

RECONSTRUCTING INCOME INEQUALITY IN ITALY: NEW EVIDENCE AND TAX SYSTEM IMPLICATIONS FROM DISTRIBUTIONAL NATIONAL ACCOUNTS

Demetrio Guzzardi

Institute of Economics and EMbeDS,
Scuola Superiore Sant'Anna, Italy

Elisa Palagi

Institute of Economics and EMbeDS,
Scuola Superiore Sant'Anna, Italy

Andrea Roventini

Institute of Economics and EMbeDS,
Scuola Superiore Sant'Anna, Italy.
OFCE Sciences Po, France

Alessandro Santoro

Department of Economics, Management
and Statistics, University of
Milano-Bicocca, Italy

Abstract

This work reconstructs novel series on income distribution in Italy combining survey data, tax data, and National Accounts both at the national and regional levels, and it analyzes the overall progressivity of the tax system. Our new Distributional National Accounts allow to correct for remarkable misreporting of capital income in surveys, to provide more accurate estimates of consumption, and to better account for the role of informal economy. Our fresh estimates show higher income concentration at the top 1% and 0.1% with respect to previous studies in order of 1.5 percentage points. Moreover, the share of national income of the richest top 10%, top 1%, and top 0.1% has been steadily increasing after the 2008 crisis. Our results shed further light on the multifaceted nature of inequality in Italy: youngest individuals, women, and inhabitants of Southern regions have been increasingly exposed to growing levels of inequality. Finally, the Italian tax system is only slightly progressive up to the 95th percentile of the income distribution, and *regressive* for the top 5%. Moreover, it is regressive throughout the whole distribution when individuals are ranked with respect to their net wealth. (JEL: D31, E01, H2, H5)

The editor in charge of this paper was Guido Lorenzoni.

Acknowledgments: We thank Salvatore Morelli, Clara Martinez-Toledano, Marc Morgan, Thomas Blanchet, Antonio Scialà, Bertrand Garbinti, Jonathan Goupille-Lebret, David Splinter, Emmanuel Saez, Arun Advani along with participants at the EAEPE 2021, SIEP 2021, World Inequality conference 2021, 2022 RES, 2022 WEHIA, LISIT 2023, ECINEQ 2023, the Editor, and three anonymous reviewers for useful comments and suggestions. All usual disclaimers apply. Elisa Palagi and Andrea Roventini acknowledge the support by the European Union's Horizon 2020 research and innovation program under grant agreement No. 822781—GROWINPRO.

E-mail: demetrio.guzzardi@santannapisa.it (Guzzardi); elisa.palagi@santannapisa.it (Palagi); andrea.roventini@santannapisa.it (Roventini); alessandro.santoro@unimib.it (Santoro)

Journal of the European Economic Association 2024 00(0):1–45

<https://doi.org/10.1093/jea/jvad073>

© The Author(s) 2023. Published by Oxford University Press on behalf of European Economic Association. All rights reserved. For permissions, please e-mail: journals.permissions@oup.com

1. Introduction

This work contributes to the research on income inequality and taxation by (i) showing new and more precise estimates on the distribution of income in Italy by combining survey data, tax data, and National Accounts (NA) both at the national and regional levels, and (ii) investigating the overall progressivity of the Italian tax system. We do so by first constructing Distributional National Accounts (DINA) for Italy, and then by studying which categories of taxpayers are most affected by the different types of taxes collected at the national level.

In recent years, the literature on country-specific studies on income inequality has flourished (Piketty and Atkinson 2010). For Italy, there have been several works investigating the degree of inequality in recent decades. Some studies use synthetic indexes such as the Gini index and focus on raw surveys from the Bank of Italy without applying any particular adjustment to the underreporting of capital income (Brandolini and D'Alessio 2001; Brandolini 2008; Jappelli and Pistaferri 2010; Ciani and Torrini 2019). The latter works find mixed evidence. Studies that use administrative data or complement with surveys and other sources, such as NA, report increasing trends since the 1980s up to the 2000s and, subsequently, stagnating dynamics for several inequality indicators (Alvaredo and Pisano 2010; Blanchet, Chancel, and Gethin 2022a). The literature has also investigated income inequality at a more fine-grained geographical scale, finding higher inequality in Southern Italy with respect to Central and Northern areas (Acciari and Mocetti 2013; Güell et al. 2018). However, methodologically, there is room for improvements in the estimates by distributing the national income to individuals as in Blanchet, Chancel, and Gethin (2022a), who correct the European Union Statistics on Income and Living Conditions (EU-SILC) surveys using Personal Income Tax returns (PIT¹) and distribute the imputed rents and undistributed profits to individuals in order to obtain an initial approximation of the national income gross and net of taxes.² However, the latter work, wishing to derive a first estimate for all European countries, lacks enough specificity in order to take into account some detailed characteristics of the individual States such as the use of a more robust distribution of capital incomes based on improved estimates of personal wealth (see Section 3.1 for further details), and a detailed analysis of the incidence of taxes at the personal level.

The distribution of income in a country is intimately intertwined with taxation policies. As showed in studies on the determinants of income inequality (Roine, Vlachos, and Waldenström 2009; Jaumotte and Osorio Buitron 2020), the progressivity of the tax system is one of the main factors influencing income inequality, with lower

1. In the case of Italy, we refer to the Imposta sui Redditi delle Persone Fisiche as the personal income tax.

2. A similar work is carried out by Ederer et al. (2022) for a wide set of European countries. However, they mainly utilize EU-SILC and data. In the next sections, we show that by focusing on Italy we can combine a rich ensemble of data sources.

top marginal tax rates being positively associated with more unequal distributions. The few studies assessing the overall degree of tax progressivity in France (Bozio et al. 2018), in the Netherlands (Bruil et al. 2022), and the United States (Piketty, Saez, and Zucman 2018; Saez and Zucman 2019, 2020) have shown that the tax system boils down to a flat tax over the whole income distribution.³ In particular, Saez and Zucman (2019) have documented how the degree of progressivity of the tax system has dramatically decreased starting from the 1950s.⁴ In Italy, although several studies have carried out a detailed analysis of the distribution of single categories of taxes (Gastaldi et al. 2017; Gastaldi and Liberati 2018; Di Caro 2020; Baldini 2021), the evidence on the degree of the overall progressivity of the tax system is still unsettled as the works (Amoureux, Guillaud, and Zemmour 2019; Ederer et al. 2022; Kuypers, Figari, and Verbist 2021) either include a limited set of categories of taxes or do not properly account for capital incomes.

For this reason, in this work we aim at reconciling different streams of literature to precisely reconstruct the Italian personal national income distribution and accurately estimate the progressivity of the Italian tax system taking into account several tax categories. More specifically, by combining different types of data and following the DINA methodology (cf. Alvaredo et al. 2016), our first contribution consists in distributing to individuals the entire national income reported in the NA reconciling for the first time macroeconomic data with microeconomic ones. Furthermore, our study is the first able to correct income for the impressively incomplete reporting of capital income information⁵ by combining survey data with new series on wealth distribution in Italy estimated by Acciari, Alvaredo, and Morelli (2023), consistent with total household wealth reported in macroeconomic aggregates.

With respect to antecedent DINA studies (Piketty, Saez, and Zucman 2018; Garbinti, Goupille-Lebret, and Piketty 2018; Ederer et al. 2022; Bruil et al. 2022), we provide some further novel methodological contributions possibly useful for other countries. First, our estimates are consistent with regional accounts, allowing for a more precise study of evidence at a sub-national level. Second, we combine our main dataset (IT-SILC, Istat) with more accurate information on consumption (HBS, Istat), instead of using the difference between income and savings as commonly done in other studies. In this way, we are able to include only consumption components that are effectively subject to the value-added tax (VAT) and to distinguish the actual VAT rates based on the categories of consumption.⁶ We also distribute the whole amount of direct

3. A recent study on the Netherlands (Bruil et al. 2022) finds that the tax system is regressive throughout the income distribution.

4. However, there is an open debate on the degree of progressivity of the US system, as results in Saez and Zucman (2019) are in contrast with estimates from other work reviewed in Splinter (2020).

5. In the definition of capital income, we include both income originating from financial assets and from real estate.

6. In the case of Italy we refer to the Imposta sul Valore Aggiunto. For more detailed information regarding the allocation of distinct VAT rates to individual consumption types see Online Appendix A.3.

and indirect taxes present in the NA at the individual level. In this way, we provide for the first time in Italy four different estimates of national income distribution (i.e. factor national income, pre-tax national income, post-tax disposable income, and post-tax national income) at both individual and household levels. Relatedly, with respect to most of the studies on Italian inequality (Alvaredo and Pisano 2010; Blanchet, Chancel, and Gethin 2022a), we better account for the relevant role of the informal economy by combining the estimates of the Non-Observed Economy (NOE) in the NA provided by the Italian official statistical office (Istat, cf. Agostinelli and Sallusti 2020) with heterogeneous evasion rates by income category and level following Albarea et al. (2020). Finally, we include a more precise distribution of capital income based on the reconstruction of wealth concentration carried out by Acciari, Alvaredo, and Morelli (2023).

Our novel and more precise estimates of income inequality in Italy revise upward those presented in (Alvaredo and Pisano 2010; Blanchet, Chancel, and Gethin 2022a): the concentration of income at the 1% and 0.1% are higher by 1.5 percentage points (see Online Appendix A.7 for a thorough discussion). Moreover, we find that since the 2008 crisis the shares of national income of the richest 10%, 1% and 0.1% have increased and exhibit a *growing trend*. The most crucial step to obtain the latter fresh results is the rescaling of capital incomes exploiting the novel wealth estimates produced by Acciari, Alvaredo, and Morelli (2023).

With our methodology, we are also able to analyze in more detail the multifaceted nature of Italian inequality by looking at the gender and age composition, the geographical dimension, the role of households and zoom into the income composition in each fractile of the income distribution. We find that the youngest Italians (18–35 years old) in the bottom part of the income distribution are those more severely hit by the surge in inequality. Gender income gaps are very relevant: they are high at the bottom of the income distribution, they fall in the middle of the income distribution, but then they rise again at the very top. Households have a positive role in reducing inequalities for individuals at the bottom of the income distribution, while the effect vanishes for the highest income earners. Finally, we document high disparities both among and within Italian regions finding the highest top income concentration in the North, and showing that within-region inequality is the major determinant of regional inequality.

Our second major contribution is to estimate the effective tax rates paid for each percentile of the income and wealth distribution. To do so, we combine the universe of Italian direct and indirect taxes with all sources of personal income employing a transparent methodology easily replicable in other countries. We find that the tax rate over the income distribution is only moderately progressive up to around the 95th percentile. For the top 5% of income earners, the tax system is *regressive* with a significant drop in the tax rate paid by the richest 1%, who pay a lower tax rate than those in the lower deciles of the income distribution, as found in France, in the Netherlands, and the U.S. In this framework, the role of social security contributions is open to debate. Although social security contributions are clearly

relevant in determining disposable income, they differ from taxes as they are related to future benefits. For this reason, we present results in both cases, i.e. including and excluding social security contributions, and we show that qualitative results are the same. In particular, the profile of the (non) progressivity of the Italian tax system remains unaltered under both hypotheses. When we differentiate taxpayers according to their primary source of income, we find that the tax rates are substantially flat oscillating around an average of 53% for employees, 49% for self-employed, reducing from 45% to 35% for capital-income earners, whereas they are slightly progressive for pensioners, ranging from 30% to 36%.⁷ Finally, when we rank individuals with respect to their net wealth, the tax system is regressive throughout the whole distribution.

The remainder of the paper is structured as follows. Section 2 describes our methodology to construct the distributional series. Section 3 presents novel estimated series of income distribution and concentration, providing evidence on several dimensions of inequality. In Section 4, we show the results on the progressivity of the Italian tax system, and, finally, Section 5 concludes.

2. Data and Methodology

In this section, we describe the methodology employed to estimate new series of income inequality and tax progressivity consistent with the different income sources and taxes present in the NA, compiled by the Italian National Institute of Statistics (Istat). To do so, we combine several data sources, such as national surveys, NA, regional accounts, personal income tax returns, and external data on wealth distribution.⁸

We start by using the IT-SILC survey as our database of reference due to an acceptable level of detail on many income sources reporting both net and gross variables. The survey relies on a sample of about 88,000 individuals of at least 16 years of age, and it is conducted every year since 2004, providing statistics on income, education, and personal information.⁹ To correct for non-sampling errors affecting the IT-SILC, we recalibrate the survey sample weights using the personal income tax tabulations at the regional level. Thereafter, using data-fusion techniques, namely propensity-score matching, we use the Survey on Household Income and Wealth

7. As discussed in Section 4.3, this peculiarity of the pensioners is due to the absence of social security contributions, which are empirically found to exert a regressive impact overall.

8. The use of all the data sources involved takes place under the full and sole responsibility of the authors and does not involve the institutions providing the data.

9. Although using the IT-SILC allows us to provide evidence starting only from 2004, the presence of net and gross income variables, which characterizes the dataset, is fundamental in our methodology both to build pre-tax income inequality measures and to retrieve a first baseline distribution of direct taxes on income. For coherence, in this work we therefore restrain from building series referring to previous periods, as it would require a totally different methodology with a new set of radical assumptions.

(SHIW) survey from the Bank of Italy to derive the joint distributions of (i) wealth and income, and (ii) consumption and income at the personal level. The resulting information on the two joint distributions allows us to integrate our dataset with the best available series on consumption and wealth, respectively the HBS survey on consumption, and a novel data source on Italian wealth distribution created by Acciari, Alvaredo, and Morelli (2023). Finally, using national and regional accounts to rescale income sources and taxes to match their macroeconomic counterparts, we construct fresh national income distribution series and analyze the tax system's progressivity. The different data sources and a schematic representation of our methodology is presented in Table 1 and in Online Appendix from A.1 to A.6. Let us now analyze each step in more details.¹⁰

2.1. Rescaling the Sampling Weights

Several studies (Dalenius 1977; Assael and Keon 1982; Gertner and Köhl 1992; Verma and Lê 1996; Taleb and Douady 2015; Ravallion 2022) show that national surveys typically suffer from sampling and non-sampling errors related to the information about the top of the income distribution. Sampling errors are those errors that could potentially be solved with sufficiently large sample size. In particular, due to small sample size, surveys may underestimate the total income owned by a specific group of individuals. This is especially true at the top of the income distribution, where revenues are often under-reported or misreported. To overcome these issues in the IT-SILC, the Italian national statistical institute identifies survey respondents by fiscal code to match their income with external administrative data (Donatiello 2011). In this way, misreporting of several income items can be corrected with remarkable precision for wages, pensions, and other transfers.

With non-sampling errors, on the other hand, we refer to those errors that do not allow the correct representation of rich individuals across the survey population. These errors cannot be solved by increasing the sample size, and typically arise due to unobserved heterogeneity in non-response rates. The construction of the IT-SILC sample-weights considers the non-response rates of individuals by matching for each non-respondent the equivalent respondent based on several demographic characteristics and occupation. However, non-response rates may increase with higher income (Groves and Couper 2012). Therefore, not considering the totality of income in the construction of the sample weights leads to biased results by under-representing the richest individuals and over-representing those at the bottom of the income distribution. Recently, the national statistical office has acknowledged this issue (Istat 2021) and has considered possible ways to account for these types of non-sampling errors using

10. The introduction of the "Salva Italia" Decree (Decree 201/2011), which mandate financial operators to report information on balances and movements of active relationships to the Tax Registry, could provide more accurate administrative data on individuals' wealth in the future. However, to the best of our knowledge, this dataset remains unavailable for research purposes.

TABLE 1. Methodological steps.

Steps	Description	Data details	Methodological details
1	Start by using the IT-SILC (Istat) as our baseline data source	IT-SILC survey is run at personal level with sample size of about 80 thousand individuals per year from 2004 to 2015	
2	Adjust the IT-SILC sample weights using the PIT tax tabulations at regional level (MEF)	PIT tabulations at regional level available from 2000 to 2019 and are divided in 33 brackets	The sample weights are adjusted using the BFMcorrection algorithm developed by Blanchet, Flores, and Morgan (2018)
3	Match IT-SILC with SHIW (Bank of Italy) to get the joint distribution between income and wealth and between income and consumption	SHIW is a biannual survey from Bank of Italy, with a sample size of about 20 thousand individuals from 1991 to 2019	The matching procedure is done using propensity score matching at the individual level
4	Substitution with Acciari, Alvaredo, and Morelli (2023) (AAM) distribution on wealth	AAM data is a distribution at the percentile level from 1995 to 2016	The substitution procedure is done by adjusting the wealth shares and total wealth, derived in step 3, at the percentile level
5	Substitution with HBS survey on consumption (Istat)	HBS is a survey on consumption run by Istat from 1997 to 2019 at the household level. HBS has a sample size of about 15 thousand households	The substitution procedures is done by adjusting the consumption shares and total consumption, derived in step 3, at the percentile level
6	Scaling up with NA to get the final distributional NA	national accounts are compiled yearly by Istat following the SNA08	The scaling up is performed by proportionally adjusting each income and tax component for each institutional sector

administrative data to fill the reported income of non-respondents.¹¹ However, the publicly available data have not been adjusted yet. To overcome these problems, we employ a new algorithm developed by Blanchet, Flores, and Morgan (2022b), which uses tax tabulations to correct the sample weights and expand the support at the top

11. For 2022, the Bank of Italy has also developed a new weighting process that relies on administrative information about assets and liabilities. However, the new weights are only available from survey year 2020 (Loschiavo et al. 2022).

of the income distribution. The algorithm identifies the merging points between the income distributions derived from survey and tax data and rescales the sample weights at the right of the merging point to match the distribution of the tax data, which is assumed to be more reliable. To compensate for the scaling-up at the top, the algorithm also scales down the weights at the left of the merging point to keep total sample weights constant. Moreover, the algorithm allows preserving the original distribution of several covariates such as age and gender.

This technique has been recently used in Blanchet, Chancel, and Gethin (2022a), also for the case of Italy. However, we made several adjustments: (i) we used a more precise definition of taxable income; (ii) we correct only non-sampling related errors, by re-weighting the survey. The IT-SILC already corrects for sampling errors, as explained above, making it unnecessary to increase the support of the right tail of the distribution; (iii) we use regional personal income tax tabulations to correct each region's non-sampling error and keep the original distribution of gender and age at the regional level (full detail in [Online Appendix A.1](#)).

2.2. Merging Different Data Sources

The IT-SILC database provides rich information on income and demographics, but it is almost silent on wealth and consumption behaviour.¹² However, these two elements are fundamental to distribute income and taxes linked to financial assets, real estate, and consumption. To acquire reliable information on the distribution of consumption, we use the Household Budget Survey (HBS) produced by Istat,¹³ while we use a novel data source by Acciari, Alvaredo, and Morelli (2023) (henceforth AAM), estimated employing NA and administrative data on inheritance taxation, to gather information on wealth distribution.

To combine these datasets, we first obtain the joint distribution of wealth and income and of consumption and income from the SHIW. The survey is conducted by the Bank of Italy every 2 years with a sample comprising about 20,000 individuals. The survey includes personal information as well as details on net income, wealth, and consumption.¹⁴ As in the SHIW, both wealth assets and consumption are recorded at the household level, we first redistribute wealth at the personal level following the methodology of D'Alessio (2018) and allocate consumption among the family members simply in proportion to their net income. Similarly to Albarea et al. (2015), we merge the two surveys SHIW and IT-SILC by propensity score matching using wages, self-employment income, pensions, gender, age, and geographical area as

12. More precisely, income from financial assets is present in the IT-SILC, but it is severely under-reported. It represents around 10% of the financial income received by the household sector in NA.

13. The survey involves around 32,000 households every year. The interviewer annotates the main socio-demographic characteristics and food and non-food spending habits with extreme detail, which is useful for identifying items subject to VAT.

14. Nevertheless, the IT-SILC survey remains richer in information about the types of income sources, social security contributions, gross income and a larger sample size at the regional level.

covariates for the matching algorithm (full details in [Online Appendix A.2](#)).¹⁵ As a result, we obtain an IT-SILC survey supplemented with additional data on wealth ownership and consumption from SHIW, which identifies the joint distributions between income and wealth and between income and consumption, which is a crucial piece of information to investigate the overall progressivity of a tax system (Kuypers, Figari, and Verbist 2021).

To integrate these external data sources on the distribution of wealth and consumption into our main dataset, we proceed as follows. First, we rank each person by percentiles of wealth. We then associate at each percentile the wealth share corresponding to the same percentile of wealth derived from AAM data. Finally, using the total household wealth calculated by AAM and multiplying it by the shares of each percentile, we derive the whole distribution of wealth consistent with AAM. Moreover, we further decompose the household net wealth into six different components using the composition of wealth in SHIW and in AAM at the percentile level (full detail in [Online Appendix A.2](#)). For the case of consumption, we apply an analogous procedure. We first sum at the family level the personal consumption and rank it by one thousand fractiles of consumption. We then use the HBS to derive the distribution of consumption at the same fractile level, and we apply to each consumption-fractile in the IT-SILC the level of consumption derived from the HBS.

2.3. Deriving the DINA

We have derived an IT-SILC survey with recalibrated sample weights that is augmented with data on wealth and consumption. Following the DINA guidelines (Alvaredo et al. 2016), we use this database to estimate the distribution of each income component and taxes that constitute the national income in NA.

The DINA methodology aims at reconciling micro-data with macro-economic aggregates through the use of NA. Even though NA are far from being perfect and income estimates are annually changed and refined, they are still the best available tool for cross-country comparison since they are built upon the same principles of the System of National Accounts (SNA). With this methodology, by distributing the whole national income at the personal level, we are thus able to build internationally consistent estimates and to compare income shares, income averages, thresholds, trends, and all sorts of inequality statistics across countries, similarly to what is currently done with macro-economic aggregates.

Although being constructed following the international “System of National Accounts 2008” (SNA08) and the “European System of Account 2010” (ESA2010), the Italian NA has few specificities that we take into account in this work of reconciliation between micro and macro data. First, we include actual rents by

15. Note that the propensity score matching is not influenced by the re-weighting procedure applied to the IT-SILC since sample-weights are not used in the matching algorithm.

adding them to imputed rents.¹⁶ We then decompose the capital income variable into NA, “Profits Distributed by companies”, in three different sub-components: (i) dividends, (ii) income withdrawn by members of quasi-corporations, and (iii) other profits distributed by companies. Out of these three components only dividends are capital income in the common sense of remuneration of investments. The other two components have a more ambiguous origin since they represent income received as a result of some type of work in the company.¹⁷ Although these types of income are included as capital income in NA, for tax purposes they represent incomes included in the personal income tax base. In our analysis, we will thus consider these income sources as self-employment income. We are also able to differentiate among social security contributions paid by employed workers and self-employed, together with a granular decomposition with 53 sub-variables for “taxes on production and imports”, and 24 sub-variables for “taxes on income and wealth” (see [Online Appendix A.3](#) and [A.4](#) for additional details on the reclassification of taxes in each institutional sector).

Another crucial aspect of Italian NA is the role of the NOE. In Italy, the role of the informal economy is highly relevant due to the prevalence of small and medium-sized enterprises. In the last year of our analysis (2015), the NOE accounted for about 15.5% of Italian national income, one of the highest ratios among OECD countries (Blades and Roberts 2002; UN Economic Commission for Europe 2008; Gyomai and Van de Ven 2014). By taking into account this NA adjustment, we substantially increase the robustness of our estimates of income distribution to under-reporting of income in surveys and tax returns.

By considering all these aspects, we identify four income concepts: factor national income, pre-tax national income, post-tax disposable income, and post-tax national income. The first concept is the income flow that remunerates the factors of production, namely labor and capital, before subtracting taxes, Social Security Contributions, and without adding the transfers for pensions and social assistance. It is given by the sum of capital income (i.e. rents and imputed rents, financial income like dividends and interests), wages and salaries, self-employment income, and it includes social security contributions paid by workers and employers. This income concept does not include the transfers for pensions and for this reason inequality statistics will be higher, in comparison with other income definitions, as most of the old-age population mainly earns pensions, which are not included in factor income. Despite this limitation, this income definition is especially useful when estimating inequality in the labor market, focusing on the working-age population. The second income concept is pre-tax national income, which excludes social security contributions but includes transfers

16. We do so by subtracting actual rents from the mixed-income category of the household sector and include them together with the imputed rents under the Operating surplus of the household sector. This is in line with the December 22, 2020 report at the following link: <https://www.istat.it/it/archivio/248596>.

17. In particular, quasi-corporations are those units that, despite having no legal personality, have complete accounts and have an economic conduct that can be separated from that of the owners; therefore, the income withdrawn by members of quasi-corporations is the income actually withdrawn by owners for their own needs out of the profits earned by their quasi-corporations, while other “profits distributed by companies” represent the compensation to the directors and statutory auditors of the joint-stock companies and the profit distributed to the members of the cooperatives.

TABLE 2. Income concepts in DINA

Income concepts	Income components
Factor national income	Wages Self-employed income Social security contributions Capital income Undistributed profits of companies Income of the Public sector
Pre-tax national income	Factor national income Pensions Social security contributions (–)
Post-tax disposable income	Pre-tax national income Social transfers All taxes paid (–)
Post-tax national income	Post-tax disposable income All public expenditure

Note: When no sign is displayed, the components are aggregated; the minus symbol in parentheses (–) indicates that the corresponding component is subtracted from the sum of the previously aggregated ones.

for pensions and other contributions-related transfers. This income definition is often considered as the baseline in the literature because, by incorporating pensions, it accounts for differences in age-profiles among countries. The third income concept is the post-tax disposable income. It is derived by incorporating all transfers for social assistance into the pre-tax national income while subtracting both indirect and direct taxes paid. Due to the exclusion of all forms of taxation, the post-tax disposable income concept does not align with the total National Income. To address this discrepancy, in the final income concept, the post-tax national income distribution series, we add back the indirect and direct taxes paid through the inclusion of public expenditures. This adjustment allows the post-tax national income to once again sum up to the total National Income accounting for the redistribution that occurs through public spending, encompassing areas like education, healthcare, and other social services. Following the DINA guidelines (Alvaredo et al. 2016), we allocate all public expenditures within each region as uniform lump-sum transfers to every individual to ensure no alterations to the relative income distribution. In Table 2, we present a concise overview of what is included in each definition (interested readers can also refer to a more in depth description in Online Appendix A.6 and to the official methodology described in Alvaredo et al. 2016).

In order to construct our income series, we start by identifying the amount of direct taxes paid by individuals that emerges from the IT-SILC.¹⁸ Given our aim of matching NA, we allocate, for each direct tax category, the difference between numbers reported

18. The direct taxes in the survey are calculated as the difference between gross and net variables.

in NAs and in IT-SILC proportionally to the corresponding tax amount recorded in the IT-SILC. In this way, we obtain, for each individual, taxes that are coherent with NAs, and we utilize this new variable to derive an updated gross income (by summing taxes to IT-SILC net income) for the different income categories.¹⁹ From the regional NA, we identify the income from self-employment, wages, actual and imputed rents, dividends and interests for the institutional sector of households. We distribute them in proportion to their relative provisional gross income keeping the regional totals consistent with regional NA, thus obtaining what we call the final gross income.

As far as the tax evasion of self-employed income is concerned, we rely on the official Istat estimates (Agostinelli and Sallusti 2020), which show a constant evasion rate equal to 46% in 2015. This finding is also confirmed by Albarea et al. (2020) and Bazzoli et al. (2020), who find an evasion rate of approximately 40% employing IT-SILC and HBS data and a methodology inspired by Pissarides and Weber (1989). The latter results validate the robustness of our analysis using micro-data and they are also consistent with official estimates of tax gap (Albarea et al. 2020, p. 921). Consequently, we adopted the estimates of self-employed evasion rates by income class from Albarea et al. (2020), proportionally adjusting the rates to match the totals in NA. These estimates reveal a relatively flat evasion rate of approximately 55%, gradually decreasing to a lower rate of 20% for those at the top of the income distribution. By incorporating these rates, we effectively capture the diversification of evaded self-employed income across different income classes while ensuring that overall estimates remain consistent with the regional totals obtained from official statistics.

To allot actual and imputed rents, as well as dividends and interests, we use the distribution of real estate, equities, and shares. With this approach, we implicitly assume that the rate of return on each asset is constant over the wealth distribution. This is a relatively strong assumption, as recent findings for other countries point out that a higher level of wealth is associated with a higher rate of return (Fagereng et al. 2020; Bach, Calvet, and Sodini 2020; Iacono and Palagi 2023). However, it is worth noticing that by keeping this assumption—standard in similar studies in the literature (see Piketty, Saez, and Zucman 2018, for the US case)—we are probably underestimating the financial and estate income accruing to the wealthiest individuals and, thus, reducing the overall level of inequality.²⁰ We estimate the net income variables as the difference between the final gross income variables and the

19. For example, in order to get gross capital incomes, we add capital income taxes to net capital incomes.

20. We choose to keep the assumption of constant returns for each type of assets in our baseline analysis in order to obtain results that are comparable to previous studies for other countries (Piketty, Saez, and Zucman 2018) and due to the lack of estimates on heterogeneous rates of return specific for Italy. As such, our results should be read as conservative, and the true underlying inequality levels might be even more dramatic. However, note that the emergent rates of return over the wealth distribution are heterogeneous as individuals in different percentiles hold varying portfolios of assets providing different (constant) returns. Moreover, the rate of return exhibits an upward trend toward the end of the wealth distribution as specific types of financial income follow the distribution of certain assets that are more concentrated among the wealthiest, consequently elevating the overall rate of return for this group. Finally, robustness analyses assuming rates of return that are increasing in net wealth, similarly to values estimated by Fagereng et al.

final direct taxes paid. Finally, we distribute indirect taxes on consumption based on differentiated VAT rates by type of consumption and distribute other indirect taxes on income or wealth proportionally to the relative income or wealth asset (full detail in [Online Appendix A.3](#)).

To match the national income of the whole economy, we need to include also the income accruing to the public and business sectors of the NA. Following the literature (Piketty, Saez, and Zucman 2018), we consider the corporate tax and retained earnings of the business sector as income earned (and taxes paid) by those who own the shares of the businesses. Therefore, we distribute the latter categories in proportion to the financial assets of equities and shares. Regarding the income from the public sector from NA, we distribute it in proportion to the personal distribution of all other income sources in line with the literature. Of course, how to distribute this type of income is highly debatable since it is not clear who benefits the most from it. However, this is arguably the most neutral distributional choice since it operates as a level-shifter of individual income and it will not change the relative distribution among individuals. In addition, to construct the post-tax national income series, we distribute the public spending according to the actual expenditure across regions. Finally, we obtain a new dataset that is consistent with national and regional accounts and that distributes at the personal level all gross income variables, social security contributions, direct and indirect taxes.

As we have already mentioned, to construct the dataset, we build on the work by Blanchet, Chancel, and Gethin (2022a) (BCG), but we follow Piketty, Saez, and Zucman (2018) to distribute all the NA components of Italian national income, as thoroughly outlined in the previous section. This allows us to improve in several ways the methodology previously used by BCG for Italy. Figure 1 shows the influence of each methodological step on our main results concerning the pre-tax national income shares. In the first step, we depart from relying solely on national tax tabulations and instead we utilize regional tabulations to correct sample weights (Section 2.1). Notably, this has only a marginal effect on the raw survey data. In the second step, we rescale all labor income components and social security contributions from the survey data to match their NA counterparts, taking special care in handling the distribution of evasion for self-employed income, as explained in Section 2.3. This step slightly reduces top income shares as these income sources are less frequent among the top earners, who primarily rely on capital income. The most substantial impact, and improvement upon previous studies, occurs in step 3 when we address the issue of under-representation of wealth in survey data by incorporating the wealth distribution based on administrative data estimated by Acciari, Alvaredo, and Morelli (2023). This refined wealth distribution enables us to impute capital income totals from the NA, which significantly impacts upon income inequality estimates. Finally, the impact on income shares is even more pronounced in the forth step, when we construct the pre-tax

(2020) for Norway, yield similar levels and trends for the top 1% and top 0.1% income shares while resulting in lower income shares for the bottom 50%. Such results are available from the authors upon request.

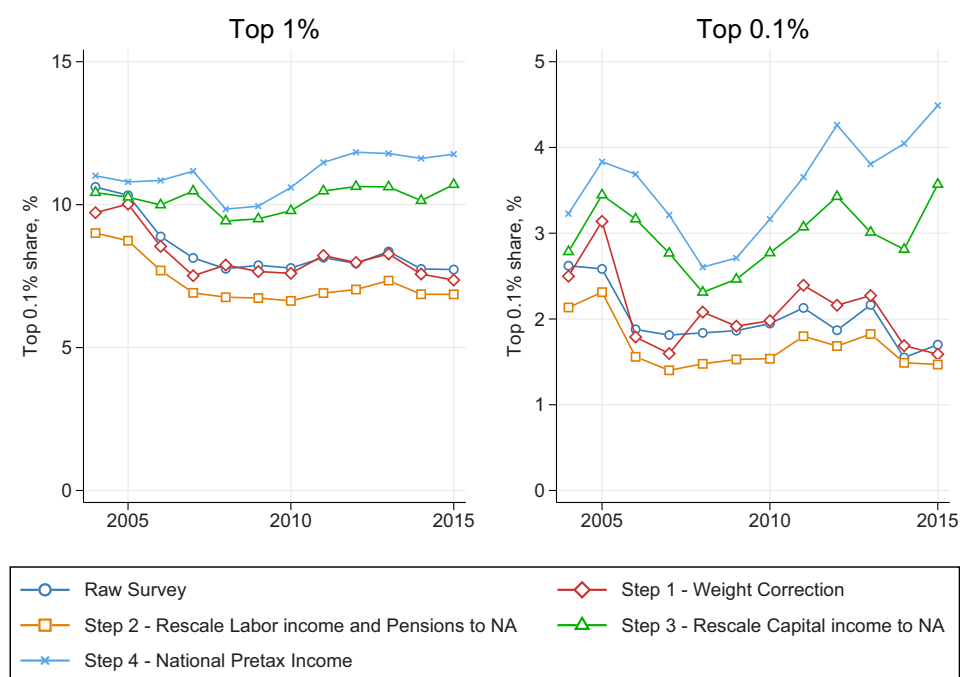


FIGURE 1. Adjustments from raw survey data to Pre-tax National Income.

national income by distributing the retained earnings of corporations and other public sector income. As a result of these improvements, in contrast to raw survey data and to previous results for Italy (Blanchet, Chancel, and Gethin 2022a), we found pre-tax income concentration estimates on an *increasing trend* for the top income groups.

We will employ our new data series to first shed further light on the concentration of income in Italy and, then, to estimate the tax progressivity of the Italian system.

3. The Multifaceted Italian Inequality

Our newly constructed series can be employed to provide fresh estimates for Italian key inequality indicators, which can update the evidence of previous studies (cf. Section 3.1). We will then provide an international comparison (see Section 3.2). Finally, we will discuss trends related to income growth focusing on age groups (Section 3.3), as well as evidence on gender inequality and regional disparities (Section 3.4).

3.1. New Estimates of Income Concentration

Our data show that several measures of income inequality have been oscillating in the period 2004–2015. Figure 2 shows indeed that top 1% shares of pre-tax income have been quite stable at relatively high levels, around 11%, with an increase in the

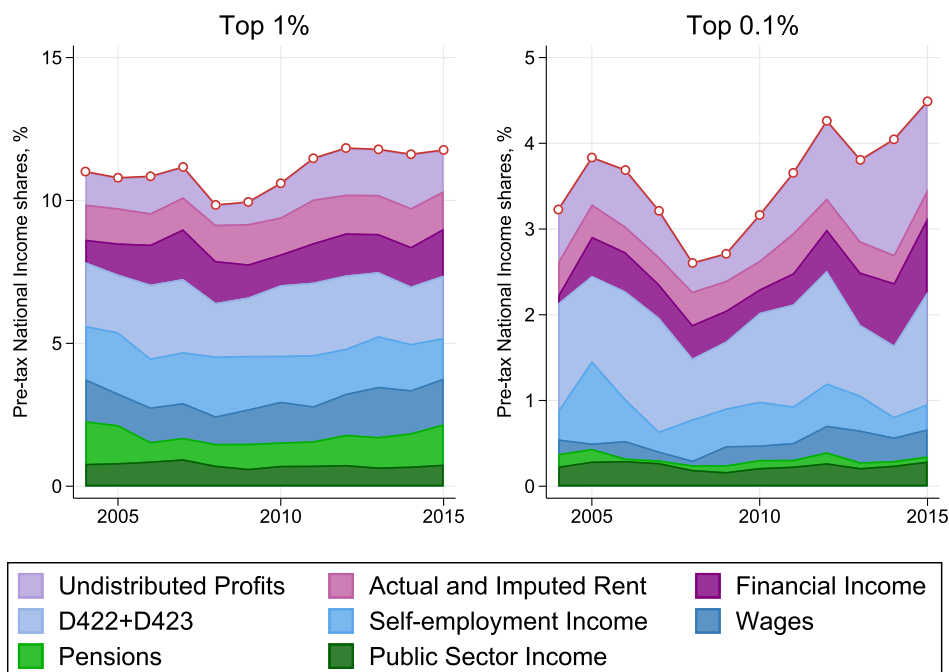


FIGURE 2. Dynamics of Pre-tax National Income concentration. D422 is income withdrawn from quasi-corporations. D423 is remuneration to directors of companies. Note that D422 and D423 are ambiguous concepts and it is not straightforward to define whether it is income deriving from capital or labor.

aftermath of the Great Recession. Similar trends emerge for top 10% shares, being just slightly below 38%, and for Gini coefficients, oscillating between the value of 0.50 and 0.53. However, concentration at the very top of the income distribution has risen more markedly, as shown by the top 0.1% share. This appears to be mainly due to a surge in undistributed profits and capital income from quasi-corporations and remunerations to directors in the aftermath of the financial crisis (see Figure 2).²¹

We now provide evidence for the whole distribution of income. Note that, as in Italy taxes are paid by individuals and, given our aim of ultimately estimating tax progressivity, we will consider adults above 18 years old our unit of analysis. We start considering factor national income, that is the income that finances the factors of production, namely labor and capital, including social security contributions and excluding taxes, transfers, and pensions. Note that this means that we allocate almost 0 labor income to the oldest individuals, mechanically increasing the overall inequality in the country. According to our estimates in Table 3, the top 10%, that is the richest individuals, earn at least € 62,000, almost 42% of the total factor national income,

21. Note that remuneration of directors are business profits distributed to the administrator and directors as form of compensation to their work in the company.

TABLE 3. Factor National Income thresholds, averages, and shares in 2015, 18 years or older.

Income group	Population	Income threshold	Average income	Income share
Full population	50,699,447		26,357	100.0%
P 0–25	12,674,862		628	0.6%
P 25–50	12,674,862	2,817	6,941	7.2%
P 50–60	5,069,945	13,340	16,829	6.4%
P 60–70	5,069,945	21,296	26,840	10.2%
P 70–80	5,069,945	32,606	38,282	14.5%
P 80–90	5,069,945	44,273	52,217	19.8%
Top 10%	5,069,945	62,045	110,476	41.9%
Top 5%	2,534,972	81,012	150,722	28.6%
Top 1%	506,994	156,016	328,882	12.5%
Top 0.1%	50,699	552,176	1,267,562	4.8%

Note: Note that top 10%, top 5%, top 1%, and top 0.1% correspond to the ranges P90–100, P95–100, P99–100, and P99.9–100, respectively.

TABLE 4. Pre-tax National Income thresholds, averages, and shares in 2015, 18 years or older.

Income group	Population	Income threshold	Average income	Income share
Full population	50,699,447		26,357	100.0%
P 0–25	12,674,862		1,814	1.7%
P 25–50	12,674,862	6,817	13,582	14.6%
P 50–60	5,069,945	20,006	22,592	8.6%
P 60–70	5,069,945	25,057	27,618	10.5%
P 70–80	5,069,945	30,433	33,938	12.9%
P 80–90	5,069,945	37,957	43,279	16.4%
Top 10%	5,069,945	50,313	97,649	37.0%
Top 5%	2,534,972	68,534	137,611	26.1%
Top 1%	506,994	147,733	310,672	11.8%
Top 0.1%	50,699	507,543	1,195,681	4.5%

Note that top 10%, top 5%, top 1%, and top 0.1% correspond to the ranges P90–100, P95–100, P99–100, and P99.9–100, respectively.

while people in the bottom 50% of the income distribution roughly earn 7.8% of the total national income with an upper-income threshold of only € 13,300.

In order to correctly account for the position of pensioners in the income distribution, we then consider the pre-tax national income distribution (Table 4). In this case, the social security contributions are excluded from the calculations. Instead, transfers due to contributions, namely old-age pensions, unemployment benefits, sickness benefits, and so forth, are included. While the global picture does not dramatically change for top income earners, who keep similar thresholds and averages, the situation of people at the bottom of the income ladder is considerably affected. Indeed, income for the poorest 50% of individuals more than doubles from an average of € 3,700 to around € 7,700, meaning that the pensions and transfer system particularly sustain those at the bottom of the factor-income distribution rather than those at the top.

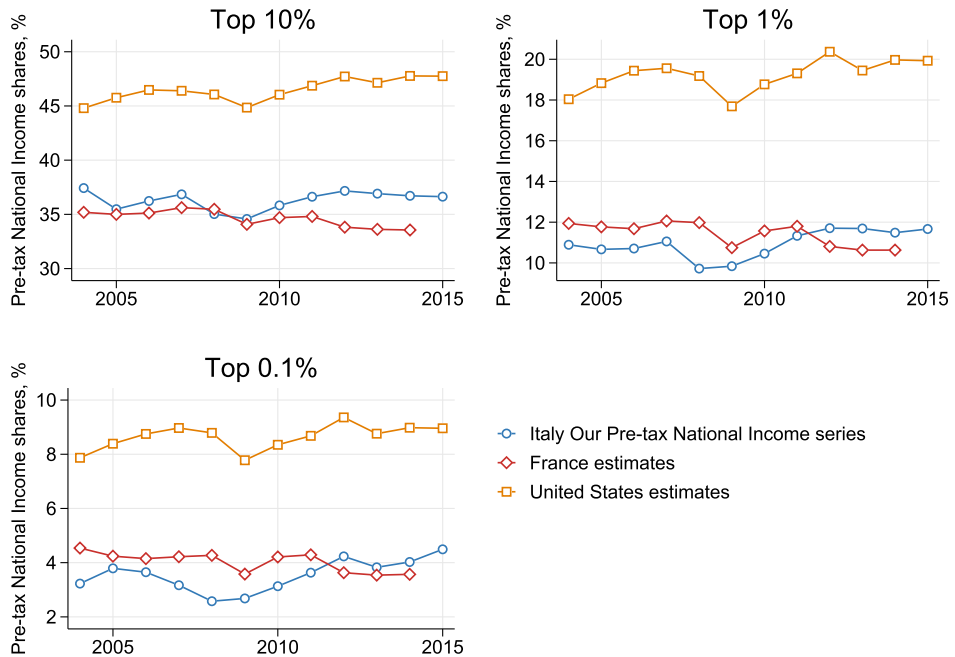


FIGURE 3. International comparison of Top Income shares of Pre-tax National Income. All series are calculated among adults from 20 years old. All income is divided at the personal level. Series for the United States and France are from WID.world.

3.2. International Comparison

In this section, we compare our new estimates for Italy with those for the United States and France (Piketty, Saez, and Zucman 2018; Garbinti, Goupille-Lebret, and Piketty 2018), which are also obtained using DINA guidelines,²² for the period 2004–2015, the years for which data of the IT-SILC survey are available.

Exploiting the international comparability of DINA estimates, which are constructed using uniform income concepts (see Section 2.3 for further details), we are able to consistently contrast the distribution and the concentration of income among countries.

In the period 2004–2015, we find striking differences between European countries and the United States (Figure 3). While France and Italy have similar levels of pre-tax national income shares earned by the richest individuals, the United States are characterized by pre-tax income shares that are 4 percentage points higher throughout the whole period. However, differently from France, Italy seems to be projected toward the same trends of increasing inequality as those observed in the United States, as

22. The estimates for the United States and France are freely available on the [WID.world](https://wid.world) website.

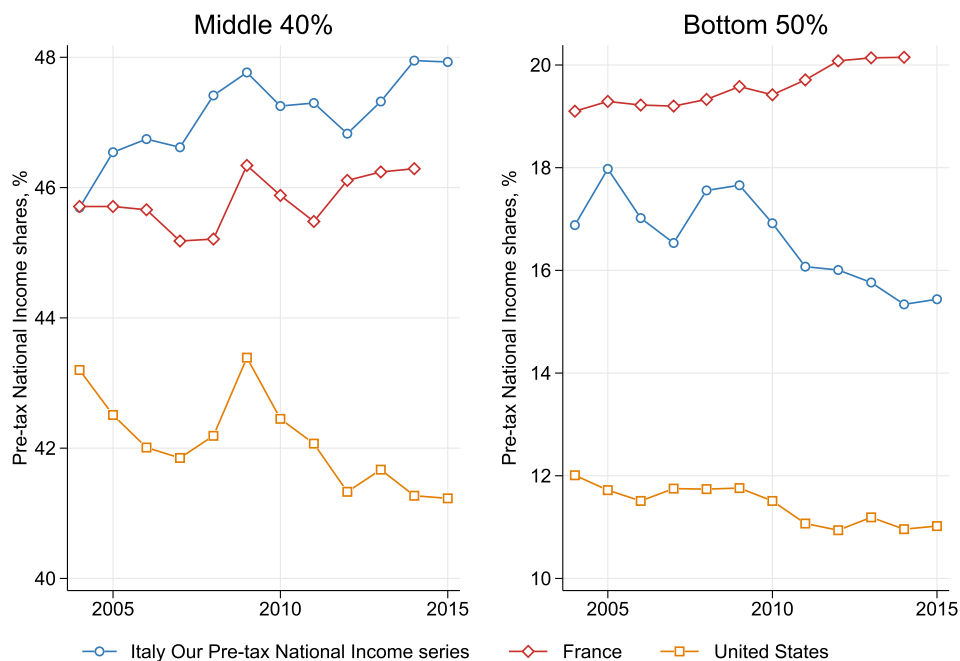


FIGURE 4. International comparison of bottom and middle income shares of Pre-tax National Income. All series are calculated among adults from 20 years old. All income is divided at the personal level. Series for the United States and France are from WID.world.

shown by the surge of the pre-tax national income shares for the richest Italians after the global financial crisis. Middle 40% shares of national pre-tax income instead rise faster in Italy than in France, while in the United States, the middle income group is losing income shares (see Figure 4). We also find that in Italy the rise of income shares for the top and middle income groups comes at the expense of the bottom 50%, which, among the three countries, is the one that has lost most of its share of pre-tax national income. Indeed, the incomes of the poorest Italians appear to be reducing at a faster speed than in the United States, losing about 2 percentage points of national income vis-à-vis 1 percentage point during the considered period for the United States (Figure 4). According to these results, pre-tax income inequality in Italy appears to be rising especially by leaving behind the poorest individuals, while the shares of the very rich steadily rise.

By looking at the differences in average pre-tax national income for different income groups (Table 5), we can deepen our analysis on the comparison across countries. Even after adjusting the average income of income groups by purchasing power parity, significant differences among countries remain for all income groups. More specifically, the average income in France for the bottom 50% is almost twice as large with respect to the Italian one. US bottom 50% average income is also higher than the Italian counterpart, although with reduced differences. Concerning other income groups, France is characterized by higher incomes than Italy throughout the whole

TABLE 5. Pre-tax National Income averages in 2014 PPP US\$, 20 years or older.

Income group	Population			Average Income		
	The United States	France	Italy	The United States	France	Italy
Bottom 50%	117,734,155	25,601,698	24,736,004	15,745\$	19,170\$	11,100\$
Middle 40%	94,187,324	20,481,358	19,788,803	74,131\$	55,033\$	43,376\$
Top 10%	23,546,831	5,120,340	4,947,201	343,173\$	159,594\$	132,841\$
Top 5%	11,773,415	2,560,170	2,473,600	521,035\$	222,776\$	186,139\$
Top 1%	2,354,683	512,034	494,720	1,434,777\$	505,599\$	415,612\$
Top 0.1%	235,468	51,203	49,472	6,454,379\$	1,697,334\$	1,456,636\$

Note that top 10%, top 5%, top 1%, and top 0.1% correspond to the ranges P90–100, P95–100, P99–100, and P99.9–100, respectively.

distribution. When instead comparing Italy to the United States, income gaps are larger at the top of the income distribution. We indeed find that, while the top 10% in the United States earn about 2.5 times the average income of the top 10% in Italy, the US top 0.1% receives, on average, more than four times the Italian top 0.1% income. These results show how marked the differences in total pre-tax national income and inequality between the United States and European countries are. Strikingly, while in the United States, the top 1%, which is composed of about 2 million individuals, earns more than a million a year, in Italy and France only 0.1% of individuals, which account for about 50,000 people, reach similar income levels.²³

3.3. *Who Bears the Cost of the Decline of Real Income?*

When analyzing the aggregate components of net national income, one should consider that Italy, contrary to the United States, France, Germany, and other European countries, has experienced an overall macro-economic loss in the first decades of the 21st century. Indeed, in the period from 2004 to 2015, Italy has witnessed a reduction of per capita national income in real terms of 13% according to World Bank estimates.²⁴

Focusing on aggregate data, we find that the macroeconomic loss of real per-capita income has characterized all components of Italian national income. More specifically, undistributed profits is the category, which has reduced the most, by almost 40%, followed by self-employment income²⁵ and capital income, with a reduction of 27% and 20% respectively, while employed income has declined by about 5% with respect to 2004. However, standard macroeconomic data alone do not allow to understand whether national trends are equally shared by the entire population. Instead, using our

23. Note that the higher income levels for the top 1% in the United States are also partially driven by higher per capita income in the country, in addition to higher income concentration.

24. Data can be found at World Bank dashboard.

25. Self-employed income includes mixed-income, income withdrawn by members of quasi-corporations and other profits distributed by companies as a form of compensations.

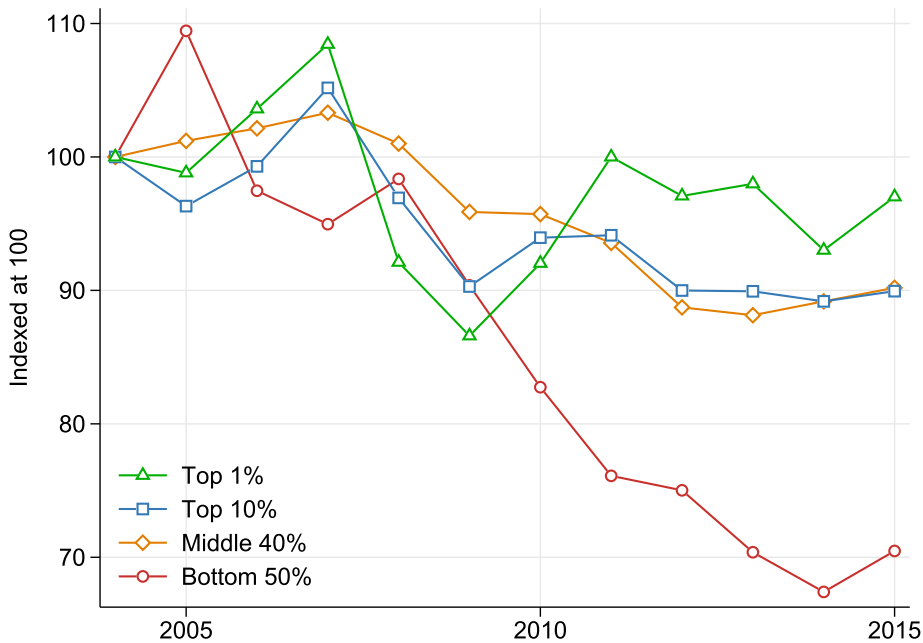


FIGURE 5. Growth of real Factor National Income in working age population. Income is divided at the personal level for the working age population 18–65.

data on DINA, we are capable of bridging this gap and deriving which mechanics at the micro level determine the macro aggregates at the national level.

We find that this reduction in real terms has hit everyone throughout the whole income distribution, but some categories have suffered more than others. By looking at the factor national income for people in working-age (i.e., between 18 and 65 years old), we focus only on the components of market-driven income, without taking into account the redistribution made by the government with the pensions system. In this scenario, we find that the poorest individuals are those who suffered the greatest loss in terms of real average income (see Figure 5). This income group, that is the bottom 50%, went from a mean income of € 8,600 per year to just € 6,100, which implies a loss of about 30% of income. The middle 40%, that is people earning between € 21,000 and € 70,000, appears to be less severely hit by the income loss, with an average reduction of real income of about 10% from an average of € 46,500 to € 42,000 in 2015. On the other hand, the top 10% and the top 1% went from an average of € 134,000 to € 121,000 and from € 370,000 to € 360,000, respectively, which translate into an overall loss of real income close to the macro-economic average for the top 10% but much smaller for the top 1%.

For the bottom 50% of the population, this impressive drop in total factor income is due to a general reduction of all income components: employed income and self-employment income fell by about 12% and 37%, respectively from 2004 to 2015. Due to a constant reduction of the amount of net wealth held by this income group, also

capital income has accordingly reduced by around 40%. With regard to the middle 40%, the main source of income in this group is employed income, which represents more than 60% of their income and has declined only by 5% keeping the overall loss more modest compared to the other income groups. However, self-employed income, which accounts for 20% of the total income of this group, has recorded the largest drop, of around 28%, compared to 2004. In contrast to the bottom 90%, the top 10% has not experienced a decline in employment income, which still accounts for nearly half of their total average pre-tax income. Consequently, only a moderate reduction in overall average income occurred, primarily driven by a decrease in self-employed income. Finally, a different scenario holds for individuals belonging to the top 1%. More specifically, they have benefited from a rise in concentration of corporate equities and shares, which have spurred both their capital income and the flow of undistributed profits. As a result, they have not only mitigated the losses in income from self-employment, but they have experienced an increase in their pre-tax income share (cf. Figure 2; more details on income composition are provided in Section 4.1).

Great disparities emerge also within each income group once we consider the age of its members. We decompose the bottom 50% of income earners between two age groups: the young adults from 18 to 35 years old and the rest of the working-age population from 36 to 65. Our findings suggest that, independently from the national income distribution concepts we use, the youngest individuals at the bottom of the income distribution are always those who experienced the highest drop in real income (see Figure 6), which went from € 7,900 in 2004 to € 4,500 per year in 2015. The average real factor national income of the age group 36–65 has instead fallen from € 9,200 in 2004 to € 7,200 in 2015.²⁶ The resulting average loss of the youngest individuals amounts to 42%, while that of the older group is limited to 22%. This is in line with the evidence provided by Bartels and Morelli (2021), and it confirms that Italy is no country for young (wo)men.²⁷

3.4. Gender, Households, and Geographical Inequalities

In this section, we provide insights on further dimensions of inequality that can be studied starting from our DINA. We first show how income is distributed between genders in Section 3.4.1. We then consider how estimates change if we aggregate income at the household level in Section 3.4.2. Finally, in Section 3.4.3, we provide information on the distribution of national income within and between Italian regions.

3.4.1. Gender Inequality. In the previous section, we have showed how the bottom half of the distribution has been heavily hit by income losses in the 2004–2015 decade

26. The data reported in the text refer to the factor national income distribution. Note also that averages for the bottom 50% are dragged down by near-zero income for the bottom 25%, similarly to what is shown in Table 3.

27. Note that these results are also partially driven by a relatively low labor force participation among the youngest individuals.

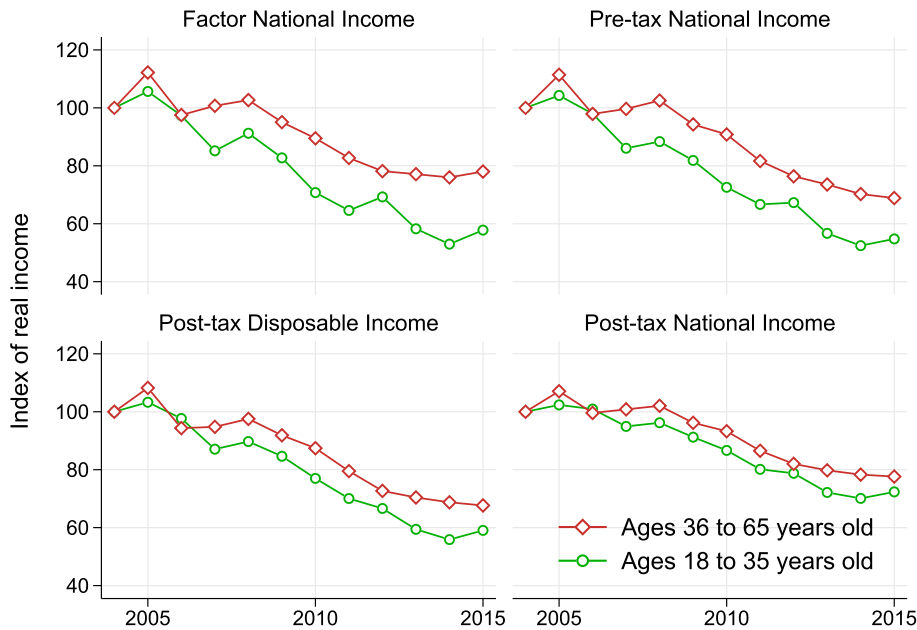


FIGURE 6. Growth of real National Income for the bottom 50% of the working-age population Real income is calculated using NIC 2018 price-index from Istat. Income is divided at the individual level for the bottom 50% of the working age population 18–65.

and within that group, young adults have experienced the highest income drop in real terms. The picture is even more dramatic when one focuses on the gender composition of the bottom 50%. Women ageing from 36 to 65 are subject to a 20% loss in real income, while it reaches a 40% loss for the youngest women, resulting in an average real factor national income of only € 4,500 in 2015. On the other hand, men ageing from 36 to 65 enjoy an average income of around € 8,400 in 2015,²⁸ which is 30% higher than women's income in the same age group.²⁹ These results suggest that the gender income gap has increased after the Great Recession, in line with findings of Piazzalunga and Di Tommaso (2019).

Our estimates on market-driven income allow us to provide a broader picture of gender inequality in Italy. Focusing on the working-age population of the factor national income distribution, net of public-sector income to factor out redistributive policies, we find that the ratio of the number of women over the number of men is relatively constant over time in every quantile of the income distribution. However, in 2015, women were the majority only in the bottom 50%, representing 60% of individuals in that income group. In other income groups, the higher up we climb the

28. Amounts are expressed in 2018 prices.

29. The gap is calculated as $(Y^W - Y^M)/Y^W$, which equals $1 - Y^M/Y^W$, with Y^M being the income of men and Y^W the income of women.

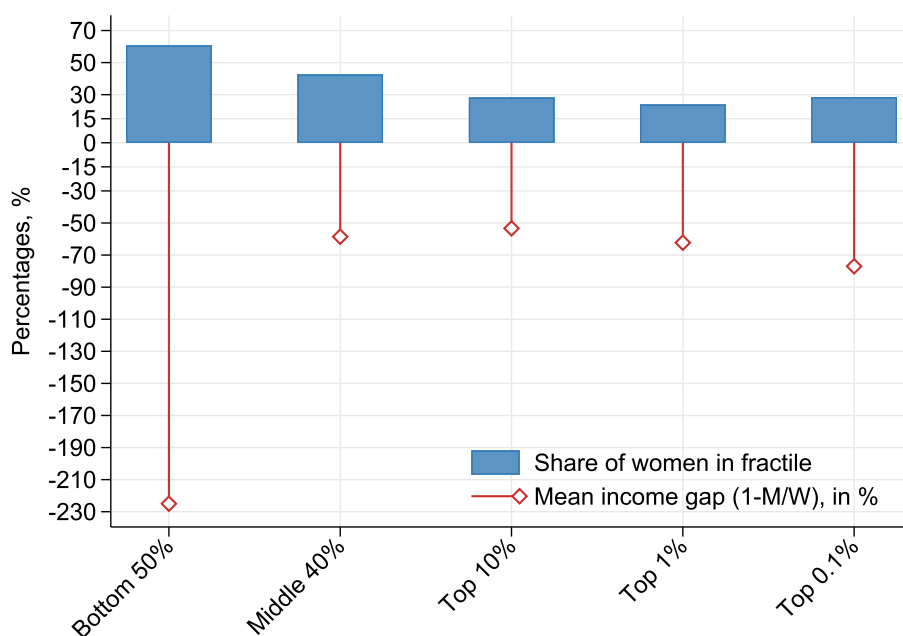


FIGURE 7. Gender gaps and gender composition for selected quantiles, 2015. Shares and income gaps are calculated on working age population of factor income net of the income of the public sector.

income distribution, the lower is women's participation in the group. Indeed, in the middle 40% (composed of people earning between € 19,000 and € 61,000) the share of women represents about 43% of the population, while this share falls to below 30% for the top of the income distribution (see Figure 7).

Gender inequality does not only affect women's participation to the various income classes, but also their earnings. Following the methodology employed in studies on wage gaps (Blau and Kahn 2017), which compares the distribution of women's and men's earnings at different percentiles, we find indeed a persistent gender gap throughout the whole factor national income distribution of men and women (cf. Figure 7). In the lowest income group, the average factor income of women is dragged down by many zero or near-zero income earners. This implies an average income of the bottom 50% of women that is more than two times lower than the bottom 50% of men. However, also in the middle-income group, where more women are employed in the labor market, this income gap still exists and reaches about 50% of the income of men, suggesting the presence of a sticky floor for women. Income disparities further increase for higher income groups, with women in the top 1% earning on average 70% less than the average income earned by men. If we move to the top 0.1%, women earn on average 80% less than men in the same income group, indicating a thick glass ceiling. Previous literature (i.e., Mussida and Picchio 2014; Piazzalunga and Di Tommaso 2019) has provided evidence for the coexistence of a sticky floor and a glass ceiling for the gender

TABLE 6. Pre-tax National Income thresholds, averages and shares in 2015, Households.

Income group	Number of Households	Number of Individuals	Income threshold	Average income	Income share
All Household	25,763,010	50,699,447		52,165	100.0%
P 0–25	6,440,752	9,606,389		14,379	6.9%
P 25–50	6,440,752	11,312,523	23,750	31,251	21.5%
P 50–60	2,576,301	5,125,394	39,133	42,790	8.2%
P 60–70	2,576,301	5,508,320	46,807	51,255	9.8%
P 70–80	2,576,301	5,936,499	56,278	62,326	11.9%
P 80–90	2,576,301	6,495,591	69,586	81,077	15.5%
Top 10%	2,576,301	6,714,731	96,370	170,123	32.6%
Top 5%	1,288,150	3,383,337	127,517	230,272	22.1%
Top 1%	257,630	657,691	235,001	499,520	9.6%
Top 0.1%	25,763	47,221	695,425	1,819,707	3.5%

Note: that top 10%, top 5%, top 1%, and top 0.1% correspond to the ranges P90–100, P95–100, P99–100, and P99.9–100, respectively.

wage gap in Italy. To the best of our knowledge, we are the first at confirming this stylized fact for Italy also for broader definitions of income. Although there might be several determinants behind such income gaps both from the supply-side (e.g., unequal job search due to social norms Del Bono and Vuri 2011; Cutillo and Centra 2017) and the demand-side (e.g., discrimination Zizza 2013), a detailed explanation of the mechanisms at play is beyond the scope of this study.

3.4.2. Household Inequality. Looking at the distribution of individual income is certainly useful to understand the level of inequality of a country. One might also be interested in how the income is distributed at the household level, especially if the country at study relies heavily on the income earned by all the the members of the family or if there is a large share of women that exits or does not even enter the labor market. In such cases, we would observe higher disparities in income concentration when looking at the individual distribution of national income than those found at the household level. At the same time, if individuals tend to form households with others who are in the same range of income, inequality might even increase by looking at the distribution at the household level.

Our estimates show that the top income shares calculated at the household levels are lower with respect to those computed at the individual level. This implies that Italian households have a relevant redistributive role as also highlighted by D'Alessio and Signorini (2000). We find that the top 10% of households earn about 33% of pre-tax national income³⁰ (compare Tables 4 and 6). Moreover, we find that the bottom 50% of the household income distribution earns about 28% of total pre-tax national income, while this income share was only 16% in the individual distribution. On average, we

30. Here, we use our baseline definition of pre-tax national income in order to account for the income received by all households components, namely also pensions for older individuals.

TABLE 7. Macro-regional average Pre-tax national income in 2015, 18 years or older.

Income group	North	Center	South
Full population	31,251	27,691	19,023
P 0–25	4,056	2,547	470
P 25–50	18,367	14,815	7,506
P 50–60	26,494	23,296	15,512
P 60–70	31,457	28,032	20,817
P 70–80	37,909	34,601	27,215
P 80–90	47,613	44,951	35,641
Top 10%	112,976	102,628	71,102
Top 5%	160,425	144,492	95,926
Top 1%	365,987	336,332	203,896
Top 0.1%	1,489,893	1,341,373	673,764

Note that top 10%, top 5%, top 1%, and top 0.1% correspond to the ranges P90–100, P95–100, P99–100, and P99.9–100, respectively.

find that individuals who are in the bottom 30% of the individual income distribution, when considered in their relative household, tend to be around the 40th percentile of the household distribution (see [Online Appendix A.8](#)). However, our results show that the equalizing effect is more evident only in the bottom half of the income distribution, while individuals in the upper half of the distribution tend to live in households with a similar income rank. This is in line with evidence on assortative mating pointed out by Milanovic (2019). All in all, considering households instead of individuals entails an equalizing effect only at the bottom of the distribution. On the contrary, top households reinforce inequality trends.³¹ For evidence on how households influence personal income also across generations in Italy; see Acciari, Polo, and Violante (2022).

3.4.3. The Italian Regional Divide. Given that our distributional national income series are consistent with the regional NA for the household sector produced by Istat, we can focus on the regional distribution of pre-tax national income to shed further light on disparities *between* and *within* regions for different income groups.

We start examining the disparities in average income between Italian macro-regions, that is the North, the Center, and the South. Table 7 clearly shows that large disparities exist among the three macro regions for every income group. In particular, the North attains a higher income level with respect to other territories throughout the income distribution. This is particularly true at the two tails of the regional distributions, where the gaps are even larger. For instance, at the bottom 25% of the income distributions the North is characterized by income levels that are more than 8 times larger than the South.³² Also at the top income gaps are quite high. The

31. Results are robust if one instead looks at household income adjusted by the OECD equivalence scale.

32. This large number is due to high youth unemployment rates female inactivity rates in the South. Considering households instead of individuals would provide a less dramatic picture. Still, high disparities persist among Italian regions as shown by the evidence provided by Istat: The risk of poverty is 46% in

TABLE 8. Macro-regional Pre-tax national income shares in 2015, 18 years or older.

Income group	North	Center	South
P 0–25	3.2%	2.3%	0.6%
P 25–50	17.9%	15.7%	10.5%
P 50–60	8.5%	8.4%	8.2%
P 60–70	10.1%	10.1%	10.9%
P 70–80	12.1%	12.5%	14.3%
P 80–90	15.2%	16.2%	18.7%
Top 10%	36.2%	37.1%	37.4%
Top 5%	25.7%	26.1%	25.2%
Top 1%	11.7%	12.1%	10.7%
Top 0.1%	4.8%	4.8%	3.5%

Note that top 10%, top 5%, top 1%, and top 0.1% correspond to the ranges P90–100, P95–100, P99–100, and P99.9–100, respectively.

top 0.1% in the North indeed earns an average income, which is 2.2 times higher than Southern income. Furthermore, numbers for the top 1% in the North are also very close to the average income estimated in the Center while being about 1.8 times higher than figures in the South. Notably, the ranking of regions is always such that Northern average income is close to but greater than the Central one, which is in turn higher than the Southern one.

We now turn to investigate income concentration *within* macro-regions. Table 8 shows that, although the bottom earns really low shares in every macro-region, numbers are particularly small for the South. Indeed, only 0.6% of Southern income accrues to the bottom 25% of the Southern income distribution (for the North the corresponding share is 3.2%). While at the middle of the distributions, shares are more similar in magnitude across regions, the top reveals some interesting insights. By looking at top 10% shares, it would seem that concentration is higher in the South with respect to other regions. However, climbing further up the income ladder reveals a different pattern: Top income shares are higher in the North and the Center, with top 0.1% grabbing 4.8% of respectively total Northern and Central income (which is 50 times more than what this group would earn in the hypothetical case of perfect equality).

In order to better understand which of the between-regional or within-regional inequality, predominantly influences income inequality at the national level, we now adopt a new method employed at the global-level by Chancel and Piketty (2021). We start by computing the between component, assuming that every resident in 1 of the 20 Italian regions earns the region's average income. This allows us to quantify the importance of income disparities between regions, while disregarding any implications arising from the income distribution within each region. The within component is

South while only 28% in Italy and 17% in the North (Siciliani 2016); the unemployment rate is 19% in the South and only 12% in Italy the inactivity rate is 46.5% in the South, while it is 29.5% in the North, and 36% in the whole country (Istat 2015)

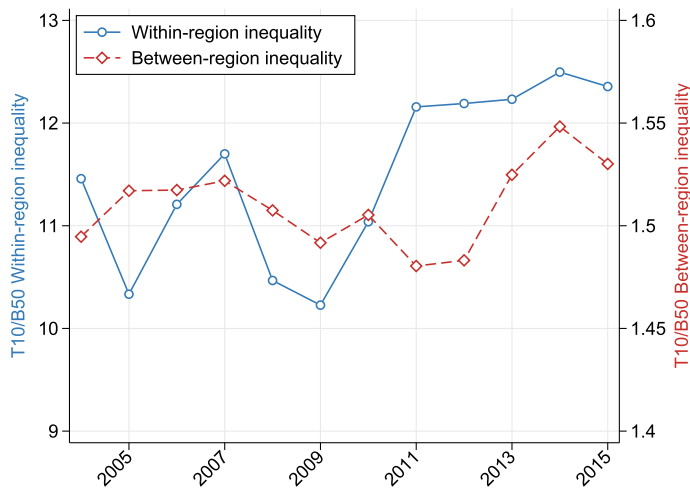


FIGURE 8. Within and between region Inequality of Pre-tax National Income.

instead calculated under the assumption that the average income in each region is the same, but the income distribution is specific to each region. The purpose of the within component is to isolate differences in inequality arising from the distinct income distributions within regions while neutralizing variations in overall average income across regions. In Figure 8, we present the ratio between the pre-tax national income shares of the Top 10% and the Bottom 50% of the population for both the between and within components. Both measures oscillate in the first part of the period and then exhibit an increasing trend in the recent years. However, the role of between-region inequality is negligible. For instance, in 2015, the between income component is about 1.53, indicating that if income were perfectly distributed within each region and only differences in average income across regions existed, the top 10% would earn only 1.5 times more than the bottom 50%. Conversely, the within component reveals greater disparities and show that the distribution of income within each region has the most significant impact on inequality. In 2015, the within-income inequality shows that even if we were to equalize the average income across all regions, the top 10% would still earn approximately 12 times more than the bottom 50%. These results highlight the pivotal role played by the income distribution within regions in shaping inequality patterns.

All in all, this macro-regional analysis confirms the well-known fact that huge disparities across Italian geographical areas exist, with the North being the richest region. We also show that the gaps are especially high at the two tails of the income distribution. In addition, we provide evidence for income concentration within macro-areas, showing that, by looking at the very top of the distribution, the North and the Center are the most unequal regions. Interestingly, the use of top income shares provides evidence that is contrasting with what was previously found in Güell et al. (2018), who instead show larger disparities in the South, by utilizing the standard deviation of log incomes as inequality indicator. Finally, the analysis underlines the crucial role of within-region income inequality in shaping country-level disparities.

4. The (Lack of) Progressivity of the Italian Tax System

In this section, we will present our main findings related to the progressivity of the Italian tax system. In order to do so, we employ the pre-tax national income³³ in line with previous studies (Bozio et al. 2018; Saez and Zucman 2019). However, since social security contributions (SSCs) paid by households represent a large fraction of total income, especially for the poorest individuals, we add also SSCs paid both by workers and employers to the total pre-tax income. This means that we add SSCs as a source of income for individuals, obtaining a new variable that we call SSCs-adjusted national income, which is higher than the total national income in NA.³⁴ We think that adopting SSCs-adjusted national income makes the comparison with macro economic aggregates easier and improves the understanding of the effective tax rate from an individual perspective, where social security contributions are deducted from gross income.³⁵

The remainder of the section is structured as follows. We will first discuss the composition of individual incomes, which is instrumental to the investigation of the incidence of different tax categories (Section 4.1). We will then estimate tax progressivity over the distribution of pre-tax national income with and without the inclusion of Social Security Contributions (Section 4.2) and for different types of earners identified by their main income source (Section 4.3). Finally, in Section 4.4, we will investigate tax incidence over the wealth distribution. Throughout the analysis, in order to avoid biases related to changes in fiscal legislation and reforms, for simplicity, we will focus on the latest year available, 2015.

4.1. Income Composition

Let us first discuss the composition of individual incomes over the income distribution, as this represents crucial information for understanding tax incidence. We find that, while pensions are more present in the left tail of the income distribution, middle-high

33. It is useful to recall that pre-tax national income series are constructed including pensions in the distribution of income, while all social security contributions paid by workers and employers are excluded.

34. Think of a simple situation in which half of the people are earning 100 units of income from labor, of which 50 units are deducted as SSCs in period 1 to pay pensions to the other half of the individuals. Then, both types of individuals have an income of 50 units, which is assumed to be taxed at 50%. In this case, by distributing the amount of taxes paid and considering SSCs only as a source of income tax, we will end up in an unrealistic situation in which taxes for the employed workers would be equal to 75, while their income would be recorded at 50 units. On the other hand, taxes for the pensioners would be equal to 25 units while having an income of 50 units. To properly distribute SSCs as income tax, we need to include both pension income and SSCs as sources of income in the denominator. In this case, the employed workers would pay 75 units as taxes out of a total income of 100 units, and the pensioner will pay 25 units out of a total income of 50 units.

35. Note also that the court of cassation, with sentence no. 20845 of May 25, 2011, defines social contributions as taxes whose purposes carry out the insurance of welfare and social security benefits in favor of workers

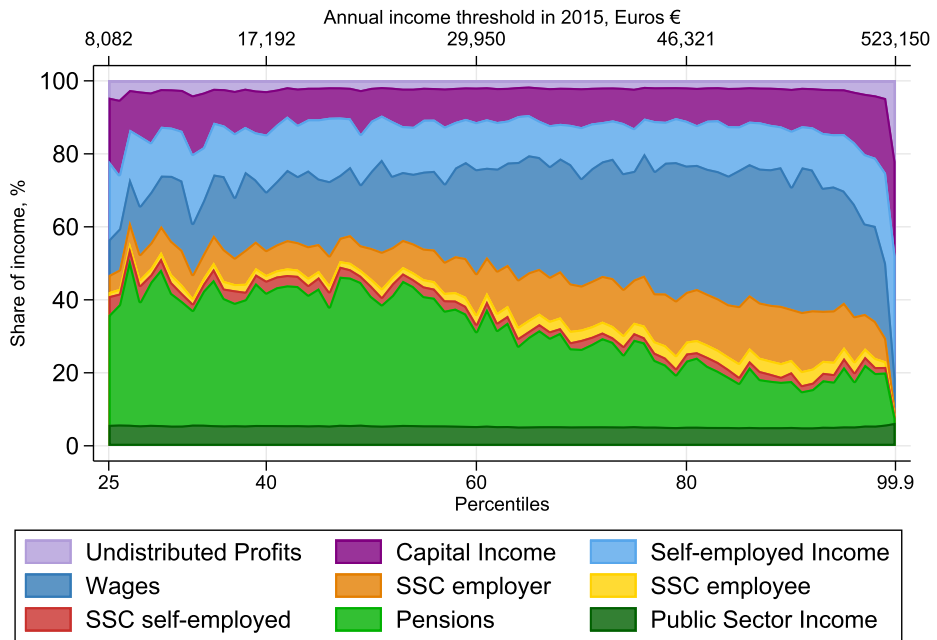


FIGURE 9. Pre-tax National Income composition including Social Security Contributions, 2015. Capital income is composed of the sum of actual and imputed rents and financial income.

income earners are on average composed of individuals earning a large part of their income from dependent work (see Figure 9).

Capital income appears to be relatively flat over most of the income distribution. However, the sum of capital income and undistributed profits becomes a major component of incomes at the very top of the distribution. The constancy of capital income over most of the income distribution is partially explained by two factors. First, in line with the literature (e.g. Piketty, Saez, and Zucman 2018), we assume constant rates of returns (cf. Section 2.3), implying that earnings from capital are non-zero also for those with relatively low levels of wealth. Second, our definition of capital income includes imputed rents, which are particularly relevant in Italy, wherein over 70% of the households are home owners.³⁶ Nonetheless, this constancy in composition for a wide part of the distribution masks great heterogeneity in capital income levels. Furthermore, we find that people at the very top of the income distribution, namely the top 0.1%, heavily rely on capital income, as well as on undistributed profits, which are allocated in proportion to equity, shares and business assets.

To have a better understanding of the overall composition of income, we divide people into four different groups according to their primary source of income: (i) income and salaries from dependent work, (ii) income from self-employment, (iii)

36. See <https://www.oecd.org/housing/data/affordable-housing-database/>.

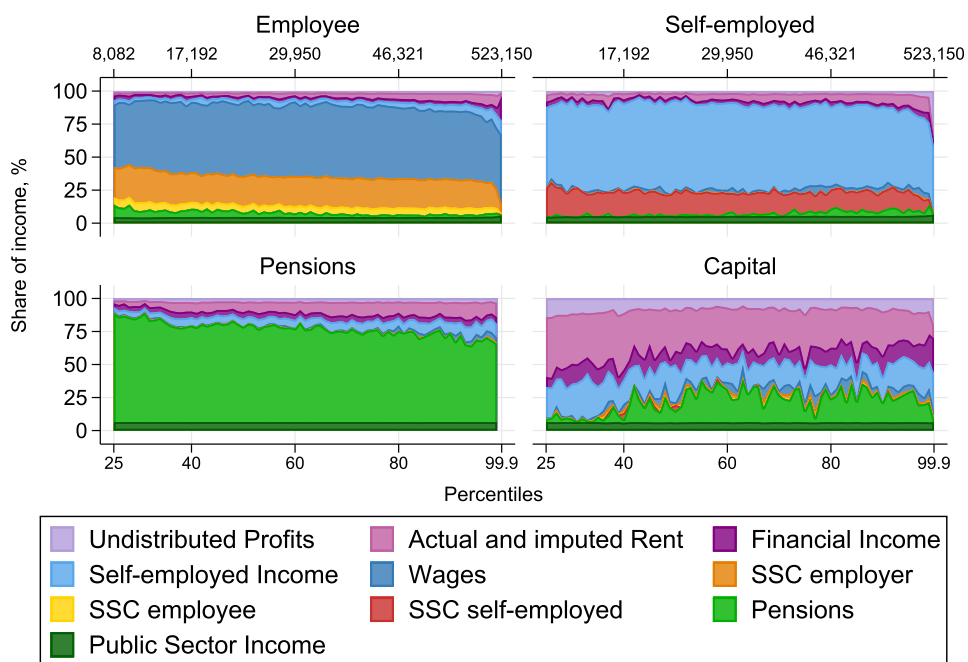


FIGURE 10. Income composition by prevalent income categories, 2015. In this figure, income is defined as the sum of pre-tax national income and social security contributions.

pensions, and (iv) capital income (see Figure 10). As expected, the first two groups are mutually self-exclusive; those who are categorized as employees have very low income from self-employment activities and, in the same way, those who are considered self-employed workers have very low dependent income. For both groups, the relevance of social security contributions declines toward the top of the income distribution due to the contributions ceiling imposed on income above € 100,000.³⁷ For both employees and self-employed workers, the relevance of capital income tends to be higher at the top of the income distribution, accounting for about 25% of total income for the top 0.1%. More specifically, in the case of employees, financial income is the most prevalent type of capital income at the top, while, for self-employed workers, rents, and undistributed profits are more relevant. In the group where pensions is the main source of income, capital income increases steadily throughout the income distribution, especially for actual and imputed rents. Finally, when we look at people whose main source is capital income, things get much more heterogeneous. First, pensions, employed and self-employed income jointly account for about 50% of their total income. Moreover, undistributed profits are also relevant, especially for those at the top of the income distribution where they account for around 25% of their total income.

37. The threshold is reduced to € 76,000 for some specific categories of self-employed workers [Circolare INPS n2026](#).

Let us focus now on the top of the income distribution where the prevalence of the different categories of income vary substantially. In the top 10%, almost 60% of the people are earning income mainly from employed activities, 16% of the people are self-employed workers, and only 8% prevalently live off the returns of their capital investments. However, as one climbs the ladder of the top income distribution, such shares are completely reversed. At the top 1%, composed of around 500,000 individuals, only 37% of the group earn mainly employed income, while 26% get primarily self-employment income, and people earning mainly capital income increases to almost 25%. Capital income earners become the most represented among the top 0.1%. Indeed, individuals earning prevalently capital income represent 74% of the top 0.1%, while employees are just 13% and self-employed workers 12%.

After having analyzed in detail income composition, we can now move on toward our final objective of estimating overall tax incidence along the income distribution.

4.2. Actual Tax Rates over Income Percentiles

As explained in previous sections, our income series are built by redistributing to each individual all income from NA and, improving on previous studies that grouped taxes in few main categories, we distribute all the 77 direct and indirect taxes that are present in NA (see [Online Appendix A.3](#) for further details on the incidence assumption of each individual tax). Therefore, by comparing the amount of income received with the amount of taxes paid, we are able to estimate the actual tax rate for each individual and the overall progressivity of the Italian tax system across income percentiles. More specifically, we first sum the income and taxes for each percentile of the distribution of pre-tax national income plus social security contributions. We then calculate the average tax rate at the percentile level by dividing total taxes paid by total income received.

We find that the tax rate is only *slightly progressive* up to the 95th percentile: The average rate increases from about 40% for individuals with lowest incomes (below € 15,000 per year) to approximately 50% at around the 90th percentile of the income distribution (see [Figure 11](#)). The low degree of overall progressivity shown in [Figure 11](#) can be explained by the combination of the following factors. First, effective average tax rates on labor and pensions are increasing with income throughout the whole distribution. Second, although SSCs are theoretically proportional with respect to labor income, the increasing role of wages and self-employed income (instead of pensions) for the middle 40% of the distribution (see [Figure 9](#)) turns out to progressively impact on the overall tax incidence up to the 90th percentile. Finally, although, theoretically, consumption tax rates (VAT and other indirect taxes on consumption in [Figure 11](#)) are designed in order to avoid regressivity, this is not the case empirically, as they drag the whole system toward lower progressivity. Coherently, the regressivity of the consumption tax is confirmed also in studies that take into account consumption sub-categories in a finer way (see e.g. [Gastaldi et al. 2017](#)).

The Italian tax system turns *regressive* for those earning more than € 82,000, corresponding to taxpayers in the top 5% of the income distribution. This income

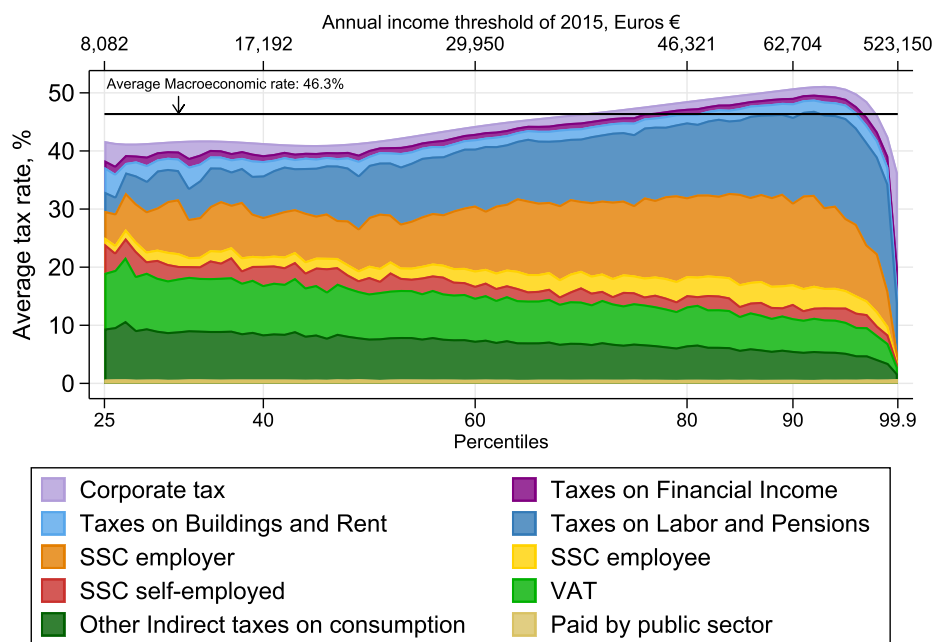


FIGURE 11. Tax rate by income percentiles, 2015. In this figure, income is defined as the sum of pre-tax national income and social security contributions. The reported macro-economic tax rate is equal to about 46.3% of the SSCs-adjusted national income, where SSCs are included in both numerator and denominator. This tax-rate is lower than the usual rate reported from official international institutions (see e.g. OECD, World Bank, and Eurostat), where the denominator is the GDP, rather than the national income, and social security contributions are included only in the numerator as a source of taxation. Please note also that “Taxes on Labor and Pensions” do not include the capital component of the Personal Income Tax.

group is composed of individuals deriving up to 48% of their income from ownership of financial and business assets. As such, they enjoy favorable flat-tax rates and are not subject to compulsory social security contributions. The result is that the highest income group enjoys the lowest estimated tax rates, which appear to be around 36% (see Figure 11).³⁸

The evidence for the top income groups can be inspected more clearly in Figure 12, where we zoom into the top 20% of the income distribution. For this income group, the progressivity is very limited with a tax rate that starts just below 50% and reaches

38. Our analysis distributes taxes at the individual level. What would change if we instead considered households as the unit of analysis? Our evidence on household inequality (Section 3.4.2) reveals that households have an equalizing effect at the bottom of the income distribution, but not at the top, where we instead find evidence of assortative mating. Therefore, considering households instead of individuals in the analysis of tax incidence is likely to yield relatively more progressivity at the bottom of the distribution, making the curve in Figure 11 less flat for lower income levels, while it would result in an even stronger degree of regressivity at the top, considering that individuals with similar income levels tend to live in the same household.

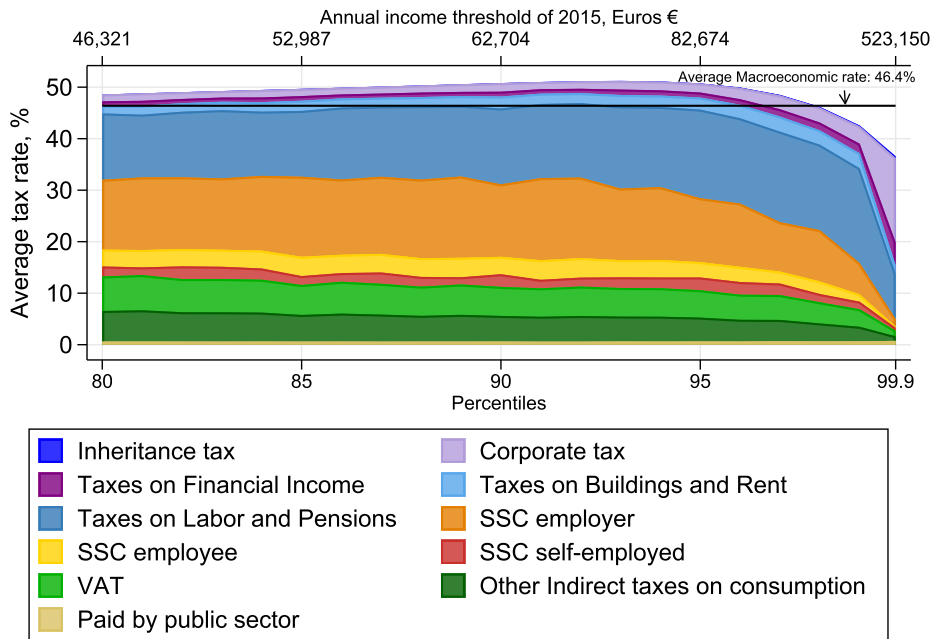


FIGURE 12. Tax rate by top income percentiles, 2015. In this figure, income is defined as the sum of pre-tax national income and social security contributions. The reported macro-economic tax rate is equal to about 46.4% of the SSCs-adjusted national income, where SSCs are included in both numerator and denominator. This tax rate is lower than the usual rate reported from official international institutions (see e.g. OECD, World Bank, and Eurostat), where the denominator is the GDP, rather than the national income, and social security contributions are included only in the numerator as a source of taxation.

its maximum value, which is slightly above 50%, for the 95th percentile. For the top 5%, we can clearly see a sharp reduction of the portion of SSC paid, jointly with a considerable decrease of taxes on consumption, labor, and pensions, while corporate taxes become more significant. This is particularly clear for the top 0.1%, which earns a higher fraction of capital income and undistributed profits. For this income group, we can observe that most of the taxes paid are related to their businesses and the corporations in which they own shares.

In Figure 12, we have also taken into account the distribution of the inheritance tax. In Italy, the revenues collected through this tax are exceptionally low, constituting only 0.14% of the overall government tax revenue (see [Online Appendix Table A.4](#) for details on all type of taxes), notably lower than other OECD countries (OECD 2021). This low incidence stems from the flat nature of inheritance tax rates, which can be as low as 4% for transfers made to spouses or direct relatives, as well as from the fact that the tax is only applicable to the overall net value exceeding 1 million euros for each beneficiary.³⁹ The particular nature of inheritance taxes makes their incidence

39. The inheritance tax rates applying to transfers to other categories of recipients are the following: 6% for transfers in favor of brothers or sisters, to be applied to the overall net value exceeding 100,000 euros

complex, as they could either be considered as paid by the deceased individuals leaving the inheritance or by those receiving it. However, in our dataset, we do not have direct information on inheritances being received or transferred. Therefore, in our exercise, we simply assume that inheritance taxes are paid by individuals with a net wealth above 1 million and they are distributed proportionally based on their wealth. Notwithstanding our assumption concentrates the inheritance tax toward the upper end of the income distribution, Figure 12 clearly shows that its impact is negligible. Note that if these taxes had been more evenly distributed across the income distribution, their relevance would have been even smaller, thus strengthening our results on the limited progressivity of the Italian tax system. Therefore, in all subsequent analyses, we decide to disregard the inheritance taxes and not to allocate them to any individual.

In the discussion above, we have intentionally left out the very bottom of the income distribution, in a cautionary spirit. Estimations of tax rates for the bottom 25% are indeed characterized by high uncertainty levels due to the majority of individuals earning very low income levels, that is less than € 7,000. Nevertheless, we find that they are subject to an average tax rate of about 50% (see Figure A.6 in Online Appendix A.10), which is higher than the average tax rate paid by the majority of the population and, particularly by the richest individuals. This is due to the fact that even if a smaller part of their income is actually subject to direct taxes, they still have to allocate a higher fraction of their income to pay indirect taxes, which considerably increase the overall tax rate for this group.

As previously explained, SSCs play a crucial role in determining the overall progressivity of the Italian tax system. However, one might argue that since SSCs can be perceived as mandatory savings that are eventually returned as pensions, they should not be considered as a conventional form of taxation. We here show that, even when excluding SSCs from the analysis of the tax system, our general findings remain robust. Indeed, Figure A.4 in Online Appendix A.10 illustrates that the regressivity at the higher end of the income distribution remains highly evident when examining all taxes paid without the inclusion of SSCs. This outcome is also clear when comparing measures of inequality in pre-tax national income, in which SSCs are left out, with inequality in post-tax disposable income, where we exclude all taxes paid but incorporate non-contributory social transfers from the government. Indeed, even without considering SSCs, the measures of pre- and post-tax income are characterized by similar values and trends, further confirming the overall limited redistributive power of taxes in Italy (see Figure 13 and the analysis spelled out in the final part of this subsection).

What is role of each macro category of taxes in shaping inequality? Figure 13 illustrates the response of the income shares of the top 1%, top 0.1%, middle 40%,

for each beneficiary; 6% for transfers in favor of other relatives up to the fourth degree, collateral relatives up to the third degree, to be applied to the overall net transferred value, without any exemption; 8% for transfers in favor of all other individuals, to be applied to the overall net transferred value, without any exemption. For a more comprehensive understanding of inequality related to inheritance and gifts in Italy, interested readers can refer to a recent work by Acciari and Morelli (2020).

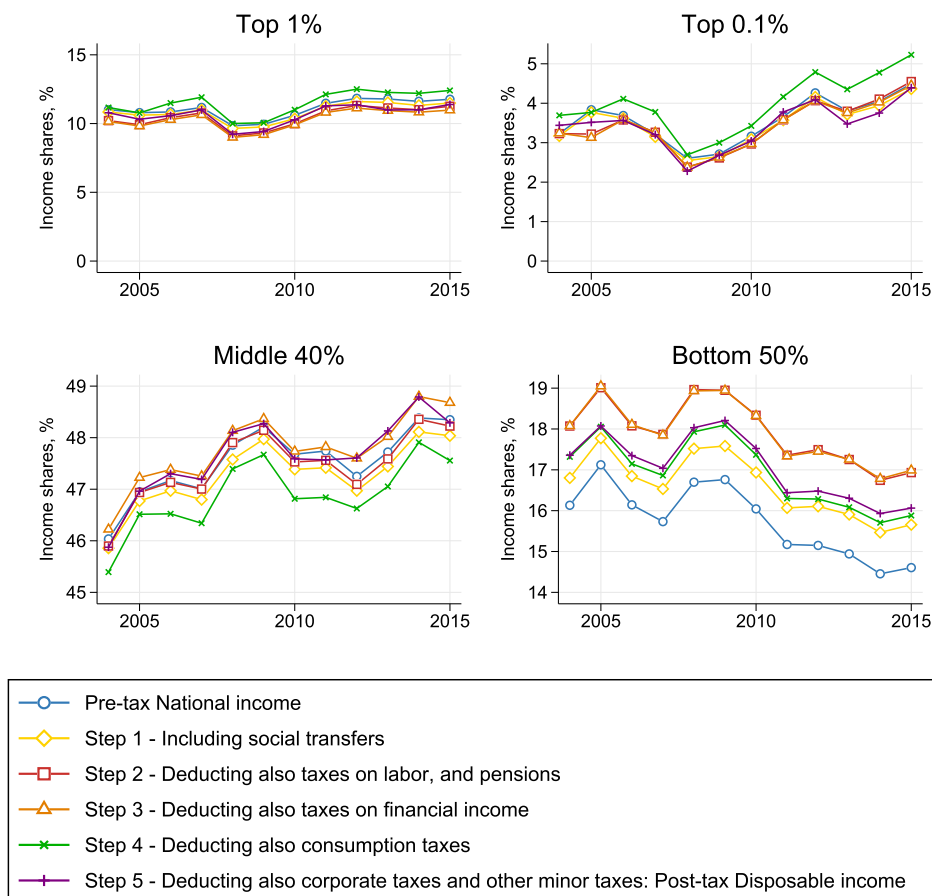


FIGURE 13. From Pre-tax National Income to Post-tax Disposable Income by selected income groups.

and bottom 50%, when the different categories of taxes are taken into account in the analysis. As a first step, we add social transfers to pre-tax national income. Step 1 in Figure 13 shows that these transfers only moderately reduce income concentration for the top and middle income groups, while they considerably increase the income shares for the bottom 50%. This difference arises because the bottom 50% benefits more than other income groups from direct government transfers. Next, we proceed by deducting taxes on labor and pensions (step 2), followed by taxes on financial income (step 3). None of these steps significantly affect the top income concentration, as a low share of their income stems from the progressively-taxed labor, and the flat low taxes on financial income have a minimal impact (see Figure 9). The middle 40% witnesses a modest growth in income share, while the bottom 50% experiences the highest increase, as the majority of their income comes from labor. However, when taxes on consumption are also subtracted (step 4), the top income shares increase while

those of the middle 40% and bottom 50% significantly fall. This outcome arises from the empirical regressivity associated with this type of taxes. Finally, when corporate taxes are removed (step 5), the post-tax disposable income concentration experiences a marginal decrease among the highest income groups, while showing a slight increase for the middle and bottom income groups. This outcome is due to the fact that only the individuals at the very top of the income distribution get a significant portion of their earnings from equities and corporate shares. As a consequence, the deduction of corporate taxes mostly impacts the top income groups and their income shares decrease accordingly. All in all, by jointly considering the foregoing adjustments, the level of post-tax disposable income inequality is significantly lower only for the bottom 50%, mainly thanks to targeted government transfers. For the top income groups, however, the post-tax inequality closely mirrors that observed in pre-tax national income, confirming the evidence on the limited progressivity of the tax system at the very end of the income distribution. Notably, none of the tax and transfers categories has a significant impact on the trends of the different inequality indicators (see Figure 13), showing that their role does not seem to have changed in the period 2004–2015.

4.3. *Actual Tax Rates by Types of Income*

To obtain a more granular assessment of the overall tax rate paid by each individual, we divide the population of interest into four different groups according to their primary source of income: (i) income and salaries from dependent work, (ii) income from self-employment, (iii) pensions, and (iv) capital income. We find that the average tax rate strongly depends on the main source of earned income, shedding light on the actual tax rates paid by individuals according to the relative position in the total income distribution (cf. Figure 11). More precisely, the average tax rate for each type of income is substantially flat with a small increase at the top, around the 90th percentile, that nevertheless becomes regressive for the top 5% (see Figure 14).

We will first describe the differences in levels and trends of the tax rates across the different types of income earners and, then, we will proceed by explaining their determinants.

First, employees, whose income is primarily derived from wages and salaries, are those who experience the highest tax rates throughout the whole income distribution (cf. Figure 14). Within this category, the tax rate exhibits a decreasing trend at the lower end of the income distribution due to the higher incidence of social security contributions. It then switches to a slightly more progressive pattern for the middle 40% up to the 90th percentile, where the tax rate hovers just above 55%. Nonetheless, taxation becomes regressive at the highest income levels.

A similar picture characterizes self-employed (see Figure 14). Their tax rate is slightly lower than that of employees, but it is regressive at the bottom half of the distribution, due to higher effective tax rates on consumption and mandatory minimum

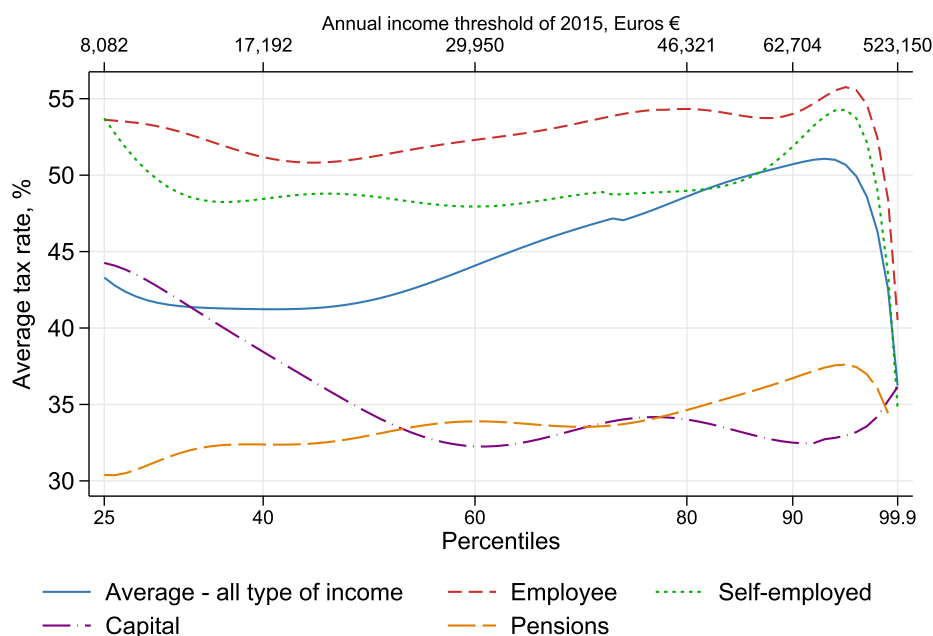


FIGURE 14. Tax rate by different types of primary income sources, 2015. In this figure income is defined as the sum of pre-tax national income and social security contributions.

non-proportional SSCs.⁴⁰ It becomes progressive only for the 90–95th percentiles. However, the tax rate is again decreasing for the top 5% with the top 0.1% being subject to a final tax rate that is lower than the one paid by the poorest individuals in this category.

Capital income earners are subject to a tax rate that is regressive at the bottom and flat for the rest of the distribution (see Figure 14), as only a limited portion of these types of income is taxed progressively via the personal income tax. This group is characterized by low tax rates with respect to other ones. This is true also for pensioners,⁴¹ who are nevertheless taxed progressively (see Figure 14). Tax rates referring to this earner type, ranging from around 30%–37%, are, thus, increasing with income and turn out to be more progressive than for other categories of individuals. Nonetheless, also for pensioners, we find a regressive tax system for the top 5%, the portion of the distribution where income from financial and real assets becomes more relevant, as described in the previous section.

We will now turn to the determinants that shape tax incidence for each income group. To do so, in Figure 15, we show the composition of taxes paid by each

40. The minimum contribution is set for artisan and traders with income below € 15,500; see [Circolare INPS n2026](#).

41. This is partly due to the fact that no social security contributions are associated with these two types of income.

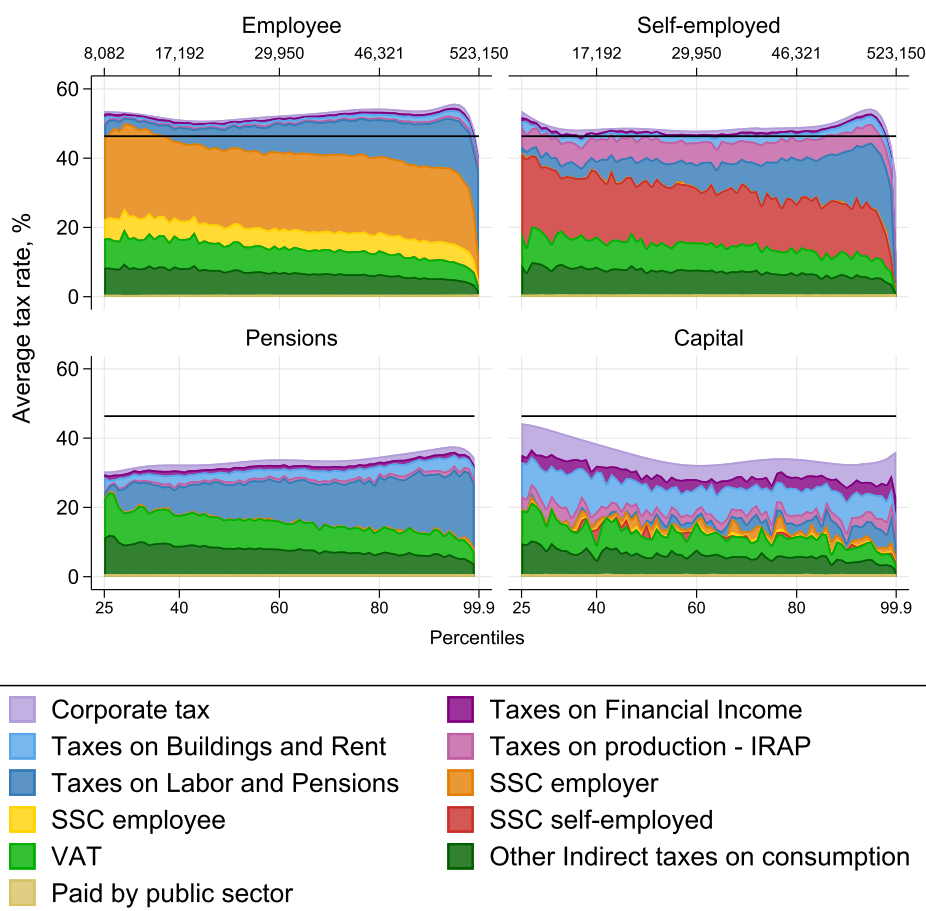


FIGURE 15. Tax rate composition by different types of primary income sources, 2015. In this figure, income is defined as the sum of pre-tax national income and social security contributions.

category. We find that social security contributions impact the most on employees and self-employed individuals. Moreover, for both categories, effective social security contributions rates appear to be slightly regressive, as the incidence of the contributions falls with higher income. The latter result is due to the increasing relevance of the sum of capital incomes and undistributed profits at the top of the respective distributions. Since the SSCs are proportional only to labor income, the increase in the relative importance of other sources of income, toward the top of the income distribution, determines the empirical regressivity of SSCs.⁴² In this framework, the progressivity of taxes on labor income and pensions only partly compensate for the regressivity of social security contributions and of indirect taxes on consumption, leading to an overall

42. From a policy perspective, one could argue that social security contributions should be compulsory based on the level of income rather than the type of income earned.

flat-tax for these types of income. The IRAP, a particular tax on productive activities, which is paid by companies and self-employed, impacts considerably on the tax rates of the latter by increasing their total tax rates and driving them closer to those of the employees. Finally, for both employee and self-employed workers, the drop of effective tax-rates at the top of the income distribution is explained by the higher incidence of capital income, taxed at a low flat tax rate, by the reduction in SSCs, due to contribution ceilings, jointly with the decline of the incidence of consumption taxes.

Individuals mainly earning capital income are also subject to an overall slightly regressive tax rate (see Figure 15). Only a fraction of this category's income is actually taxed progressively, while the rest of their income is instead subject to a flat-tax rate of 12% or 26% depending on the asset type. As individuals in this income group earn also other types of income, in addition to capital income, social security also marginally contribute to the overall rate. Furthermore, the progressive personal income tax (taxes on labor income and pensions) is so low that it does not compensate for the other flat and regressive taxes (e.g. VAT), implying an overall slightly decreasing tax rate.

Finally, pensioners represent the only category that does pay an overall progressive tax (see Figure 15). Indeed, as pensioners are not subject to social security contributions,⁴³ the most progressive component of personal income tax (taxes on labor income and pensions) is enough to compensate for the regressivity of the indirect taxes on consumption.

4.4. Wealth Distribution and Tax Regressivity

What is the degree of progressivity of the tax system if we order individuals based on their net wealth instead of their income? Figure 16 shows that when individuals are compared along the net wealth distribution, the Italian tax system appears to be regressive throughout the whole distribution.

The tax decomposition shows that all tax components are either flat or regressive. This is not surprising: as capital incomes are proportional to wealth, the larger is wealth, the higher is the flow of capital incomes taxed in a proportional way. In turn, this leads to the *overall regressivity* of the system when net wealth distribution is considered. Notice that the estimates of level of regressivity of the system is conservative, as we imputed homogeneous rates of return to individuals (following Piketty, Saez, and Zucman 2018) instead of increasing returns to wealth in line with the recent evidence (i.e., Fagereng et al. 2020; Bach, Calvet, and Sodini 2020; Iacono and Palagi 2023).

Overall, the evidence of a regressive tax system when wealth distribution is considered provides further support for the introduction of a top wealth tax, in line with work by Saez and Zucman (2019). However, a comprehensive exploration of how

43. Recall that, as social security contributions are proportional with respect to labor income, and as top income earners are characterized by an income composition in which capital income is relatively more relevant with the respect to the rest of the distribution, effective SSC rates appear to be empirically regressive over the distributions of income, of employee income and self-employed income.

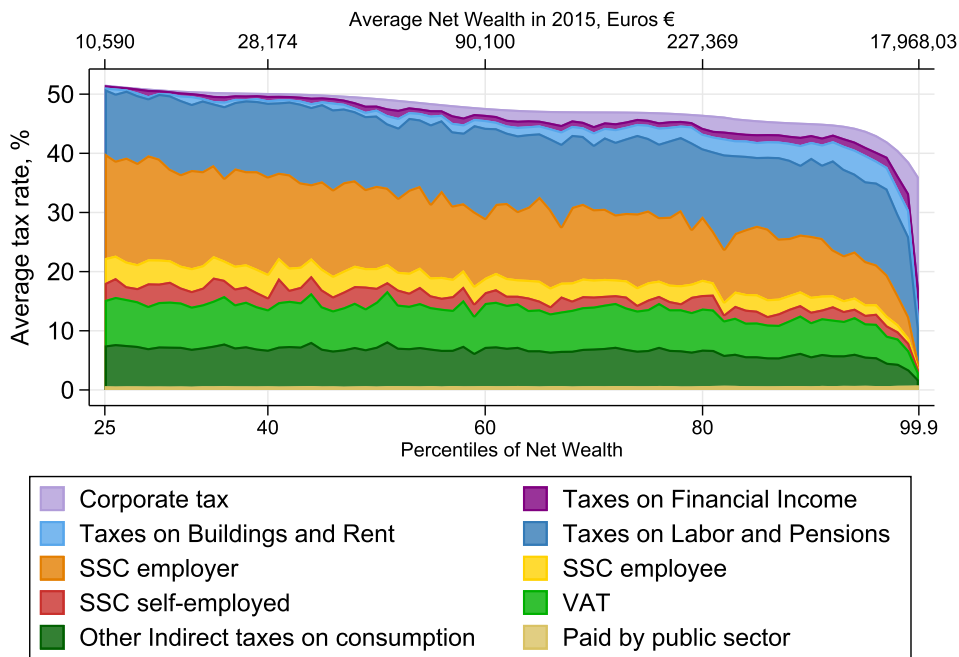


FIGURE 16. Progressivity by percentiles of Net Wealth, 2015.

a wealth tax could be utilized to address the regressivity of the tax system that we have discussed, is left for future research

5. Conclusions

In this work, we have reconstructed the Italian income distribution following the DINA approach (cf. Alvaredo et al. 2016; Piketty, Saez, and Zucman 2018) for the period 2004–2015 combining different data sources. With this approach, we were able to correct for remarkable misreporting of capital income in surveys, attributing the missing component to individuals following wealth distributions provided by Acciari, Alvaredo, and Morelli (2023). Moreover, we combined our main survey of reference (IT-SILC, Istat) with more accurate information on consumption (HBS, Istat), in order to include in the analysis only consumption components that are effectively subject to the value-added tax, and discerning the actual VAT rates specific to the different categories of consumption. We also accounted for the role of tax evasion employing the Non-Observed Economy estimates provided by Istat and self-employed heterogeneous evasion rates as estimated by Albarea et al. (2020). Finally, we methodologically contributed to the literature by building DINA that are consistent with regional accounts, thus studying more precisely the rich evidence at a sub-national level.

Our study shows that previous works on income distribution in Italy (Alvaredo and Pisano 2010; Blanchet, Chancel, and Gethin 2022a) have underestimated the concentration of income at the top 1% and 0.1% by 1.5 percentage points. Furthermore, inequality trends appear less flat than previously thought: In the aftermath of the 2008 financial crisis, the richest top 1% and top 0.1% have increased their share of national income and the very top income earners are still on increasing trends. We also find that the fall of real income per adult affected all income groups of the population, but it hit particularly hard the youngest individuals, between 18 and 35 years old, belonging to the bottom 50% of the factor income distribution, who lost about 42% of their income in real terms between 2004 and 2015. Looking at the gender composition, we find that a gender income gap is present throughout the whole income distribution, and it is also relevant for the very top of income earners, wherein women represent less than 30% of the top 0.1% and earn, on average, half of the income earned by men. Finally, at the regional level, we find higher income levels in the North throughout the distribution. Moreover, national disparities are mostly due to *within-region* income inequality.

Combining our fresh estimates of income distribution with the amount of direct and indirect taxes paid by individuals, we estimated the progressivity of the Italian tax system (similarly to Bozio et al. 2018; Piketty, Saez, and Zucman 2018; Saez and Zucman 2019; Bruil et al. 2022, for France, the United States, and the Netherlands respectively), both at the percentile level and across primary types of income. To the best of our knowledge, this is the first time such an analysis is carried out for Italy. We show that the Italian tax system is very mildly progressive for most part of the distribution and it turns *regressive* for the top 5%, with a tax rate falling from a peak of 50% to 36%. Such a result is driven by a progressive personal income tax that is insufficiently compensating for the empirically found regressivity of indirect taxes on consumption and social security contributions. Indeed, by dividing the population according to each individual's main source of income, we show that pensioners are the only category for which a significant tax progressivity is present, where individuals mostly earning capital income are subject to a slightly regressive overall income tax, as capital income is taxed with a flat rate and exempted from compulsory social security contributions. Strikingly, when we rank individuals on wealth, the tax system is regressive throughout the wealth distribution. Such new results should be taken into account in the ongoing debate about the reform of the Italian tax system.

Our work can be extended along several directions. First, by developing a new methodology to integrate the data sources that are available for the years before 2004, we could construct inequality measures in coherence with the DINA framework spanning a longer time period. Second, by taking into account the various tax reforms introduced in the last decades, we could study how the progressivity of the Italian tax system has varied through time. Third, simulation exercises could be performed taking into account possible behavioral responses due to tax reforms, such as a wealth tax targeted only on the top 5% of individuals aiming at compensating the regressivity of the tax system. (see Advani and Tarrant 2021, for a review).

References

- Acciari, Paolo, Facundo Alvaredo, and Salvatore Morelli (2023). "The Concentration of Personal Wealth in Italy 1995–2016." Working Paper No. 88, LSE International Inequality Institute.
- Acciari, Paolo and Sauro Mocetti (2013). "Una Mappa Della Disuguaglianza Del Reddito in Italia (The geography of income inequality in Italy)." Bank of Italy Occasional Paper No. (208).
- Acciari, Paolo and Salvatore Morelli (2020). "Wealth Transfers and Net Wealth at Death: Evidence from the Italian Inheritance Tax Records 1995–2016." Working paper, NBER.
- Acciari, Paolo, Alberto Polo, and Giovanni L. Violante (2022). "And Yet It Moves: Intergenerational Mobility in Italy." *American Economic Journal: Applied Economics (Forthcoming)*, 14, 118–163.
- Advani, Arun and Hannah Tarrant (2021). "Behavioural Responses to a Wealth Tax." *Fiscal Studies*, 42, 509–537.
- Agostinelli, Alessandra and Federico Sallusti (2020). "L'economia Non Osservata Nei Conti Nazionali - Anni 2015-2018." Report Statistiche Istat - Istituto Nazionale di Statistica.
- Albarea, Andrea, Michele Bernasconi, Cinzia Di Novi, Anna Marenzi, Dino Rizzi, and Francesca Zantomio (2015). "Accounting for Tax Evasion Profiles and Tax Expenditures in Microsimulation Modelling. The BETAMOD Model for Personal Income Taxes in Italy." University Ca' Foscari of Venice, Dept. of Economics Research Paper Series No. 24.
- Albarea, Andrea, Michele Bernasconi, Anna Marenzi, and Dino Rizzi (2020). "Income Underreporting and Tax Evasion in Italy: Estimates and Distributional Effects." *Review of Income and Wealth*, 66, 904–930.
- Alvaredo, Facundo, Anthony Atkinson, Lucas Chancel, Thomas Piketty, Emmanuel Saez, and Gabriel Zucman (2016). "Distributional National Accounts (DINA) Guidelines: Concepts and Methods used in WID. World." World Inequality Lab, Working Paper No. (2016/2).
- Alvaredo, Facundo and Elena Pisano (2010). "Top Incomes in Italy, 1974–2004." In *Top Incomes: A Global Perspective*, edited by Anthony B. Atkinson and Thomas Piketty, pp. 625–663. Oxford University Press.
- Amoureux, Victor, Elvire Guillaud, and Michaël Zemmour (2019). "It Takes two to Tango: Income and Payroll Taxes in Progressive Tax Systems." Working Paper No. 779, Luxembourg Income Study (LIS).
- Assael, Henry and John Keon (1982). "Nonsampling vs. Sampling Errors in Survey Research." *Journal of Marketing*, 46, 114–123.
- Bach, Laurent, Laurent E. Calvet, and Paolo Sodini (2020). "Rich Pickings? Risk, Return, and Skill in Household Wealth." *American Economic Review*, 110(9), 2703–47.
- Baldini, Massimo (2021). "Redistribution and Progressivity of the Italian Personal Income Tax, 40 Years Later." *Fiscal Studies*, 42, 345–366.
- Bank of Italy. "Banca d'Italia, Indagine sui bilanci delle famiglie italiane - Version 10.1 of the historical database."
- Bartels, Charlotte and Salvatore Morelli (2021). "A Tale of Two Countries: The Long Shadow of the Crisis on Income and Wealth in Germany and Italy." *Journal of Modern European History*, 19, 33–39.
- Bazzoli, Martina, Paolo Di Caro, Francesco Figari, Carlo V. Fiorio, and Marco Manzo (2020). "Size, Heterogeneity and Distributional Effects of Self-Employment Income Tax Evasion in Italy." EUROMOD Working Paper No.
- Blades, Derek and David Roberts (2002). "Measuring the Non-Observed Economy." *OECD Statistics Brief*, (2002/5).
- Blanchet, Thomas, Lucas Chancel, and Amory Gethin (2022a). "Why Is Europe More Equal than the United States?" *American Economic Journal: Applied Economics (Forthcoming)*, 14, 480–518.
- Blanchet, Thomas, Ignacio Flores, and Marc Morgan (2018). "BFMCORR: Stata Module for Correcting Surveys using Tax Data."
- Blanchet, Thomas, Ignacio Flores, and Marc Morgan (2022b). "The Weight of the Rich: Improving Surveys using Tax Data." *The Journal of Economic Inequality*, 20, 119–150.
- Blau, Francine D. and Lawrence M. Kahn (2017). "The Gender Wage Gap: Extent, Trends, and Explanations." *Journal of Economic Literature*, 55, 789–865.

- Bozio, Antoine, Bertrand Garbinti, Jonathan Goupille-Lebret, Malka Guillot, and Thomas Piketty (2018). "Inequality and Redistribution in France, 1990-2018: Evidence from Post-Tax Distributional National Accounts (DINA)." World Inequality Lab, Working Papers No., (2018/10).
- Brandolini, Andrea (2008). "Income Inequality in Italy: Facts and Measurement." XLIV Riunione Scientifica, CLEUP, Padova.
- Brandolini, Andrea and Giovanni D'Alessio (2001). "Household Structure and Income Inequality." Tech. rep., LIS Working Paper Series.
- Bruil, Arjan, Celinevan Essen, Wouter Leenders, Arjan Lejour, Jan Möhlmann, and Simon Rabaté (2022). "Inequality and Redistribution in the Netherlands." CPB Discussion Paper No. 436.
- Chancel, Lucas and Thomas Piketty (2021). "Global Income Inequality, 1820–2020: The Persistence and Mutation of Extreme Inequality." *Journal of the European Economic Association*, 19, 3025–3062.
- Ciani, Emanuele and Roberto Torrini (2019). "The Geography of Italian Income Inequality: Recent Trends and the Role of Employment." *Politica Economica*, 35, 173–208.
- Cuttillo, Andrea and Marco Centra (2017). "Gender-Based Occupational Choices and Family Responsibilities: The Gender Wage Gap in Italy." *Feminist Economics*, 23, 1–31.
- Dalenius, Tore (1977). "Bibliography on Non-Sampling Errors in Surveys: I (A to G)." *International Statistical Review/Revue Internationale de Statistique*, 45, 71–89.
- D'Alessio, Giovanni (2018). "Gender Wealth Gap in Italy." Bank of Italy Occasional Paper No., (433).
- D'Alessio, Giovanni and Luigi Federico Signorini (2000). "Inequality of Individual Incomes and the Role of the Household in Italy." Working Paper No. (390).
- Emilia Del Bono, and Daniela Vuri (2011). "Job Mobility and the Gender Wage Gap in Italy." *Labour Economics*, 18(1), 130–142.
- Di Caro, Paolo (2020). "Decomposing Personal Income Tax Redistribution with Application to Italy." *The Journal of Economic Inequality*, 18, 113–129.
- Donatiello, Gabriella (2011). *La metodologia di stima dei redditi lordi nell'indagine Eu-Silc: indagine europea sui redditi e le condizioni di vita delle famiglie*. Sistema statistico nazionale, Istituto nazionale di statistica.
- Ederer, Stefan, Predrag Etkovi, Stefan Humer, Stefan Jestl, and Emanuel List (2022). "Distributional National Accounts (DINA) with Household Survey Data: Methodology and Results for European Countries." *Review of Income and Wealth*, 68 (3), 667–688.
- Fagereng, Andreas, Luigi Guiso, Davide Malacrino, and Luigi Pistaferri (2020). "Heterogeneity and Persistence in Returns to Wealth." *Econometrica*, 88, 115–170.
- Garbinti, Bertrand, Jonathan Goupille-Lebret, and Thomas Piketty (2018). "Income Inequality in France, 1900–2014: Evidence from Distributional National Accounts (DINA)." *Journal of Public Economics*, 162, 63–77.
- Gastaldi, Francesca and Paolo Liberati (2018). "Il Destino Della Progressività dell'imposta personale sul reddito." In *I Nodi Della Finanza Pubblica: Teoria e Politica. Scritti in Onore di Antonio Pedone*, edited by F. Gastaldi, pp. 73–84. Milano: Franco Angeli.
- Gastaldi, Francesca, Paolo Liberati, Elena Pisano Simone Tedeschi et al. (2017). "Regressivity-Reducing VAT Reforms." *International Journal of Microsimulation*, 10, 39–72.
- Gertner, G and M. Köhl (1992). "An Assessment of Some Nonsampling Errors in a National Survey using an Error Budget." *Forest Science*, 38, 525–538.
- Groves, Robert M. and Mick P. Couper (2012). *Nonresponse in Household Interview Surveys*. John Wiley & Sons.
- Güell, Maia, Michele Pellizzari, Giovanni Pica, and José V Rodríguez Mora (2018). "Correlating Social Mobility and Economic Outcomes." *The Economic Journal*, 128, F353–F403.
- Gyomai, György and Peter Van de Ven (2014). "The Non-Observed Economy in the System of National Accounts." OECD Statistics Brief, (2014/18). <https://web-archiv.oecd.org/2014-06-17/308230-Statistics>. Accessed September 1, 2023.

- Iacono, Roberto and Elisa Palagi (2023). “A Micro Perspective on $r > g$.” *Economica*, 90, 531–556.
- Istat. “Istat, Indagine sulle condizioni di vita (UDB - IT SILC).” <https://www.istat.it/it/archivio/4152>. Accessed December 4, 2020.
- Istat. “Istat, Indagine sulle spese delle famiglie: Microdati ad uso pubblico.” <https://www.istat.it/it/archivio/180356>. Accessed December 10, 2020.
- Istat (2015). “Il Mercato Del Lavoro.” Statistiche Flash. Istituto Nazionale di Statistica.
- Istat (2021). “L’utilizzo Della Banca Dati Reddittuale Del MEF Per La Calibrazione Del Campione.” In *L’indagine EU-SILC. Innovazioni nella metodologia di rilevazione e di stima*, Chapter 12, pp. 137–150.
- Jappelli, Tullio and Luigi Pistaferri (2010). “Does Consumption Inequality Track Income Inequality in Italy?” *Review of Economic Dynamics*, 13, 133–153.
- Jaumotte, Florence and Carolina Osorio Buitron (2020). “Inequality: Traditional Drivers and the Role of Union Power.” *Oxford Economic Papers*, 72, 25–58.
- Kuypers, Sarah, Francesco Figari, and Gerlinde Verbist (2021). “Redistribution in a Joint Income–Wealth Perspective: A Cross-Country Comparison.” *Socio-Economic Review*, 19, 929–952.
- Loschiavo, David, Eleonora Porreca, Antonietta Di Salvatore, Federico Tullio, and Francesca Zanichelli (2022). “Indagine Sui Bilanci Delle Famiglie Italiane Nell’anno 2020.” Statistical Reports, Bank of Italy.
- MEF. “IRPEF tax tabulation - MEF - Dipartimento delle Finanze.” https://www1.finanze.gov.it/finanze/pagina_dichiarazioni/public/dichiarazioni.php. Accessed September 6, 2017.
- Milanovic, Branko (2019). *Capitalism, Alone*. Harvard University Press.
- Mussida, Chiara and Matteo Picchio (2014). “The Gender Wage Gap by Education in Italy.” *The Journal of Economic Inequality*, 12, 117–147.
- OECD (2021). *Inheritance Taxation in OECD Countries*. Number 28 in OECD Tax Policy Studies. OECD Publishing, Paris. <https://www.oecd-ilibrary.org/content/publication/e2879a7d-en>.
- Piazzalunga, Daniela and Maria Laura Di Tommaso (2019). “The Increase of the Gender Wage Gap in Italy During the 2008–2012 Economic Crisis.” *The Journal of Economic Inequality*, 17, 171–193.
- Piketty, Thomas and Anthony B. Atkinson (2010). *Top Incomes: A Global Perspective*. Oxford University Press.
- Piketty, Thomas, Emmanuel Saez, and Gabriel Zucman (2018). “Distributional National Accounts: Methods and Estimates for the United States.” *The Quarterly Journal of Economics*, 133, 553–609.
- Pissarides, Christopher A. and Guglielmo Weber (1989). “An Expenditure-Based Estimate of Britain’s Black Economy.” *Journal of Public Economics*, 39, 17–32.
- Ravallion, Martin (2022). “Missing top income recipients.” Working Paper No. 28890.
- Roine, Jesper, Jonas Vlachos, and Daniel Waldenström (2009). “The Long-Run Determinants of Inequality: What can we Learn from Top Income Data?” *Journal of Public Economics*, 93, 974–988.
- Saez, Emmanuel and Gabriel Zucman (2019). *The Triumph of Injustice: How the Rich Dodge Taxes and How to Make them Pay*. WW Norton & Company.
- Saez, Emmanuel and Gabriel Zucman (2020). “The Rise of Income and Wealth Inequality in America: Evidence from Distributional Macroeconomic Accounts.” *Journal of Economic Perspectives*, 34, 3–26.
- Siciliani, Isabella (2016). “Income and Living Conditions.” Report Statistiche Istat —Istituto Nazionale di Statistica. https://www.istat.it/en/files/2016/12/EN_Income-and-living-conditions.pdf. Accessed September 1, 2023.
- Splinter, David (2020). “US Tax Progressivity and Redistribution.” *National Tax Journal*, 73, 1005–1024.
- Taleb, Nassim Nicholas and Raphael Douady (2015). “On the Super-Additivity and Estimation Biases of Quantile Contributions.” *Physica A: Statistical Mechanics and Its Applications*, 429, 252–260.
- UN Economic Commission for Europe (2008). *Non-observed Economy in National Accounts: Survey of Country Practices*. Vol. 812, United Nations Publications.

- Verma, Vijay and Thanh Lê (1996). “An Analysis of Sampling Errors for the Demographic and Health Surveys.” *International Statistical Review/Revue Internationale de Statistique*, 64, 265–294.
- Zizza, Roberta (2013). “The Gender Wage Gap in Italy.” Bank of Italy Occasional Paper No. 172.

Supplementary Data

Supplementary data are available at [JEEA](#) online.