age, survivors', disability, social pension; unemployment severance pay; other severance pay; unemployment benefits, cig (short term working allowance), other; family allowances; social exclusion (tax bonus)		Employers' actual social contributions		Net social contributions
	Social exclusion (other)		Employers' imputed social contributions		
			Households' actual social contributions		
Other current transfers	(Non-life) insurance claims		Social insurance scheme service charges (-)		
	Miscellaneous current transfers		Net premia (non-life insurance)		
	Current transfers received from other households		Current transfers paid to other households		
	Current transfers received from from AP, NPISHs, RoW		Current transfers paid to AP and NPISHs		
		Current transfers received from from AP, NPISHs, RoW		Current transfers paid to RoW	

A Method    
 B Method    
 C Method    
 D Method

## 2.4. Social Transfers in Kind Distribution Estimation Method

Social Transfers in Kind (STiK) consist of individual goods and services provided free or at prices that are not economically significant to individual households by government units and nonprofit institutions serving households (NPISHs), whether purchased on the market or produced as non-market output by government units or NPISHs. They are financed out of taxation, other government income or social security contributions, or out of donations and property income in the case of NPISHs.

Adding them to household disposable income leads to the adjusted disposable income.

In Italy, the total amount of STiK was equal to 17% of disposable income in the years 2015 – 2019 and rose to 18% in 2020. Those on health were the largest share of STiK (on average 55.8% of the total over the years 2015 – 2019), while those on education accounted for around 30% of the total (on average 30.4% over the years 2015 – 2019). In 2020, the first year of the Covid-19 pandemic, the share of STiK on health rose to 57.9%, while that of other STiK decreased from an average of 13.8% in 2015 – 2019 to 12.1% (the share of STiK on education showed only a small decrease, to 30.0%).

STiK are up to now beyond the scope of Eu-Silc and of its Italian version. Therefore, their distribution estimation requires the use of other sources.

The EG DNA guidelines suggest two approaches for the estimation of the STiK distribution: the actual value approach, according to which values are allocated to households on the basis of the actual transfers they receive; and the insurance value approach, according to which values are allocated on the basis of an insurance premium equivalence households would have to pay to obtain the same protection.

The insurance value approach was chosen for STiK on health by all except one of the countries whose estimates were considered by Zwiijnenburg et al. (2021), while the actual value approach or a modelled one using socio-demographic information was chosen by most of these countries for STiK on education.

The methodology described in the following of this Section is coherent with those applied in other countries: in fact, it is an application of the insurance value approach for STiK on health and of the actual value approach for STiK on education.

More specifically, for STiK on health, the estimates by the Ministry of Economics and Finance of the per capita expenditure on health services by the general government by type of service, year, age and sex of the beneficiary were imputed to the Italian Silc respondents' samples, using the information available on age and sex of the household members. The following types of services were considered: hospital services, outpatient services, medical products and equipment, public health services. Proportional correcting factors were considered to ensure that the grossed up figures matched the National Accounts estimates of total general government expenditure on health, adjusted to exclude the share pertaining to institutional households. The National Accounts estimates of total NPISHs expenditure on health, adjusted in their turn to exclude institutional households, were distributed proportionally to the adjusted general government expenditure on health.

For STiK on education, the figures produced by the Ministry of Education, University and Research on the number of students enrolled in public schools (by year, school level and geographical area) and universities (by year and geographical area) were used. These figures, together with the National Accounts estimates of the general government expenditure on education for each year and education level (adjusted to exclude the share pertaining to institutional households), allowed to calculate per capita expenditures by general government by year and education level. These per capita expenditures were imputed to the Italian Silc respondents' samples, using the information available on the enrollment in schools or universities of the household members. Also in this case, proportional correcting factors were considered to ensure that the grossed up figures matched the adjusted National Accounts estimates of total general government expenditure on education. A residual 6% of general government expenditure on education (other types of education and auxiliary services to education) was distributed proportionally to the general government expenditure on education for schools and university. The National Accounts estimates of total NPISHs expenditure on education, adjusted in their turn to exclude institutional households, were distributed proportionally to the adjusted general government expenditure on education.

Finally, the National Accounts estimates of total general government expenditure on other STiK, adjusted to exclude institutional households, were distributed proportionally to the total expenditure by general government and NPISHs on education and health.

### **3. Household income distribution in the framework of national accounts: the estimates**

#### **3.1 Inequality indicators and household distribution by income quintiles– years 2015 - 2020**

The inequality in the estimated distributions of National Accounts household disposable income and its main components is measured via the Gini index and the ratio between the values for the fifth and the first income quintiles (Q5/Q1).

For disposable income, both indices are quite similar in the period 2015-2019, whereas in 2020, as expected, the inequality increases (see Figures 3.1 and 3.2). In 2020 the Gini index reached 0.360, 2.4% higher than in 2019, and Q5/Q1 reached 5.3, 5% higher than in 2019. During the years from 2015 to 2019, inequality, as measured by both indices for all components, is very stable over time. Only in 2020, there is an increase in

inequality for all components with the exclusion of social benefits, for which the Gini index decreased by 6.4%, as an effect of the significant increase in public transfers (see also Section 3.2).

Figure 3.1 - Gini index for household disposable income and its main components - Years 2015-2020

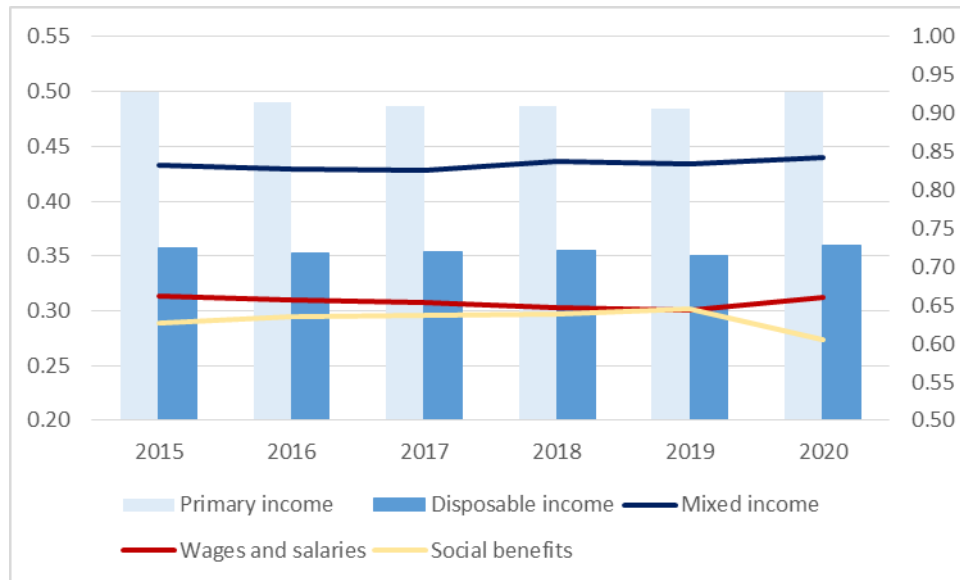
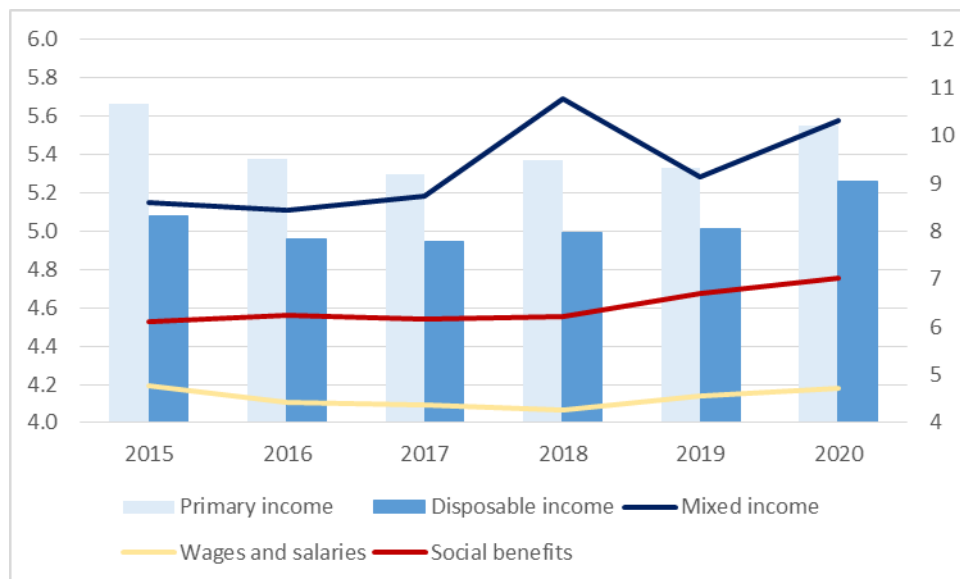


Figure 3.2 - Q5/Q1 for household disposable income and its main components - Years 2015-2020



Figures 3.3 and 3.4 show the same indices to highlight the redistributive nature of the Social Transfers in Kind for health and education. The inequality indicators allow to assess also the different redistributive effects of STiK. Those related to education, in fact, are naturally concentrated in the quintiles where children are more present, which are often the lowest ones. The reduction in inequality generated by STiK on education is reflected in the considered measures: the Gini index on STiK on education is quite high (ranging from 0.82 to 0.84), while Q5/Q1 is very low (around 0.3). On the other hand, STiK related to health are fairly distributed among quintiles, with the exception of the first quintile where they are somewhat lower because of the large

presence of children and of per capita health expenditures increasing with age. The redistributive effect of STiK on health is especially apparent in their low Q5/Q1, which ranges between 1.2 and 1.3.

Figure 3.3 - Gini index for household disposable income, Social Transfers in Kind and adjusted disposable income - Years 2015-2020

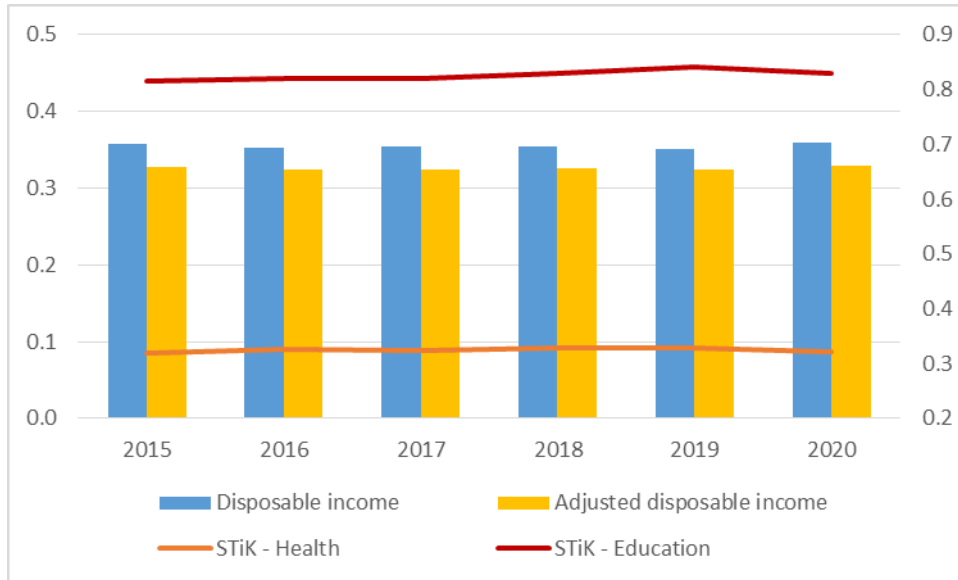
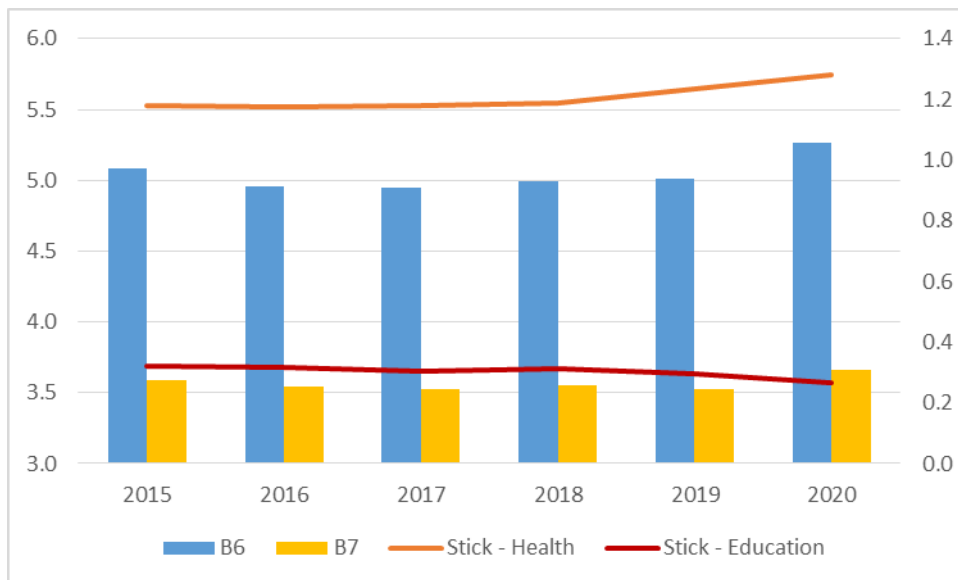
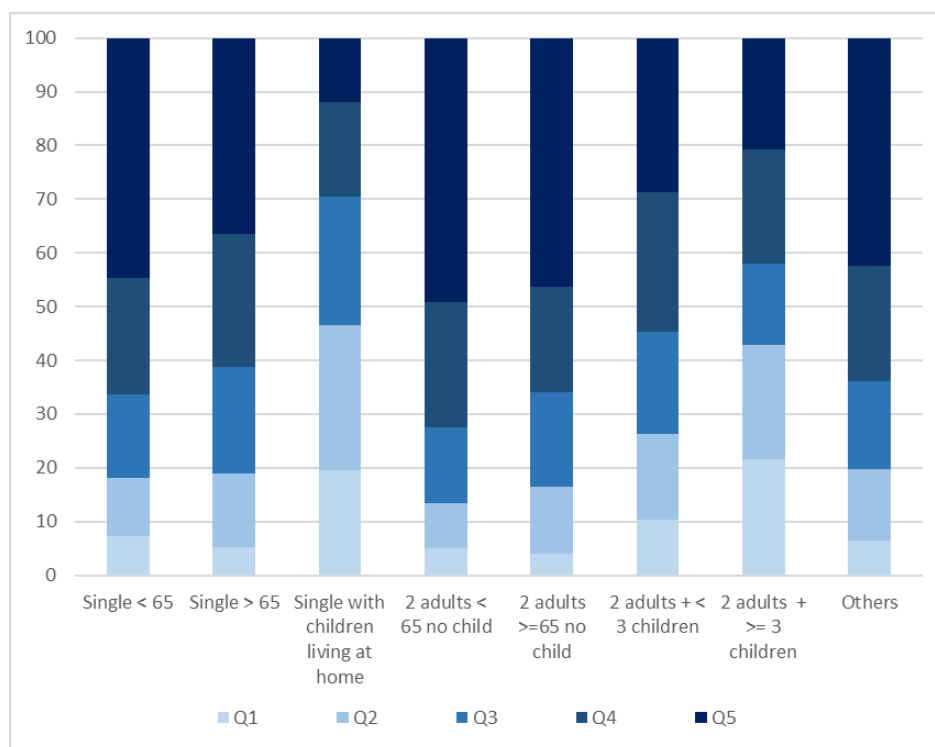


Figure 3.4 - Q5/Q1 for household disposable income, Social Transfers in Kind and adjusted disposable income - Years 2015-2020



If we consider the distribution of different types of households by income quintiles for a representative year (2019), it can be observed that at least 60% of households composed by one or two adults with no children belong to the two highest quintiles (from 61% of household composed of a single with more of 65 years to 72% of those composed of two adults with less of 65 years with no child, see Figure 3.5). On the other hand, less of 30% of households composed of a single with children at home are in the two highest quintiles. More than 46% of household composed of a single with children living at home and about 43% composed of two adults with three or more children living at home are in the two lowest quintiles.

Figure 3.5 Household distribution by quintile and type of household - Year 2019 (percentage composition)



### 3.2. First Estimates of the Effects of the Covid-19 Crisis in 2020

#### 3.2.1 The policies implemented by the Italian Government in response to the Covid-19 crisis

In 2020, the first year of the Covid-19 pandemic, disposable household income decreased, due to the effects of the sharp contraction in economic activity, only partially offset by the income support and labour market policies to mitigate the economic crisis and job losses<sup>11</sup>.

The decree-laws issued by the Italian government, during the Covid-19 pandemic crisis, provided for extensive public programs to preserve employment and income levels and, at the same time, to relieve enterprises from the cost of labor during periods of inactivity, granting them financial support because of the collapse of revenues.

In this emergency phase there was a massive recourse to the wage subsidies (partial unemployment benefits)<sup>12</sup> by means of the Wage Guarantee Fund - WGF (Cassa integrazione guadagni), sometimes adapted to extend its coverage to a wider range of employees, and other ad hoc measures to support those who were not covered by WGF (self-employed, professional workers, seasonal workers, etc.). As a corollary of these public interventions, there was a parallel temporary suspension of individual and collective dismissals for economic reasons, until the end of the lockdown period, after the various pandemic waves. During the first pandemic period (March to December 2020), wage subsidies played a key role in supporting labor income. According to the It-Silc survey, the total number of wage subsidies recipients was 6.04 million, representing around 37.4% of the employee workforce of the private sector. In 2020, about 97.4% of all wage subsidies were related to the Covid-19 crisis. The total annual cost of wage subsidies related to Covid-19 is estimated at around 9 billion euros after tax. On average, wage subsidy recipients received around 1,490 euros as

<sup>11</sup> See Istat 2022.

<sup>12</sup> It represents a social shock absorber that supplements or replaces the remuneration of employees who are in severe economic hardship due to the suspension or reduction of their working hours.

monetary transfers net of taxes. Recipients of this form of partial unemployment benefit grew 14-fold over 2019, and related net social spending increased ten-fold. In terms of coverage rate, throughout 2020 there was a greater use of wage subsidies among permanent workers (41.5%) compared to those with a fixed-term employment contract (23.7%). Wage subsidies were more widely paid in the following sectors: accommodation and catering (50.3% of workers in the sector), industry in strict sense (49.3%) and commerce (48.3%). While the sectors of financial and insurance activities (8.9%), agriculture (5.2%) and domestic services (3.5%) were only marginally involved. Women employed in the private sector had less access to wage subsidies compared to their male counterparts (39.6% and 34.2% respectively). Furthermore, middle age employees (35-44 and 45-54 years) were supported by Wage Guarantee Funds more often than younger (15-34 years) or older (55-64 and at least 65 years) colleagues. Finally, the recourse to the Wage Guarantee Fund was relatively more spread among workers living in the North-East (40.7%), North-West (38.8%) and Center (38.9%) and less in the South of Italy (31.8%).

For those whom the Wage Guarantee Fund did not cover, because not employed or with a temporary contract, a one-off benefit was provided: a 600-1000 euro bonus (i.e. non-repayable grant). On the basis of It-Silc, it involved 4.3 million beneficiaries in 2020, corresponding to a net public transfer of 6.2 billion euro (1,450 euro per capita). This measure was the prerogative of self-employed workers (67.5%), only secondarily assigned to employees (22.4) and, to an even lesser extent, to collaborators (4.8%) and unemployed (5.3%).

During the period of the Covid-19 health emergency, the Government implemented also a series of exceptional interventions for the reconciliation of working hours and family care: parental leave and a bonus for babysitting service<sup>13</sup>. According to It-Silc, 765 thousand Italian workers had access to the babysitting bonus during 2020, for a social expenditure of 870 million euros (1,140 euros per capita).

In addition to the Covid-19 social protection measures tailored to workers and their families, the legislator implemented an extraordinary income support measure, specifically aimed at combating poverty: the emergency income (Reddito di Emergenza, REM). The REM was a selective, means-tested and conditional measure, designed with the aim of supporting households in unmet needs due to the Covid-19 crisis. Based on It-Silc, in 2020, the REM was received by around 330 thousand households, guaranteeing them monetary transfers estimated at around 680 million euros (2,085 euros per household). Of these REM recipient households, 54.8% belonged to the poorest quintile of the equivalised<sup>14</sup> income distribution, and 95.4% were below the fourth quintile.

Among the pre-existing measures to fight poverty in Italy, the basic income (Reddito di Cittadinanza, RdC) assumed a key role in 2020. In 2019, approximately 970 thousand households (3.8% of all households) received an average of slightly over 3,980 euros per year. Nonetheless in 2020, It-Silc estimated that the RdC involved over 1.3 million households (5.3% of all households), with an annual benefit of 5,216 euros per household. In 2020, 57.8% of households who received the RdC belonged to the poorest quintile, and 90.3% were below the fourth quintile.

### **3.2.2 Estimates of the distributional effects of the Covid-19 crisis in the National Accounts framework**

A number of studies have proposed analysis of the effects of the Covid-19 pandemic on household income inequality. In particular, Carta and De Philippis (2021) have studied the pandemic effects on labour income inequality via simulation. Moreover, Istat (2022) and Gallo and Raitano (2023) have simulated the effects of the pandemic and the emergency benefits on individual and household income distribution. Furthermore, Di

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<sup>13</sup> The babysitting bonus was paid for a total maximum of 600 euros per household; it could be spent for the assistance and supervision of children during the period of closure or suspension of school services due to Covid-19 infection.

<sup>14</sup> Household members are equalised or made equivalent by weighting each according to their age, using the so-called modified OECD equivalence scale. This scale, first proposed by Haagenars et al. (1994), assigns a value of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child.



Pietro (2022) has used longitudinal data from a Bank of Italy survey to estimate changes in household income during the pandemic.

The estimates of the household income distribution presented above allow a first assessment of the effects during 2020 of the Covid-19 pandemic and the above described policies coherent with the National Accounts macroeconomic aggregates.

As expected, due to the much lower activity levels, both mixed income and wages and salaries decreased for all income quintiles between 2019 and 2020 (with the exception of wages and salaries for the third quintile, see Figure 3.6). The reduction of mixed income was more pronounced for the first three quintiles (ranging from -12% to -17% of 2019 values), while the decrease in wages and salaries was especially large for the fourth quintile (-14% of the 2019 value). Social contributions and income taxes decreased in parallel with labour income.

The effect of these changes was an increase in the inequality of the distribution of primary incomes, by 3.2% when measured via the Gini index, and by 5.0% in terms of ratio between Q5 and Q1.

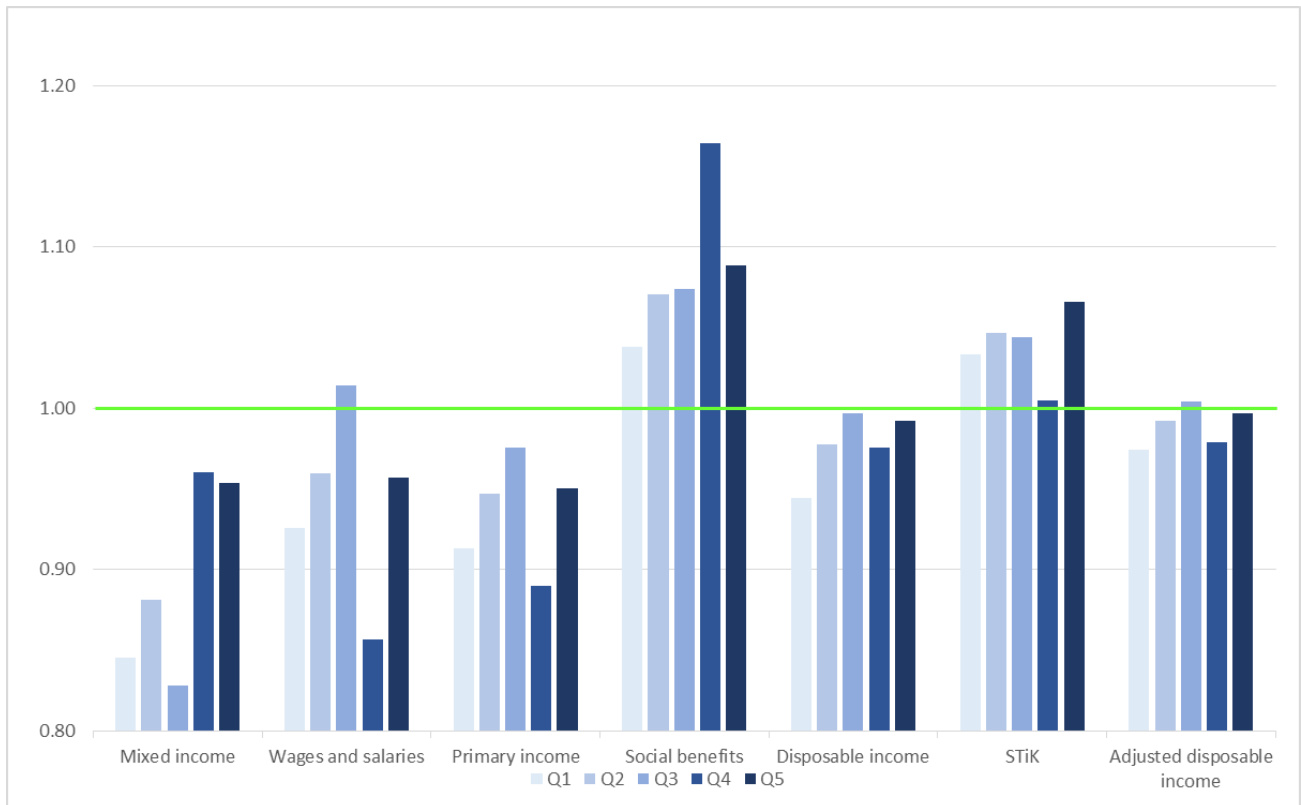
Social benefits (non in kind), which included most of the monetary transfers to households generated by the above described emergency policies, were able to only partially counter the increase in inequality in primary income. In particular, unemployment benefits and wage subsidies, whose increase in 2020 was especially large up to the fourth quintile (ranging from + 87% to +130% with respect to 2019), contributed to contain the increase in inequality. However, old age pensions partially countered the redistribution allowed by wage subsidies and unemployment benefits: in fact, they were lower in 2020 than in 2019 in the first three quintiles (especially in the first and second quintiles, -25% and -13% respectively) and they increased in the highest two (+9% in the fourth quintile and + 8% in the fifth one). As a whole, monetary social benefits increased between 2019 and 2020 for all quintiles, but the increase was larger both in values and in percentage terms for higher quintiles.

Therefore, the distribution of household disposable income was more unequal in 2020 than in 2019, as indicated in Section 3.1.

The distribution of social transfers in kind, on the other hand, was in 2020 less unequal than in 2019, especially when measured by the Gini index (-4.8% between 2019 and 2020). Both transfers for health and education contributed to this result.

Consequently, the decrease in adjusted disposable income was smaller in percentage terms than that in disposable income, especially in the first quintile (-6% for disposable income, -3% for adjusted disposable income).

*Figure 3.6 – Household disposable income and its main components by income quintile – ratio between 2020 and 2019 values*



Households composed by two adults younger than 65 years and those composed by two adults and less than three children were those most affected by a contraction of primary incomes (respectively, -11% and -10%, see Figure 3.7).

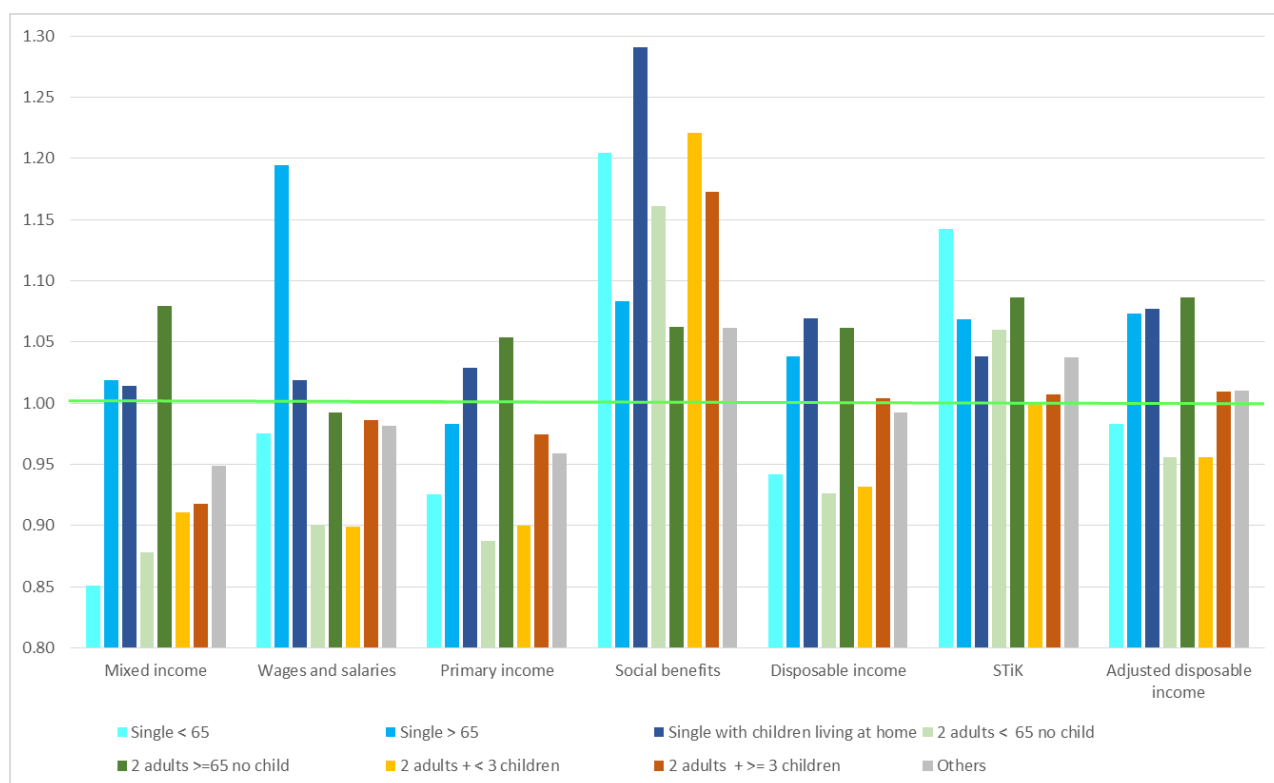
However, they were among those for which social benefits rose more, together with households composed by single persons younger than 65 years, single persons with children, and two adults with more than three children (with increases ranging from +16% to +29%).

The expansion of social benefits fully compensated the decrease in primary income for single persons aged 65 or plus and households composed by two adults and more than three children.

Social transfers in kind increased for all types of households (with the exception of those composed by two adults and less than three children, for which they remained unchanged), with the larger increases being driven by health expenditure and therefore being allocated more to households with no children (per capita health expenditure is estimated to increase with age).

Therefore, for all household types the ratio between 2020 and 2019 values of the adjusted disposable income was higher than the corresponding ratio for disposable income.

*Figure 3.7 – Household Disposable income and its main components by household type – ratio between 2020 and 2019 values*



#### 4. Concluding Remarks and Way Forward

The estimates of Italian household income distribution in the framework of National Accounts for the years 2015 – 2020 have been produced coherently with the methodology proposed in the OECD – Eurostat Expert Group on Disparities in a National Accounts Framework and partly in the context of the 3<sup>rd</sup> exercise coordinated by the Expert Group itself.

They are based on a deep interaction between micro and macro experts, and an in-depth analysis and comparison of two main sources, namely the Italian version of Eu-Silc and National Accounts household macroeconomic aggregates.

These interactions and analysis have allowed a careful choice of the most appropriate method to distribute each income component at a high level of disaggregation.

In addition, the allocation of income components not within the scope of Eu-Silc, and in particular STiK, has been carried out, to assess also their impact on inequalities.

The estimated household income distribution has been analysed by income quintiles and socio-demographic household characteristics, such as household type. Moreover, inequality indicators such as the Gini index and the ratio between the values allocated to the fifth and first quintiles have been calculated.

Following a description of the main policies implemented in 2020 by the Italian government to respond to the economic shocks generated by the Covid-19 pandemic, a first assessment of the effects of the pandemic and policies on the estimates coherent with the National Accounts macroeconomic aggregates has been presented, highlighting the different impact of the shock and policies across income quintiles and household types.

Some improvements to the methods presented in this paper could be studied, to better estimate the distributions of income components that are not within the scope of Eu-Silc, or are affected by significant measurement problems in the household survey. In particular, these improvements could target: property

income; the income components related to the non observed economy; and the distribution of some components among more affluent households, for example via a Pareto tail distribution.<sup>15</sup>

Sensitivity analyses could be considered to assess the impact of different assumptions or allocation methods, in particular, for the just mentioned income components and distribution tails.

The estimates currently published as experimental statistics in the OECD and Eurostat public databases refer to the entire households sector, to allow comparisons with those produced by other countries. The distributional estimates coherent with the National Accounts that will be published in future in Italy will refer only to the sub-sector of households as consumers.

The estimation of the distribution of household consumption is currently being studied at Istat.

The joint distribution of income and consumption could lead to the estimation of that of saving rates.

Analyses of the joint distributions of income, consumption and wealth could be carried out in cooperation with the Bank of Italy, in the light of their estimation of wealth distribution in the context of the Expert Group on Distributional Financial Accounts.<sup>16</sup>

In coherence with the new G20 Data Gaps Initiative on distributional results on income, consumption and saving in line with National Accounts totals,<sup>17</sup> improvements to the timeliness of the income distribution estimates could be pursued. To this aim, the increase in timeliness of the Italian version of Eu-Silc and the possibility to apply nowcasting techniques, such as those currently studied for these distributional estimates at the OECD,<sup>18</sup> could be explored. Furthermore, increases in the granularity of the estimates, in particular to income deciles and top percentiles, could be studied.

Increases in granularity could be desirable also to improve the alignment of the distributional estimates breakdowns with those discussed for other domains that will likely be included in the sections on well-being and sustainability in the SNA update.<sup>19</sup>

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<sup>15</sup> See, for example, Törmälehto (2019).

<sup>16</sup> See Kavonius (2023).

<sup>17</sup> See <https://www.imf.org/en/News/Articles/2022/11/28/pr22410-g20-leaders-welcome-ndgi-to-address-climate-change-inclusion-financial-innovation>

<sup>18</sup> See Levy (2023).

<sup>19</sup> See the consultations on the 2008 SNA update issues at: <https://unstats.un.org/unsd/nationalaccount/raconList.asp>

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