

Why Is Europe More Equal than the United States?[†]

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This article combines all available data to produce pretax and post-tax income inequality series in 26 European countries from 1980 to 2017. Our estimates are consistent with macroeconomic growth and comparable with US distributional national accounts. Inequality grew in nearly all European countries, but much less than in the US. Contrary to a widespread view, we demonstrate that Europe's lower inequality levels cannot be explained by more equalizing tax and transfer systems. After accounting for indirect taxes and in-kind transfers, the US redistributes a greater share of national income to low-income groups than any European country. "Predistribution," not "redistribution," explains why Europe is less unequal than the United States. (JEL D31, E01, H23, H24, H50, I38)

The evolution of inequality in Europe and the United States has attracted considerable attention in recent academic and policy debates, yet basic questions about the distribution of growth in the two regions remain unanswered. How did Europe and the United States compare in terms of their distributional outcomes? What have been the respective roles of pretax income inequality and redistribution in explaining differences between the two regions? The comparative study of the distribution of growth, taxes, and transfers can provide critical insights into such debates. However, because of a lack of conceptual and empirical consistency, existing estimates of the income distribution have been hard to interpret and compare across countries. These shortcomings have led to a series of misunderstandings on the drivers of inequality in rich nations.

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The standard source to compare economic growth across countries is the national accounts, while the standard source to measure inequality and redistribution is household surveys. Surveys are known to underrepresent top incomes and do not add up to macroeconomic income totals, leading to potential inconsistencies in the study of growth, inequality, and redistribution. In order to address some of these limitations, Piketty, Saez, and Zucman (2018) and Alvaredo et al. (2020) developed Distributional National Accounts (DINA) that combine various sources to distribute the entirety of a country's net national income, and established guidelines to carry out this work.

This new methodology has attracted significant interest, but unfortunately, with the exception of the United States (Piketty, Saez, and Zucman 2018) and France (Bozio et al. 2018; Garbinti, Goupille-Lebret, and Piketty 2018), similar work in comparable countries remains rare.¹ In Europe, the absence of estimates of the income distribution that integrate survey, tax, and national accounts data is not the result of a lack of data per se. In fact, there is a fair amount of data available, at least since the 1980s. The problem is that these data are scattered across a variety of sources, taking several forms and using different concepts and methodologies. As a result, researchers and policymakers find themselves with a disparate set of indicators that are not always comparable, are hard to aggregate, provide uneven coverage, and can tell conflicting stories.

This article addresses these substantive and methodological issues by constructing distributional national accounts for 26 European countries from 1980 to 2017. To our knowledge, this is the first attempt at doing so. Our estimates combine virtually all existing data sources on the income distribution of European countries in a consistent way. These include household surveys, tax data, and national accounts but also additional databases on social insurance benefits and contributions and government spending on health that have been compiled by several institutions over the years (OECD, Eurostat, WHO). Our methodology exploits the strengths of each data source to correct for the weaknesses of others, making all assumptions explicit and as transparent as possible. It avoids the kinds of systematic errors and implausible assumptions that arise from the comparison of different income concepts, statistical units, or methodologies. Crucially, our series are fully comparable with recently produced US distributional national accounts, allowing us to compare the dynamics of inequality and redistribution in the two regions in great detail.

Two key findings emerge from the analysis of our new database.

First, we show that, over the past four decades, inequality has increased in nearly all European countries as well as in Europe as a whole, both before and after taxes, but much less than in the United States. Between 1980 and 2017, the share of pretax income that accrued to the richest 1 percent Europeans rose from 8 percent to 11 percent before taxes and transfers and from 7 percent to 9 percent

¹ Statistical institutes, international organizations, and researchers have increasingly recognized the need to bridge the micro-macro gap in inequality studies. Since 2011, an expert group on the Distribution of National Accounts mandated by the OECD has been working on methods to allocate gross disposable household income to income quintiles (Fesseau and Mattonetti 2013; Zwijsenburg, Bournot, and Giovannelli 2019). In a similar fashion, experimental statistics on the distribution of personal income and wealth have been recently published by Eurostat (2018); Statistics Netherlands (2014); Statistics Canada (2019); and the Australian Bureau of Statistics (2019). These exercises have improved upon traditional survey-based estimates but do not make systematic use of tax data and are restricted to the household sector.

after taxes and transfers. In the United States, the top 1 percent pretax income share rose from 11 percent to 21 percent over the same period, and the top 1 percent post-tax income share from 9 percent to 16 percent. We also find that European inequality increased between 1980 and 1990 but less so afterward, while the rise was sustained in the United States. In Europe as a whole, inequality levels are mostly explained by within-country inequality rather than by average income differences between Western, Northern, and Eastern European countries.² Between-country average income differentials are also found to explain close to none of the inequality trends observed in Europe in the past four decades. Still, regional dynamics vary: Eastern Europe has experienced the highest inequality increase, while the trend has been more muted in Western Europe. Northern Europe also experienced a significant increase in inequality but remains the most equal region, both before and after redistribution.

Second, the main reason for Europe's relative resistance to the rise of inequality has little to do with the direct impact of taxes and transfers. While Western and Northern European countries redistribute a larger fraction of output than the United States (about 47 percent of national income is taxed and redistributed in Europe versus 35 percent in the United States), the distribution of taxes and transfers does not explain the large gap between Europe and US posttax inequality levels. Quite the contrary: after accounting for all taxes and transfers, the United States appears to redistribute a greater fraction of its national income to the poorest 50 percent than any European country. This finding stands in sharp contrast with the widespread view that "redistribution," not "predistribution," explains why Europe is less unequal than the United States (e.g., OECD 2008, 2011). In other words, Europe has been much more successful than the United States at ensuring that its low-income groups benefit from relatively good-paying jobs. We show that the differences between our conclusions and those of the OECD are driven by several factors, including the greater underrepresentation of top incomes in US surveys; the fact that we account for indirect taxes and in-kind transfers, which are more progressive in the United States than in Europe overall; and the inclusion of pensions in the definition of pretax income.

This paper contributes to the existing literature on the evolution of income inequality in Europe and the United States in three ways.

First, we provide novel estimates on the distribution of growth in Europe as a whole and within European countries. While it has generally been acknowledged that income inequality has grown in Europe since the 1980s (OECD 2008), little is known of how this rise compares across countries, across income groups in the distribution, or across time periods. The efforts made by the Luxembourg Income Study (LIS) to harmonize existing surveys, for instance, have been extremely helpful to improve the comparability of pre-2000 inequality statistics in Europe. Yet, because of sampling issues and misreporting at the top of the income distribution, surveys can picture evolutions that are inconsistent with those suggested by tax data. In this paper, we combine for the first time all these sources in a

²In 2017 more than 80 percent of European inequality is due to within-country differences, according to a Theil index decomposition. See Figure 4.

meaningful way, using new techniques and a consistent methodology. We show that correcting for the weaknesses of existing estimates does lead to substantively different conclusions on the level and evolution of inequality in Europe, the distributive impact of taxes and transfers, and how inequality and redistribution compare across European countries.

Second, we compare how growth has been distributed before and after taxes in Europe and the United States since 1980. While most studies suggest that posttax income inequality is greater in the United States than in European countries today, it remains unclear whether this gap is due to differences in pretax income inequality or to differences in government redistribution. International organizations such as the OECD (OECD 2008, 2011), in line with other research (e.g., Jesuit and Mahler 2010; Immervoll and Richardson 2011), find that the lower posttax income inequality levels of European countries are mostly due to redistribution. This contrasts with Bozio et al. (2018), who use the DINA methodology, distribute all taxes and transfers, and find that redistribution reduces inequality less in France than in the United States.³ Whether the United States is more unequal than Europe as a whole (i.e., as a region) also remains an open question.⁴ Thanks to our new dataset, we are able to provide new insights into these questions, decomposing precisely the contributions of spatial integration, pretax income inequality, and redistribution in explaining differences between Europe and the United States and their evolution over time.

Third, we contribute to the distributional national accounts literature by enriching its methodology. Piketty, Saez, and Zucman (2018) and Garbinti, Goupille-Lebret, and Piketty (2018) start with tax data, to which they progressively add information from surveys and national accounts. This “top-down” approach exploits all the richness of tax microdata and yields very detailed and precise estimates. However, while this type of work should be extended to as many European countries as possible, there are many countries and time periods for which tax microdata are simply not available. This justifies our “bottom-up” approach, which starts from surveys and gradually incorporates information from top incomes shares, estimated from income tax tabulations, and unreported national income components. As such, we view our methodology as well suited to estimating the distribution of national income in countries gathering a mix of survey microdata, tabulated tax returns, and a variety of other heterogeneous data sources. This case corresponds to the majority of countries beyond Europe and the United States.⁵

The rest of this paper is organized as follows. Section I presents our conceptual framework, data sources, and methodology. Section II summarizes our findings on the distribution of pretax incomes in Europe. Section III discusses the impact

³ See also Guillaud, Olckers, and Zemmour (2019), who find results similar to Bozio et al. (2018) without using the DINA framework.

⁴ Works on the distribution of income in the EU-15 (Atkinson 1996) or the eurozone (Beblo and Knaus 2001) suggested that income inequality was higher in the United States, but recent studies extending the analysis to new, poorer Eastern European member states have found mixed results (e.g., Brandolini 2006; Dauderstädt and Keltek 2011; Salverda 2017; Filauro and Parolin 2018).

⁵ In a similar fashion, Piketty, Saez, and Zucman (2019) have recently proposed a simplified method for recovering estimates of top pretax national income shares based on the fiscal income shares of Piketty and Saez (2003) and very basic assumptions on the distribution of untaxed labor and capital income components. Our methodology follows the same spirit.

of taxes and transfers on inequality in Europe and the United States. Section IV concludes.

I. Data Sources and Methodology

This section introduces the data sources and methodology used to estimate the distribution of national incomes in Europe. Section IA outlines our conceptual framework and the assumptions used to distribute the components of net national income. Section IB presents the data sources used. Section IC explains how we harmonize and combine these data sources to derive estimates of factor income, pretax income, and posttax income inequality.

A. Conceptual Framework

Universe.—We study the distribution of national income in 26 European countries from 1980 to 2017. The choice of countries considered in this paper has been dictated by the availability of comparable, high-quality data sources allowing us to estimate pretax and posttax inequality statistics with a sufficient degree of certainty.⁶ Our geographical area of interest includes all 15 members of the European Union before its 2004 extension (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom), 7 Central and Eastern European countries that joined the EU in 2004 or in the years that followed (Croatia, the Czech Republic, Estonia, Hungary, Poland, Romania, and Slovenia), and 4 countries that are not part of the EU but have maintained tight relationships with it (Iceland, Norway, Serbia, and Switzerland).

Methodological Framework.—We follow the principles of the DINA guidelines (Alvaredo et al. 2020), which provide a set of methods to distribute the totality of net national income—GDP minus capital depreciation plus net foreign income—in a way that is consistent with the concepts defined in the System of National Accounts (United Nations Statistics Commission 2008). The DINA framework acknowledges three levels of distribution: factor national income, pretax national income, and posttax national income. We report in Table 1 how these concepts are derived, which data sources are used to allocate their various components, the distributional assumptions made in this paper to do so, and the share of national income they represent.

⁶More precisely, we exclude from our sample all European countries for which no tax data were available to correct incomes at the top end of the distribution: Albania, Bosnia and Herzegovina, Bulgaria, Cyprus, Kosovo, Lithuania, Latvia, Malta, Moldova, Montenegro, North Macedonia, and Slovakia. However, we still provide results for each of these countries in online Appendix Section 4, estimated with and without an imputed top income correction profile. Including or excluding these countries from the analysis barely affects our estimates of European income inequality (see online Appendix Figures A.2.1.14 and A.2.1.15).

TABLE 1—METHODODOLOGY USED TO DISTRIBUTE FACTOR INCOME,
PRETAX INCOME, AND POSTTAX INCOME IN EUROPE

Income concept	Source	Method	Share of income (percent)
<i>Factor national income</i>			100
(+)Household primary income			79.2
Compensation of employees, mixed and property income	Survey + tax data	Observed	76.9
Net imputed housing rents	Survey + tax data	Observed	2.3
(+)Corporate primary income	National accounts	Proportional to equity ownership/wages and pension for equity held through pension funds	8.3
(+)Government primary income	National accounts	Proportional to pretax income	12.4
<i>Pretax national income</i>			100
(+)Factor national income			100
(-)Contributory social contributions	Survey + tax data	Observed/simulated	18.2
(+)Pension benefits	Survey + tax data	Observed	16.6
(+)Unemployment benefits	Survey + tax data	Observed	1.7
<i>Posttax national income</i>			100
(+)Pretax national income			100
(-)Taxes			29.3
Noncontributory social contributions	Survey + tax data	Observed/simulated	1.3
Direct taxes on income and wealth	Survey + tax data	Observed	11.1
Taxes on products	National accounts	Proportional to consumption	14
Corporate income tax	National accounts	Proportional to equity ownership/wages and pension for equity held through pension funds	3
(+)Transfers			30
Cash transfers	Survey + tax data	Observed	5.1
Public health expenditures	National accounts	Lump sum	7.7
Other public expenditures	National accounts	Proportional to posttax income	17.3
(+)Budget balance	National accounts	Proportional to posttax income	-0.7

Note: The table reports the methodology used to distribute the various components of factor national income, pretax national income, and posttax national income in European countries, together with the share of net national income each component typically represents (population-weighted average over all European countries over the 2010–2017 period).

Factor Income.—Factor national income corresponds to all income flows that accrue to individuals before any form of government redistribution.⁷ It is equal to the sum of the primary incomes of the different sectors of the economy: households, corporations, and the government.

The primary income of households (79% of national income on average across European countries) can be decomposed into four main components: compensation of employees, mixed income, net property income, and the net imputed rents of owner-occupiers. The distribution of these income flows is generally observed in survey and tax data, although data on imputed rents are not systematically collected

⁷We refer in this paper to “redistribution” as the operation of the tax and transfer system, measured by the difference between pretax and posttax income inequality. By contrast, “predistribution” refers to all forms of government interventions (such as labor market regulations, minimum wages, educational investments, etc.) that drive pretax inequality levels (see Section III as well as Hacker and Pierson 2010 for a discussion of these concepts).

and are usually not included in inequality measures published by statistical institutes or international organizations.

The primary income of corporations (8%) corresponds to the income that companies retain after having paid suppliers, employees, shareholders, and corporate taxes and that we also refer to as “retained earnings” or “undistributed profits.” Following other DINA studies, we consider that the undistributed profits of privately owned corporations belong to the owners of these corporations. We separate the share of retained earnings that accrues to shareholder households, to the government, and to pension funds, proportionally to the total amount of equity they own. We distribute the retained earnings of shareholder households proportionally to their equity ownership. We distribute the retained earnings that accrue to pension funds proportionally to wage and pension income. And we distribute the government’s share like the primary income of the government.^{8,9}

The primary income of the general government (12 percent) is the sum of taxes less subsidies on production and imports and of net property income. In our benchmark series, we distribute it proportionally to pretax income, in line with DINA recommendations (Alvaredo et al. 2020).¹⁰

Pretax Income.—Pretax income corresponds to income after the operation of social insurance systems but before other types of redistribution. It is equal to factor income, plus pension benefits (17 percent of national income on average) and unemployment and disability benefits (1.7 percent), minus the social contributions that pay for them. Contributions and transfers are generally observed in survey data and can therefore be directly removed from or added to individual factor incomes.

Notice that for pretax income to sum up to national income, it is important to remove the same amount of social contributions as the amount of social benefits that we distribute. In most countries, social contributions exceed pension and unemployment benefits because contributions also pay for health or family-related benefits that we classify as non-insurance-based redistribution. In these cases, we only deduct a fraction of social contributions from pretax income (their “contributory” part). On the contrary, in a few countries such as Denmark, social contributions are virtually nonexistent. In these cases, we assume that social insurance is financed by the income tax by deducting a fraction of the income tax from factor income to get to pretax income.

⁸This can be justified by the fact that retained earnings correspond to profits that are kept within the company rather than distributed to shareholders as dividends. This income ultimately increases the wealth of shareholders and therefore represents a source of income to them. Several papers have documented the impact of including retained earnings in the United States (Piketty, Saez, and Zucman 2018), Canada (Wolfson, Veall, and Brooks 2016), and Chile (Fairfield and Jorratt De Luis 2016; Atria et al. 2018). In Norway, Alstadsæter et al. (2017) showed that the choice to keep profits within a company or to distribute them is highly dependent on tax incentives and therefore that failing to include them in estimates of inequality makes top income shares and their composition artificially volatile.

⁹This approach assumes that the wealthiest shareholders do not own stock in companies that systematically have higher retained earnings than the rest.

¹⁰We provide variants in which taxes on products are distributed proportionally to consumption in the online Appendix (see online Appendix Figure A.2.1.16).

Posttax Income.—Posttax income accounts for other forms of redistribution operated by the government. We consider two types of posttax income concepts. Posttax disposable income removes all taxes from pretax income but only adds back cash transfers and therefore does not sum up to national income. Posttax national income also adds back collective government expenditure and therefore adds up to national income.

To move from pretax to posttax income, we first remove all taxes and social contributions that remain to be paid by individuals. These include noncontributory social contributions (1 percent of national income) and direct taxes on income and wealth (11 percent), which are directly observed in survey and tax data. They also include indirect taxes (14 percent) and corporate income taxes (3 percent), which are not directly observed. We assume that indirect taxes are paid by consumers and distribute them proportionally to household final consumption expenditure. Corporate income taxes are paid out of corporate profits, so we distribute them similarly to undistributed profits.

We then allocate all types of government transfers to individuals. Social assistance transfers (5 percent of national income) are observed in survey data, so they can be added directly to individual incomes. We distribute other public spending proportionally to posttax disposable income (17 percent of national income), with the exception of public health expenditure (8 percent), which we distribute in a lump-sum way, considering that the insurance value provided by health systems is similar for everyone. While this remains a simplification, the existing literature suggests that it does represent a good first-order approximation of who benefits from the public health care system.¹¹ We use the proportionality assumption for nonhealth in-kind transfers as a benchmark for simplicity, transparency, and comparability with US distributional national accounts (Piketty, Saez, and Zucman 2018), but we discuss at greater length the robustness of our findings to this assumption in Section III. In particular, we consider an alternative scenario in which all collective expenditure is distributed on a lump-sum basis and find that it does not alter our main conclusions.¹²

We distribute the budget balance of the government (the discrepancy between what it collects in taxes and what it pays in transfers, representing -0.7 percent of national income on average) proportionally to posttax disposable income.

Unit of Analysis.—In our benchmark series, the statistical unit is the adult individual (defined as being 20 or older) and income is split equally among spouses.¹³

¹¹ See in particular Germain et al. (2020), who combine household surveys and administrative data with a simulation model of health payments to distribute health expenditure in France.

¹² This assumption affects the levels of posttax inequality but is unlikely to affect the trends, as government final expenditures have remained fairly stable in Europe, with no major changes in their decomposition by functions: see Figure A.2.1.2 in the online Appendix.

¹³ We also compute additional series in which income is split between all adult household members, not just members of a couple (i.e., a “broad” rather than a “narrow” equal split)—see online Appendix Figure A.2.1.17.

B. Data Sources

National Accounts.—For total net national income, we use series compiled by the World Inequality Database based on data from national statistical institutes, macroeconomic tables from the United Nations System of National Accounts, and other historical sources (see Blanchet and Chancel 2016). For the various components of national income, we collect national accounts data from Eurostat, the OECD, and the United Nations. Additional data come from the OECD health and social expenditures databases. We provide a detailed view of the coverage that these data provide in the online Appendix.

Survey Microdata.—We collect and harmonize household survey microdata from several international and country-specific datasets. Our most important source of survey data is the European Union Statistics on Income and Living Conditions (EU-SILC), which has been conducted on a yearly basis since 2004 in 32 countries. We complement EU-SILC by its predecessor, the European Community Household Panel (ECHP), which covers the 1994–2001 period for 13 countries in Western Europe. Our second most important source of survey data is the Luxembourg Income Study (LIS), which provides access to harmonized survey microdata covering 26 countries since the 1970s. Most Western European countries are covered from 1985 until today, and several countries from Eastern Europe have been surveyed since the 1990s.

Survey Tabulations.—We complement survey microdata sources with a number of tabulations available from the World Bank's PovcalNet portal, the World Income Inequality Database (WIID), and other sources. PovcalNet provides precalculated survey distributions by percentile of posttax income or consumption per capita. The WIID gathers inequality estimates obtained from various studies and gives information on the share of income received by each decile or quintile of the population. Finally, we collect historical survey data on post-tax income inequality in former communist Eastern European countries provided by Milanovic (1998). In all cases, we use generalized Pareto interpolation (Blanchet, Fournier, and Piketty 2017) to recover complete distributions from the tabulations.

Tax Data.—To better capture the evolution of incomes at the top end of the distribution, we rely on known top income shares estimated from administrative data and compiled in the World Inequality Database. In general, tax data is only reliable for the top of the distribution, and this is why these series do not cover anything below the top 10 percent. At the time of writing, data series were available for 19 European countries. We complete this database by gathering and harmonizing a new collection of tabulated tax returns covering Austria (1980–2015), East Germany (1970–1988), Estonia (2002–2017), Iceland (1990–2016), Italy (2009–2016), Luxembourg (2010, 2012), Portugal (2005–2016), Romania (2013), and Serbia (2017). We use these tabulations to add new top income shares to our database (see online Appendix Section 1.7).

C. Methodology

We now explain how we combine these various data sources to estimate the distributions of factor income, pretax income, and posttax income in Europe. First, we derive measures of household income inequality from survey microdata. Second, we train a machine learning algorithm to correct conceptual inconsistencies in survey tabulations. Third, we combine survey data with tax data to correct incomes at the top end of the distribution. Fourth, we combine external data sources with national accounts aggregates to distribute unreported national income components. We summarize the different steps of this methodology in Table 2. Similar tables for each of the countries covered in this paper are available in the online Appendix.

(1) *Direct Measurement of Income Concepts in Survey Microdata.*—When we have access to survey microdata (from EU-SILC or LIS), we can in most cases estimate income concepts that are close to our concepts of interest. As a result, we have survey data on both pretax and posttax income inequality for almost all countries since 2007 and for a longer period of time for a number of countries.

A significant exception concerns employee and employer social contributions in EU-SILC, which are not always reported separately from income and wealth taxes. We use the social contribution schedules published in the OECD Tax Database to impute social contributions separately. This only has a marginal effect on estimates of pretax income inequality.

(2) *Harmonization of Survey Tabulations.*—Contrary to microdata, tabulations only provide distributions covering specific income concepts and equivalence scales. For these data sources, as well as for survey microdata for which information on taxes and transfers is incomplete, we have to develop a strategy to transform the distribution of the observed “source concept” (e.g., posttax income among households) into an imputed distribution measured in a “target concept” (pretax or posttax income per adult).

To tackle this prediction problem, we choose to rely on XGBoost (Chen and Guestrin 2016), a state-of-the-art implementation of a standard, high-performing machine learning algorithm called boosted regression trees. The key idea behind our harmonization procedure is that while the income or consumption concepts we observe are different, they are also related. Using all the cases in which the income distribution is simultaneously observed for two different concepts, we can thus map the way they tend to relate to one another and convert any source concept to our concept of interest. We provide a detailed overview of the method and results of this imputation procedure in online Appendix Section 1.3. In particular, we show that this approach performs better than more naïve ones, such as assuming a single correction coefficient by percentile.¹⁴ Overall, this harmonization only has a small impact on our results, given that we observe both pretax and posttax income in the

¹⁴ While this approach is certainly not perfect, the existing literature has often chosen to ignore these issues altogether and directly compare and combine, say, income and consumption data (e.g., Lakner and Milanovic 2016). We feel that our approach is preferable because it corrects at least for what can be corrected.

TABLE 2—METHODOLOGY USED TO COMBINE SURVEY, TAX, AND NATIONAL ACCOUNTS DATA IN EUROPE

Methodological step	Detailed steps	Sources and coverage	Discussion/impact
Step 1: Direct measurement of income concepts in survey microdata.	Construction of pretax and posttax income variables. Imputation of social contributions.	EU-SILC (2004–2017); LIS (1980–2017); ECHP (1994–2001) Employee contributions (OECD 2004–2017); Employer contributions (OECD 2004–2005, EU-SILC 2006–2017)	Negligible impact • Top 10 percent pretax income share decreases on average by 0.1 pp after deduction of contributory social contributions.
Step 2: Harmonization of survey tabulations.	Collection and interpolation of survey tabulations, and harmonization using a machine learning algorithm.	World Income Inequality Database, PovcalNet, other survey data sources (1980–2017)	Small impact • 28 percent of cases: Pretax income estimated from posttax income. • 1.5 percent of cases: Income estimated from consumption.
Step 3: Combination of Surveys and tax data.	Calibration of survey microdata using top income shares series estimated from tax data. Application of the correction to all survey distributions.	World Inequality Database, various research articles, authors (1980–2017)	• Matching of income concepts and statistical units in surveys and tax data. • Calibration of surveys on tax data. Large impact • Correction increases top 10 percent pretax income share by 2.3 pp on average.
Step 4: Distribution of unreported national income components.	Estimation and calibration of consumption, imputed rents, and stock ownership. Missing incomes matched statistically to calibrated survey distributions.	HFCS/WAS surveys for stock ownership; HBS for consumption; EU-SILC for imputed rents	Top 10 percent pretax income earners account on average for: • 36 percent of stock. • 19 percent of consumption. • 16 percent of imputed rents. Moderate impact • Retained earnings increase top 10 percent pretax income share by 1.0 pp • Corporate tax increases top 10 percent pretax income share by 0.7 pp • Imputed rents decrease top 10 percent pretax income share by 0.4 pp • Taxes on products increase top 10 percent posttax income share by 1.5 pp • Health spending decreases top 10 percent posttax income share by 1.5 pp

Notes: The table reports the methodology used to combine survey, tax, and national accounts data to create European distributional national accounts, together with the impact of each methodological step on estimates of pretax and posttax income distributions. Numbers in the table refer to population-weighted averages across all countries and all years included in the database.

majority of cases and that corrections to equivalence scales only have limited impact on estimates of the income distribution.

(3) *Combination of Surveys and Tax Data.*—Survey data are known to often miss the very rich. For our purpose, it is important to distinguish two reasons for that: nonsampling error and sampling error.

Nonsampling Error.—Nonsampling error refers to the systematic biases that affect survey estimates in a way that is not directly due to sample size. These mostly include people refusing to answer surveys and misreporting their income in ways that are not observed, and therefore not corrected, by survey producers. We correct the survey data for nonsampling error by combining them with top income shares estimated from tax data using standard survey calibration methods. Statistical institutes already routinely apply these methods to ensure survey representativity in

terms of age or gender. We directly extend them to enforce representativity in terms of income, by adding top income shares based on tax data as a calibration margin.¹⁵

Sampling Error.—Sampling error refers to problems that arise purely out of the limited sample size of survey data. The sample size of surveys varies a lot and can sometimes be quite low: this, in itself, can affect estimates of inequality at the top. Borrowing methods from extreme value theory, we correct sampling error by modeling the top 10 percent of the income distribution as a generalized Pareto distribution (see online Appendix Section 1.4). Note that by construction, this adjustment has no impact on the top 10 percent income share (which we know from the tax data) but only refines the income distribution within the top 10 percent.

Correcting survey-based estimates using top income shares derived from tax data has a large impact on our estimates of the income distribution because surveys tend to significantly underestimate both the level of top income inequality and its rise since the 1980s in most European countries.

(4) *Distribution of Unreported National Income Components.*—Once we have harmonized and corrected survey data with tax data, we find ourselves with more accurate and comparable inequality series. However, these series still lack some components of national income from the household sector (imputed rents), the corporate sector (undistributed profits), and the government sector (taxes on products and government spending) (see Table 1).

Imputed Rents.—Imputed rents are not always recorded in household surveys, and they are not included in the income concepts used in survey tabulations. To distribute them, we rely on EU-SILC surveys, which do record imputed rents, and perform a simple statistical matching procedure, using income as a continuous variable, to add imputed rents to the rest of our series (see online Appendix Section 1.5). The method preserves the rank dependency between income and imputed rents in EU-SILC, the distribution of imputed rents in EU-SILC, the distribution of income in the original data, and the imputed rents total in the national accounts.

Undistributed Profits.—As we explain in Section IA, undistributed profits are distributed partially in proportion to the ownership of corporate stocks (including both private and public shares held directly or indirectly through mutual funds), partially in proportion to labor and pension income (for the fraction that accrues to pension funds), and partially like government primary income (for the fraction that accrues to the government). These respective shares correspond to the fraction of corporate equity owned by households, governments, and pension funds. The distribution of

¹⁵ One advantage of calibration procedures, in particular, is that they allow to perform survey correction with a taxable income concept that may differ from the income concept of interest—either in terms of income definition or statistical unit. Accordingly, we always perform the correction by matching income concepts in the tax data and in the survey data. Importantly, this allows us to account for top incomes while retaining the wealth of information included in the surveys, notably on taxes and transfers, so that we can still calculate both pretax and posttax incomes after correction. For the historical period (typically before 2007), for which we do not have survey microdata to match precisely to the tax data concepts, we interpolate the adjustment observed in recent years to the tax-based top share series (see online Appendix Section 1.4.3).

stock ownership comes from the Household Finance and Consumption Survey (HFCS).¹⁶ We first calibrate that survey on the top income shares as we do for other surveys to make it representative in terms of income. We then use the same statistical matching procedure as above to allocate undistributed profits alongside the distribution of income.¹⁷

Corporate Income Taxes.—Because the corporate income tax is paid out of corporate profits, we distribute it similarly to undistributed profits.

Indirect Taxes.—Indirect taxes (including VAT and excise taxes) are eventually paid by consumers, so we allocate them proportionally to household final consumption expenditure. For that, we rely on the Household Budget Surveys (HBS) from Eurostat to get the distribution of consumption and its dependency to income. We then use the same statistical matching procedure as above to allocate indirect taxes to individuals.

D. Validation of Our Methodology

Impact of the Different Methodological Steps.—Our estimates differ from existing survey-based estimates for two main reasons: because we use tax data at the top of the distribution and because we incorporate forms of income that are traditionally absent from inequality statistics. How do these elements impact our results? Panel A of Figure 1 gives the answer.¹⁸ Based only on survey data, which do not add up to national income, we would conclude that inequality has been slightly declining in Europe after a one-time increase in the early 1990s: the top 10 percent income share has been stable after 1995, while the bottom 50 percent share has been slightly but consistently on the rise. When using tax data to correct the top of the distribution, we get a fairly different picture: the increase in the top 10 percent share has been much more significant, while the share of the bottom 50 percent has been stable. Adding missing national income components further modifies the distribution of income. Some components (such as undistributed profits) have a strong unequalizing impact, while others (such as imputed rents) have more equalizing effects. Overall, we distribute between one-fifth and one-quarter of national income in the form of additional income components. This leads to our DINA series, which show a slightly higher top 10 percent income share in recent years than survey and tax data alone. Most of the difference with raw survey estimates, however, comes from tax data.¹⁹

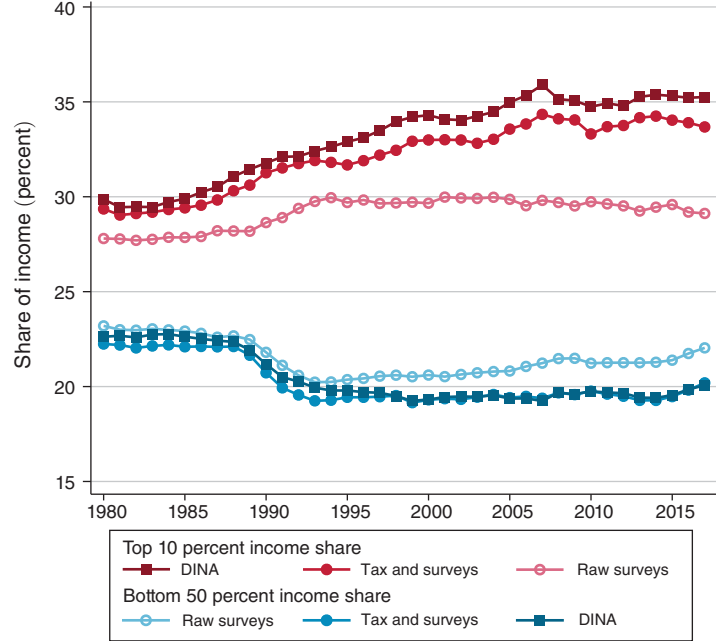
¹⁶In the United Kingdom we use its equivalent, the Wealth and Assets Survey (WAS).

¹⁷The HFCS only started around 2013, so before that year we keep the distribution of retained earnings constant and only change the amount of retained earnings to be distributed.

¹⁸See the extended online Appendix for the impact of our different methodological steps country by country.

¹⁹Moving from survey to DINA estimates does not only increase estimates of income concentration: it also significantly affects the ranking of European countries in terms of pretax income inequality and in terms of the intensity of the rise of top income concentration since the 1980s. See in particular online Appendix Figures A.2.1.10, A.2.1.11, A.2.1.12, and A.2.1.13. In 2017, for instance, accounting for misreporting of top incomes in surveys and unreported national income components increases the estimated top 1 percent share by 10 percentage points in Poland, compared to only half a percentage point in the Netherlands. As a result of this correction, Poland moves from being one of the least unequal countries of Europe to the most unequal in terms of pretax income. More generally, surveys tend to better capture top incomes in Northern European countries, where survey responses are often corrected ex post using administrative data, than in Eastern Europe.

Panel A. Pretax income inequality in all 26 European countries, 1980–2017



Panel B. Top 10 percent income share in France, 1978–2015

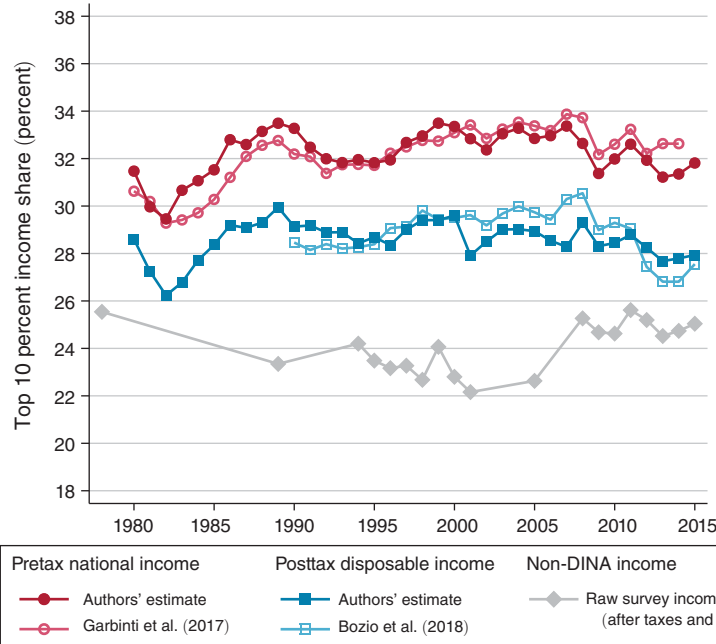


FIGURE 1. MEASURING INEQUALITY: FROM SURVEYS TO DISTRIBUTIONAL NATIONAL ACCOUNTS

Notes: Incomes measured at purchasing power parity. The unit of observation is the adult individual aged 20 or above. Income is split equally among spouses, except for the “raw survey income” series in panel B, for which income is split equally among all adult household members. Posttax DINA series distribute taxes on products proportionally to income for consistency with Bozio et al. (2018); see online Appendix 3 for other approaches that follow the latest DINA guidelines.

Source: Authors’ computations combining surveys, tax data, and national accounts.

Comparison with Earlier Works.—Existing studies comparing inequality levels between the United States and Europe have typically relied on surveys.²⁰ This implies making strong assumptions on the distribution of missing incomes in one region or the other, typically considering that these sources of income are distributionally neutral. While our method is not perfect, it has the advantage of making these assumptions explicit and grounds them in the latest empirical evidence.

In particular, we wish to provide results that are conceptually similar to other works on distributional national accounts, yet in practice our methodology is quite different. In France, Garbinti, Goupille-Lebret, and Piketty (2018) and Bozio et al. (2018) estimated the distribution of pretax national income and posttax disposable income using detailed tax microdata, combined with various surveys and microsimulation models for taxes and benefits, and rescaling income component by component to the national accounts. By contrast, we only use tax tabulations to correct survey data, and rescale our results to the national accounts at a coarser level. The advantage of our method is that it is applicable much more widely and rapidly, in particular in countries in which no tax microdata are available.

To what extent can our approach yield results that are comparable to more complex and detailed works? As panel B of Figure 1 shows, we get results that are very similar to these earlier works in the case of France. Concretely, our methodological approach starts from the raw survey series shown on the bottom line, which suggest that the top 10 percent share has fluctuated between 22 percent and 26 percent. In a second step, we calibrate these distributions to the top income shares measured from tax data. In a third step, we impute additional sources of income, such as retained earnings and imputed rents. This yields the DINA top 10 percent pretax income share, which closely follows the series estimated by Garbinti, Goupille-Lebret, and Piketty (2018). Finally, we impute all taxes and cash transfers to derive the top 10 percent posttax disposable income share, which is also remarkably similar to that obtained by Bozio et al. (2018).²¹

Notice, in particular, that we obtain these results in spite of the fact that our data sources for France are not of especially high quality and are also very different from the ones used by Garbinti, Goupille-Lebret, and Piketty (2018) and Bozio et al. (2018).²² All these results provide strong evidence that our methodology performs very well at reproducing more detailed DINA studies, despite the differences between our “bottom-up” approach combining survey microdata with tabulated tax data and “top-down” approaches that rely primarily on tax microdata.

²⁰ See footnote 4.

²¹ See online Appendix Figure A.2.1.9 for similar results on the bottom 50 percent of the distribution.

²² The SILC statistics for France are a transcription of a survey (called SRCV) that is used for its extensive set of questions on material poverty but is not considered the best survey for income inequality. For that purpose, the French statistical institute relies on another survey, called ERFS. However, that survey is not part of any international scheme, such as EU-SILC, nor is it available through portals such as the Luxembourg Income Study, so we do not include it in our estimations. Before SILC is available, we rely on France’s Household Budget Survey, which has been made available through LIS. While France’s HBS is a key source for consumption data, it is not viewed as the best source for income data either. It is also separate from EU-SILC data, which explains the inconsistent trend. Therefore, there is no reason to think that our methodology would work better for France than other countries just because of the quality of the data in input.

TABLE 3—THE DISTRIBUTION OF PRETAX INCOME IN EUROPE AND THE UNITED STATES, 2017

	Eastern Europe		Northern Europe		Western Europe		United States	
	Average income	Income share (percent)	Average income	Income share (percent)	Average income	Income share (percent)	Average income	Income share (percent)
Full population	€21,700	100	€44,900	100	€35,300	100	€52,700	100
Bottom 50 percent	€8,700	20.1	€21,600	24.1	€14,600	20.8	€12,300	11.7
Bottom 20 percent	€3,100	2.8	€11,600	5.2	€6,800	3.8	€3,800	1.4
Next 30 percent	€12,500	17.3	€28,300	18.9	€19,900	16.9	€18,000	10.2
Middle 40 percent	€24,100	44.3	€50,600	45.1	€39,200	44.5	€53,300	40.5
Top 10 percent	€77,300	35.6	€138,000	30.8	€123,000	34.8	€252,000	47.8
Top 1 percent	€261,000	12.0	€395,000	8.8	€384,000	10.9	€1,110,000	21.1
Top 0.1 percent	€892,000	4.1	€1,140,000	2.5	€1,230,000	3.5	€5,190,000	9.8
Top 0.01 percent	€3,060,000	1.4	€3,290,000	0.7	€3,970,000	1.1	€23,830,000	4.5
Top 0.001 percent	€10,490,000	0.5	€9,490,000	0.2	€12,840,000	0.4	€92,020,000	1.7

Notes: The table shows the average annual real pretax income of various groups of the population in Western and Northern Europe, Eastern Europe, and the United States in 2017. Incomes measured at purchasing power parity, €1 = US\$1.3. The unit of observation is the adult individual aged 20 or above. Income is split equally among spouses.

Sources: Authors' computations combining surveys, tax data, and national accounts for Europe; Piketty, Saez, and Zucman (2018) for the United States.

II. The Distribution of Pretax National Incomes in Europe and the United States, 1980–2017

In this section, we show that pretax income inequality has risen much less in Europe than in the United States since 1980. This is true for most European countries taken separately but also for Europe taken as a whole—a block that is broadly similar in terms of population size and aggregate economic output as the United States. Section IIA presents results on the distribution of pretax income in Europe and the United States in 2017. Section IIB discusses the evolution of pretax income inequality in the two regions since 1980. Section IIC analyzes the role of spatial integration in accounting for the dynamics of inequality in Europe and the United States.

A. The Distribution of Pretax Income in 2017

How do pretax incomes vary in Europe and the United States today? Table 3 provides a first answer to this question by displaying the average incomes and income shares of key income groups in Western Europe, Northern Europe, Eastern Europe, and the United States in 2017. The average national income per adult stood at €52,700 in the United States at purchasing power parity, compared to €44,900 in Northern Europe, €35,300 in Western Europe, and €21,700 in Eastern Europe. In Europe, only Norway (€55,000) and Luxembourg (€102,000) have higher average national incomes than the United States.²³

Things look very different at the bottom of the pretax income distribution. The bottom 50 percent earned only about €12,300 in the United States in 2017, compared to €21,600 in Northern Europe and €14,600 in Western Europe. Of the 27 countries considered in this paper, the United States thus ranks third in terms of average national

²³ See online Appendix Table 1.9.

income per adult but nineteenth when it comes to the average income of the poorest 50 percent.²⁴ On average, pretax income inequality at the bottom is lowest in Northern Europe (with a bottom 50 percent share of 24 percent), followed by Western Europe (21 percent) and Eastern Europe (20 percent). With a bottom 50 percent pretax income share of only 11.7 percent, the United States is by far the most unequal of all countries, followed by a distant Serbia (16 percent) and very far from the values observed in the Czech Republic, Iceland, Norway, and Sweden (all above 25 percent).²⁵ These differences appeared even more pronounced at the very bottom of the distribution: the average income of the poorest 20 percent was €11,600 in Northern Europe in 2017, more than 3 times larger than its counterpart in the United States (€3,800).

The same differences are visible at the top end of the distribution: the top 1 percent captured 21 percent of total pretax income in the United States in 2017, compared to 12 percent in Eastern Europe, 11 percent in Western Europe, and less than 9 percent in Northern Europe. In 2017, the top 0.001 percent average pretax income exceeded €92 million in the United States, nearly 10 times the value observed in Northern Europe. The European countries with lowest top 1 percent income shares are the Netherlands, Slovenia, Iceland, Belgium, and Finland (less than 9 percent), while those with highest top income concentration are Germany, the United Kingdom, Greece, and Poland (13–15 percent).²⁶

In summary, while the United States stands out as being richer than most European countries today, differences in average national incomes mask substantial heterogeneity. With inequality levels surpassing by far those observed in any European country, the United States displays bottom pretax average incomes that barely exceed those observed in poorer Eastern European countries. In contrast, the lower inequality levels and higher average incomes observed in Northern Europe imply significantly better standards of living for the majority of the population than in the United States.

B. *The Distribution of Pretax Income Growth*

We now turn to documenting the evolution of pretax income inequality in Europe and the United States. Panel A of Figure 2 shows the evolution of the top 10 percent pretax income share in the United States, Eastern Europe, Western Europe, and Northern Europe from 1980 to 2017. The United States remained more unequal than most European countries throughout the entire period, but the gap between Europe and the United States has widened significantly over time.²⁷ Indeed, the top 10 percent rose most rapidly and steadily in the United States (from 34 percent to 48 percent), followed by Eastern Europe (from 24 percent to 36 percent), Western Europe (from 30 percent to 35 percent), and Northern Europe (from 26 percent to 31 percent). From 1980 to 2017, Eastern Europe shifted from being the

²⁴ See online Appendix Figure A.2.2.26.

²⁵ See online Appendix Figure A.2.2.19.

²⁶ See online Appendix Figure A.2.2.18.

²⁷ In 1980 the top 10 percent share was higher in Spain and Greece than in the United States, and several Western European countries had inequality levels close to those observed in the United States. This contrasts with the more recent period, when the United States clearly stands out as being the most unequal of all countries studied in this paper: see online Appendix Figure A.2.2.17.

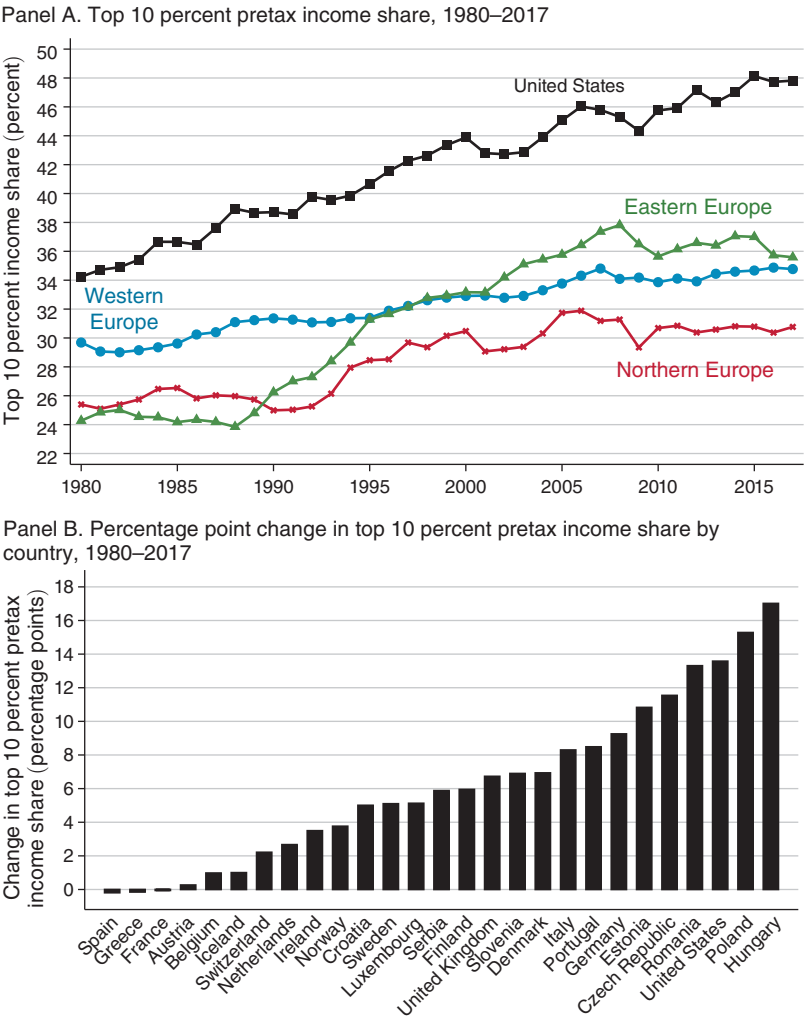


FIGURE 2. THE RISE OF TOP INCOMES IN EUROPE AND THE UNITED STATES, 1980–2017

Notes: Panel A represents the evolution of the share of pretax income received by the top 10 percent in Western Europe, Northern Europe, Eastern Europe, and the United States. Panel B plots the percentage point change in the top 10 percent pretax income share by country between 1980 and 2017. The unit of observation is the adult individual aged 20 or above. Income is split equally among spouses. See online Appendix Table A.2.7.1 for the composition of European regions.

Source: Authors’ computations combining surveys, tax data, and national accounts.

least unequal to the most unequal European region. A significant part of this change occurred between 1989 and 1995, following the disintegration of the Soviet Union and the transition of Eastern European countries to market economies.²⁸

²⁸Let us stress here that we focus solely on monetary income inequality, which was unusually low in Russia and Eastern Europe under communism. Other forms of inequality prevalent at the time, in terms of access to public services or consumption of other forms of in-kind benefits, may have enabled local elites to enjoy higher

The rise of top incomes has been a widespread phenomenon, yet there has been significant heterogeneity in the intensity of this rise across countries. Panel B of Figure 2 plots the percentage point change in the top 10 percent pretax income share by country over the 1980–2017 period.²⁹ In Europe, inequality rose most strongly in Hungary, Poland, Romania, the Czech Republic, and Estonia, five Central and Eastern European countries that saw their economies shift from communist to capitalist systems during the 1990s. The United States ranks third of all the countries considered here, with an increase in the top 10 percent share of almost 14 percentage points. In Western Europe, Germany is the country where the top 10 percent share grew the most (+9 percentage points), followed by Portugal and Italy (+8 pp). Meanwhile, several European countries saw pretax income inequality barely change in the past decades, including Spain, Greece, France, and Austria. In no European country, however, do we observe a significant long-run decline in the top 10 percent pretax income share.

Table 4 provides a more detailed picture of the rise of pretax income inequality by showing the real average annual income growth of selected income groups in our four regions of interest over the 1980–2017 and 2007–2017 periods.³⁰ National incomes grew at a modest yearly rate in the past four decades in Europe and the United States: 1 percent in Western Europe, 1.2 percent in Eastern Europe, 1.4 percent in the United States, and 1.8 percent in Northern Europe. In all regions, however, growth rates have been markedly higher the further one moves toward the top end of the distribution. The average pretax income of the top 1 percent thus rose at a rate of 1.9 percent in Western Europe, 3.2 percent in Northern Europe, 3.3 percent in the United States, and 3.8 percent in Eastern Europe. Meanwhile, middle-income groups saw their average pretax incomes grow at a rate closer to the average of the full population in all regions. The bottom 20 percent benefited the least from real national income growth: their average income increased at a rate of 1.2 percent in Northern Europe and 0.7 percent in Western Europe, while it decreased at a rate of 1.3 percent in Eastern Europe and fell on average by 1.1 percent every year in the United States.

While the long-run picture reveals a clear increase in inequality, the period of stagnation that followed the 2007–2008 crisis has been less detrimental to the European middle class than to other income groups. In Western Europe and Northern Europe, average earnings increased or stagnated for middle-income groups, while they decreased significantly at both tails of the distribution. Eastern European countries were less affected by the crisis but experienced a similar evolution: the bottom 20 percent grew at an annual rate of 1.6 percent between 2007 and 2017, lower than the regional average of 2.2 percent. Therefore, while the financial crisis has to some extent halted the rise of top income inequality in Europe, income gaps between the middle and the bottom of the distribution have continued to widen, and low incomes

standards of living than what their income levels suggest. That being said, the survey tabulations at our disposal do partially account for forms of in-kind income, so this limitation should not be exaggerated (see Milanovic 1998). Furthermore, the top 10 percent income share did continue to rise in many Eastern European countries after 1995.

²⁹ See online Appendix Figures A.2.2.21 and A.2.2.22 for similar results on top 1 percent and bottom 50 percent pretax income shares. Online Appendix Figures A.2.2.8 to A.2.2.16 compare the evolution of pretax income inequality across countries by five-year intervals.

³⁰ The cumulated income growth rates of selected pretax income groups in Western Europe, Northern Europe, Eastern Europe, and the United States are respectively represented in online Appendix Figures A.2.2.2, A.2.2.3, A.2.2.4, and A.2.2.5.

TABLE 4—AVERAGE ANNUAL PRETAX INCOME GROWTH IN EUROPE AND THE UNITED STATES, 1980–2017

	Eastern Europe (percent)		Northern Europe (percent)		Western Europe (percent)		United States (percent)	
	1980–2017	2007–2017	1980–2017	2007–2017	1980–2017	2007–2017	1980–2017	2007–2017
Full population	1.2	2.2	1.8	0.7	1.0	0.0	1.4	0.4
Bottom 50	0.3	2.8	1.5	0.3	0.7	0.0	–0.1	–1.2
Bottom 20	–1.3	1.6	1.2	–0.5	0.7	–0.6	–1.1	–2.9
Next 30	0.6	3.0	1.5	0.5	0.7	0.1	0.1	–0.9
Middle 40	1.1	2.3	1.7	1.0	0.8	0.0	1.0	0.5
Top 10	2.2	1.7	2.4	0.6	1.4	0.0	2.3	0.9
Top 1	3.8	1.1	3.2	–0.6	1.9	–0.3	3.3	1.0
Top 0.1	5.7	0.1	4.3	–1.9	2.3	–1.0	4.2	1.3
Top 0.01	7.7	–1.0	5.4	–3.3	2.6	–1.7	4.9	1.4
Top 0.001	9.8	–2.1	6.6	–4.6	2.9	–2.5	5.4	0.5

Notes: The table shows the average annual real pretax income growth of various groups of the population in Western and Northern Europe, Eastern Europe, and the United States over the 1980–2017 and 2007–2018 periods. Incomes measured at purchasing power parity. The unit of observation is the adult individual aged 20 or above. Income is split equally among spouses.

Sources: Authors' computations combining surveys, tax data, and national accounts for Europe; Piketty, Saez, and Zucman (2018) for the United States.

have consistently lagged behind the expansion of the overall economy. The rise of inequality has been much clearer and more pronounced in the United States: between 2007 and 2017, the bottom 20 percent saw their average pretax income decrease by 2.9 percent every year, while that of the top 1 percent expanded at an annual rate of 1 percent.

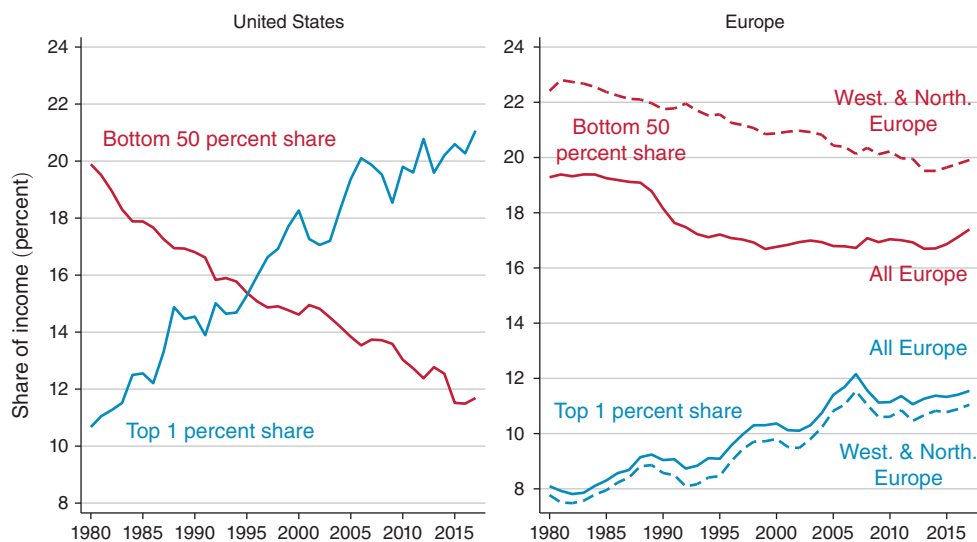
C. The Distribution of Pretax Income in Europe as a Whole and the Role of Between-Country Inequalities

Our findings show that pretax income differences are lower and have risen less in most European countries than in the United States in the past decades. Does this result hold, however, once considering inequality in Europe at large, that is, after accounting for the important differences in average national incomes between Western, Northern, and Eastern European countries?

Panel A of Figure 3 compares the levels and evolution of the top 1 percent and bottom 50 percent pretax income shares in the United States, Europe as a whole, and Western and Northern Europe from 1980 to 2017.³¹ Income inequality was unambiguously larger in the United States than in Europe in 2017, even after accounting for differences in average incomes between European countries. The share of regional income received by the top percentile was almost twice as high in the United States (21 percent) as in Western and Northern Europe (11 percent) and Europe at large (11.5 percent). Meanwhile, the bottom 50 percent pretax income share reached

³¹ We estimate pretax income distributions for Europe as a whole and for Northern and Western Europe by aggregating country-level distributions after converting average national incomes at market exchange rates euros rather than at purchasing power parity. This approach is justified by the fact that PPP conversion factors exist for European countries but not for US states: it would be unclear why one would correct for spatial differences in the cost of living in the former case but not in the latter. Estimating the distribution of European-wide income at purchasing power parity slightly reduces European inequality levels as well as the share of inequality explained by between-country income disparities, so it does not affect our main conclusions.

Panel A. Top 1 percent versus bottom 50 percent pretax income shares



Panel B. Average annual pretax income growth by percentile

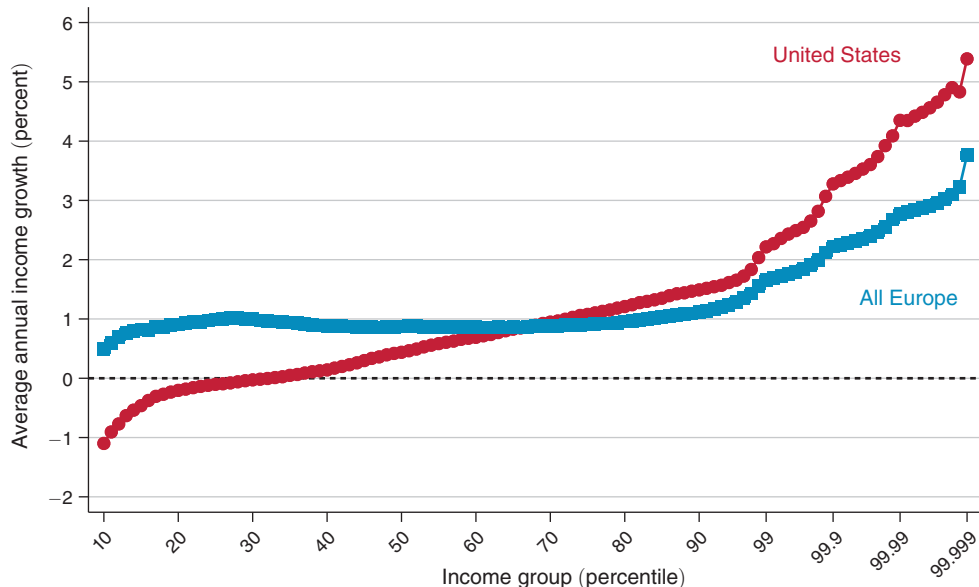


FIGURE 3. THE DISTRIBUTION OF PRETAX INCOME GROWTH IN EUROPE AND THE UNITED STATES, 1980–2017

Notes: Panel A compares the share of pretax income received by the bottom 50 percent to that received by the top 1 percent of the regional population in Europe and the United States. Panel B plots the average annual pretax income growth rate by percentile in Europe and the United States, with a further decomposition of the top percentile. Figures for Europe correspond to Europe at large, that is, after accounting for differences in average national incomes between European countries, measured at market exchange rates. The same holds for Western and Northern Europe. The unit of observation is the adult individual aged 20 or above. Income is split equally among spouses. See online Appendix Table A.2.7.1 for the composition of European regions.

Sources: Authors' computations combining surveys, tax data, and national accounts. Figures for the United States come from Piketty, Saez, and Zucman (2018).

17 percent in Europe and 20 percent in Western and Northern Europe, compared to less than 12 percent in the United States. This was not always the case: in 1980, the bottom 50 percent share was actually slightly higher in the United States than in Europe as a whole (about 20 percent of national income) and only 2 percentage points lower than in Western and Northern Europe.

A more detailed picture of the distribution of growth in Europe and the United States is displayed in panel B of Figure 3, which plots the average annual income growth rate by percentile in the two regions from 1980 to 2017, with a further decomposition of the top percentile.³² Average income growth has been slightly higher in the United States (1.4 percent per year) than in Europe (1.1 percent) in the past four decades, yet this average gap hides substantial differences throughout the distribution. The average pretax income of the top 0.001 percent grew at a rate of 3.7 percent in Europe as a whole and as much as 5.4 percent per year in the United States. Meanwhile, low-income groups have benefited significantly more from macroeconomic growth in Europe than in the United States: the average income of the bottom 50 percent grew positively in Europe, while it stagnated in the United States and even declined for the bottom 30 percent of the population. The two growth incidence curves cross at the sixty-seventh percentile; that is, while average pretax income growth has been higher in the United States than in Europe, it has been lower for the bottom 67 percent of the US population than for all corresponding European income groups.

To what extent are these differences driven by pretax income inequality between US states and between European countries rather than within states and within countries? A Theil decomposition of within-group and between-group inequality in Europe and the United States is shown in Figure 4. The Theil index has risen much more in the United States than in Europe, and this change has been entirely due to increases in inequality within US states. In 1980, the Theil index in the United States was almost perfectly equal to that of Europe at large, reaching about 0.45; by 2017, it had become higher than 1 in the United States, whereas it did not exceed 0.6 in Europe. The overall Theil index and the Theil index of within-state inequality are almost indistinguishable in the United States: within-state inequality explained 97 percent of overall US inequality in 1980 and 98 percent in 2017. The share of inequality explained by the between-group component has remained larger in Europe, but it has decreased from about 24 percent in 1980 to 17 percent in 2017, due mainly to the rise of pretax income inequality within European countries. In other words, macroeconomic convergence in Europe has become increasingly insufficient to reduce inequalities between European residents, and within-country inequality continues to matter the most.

III. The Impact of Taxes and Transfers on Inequality

We now turn to discussing the impact of taxes and transfers on inequality in Europe and the United States. Section IIIA and Section IIIB present results on the

³² See online Appendix Figure A.2.2.1 for similar results on each European region.

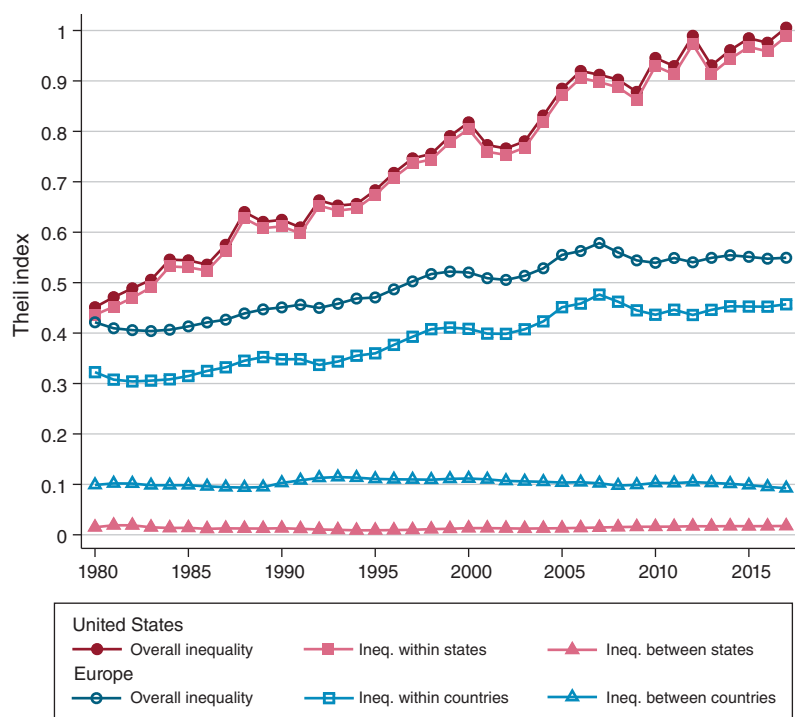


FIGURE 4. PRETAX INCOME INEQUALITY IN EUROPE AND THE UNITED STATES, 1980–2017: THEIL DECOMPOSITION

Notes: Figures for Europe correspond to Europe at large, that is, after accounting for differences in average national incomes between European countries, measured at market exchange rates. The income concept is pretax income. The unit of observation is the adult individual aged 20 or above. Income is split equally among spouses.

Sources: Authors' computations combining surveys, tax data, and national accounts for European countries. Figures for the United States come from Piketty, Saez, and Zucman (2018) for the overall Theil index and from state GDP estimates of the Bureau of Economic Analysis for the United States between-group component.

distribution of taxes and transfers. Section IIIC studies the net direct impact of the tax and transfer system on pretax income inequality. Section IIIE investigates to what extent taxes and transfers indirectly contribute to reducing pretax income inequality in Europe and the United States.

A. The Structure and Distribution of Taxes

Before investigating the distributional impact of taxes, it is useful to briefly compare the size and composition of government revenue in Europe and the United States.³³ In 2007–2017 taxes and social contributions amounted to 47 percent of national income in Europe, compared to 28 percent in the United States. The United

³³ Online Appendix Table A.2.7.2 presents the structure of taxes and transfers in Europe and the United States, expressed as a share of national income, over the 2007–2017 period. Online Appendix Figures A.2.1.4, A.2.1.5, and A.2.1.6 present similar results disaggregated by country.

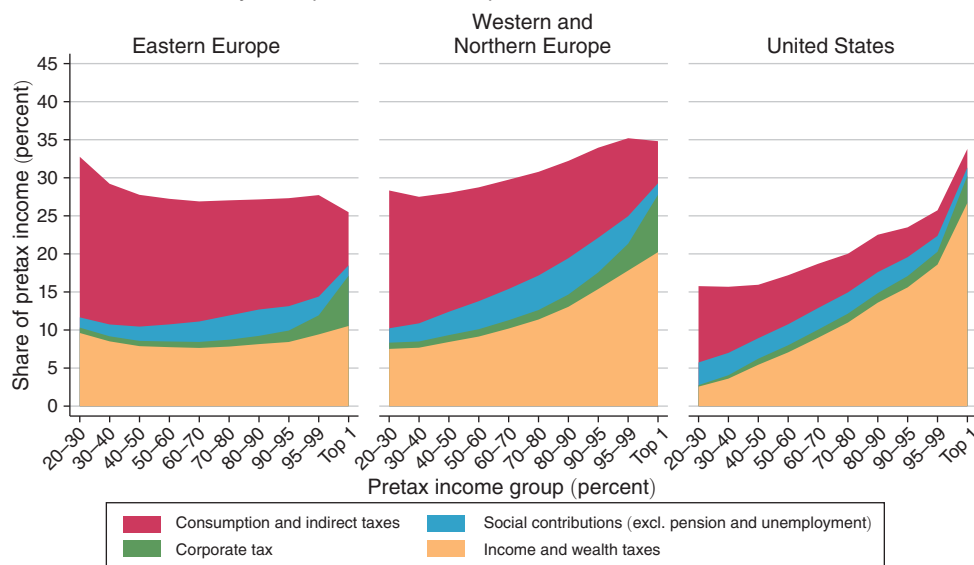
States collected less tax revenue than any European country, from Romania (32 percent), the country with lowest tax revenue, to Denmark (57 percent), which displayed the highest tax to national income ratio. The gap between the two regions was driven by two components of revenue: social contributions, which represented 19 percent of national income in Europe versus 8 percent in the United States, and indirect taxes (14 percent versus 7 percent). Meanwhile, both regions collected comparable amounts of revenue from income and wealth taxes (10–11 percent) and from corporate income taxes (3 percent). The macroeconomic tax rate was larger in Northern Europe (52 percent) than in Western Europe (48 percent) and Eastern Europe (41 percent), due mostly to the larger share of national income collected in income and corporate taxes. If one excludes contributory social contributions from the analysis (that is, contributions financing the pension and unemployment systems), then the gap between Europe and the United States decreases but remains significant: 23 percent of national income was collected in noncontributory taxes in the United States in 2007–2017, compared to 30 percent in Europe.

Panel A of Figure 5 represents the level and composition of noncontributory taxes paid by pretax income group in Eastern Europe, Western and Northern Europe, and the United States in the past decade.³⁴ Two results clearly stand out. First, while taxes paid are lower in the United States than in Europe for most pretax income groups, the taxation profile is unambiguously more progressive in the United States. The top 1 percent face a tax rate higher than 30 percent in the United States, which is relatively comparable to what we observe in Western and Northern Europe. Meanwhile, bottom income groups are taxed at an average rate that is nearly twice as small in the United States as in Europe. Second, the difference in tax progressivity between the two regions is mainly driven by indirect taxes, which represent a significantly larger share of national income in Europe than in the United States. These taxes tend to be regressive because they are paid proportionally to consumption. Eastern Europe is the region with the least progressive tax system, due to the importance of indirect taxes and to the low progressivity of income and wealth taxes. This reflects the fact that many Eastern European countries have opted for flat (or almost flat) income taxes, whereas Western and Northern European countries and the United States have a relatively long history of progressive income taxes and have so far maintained increasing marginal income tax rates.

Panel B of Figure 5 ranks European countries and the United States according to a simple measure of tax progressivity: the ratio of the total tax rate faced by the top 10 percent to that of the bottom 50 percent. The composition of bars corresponds to the composition of taxes paid by the top 10 percent. The United States stands out as the country with the highest level of tax progressivity: the top decile faces a tax rate that is more than 70 percent higher than that of the poorest half of the population. By this measure, the European country with the most progressive tax system is the United Kingdom, followed by Norway, the Czech Republic, and France. Many

³⁴ This way to look at tax incidence is useful for international comparisons focusing on the entire support of the adult distribution (including pensioners and the unemployed), as it allows us to better analyze the distribution of taxes independently from demographic (pensions) or economic (unemployment) factors that might artificially blow up or reduce tax progressivity. A complementary view, focusing on the distribution of all taxes as a share of factor income among the working-age population, is presented at the end of this section.

Panel A. Noncontributory taxes paid as a share of pretax income



Panel B. Level and composition of taxes paid by the top 10 percent relative to the bottom 50 percent by country

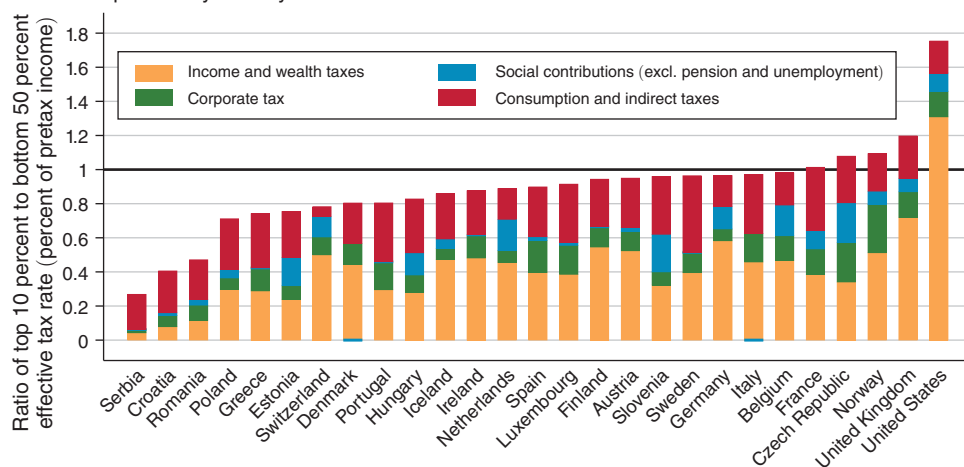


FIGURE 5. THE DISTRIBUTION OF TAXES IN EUROPE AND THE UNITED STATES

Notes: Figures correspond to averages over the 2007–2017 period for European countries (population-weighted average of country-specific estimates in the case of European regions) and to 2017–2018 for the United States. In panel B, the composition of bars corresponds to the composition of taxes paid by the top 10 percent. The unit of observation is the adult individual aged 20 or above. Income is split equally among spouses. See online Appendix Table A.2.7.1 for the composition of European regions.

Sources: Authors' computations combining surveys, tax data, and national accounts for European countries; Piketty, Saez, and Zucman (2018) for the United States.

European countries have values close to 1 on this indicator, corresponding to relatively flat tax systems, in which top income groups face a tax rate approximately equal to that of the bottom 50 percent. Several countries, in particular Serbia, Croatia, and

Romania, are characterized by unambiguously regressive tax systems. As shown in the figure, the United States also stands out as one of the countries where the top 10 percent pay the largest share of their pretax income in the form of income and wealth taxes, which points to the role of the income tax in enhancing tax progressivity at the top end of the distribution.

Looking at noncontributory taxes as a share of pretax income is useful to study tax progressivity independently from the pension and unemployment systems, whose significance may depend on demographic and economic factors that are not directly related to redistribution (such as the size of the elderly population). The downside of this approach is that it misses a share of payments that can legitimately be considered as taxes by individuals. We address this issue by reporting in the online Appendix the distribution of total taxes paid as a share of factor income.³⁵ By doing so and by narrowing down the analysis to the employed and working-age (20–64) population, the analysis remains consistent and cross-country comparisons meaningful. The main conclusions are unchanged. Because social contributions fall on labor income and are generally set at fixed rates, they tend to be flat for most groups within the bottom 90 percent and regressive at the top. This turns the tax systems of Western and Northern European countries into approximately flat tax systems, while those of most Eastern European countries become strongly regressive at the top end of the distribution. Because social contributions are smaller in the United States than in Europe, the US tax system remains more progressive than that of all European countries (with the exception of the United Kingdom).

B. *The Structure and Distribution of Transfers*

As for taxes, total government expenditure is significantly lower in the United States (35 percent of national income) than in Europe (47 percent).³⁶ The difference between the two regions is due to cash transfers, which represent 9 percent of national income in the United States compared to 23 percent in Europe. Within cash transfers, pensions are the aggregate that differs the most between the two regions (16 percent of national income in Europe versus 5 percent in the United States), followed by family and social assistance transfers (5 percent versus 3 percent) and unemployment and disability benefits (1.6 percent versus 1.4 percent). Meanwhile, in-kind transfers in health, education, and other collective government expenditure are very similar in Europe and the United States (25–26 percent, of which about 7 percent goes to health). Total government expenditure is higher in Northern Europe (51 percent of national income) and Western Europe (48 percent) than in Eastern Europe (42 percent), due mainly to the larger size of social assistance transfers (5 percent in Western and Northern Europe versus 3.5 percent in Eastern Europe) and in-kind transfers (29 percent versus 25 percent versus 23 percent, respectively) in Western and Northern Europe.

³⁵ See in particular online Appendix Figures A.2.3.1 and A.2.3.7, which reproduce the results of panels A and B of Figure 5 in terms of factor income.

³⁶ See online Appendix Table A.2.7.2.

Panel A of Figure 6 presents the distribution of transfers across posttax income groups in Europe and the United States, expressed as a share of posttax national income. Unsurprisingly, transfers are progressive in both the United States and Europe: they represent over 60 percent of the posttax incomes of bottom deciles, compared to less than 30 percent of those of the top 1 percent. Pensions represent a smaller share of posttax income in the United States than in Europe for all posttax income groups, while the distribution of other cash transfers is relatively similar between the two regions. Health payments are the most progressive type of transfers. In Europe, this is directly due to the fact that we distribute health expenditure on a lump-sum basis, assuming as a first approximation that all individuals benefit from the same in-kind transfer (see methodology). Health expenditure is also highly progressive in the United States, where public health spending is significant and targeted toward the very poor (via Medicaid). Other in-kind transfers are neither progressive nor regressive because we assume that they are distributed proportionally to posttax disposable income (we come back to this assumption in the next section).

Panel B of Figure 6 provides a complementary picture of the magnitude and progressivity of government expenditure by plotting total transfers received by the bottom 50 percent in European countries and the United States, expressed as a share of national income. The United States ranks third in terms of the smallest share of national income transferred to the bottom 50 percent (about 13 percent), due mainly to lower expenditure on pensions. In Europe, transfers received by the poorest half of the population are smallest in Serbia (11 percent), followed by Romania (12 percent), Estonia (14 percent), and Poland (14 percent). Meanwhile, Denmark, the Czech Republic, Sweden, the Netherlands, Belgium, and Finland stand out as the European countries allocating the greatest share of national income to the poorest half of the population (22–23 percent, corresponding to slightly less than half of all government revenue in these countries).

C. The Net Impact of Taxes and Transfers on Inequality

On the one hand, taxes are lower and more progressive in the United States than in Europe. On the other hand, Europe redistributes a significantly greater fraction of national income to low-income groups than the United States, although transfers are about as progressive in the two regions. What is the net impact of the tax and transfer system on inequality, and is it more progressive in the United States or in Europe overall?

Panel A of Figure 7 directly answers this question by representing the share of national income transferred by the tax and transfer system between pretax income groups in Eastern Europe, Western and Northern Europe, and the United States in 2017. The bottom 50 percent and the middle 40 percent are net beneficiaries of redistribution in all 3 regions, but the US tax and transfer system appears to be unequivocally more progressive. The bottom 50 percent in the United States received a positive net transfer of 6 percent of national income in 2017, compared to about 4 percent in Western and Northern Europe and less than 3 percent in Eastern Europe. Meanwhile, the top 10 percent saw their average income decrease by 8 percent of national income in the United States after taxes and transfers, compared to

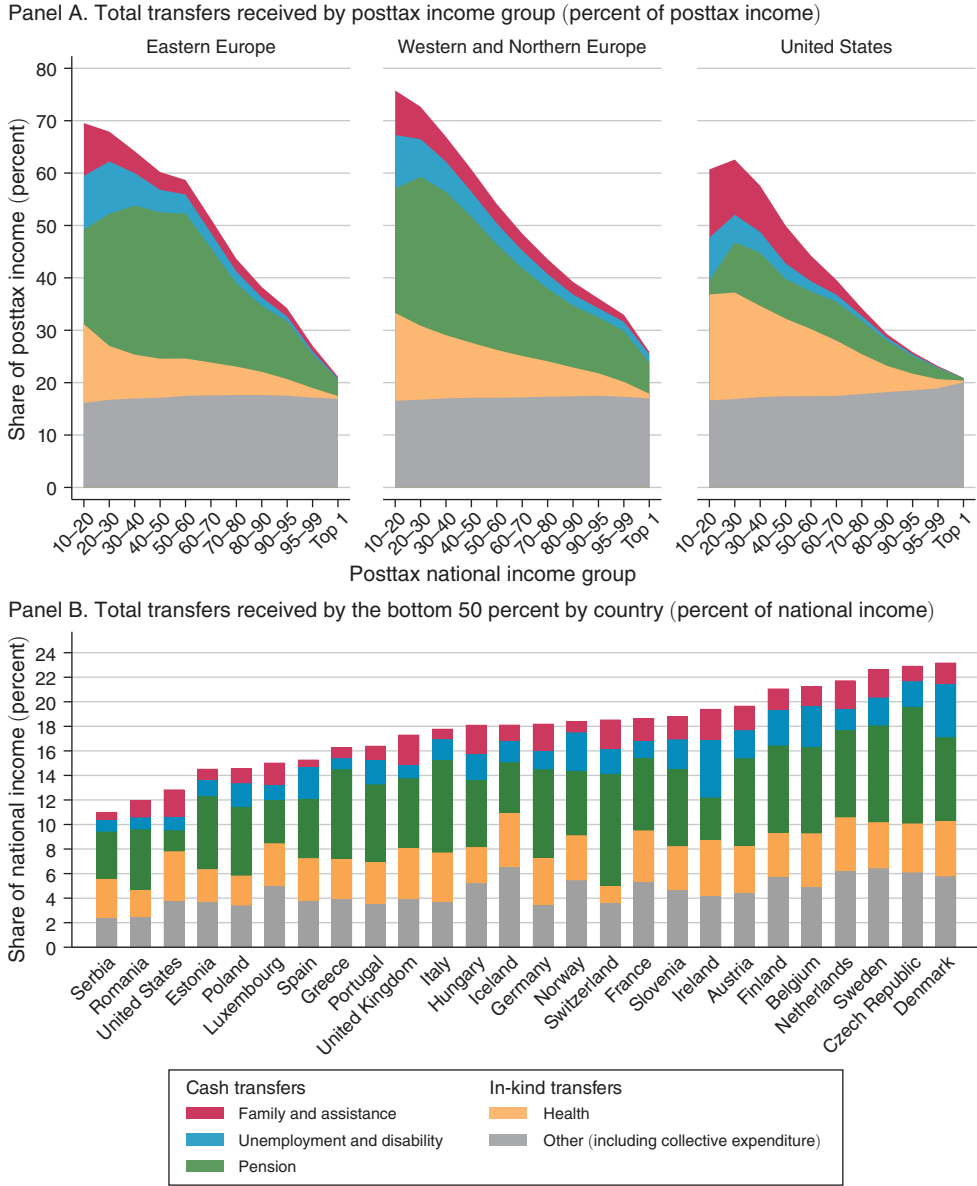
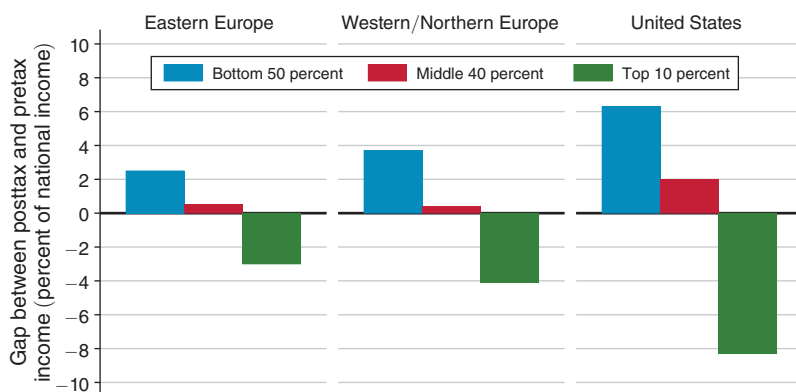


FIGURE 6. THE DISTRIBUTION OF TRANSFERS IN EUROPE AND THE UNITED STATES

Notes: Figures correspond to averages over the period 2007–2017 for European countries (population-weighted average of country-specific estimates in the case of European regions) and to 2017–2018 for the United States. The unit of observation is the adult individual aged 20 or above. Income is split equally among spouses. See online Appendix Table A.2.7.1 for the composition of European regions.

Sources: Authors’ computations combining surveys, tax data, and national accounts for European countries; Piketty, Saez, and Zucman (2019) for the United States.

Panel A. Net transfers operated by the tax and transfer system between pretax income groups (percent of national income)



Panel B. Net transfer received by the bottom 50 percent by country

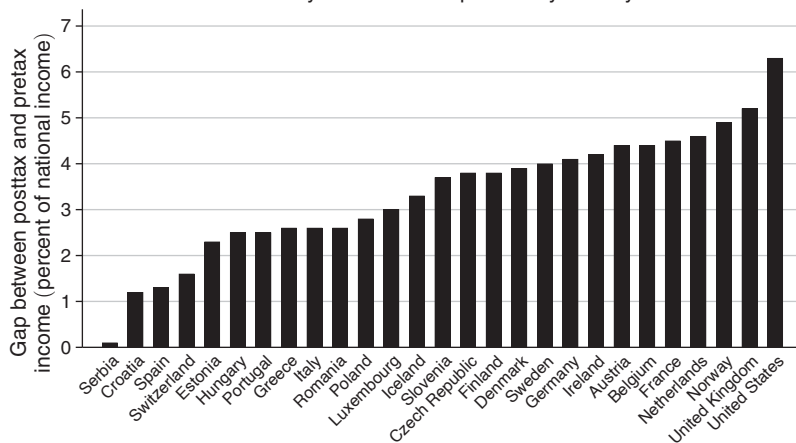


FIGURE 7. NET REDISTRIBUTION IN EUROPE AND THE UNITED STATES

Notes: Panel A represents the net transfer received or paid by pretax income group in Eastern Europe, Western and Northern Europe, and the United States in 2017. Panel B represents the net transfer received by the bottom 50 percent by country, expressed as a share of national income, in 2017. The unit of observation is the adult individual aged 20 or above. Income is split equally among spouses. See online Appendix Table A.2.7.1 for the composition of European regions.

Sources: Authors' computations combining surveys, tax data, and national accounts for European countries; Piketty, Saez, and Zucman (2018) for the United States.

about 4 percent in Western and Northern Europe and 3 percent in Eastern Europe. The middle 40 percent benefits slightly more from redistribution in the United States (2 percent) than in Europe (less than 1 percent).

Panel B of Figure 7 represents the net transfer received by the bottom 50 percent in all European countries and the United States in 2017. Again, the United States stands out as the country that redistributes the greatest fraction of national income to the bottom 50 percent (6 percent), followed by the United Kingdom, Norway, the Netherlands, France, and Belgium (4–5 percent). In all countries considered in this

paper, the bottom 50 percent end up being net beneficiaries of redistribution. Serbia, Croatia, Spain, Switzerland, Estonia, and Hungary are the European countries that redistribute the lowest share of national income to bottom income groups.

Assumptions made on the allocation of collective consumption expenditure can have a large impact on estimated posttax inequality levels across countries. As discussed in the methodology section, our benchmark series follow Piketty, Saez, and Zucman (2018) and allocate nonhealth in-kind transfers proportionally to post-tax disposable income. However, we also consider alternative series in which we distribute all collective expenditure in a lump-sum way. Our main conclusions are unchanged. Under that scenario, the United States is still the country redistributing the largest fraction of national income to the bottom 50 percent (about 11 percent), and the ranking of European countries on this measure also remains broadly the same (ranging from 5 percent to 10 percent). Our results on the evolution of posttax income inequality in the two regions are also maintained.³⁷ These are not surprising results, given that collective government expenditure represents approximately the same share of national income in Europe and the United States and has remained relatively constant since the 1980s. As an additional robustness check, we make the polar assumption that all government consumption is distributed in a lump-sum way in Europe and proportionally to posttax income in the United States. Even under this extreme and highly implausible scenario, we find that redistribution is not dramatically and unambiguously more progressive in Europe than in the United States (see online Appendix Figure A.2.5.11).

That being said, we acknowledge that the way we allocate this large component of government spending remains unsatisfactory. Ideally, one would like to distribute one by one specific types of expenditure in education, housing, infrastructure, and other areas of government intervention by combining microdata on individual use with macrodata on total spending by program. Unfortunately, while this should be done in the context of more precise country-level studies (for promising attempts, see, for instance, Germain et al. 2020; Aaberge et al. 2010; O'Dea and Preston 2010), the data at our disposal simply do not allow us to do so for all the countries considered in this paper. We leave this for future research. For our purpose, what is important is that allocating collective expenditure in two polar ways (proportionally versus lump-sum) only marginally affects our comparison of the United States and European countries, both in terms of trends and levels of inequality and redistribution.

D. Predistribution versus Redistribution: Revisiting the Europe-US Inequality Gap

When comparing inequality in Europe and the United States, landmark publications on inequality such as OECD (2008) and OECD (2011) reached two main conclusions: that income is less concentrated in most European countries than in the United States and that this gap is substantially larger in terms of posttax income

³⁷ See online Appendix Figure A.2.5.19, which reproduces panel B of Figure 7 assuming that all collective expenditure is allocated on a lump-sum basis. Online Appendix Figure A.2.5.9 compares the evolution of top 10 percent and bottom 50 percent posttax income shares in Europe and the United States under these two polar scenarios. Allocating collective expenditure in a lump-sum way reduces inequality significantly in both regions but does not affect the trends observed.

than in terms of pretax income.³⁸ The policy implications of these findings are relatively clear: if high income inequality countries were to increase redistribution to its level observed in less unequal countries, they would get significantly closer to the inequality levels observed in the latter. Our results challenge this claim. As documented in previous sections, pretax income inequality appears to be considerably higher in the United States than in Europe, and accounting for redistribution only marginally affects the US-Europe inequality gap. If anything, taxes and transfers reduce inequality more in the United States than in Europe.

Why do our conclusions contradict the standard view on redistribution in Europe and the United States? We find that this is the case for three main reasons.

First, OECD estimates rely exclusively on surveys, while we systematically distribute the entire national income by combining surveys with tax data and national accounts. Because household surveys tend to underestimate top income inequality more in the United States than in Europe, our estimates lead to a significant upward revision of the gap in pretax income inequality between the two regions.

Second, standard estimates of redistribution only allocate direct taxes and transfers to individuals, thereby ignoring corporate taxes, indirect taxes, and in-kind transfers. Distributing these components of government revenue and expenditure reverts the rankings of Europe and the United States in terms of redistribution. This is because indirect taxes are much higher in Europe than in the United States and fall disproportionately on low-income earners.

Third, our benchmark measure of redistribution compares pretax incomes to posttax incomes, while the standard view tends to compare factor incomes (sometimes referred to as market incomes) to posttax incomes. Because many European countries have a greater share of pensioners than the United States, and because public pension systems are much more developed in Europe than in the United States, including pensions in the analysis leads to increasing estimates of redistribution more in the former than in the latter. However, as we now show, our conclusions are robust to using one or the other of these two income concepts.

To illustrate the role of these three factors in explaining the differences between our conclusions and the standard view, we compare in Table 5 several estimates of the top 10 percent and bottom 50 percent income shares in Europe and the United States in 2017. The table reports results obtained using three different methodologies (relying only on surveys, combining surveys and tax data, and following the DINA framework) and for three different income concepts (factor income, pretax income, and posttax income).

Survey-based estimates suggest that the top 10 percent factor income share is only slightly higher in the United States (35.9 percent) than in Europe (33.3 percent). This gap is significantly larger in terms of posttax disposable income (4.7 percentage points) than in terms of factor income (2.6 pp). By this measure, about 45 percent of the US-Europe inequality gap can be explained by redistribution, if we define redistribution as the gap between factor income and posttax income

³⁸In OECD (2011) redistribution as measured by the difference between market Gini and disposable income Gini is found to be 18 percent in the United States versus 40 percent in Sweden and 33 percent in Norway (p. 270). Similar findings are obtained in more recent OECD publications, such as Causa and Hermansen (2017).

TABLE 5—PREDISTRIBUTION VERSUS REDISTRIBUTION IN EUROPE AND THE UNITED STATES: ESTIMATES OF THE TOP 10 PERCENT AND BOTTOM 50 PERCENT INCOME SHARES USING DIFFERENT CONCEPTS AND DATA SOURCES

	Top 10 percent			Bottom 50 percent		
	United States	Europe	Difference	United States	Europe	Difference
Surveys						
Factor income	35.9	33.3	+2.6pp	15.0	12.1	+2.9pp
Pretax income	33.1	26.9	+6.2pp	20.2	25.9	−5.7pp
Posttax income	28.9	24.3	+4.7pp	23.7	29.2	−5.5pp
Surveys + tax data						
Factor income	43.5	37.7	+5.8pp	11.2	8.5	+2.7pp
Pretax income	41.7	32.1	+9.6pp	15.1	21.8	−6.7pp
Posttax income	35.9	28.8	+7.2pp	18.9	24.7	−5.8pp
DINA						
Factor income	46.0	37.9	+8.1pp	11.2	12.5	−1.4pp
Pretax income	45.7	34.3	+11.4pp	12.7	21.4	−8.6pp
Posttax income	37.1	30.4	+6.7pp	19.8	24.9	−5.0pp

Notes: The table shows how estimates of top 10 percent and bottom 50 percent factor income, pretax income, and posttax income shares in Europe and the United States in 2017 vary depending on whether they are observed in household surveys, computed by combining surveys and tax data, or estimated using the distributional national accounts methodology.

Sources: Authors' computations combining surveys, tax data, and national accounts for Europe (population-weighted average). Survey-based estimates for the United States come from the Luxembourg Income Study. Surveys + tax data and DINA estimates for the United States come from Piketty, Saez, and Zucman (2018).

inequality. The differential impact of redistribution in the two regions appears even stronger when looking at the bottom 50 percent income share, which is lower in Europe than in the United States in terms of factor income but becomes higher when moving to pretax and posttax incomes. This corresponds relatively well to the standard view: by moving to European redistribution levels, the United States would close a significant share of the US-Europe posttax income inequality gap.

If we combine surveys with tax data, we get a relatively different picture. The estimated top 10 percent factor income share increases by 7.6 percentage points in the United States, compared to only 4.4 percentage points in Europe. As a result, the US-Europe gap in factor income inequality more than doubles, from 2.6 pp in surveys to 5.8 pp in estimates combining surveys with tax data. While taxes and transfers do continue to reduce inequality more in Europe than in the United States, redistribution now appears to only explain about 19 percent of the posttax income inequality gap between the two regions (although the results continue to some extent to conform to the standard view when focusing on the bottom 50 percent income share).

Moving to DINA estimates further modifies the distribution of income in both regions. The allocation of unreported national income components (undistributed profits and imputed rents) increases factor income inequality more in the United States than in Europe, shifting the gap in the top 10 percent income share from 5.8 to 8.1 percentage points. It also reverts the US-Europe gap at the bottom of the distribution: the bottom 50 percent factor income share now appears to be higher in Europe than in the United States. By contrast, the difference between the two regions in terms of top posttax income inequality actually decreases from 7.2 to 6.7 pp (and from 5.8 to 5 pp in terms of the bottom 50 percent share). This is

because moving from standard estimates of posttax income to DINA series implies allocating corporate taxes, indirect taxes, and in-kind transfers, which are more progressive in the United States than in Europe overall. DINA estimates reveal that taxes and transfers reduce top inequality less in Europe than in the United States: the gap in the top 10 percent share between the two regions is 8.1 percentage points in terms of factor income, compared to 6.7 percentage points in terms of posttax income. Predistribution, not redistribution, explains why Europe is less unequal than the United States.

Until now, we have compared factor income inequality to posttax income inequality for greater comparability with the existing literature. If we define redistribution as the gap between pretax income inequality and posttax income inequality, as in Section III, then the picture gets even clearer. Estimates from surveys, surveys and tax data, and DINA series all point to redistribution being higher in the United States than in Europe, both at the top and at the bottom of the income distribution. This is even more the case in DINA series than in surveys. According to our DINA estimates, greater redistribution in the United States thus succeeds in closing 41 percent $((11.4 - 6.7)/11.4)$ of the US-Europe top pretax income inequality gap (and 42 percent of the gap in the bottom 50 percent share). This is a radically different conclusion from the one obtained by the OECD. Redistribution does not explain why Europe is less unequal than the United States: it actually contributes to *reducing* the inequality gap between the two regions.

In our view, pretax income is more comparable across countries because it avoids artificially inflating inequality and redistribution in countries with a large elderly population and public pension systems.³⁹ That being said, we acknowledge that pensions may contribute to reducing inequality within the elderly population, and social contributions may also have significant distributional consequences in some cases. Whether factor income or pretax income should be used as the benchmark concept remains an open question. What is important for our analysis, however, is that our results are robust to adopting one or the other of these two approaches to the measurement of redistribution.⁴⁰

Finally, we do not find any evidence that redistribution has mitigated the rise of pretax income inequality more in Europe than in the United States. Figure 8 represents the evolution of the top 10 percent and bottom 50 percent pretax and posttax income shares in the two regions from 1980 to 2017. In 1980, redistribution already appeared to be greater in the United States than in Europe: for instance, the bottom 50 percent pretax income share stood at about 20 percent in both regions, while the bottom 50 percent posttax income share was significantly higher in the United States (26 percent) than in Europe (22 percent). By 2017, the bottom 50 percent share has become significantly lower in the United States, and the gap between

³⁹ In particular, rich pensioners may earn little factor income and therefore may appear to be lifted out of poverty by the pension system, even in a system in which pension benefits are proportional to income.

⁴⁰ We report in online Appendix Table A.2.7.7 comparable results for the top 1 percent income share, the Gini index, and the Theil index. The results are in line with those discussed above. The Gini coefficient estimated from survey data, for instance, is 4.1 pp lower in the United States than in Europe in terms of factor income, while it is 6.8 pp higher in terms of posttax disposable income. This conforms to the standard view. When moving to DINA estimates, by contrast, it appears to be unambiguously higher in the United States across all income concepts (by 8.8 pp in terms of factor income, 14.4 pp in terms of pretax income, and 8.6 pp in terms of posttax national income).

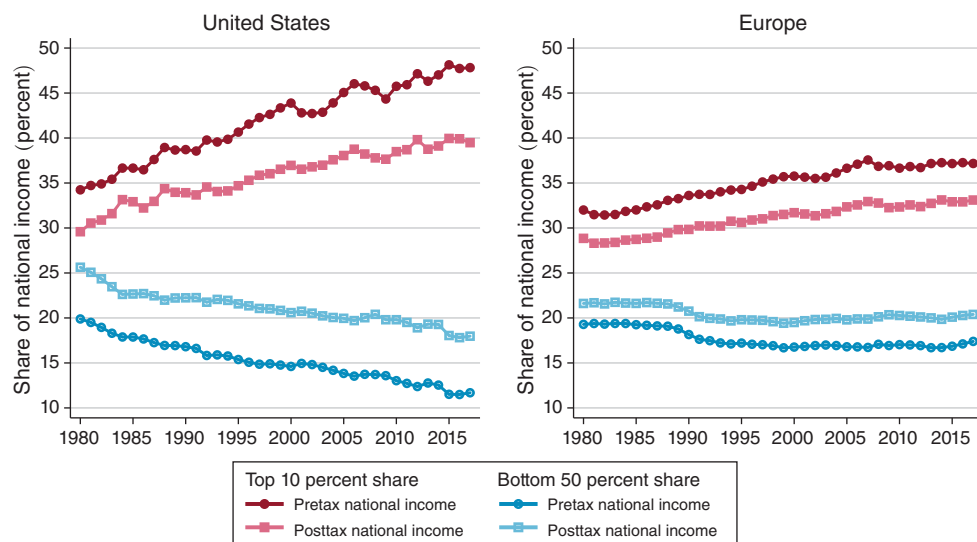


FIGURE 8. PRETAX AND POSTTAX INCOME INEQUALITY IN EUROPE AND THE UNITED STATES, 1980–2017

Notes: The figure represents the evolution of the top 10 percent and bottom 50 percent shares in Europe and the United States in terms of pretax national income and posttax national income from 1980 to 2017. The unit of observation is the adult individual aged 20. Income is split equally among spouses. See online Appendix Table A.2.7.1 for the composition of European regions.

Sources: Authors' computations combining surveys, tax data, and national accounts for Europe and Piketty, Saez, and Zucman (2018) for the United States.

the two regions is much larger in terms of pretax income (12 percent in the United States versus 17 percent in Europe) than in terms of posttax income (18 percent versus 20 percent). Seen from this perspective, the greater inequality levels observed in the United States today appear to be a relatively recent phenomenon. When considering the European continent as a whole and properly accounting for redistribution, we find that posttax income disparities at the bottom of the distribution were in fact larger in Europe than in the United States only a few decades ago.

E. The Indirect Impact of Taxes and Transfers on Pretax Income Inequality

While the distinction between predistribution and redistribution is widespread and useful, it should be approached with care. Indeed, redistribution policies may have an impact on the distribution of pretax incomes themselves, not only on the gap between pretax and posttax income inequality. For example, high top marginal tax rates can limit top earners' incentives to bargain for higher pay, decreasing pretax inequality. Transfers at the bottom of the distribution can also change incentives to work or acquire skills. To what extent could these considerations change our conclusion regarding the role of redistribution? This section provides an exploration of this question. We investigate two channels: changes in pretax inequality due to changes in top marginal tax rates and changes in pretax inequality due to net redistribution at the bottom.

Top Marginal Income Tax Rates.—The idea that high top marginal tax rates reduce top incomes has been suggested before (Piketty, Saez, and Stantcheva 2014) and supported by cross-country evidence tying top marginal rates to reduced income concentration at the top. Using our own data, we indeed observe that higher top marginal tax rates are associated with lower top 1 percent pretax income shares. In online Appendix Section 1.8, we study different specifications for estimating the elasticity of the top 1 percent share with respect to (one minus) the top marginal tax rate across European countries. Across specifications, we find estimates ranging between $\sigma = 0.12$ and $\sigma = 0.45$, somewhat more muted than the findings of Piketty, Saez, and Stantcheva (2014) but nonetheless significant overall.⁴¹

Let us assume that $\sigma = 0.5$, close to the benchmark of Piketty, Saez, and Stantcheva (2014) and at the high end of our own estimates. Based on this assumption of a rather strong impact of tax rates on pretax inequality, can we explain the evolution of European inequality and the difference between Europe and the United States? Panel A of Figure 9 simulates two counterfactual evolutions of the top 1 percent pretax income share in Europe to answer this question: one that applies the United States' top marginal tax rate to every European country and another that fixes top tax rates at their 1981 value in every country. The first scenario shows that the lower top marginal tax rates observed in the United States can only explain a small fraction of the Europe-US inequality differential. The second scenario shows that the decrease of top marginal tax rates generally observed in European countries can explain about 40 percent of the rise in within-country inequality observed since the 1980s. Therefore, the decrease of top marginal tax rates does contribute to explaining the rise of top income concentration in Europe, but it cannot account for the higher pace at which pretax inequality rose in the United States. For top marginal tax rates to explain the entire difference between Europe and the United States, we would have to assume extremely high elasticities of the order $\sigma = 2$.

Net Transfers at the Bottom.—Now, focusing on the bottom of the distribution, it could be argued that there is a trade-off between redistribution and predistribution and that policymaking is about setting the equilibrium between the two. To assess this view, one can measure the correlation between the bottom 50 percent pretax income share and the net transfers received by the bottom 50 percent, as measured by the difference between their posttax and pretax income share. As shown in panel B of Figure 9, the cross-country correlation suggests a positive link between these two variables, with a small but positive elasticity of 0.10.⁴² In other words, we find no evidence that redistribution and predistribution are substitutes, and if anything, they may be complements. Since the United States redistributes a larger share of national income to the bottom 50 percent than European countries, a positive relationship between lower pretax inequality and higher redistribution cannot explain the differential between Europe and the United States.

⁴¹ Differences with the results of Piketty, Saez, and Stantcheva (2014) arise mostly due to their inclusion of non-European countries and their longer time frame. See online Appendix 1.8.

⁴² We stress that this elasticity is only mildly significant and not robust to the inclusion of country fixed effects (see online Appendix Section 1.9).

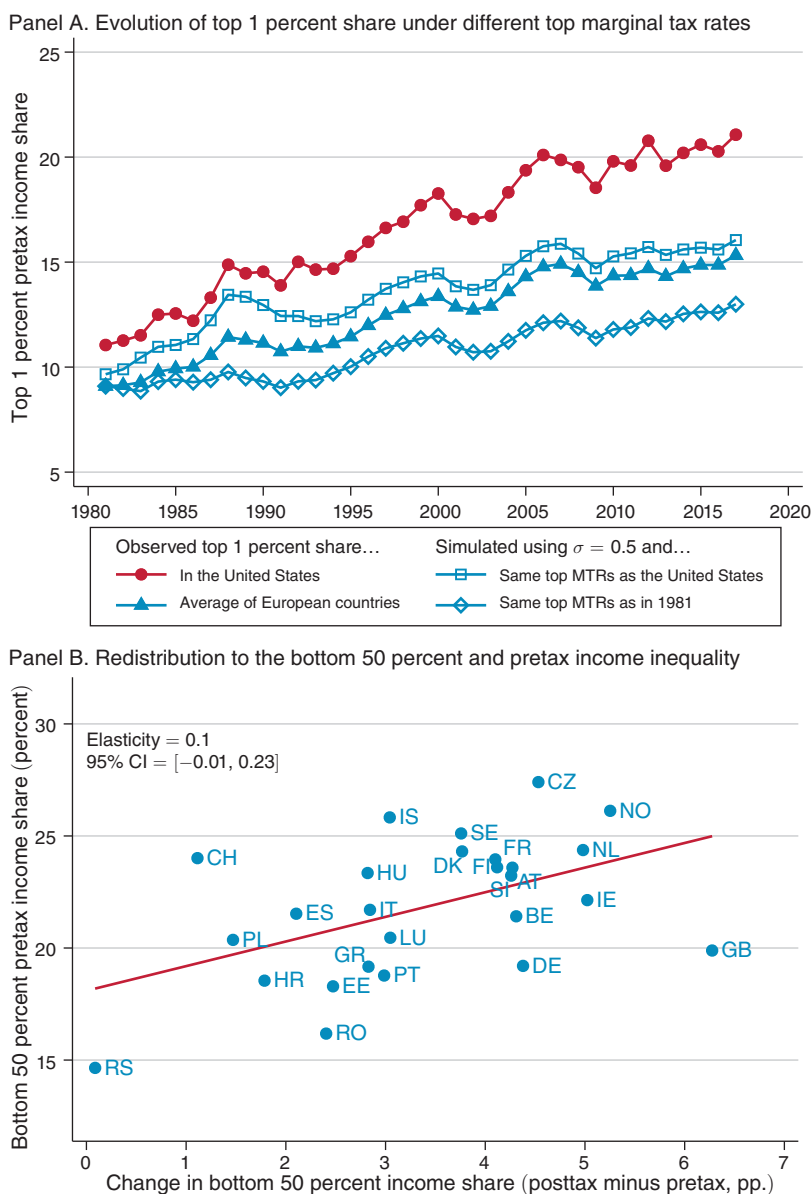


FIGURE 9. THE INDIRECT IMPACT OF REDISTRIBUTION ON PREDISTRIBUTION

Notes: Panel A: European estimates refer to a population-weighted average of European countries with data available since 1981 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom). Counterfactual top 1 percent share estimated using the model $\Delta(\text{top 1 percent share}) = (\Delta(1 - MTR))^{\sigma}$. Panel B: Averages over the 2007–2017 period. Elasticity refers to specification (2) in online Appendix Table A.1.9.5, online Appendix 1.9.

Sources: Authors' computations combining surveys, tax data, and national accounts for Europe; Piketty, Saez, and Zucman (2018) for the United States. Top marginal tax rates data extended from Kleven et al. (2020) using OECD data (see online Appendix 1.6.2).

The exploratory results of this section should be interpreted with care and not in a strictly causal way. That being said, they do suggest the existence of some indirect effects of redistribution on predistribution, but not in a way that would overturn our key conclusions.

IV. Conclusion

This article developed a new methodology to estimate the distribution of national income in 26 European countries between 1980 and 2017 by combining all available surveys, tax data, and national accounts in a systematic manner. The resulting dataset was then used to study the joint evolution of growth, inequality, and redistribution in Europe and the United States in the past decades.

Our results revealed that pretax income inequality has risen in almost all European countries since 1980. This rise has been concentrated at the top end of the distribution and has been most pronounced in Eastern Europe. However, income concentration has grown much less in Europe than in the United States. This is true of each European country taken separately but also of Europe as a whole. While inequalities between European countries remain significant, they only explain a small and decreasing fraction of European-wide income disparities.

Against a widespread view, we documented that the structure of taxes and transfers cannot explain why Europe is less unequal than the United States today. On the contrary, redistribution appears to reduce inequality more in the United States than in Europe, despite the lower aggregate levels of taxes and transfers observed in the United States. The novelty of this conclusion mainly arises from accounting for the underrepresentation of top incomes in surveys, which is more acute in the United States than in Europe; from distributing the totality of national income, which leads to revising inequality estimates upward more in the United States than in Europe; and from allocating indirect taxes and in-kind transfers, which are more progressive in the United States than in Europe. Given that the two regions have been exposed in a relatively similar way to technological change and globalization in the past decades, our results thus shed light on the importance of predistribution policies, such as access to education and health care or labor market regulations, in explaining international differences in the distribution of pretax income growth.

We see at least two avenues for future research. First, there is a need to better understand to what extent collective government expenditure in education, health, and other spheres of public intervention reduces inequality in the long run. While we have shown that our main conclusions are robust to polar assumptions on the distributional incidence of this form of redistribution, much remains to be done when it comes to precisely estimating it. Doing so would require combining distributional national accounts with more disaggregated data on who benefits from specific policies and programs.

Our dataset could also be used to better assess the distributional impact of taxes and transfers on inequality. Drawing on simple correlations and estimates from the existing literature, we have shown that changes in top marginal income tax rates or in net redistribution cannot entirely rationalize the diverging trajectories of Europe

and the United States observed in the past decades. In the same spirit, further analyses could more systematically simulate, for instance, the effect of adopting specific tax and transfer systems of the distribution of pretax and posttax incomes. Such an enterprise would be particularly useful to better understand the sources of rising pretax income inequalities and to identify which policies affect them in the long run.

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