



Income inequality in France, 1900–2014: Evidence from Distributional National Accounts (DINA)^{☆,☆☆}

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ABSTRACT

This paper presents “Distributional National Accounts” (DINA) for France. That is, we combine national accounts, tax and survey data in a comprehensive and consistent manner to build homogenous annual series on the distribution of national income by percentiles over the 1900–2014 period, with detailed breakdown by age, gender and income categories over the 1970–2014 period. Our DINA-based estimates allow for a much richer analysis of the long-run pattern found in previous tax-based series, i.e. a long-run decline in income inequality, largely due to a sharp drop in the concentration of wealth and capital income following the 1914–1945 capital shocks. First, our new series deliver higher inequality levels than the usual tax-based series for the recent decades, because the latter miss a rising part of capital income. Growth incidence curves look dramatically different for the 1950–1983 and 1983–2014 sub-periods. We also show that gender inequality in labor income declined in recent decades, albeit fairly slowly among top labor incomes. E.g. female share among top 0.1% earners was only 12% in 2012 (vs. 7% in 1994 and 5% in 1970). Finally, we find that distributional changes can have large impact on comparisons of well-being across countries. E.g. average pretax income among bottom 50% adults is 20% larger in France than in the U.S., in spite of the fact that aggregate per adult national income is 30% smaller in France.

1. Introduction

Income inequality has increased significantly in many developed and developing economies over the last decades, with significant variations across countries and regions. At the same time, the rise of emerging countries has contributed to the reduction of inequality between countries. These conflicting trends have attracted considerable interest among academics, policy-makers, and the global public.

Unfortunately we face important limitations in our collective ability to measure income inequality. During the past fifteen years, following up on Kuznets' (1953) pioneering attempt, a number of authors have used administrative tax records to construct long-run series of top income shares (Piketty, 2001, 2003; Piketty and Saez, 2003; Atkinson and

Piketty, 2007, 2010; Alvaredo et al., 2011–2017). These new series have contributed to improve our understanding of inequality trends, particularly the rise of top income shares. Yet they have a number of shortcomings. In particular, they do not offer for the bottom segments of the distribution the same detailed decomposition as for the top part. In order to make progress in this direction, it is critical to combine different data sources in a more systematic manner – typically tax records for the top of the distribution, and survey data for the bottom.

More generally, one important limitation of existing research is the large gap between national accounts - which focus on economic aggregates and macro-economic growth - and inequality studies - which focus on distributions using survey and tax data but usually without trying to be fully consistent with macro aggregates. This gap makes it

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hard to rigorously address questions such as: how is aggregate economic growth distributed between the different income percentiles, from the bottom to the top of the distribution? E.g. what fraction of total growth accrues to the bottom 50%, the middle 40% and the top 10% of the distribution? How much is due to changes in the labor and capital shares in national income, and how much is due to changing dispersions of labor earning, capital ownership, and returns to capital? How does per capita growth of the bottom 50% and 90% income and wealth groups compare to overall growth, and how is this affected by taxes and transfers?

The present paper attempts to bridge the gap between national accounts and inequality studies more systematically than has been done in the past. We combine national accounts, tax, and survey data in a comprehensive and consistent manner to build ‘Distributional National Accounts’ (DINA), that is, homogenous series on the distribution of total national income in France since 1900. In contrast to previous attempts to construct top income series for France (Piketty, 2001, 2003), which are based upon fiscal income, our estimates capture 100% of national income recorded in the national accounts, and cover the entire distribution, from bottom percentiles to top percentiles. This allows us to provide decompositions of growth by income groups consistent with total economic growth used in macroeconomics.

From a methodological perspective, our key contribution is to construct prototype micro-files of income distribution consistent with macro-aggregates, obtained by statistically matching tax and survey data and making explicit assumptions about the distribution of income categories for which there is no readily available source of information. That is, we combine national accounts, tax and survey data in a comprehensive and consistent manner to build homogenous annual series on the distribution of national income by percentiles over the 1900–2014 period, with detailed breakdowns by age, gender and income categories over the 1970–2014 period. The corresponding micro-files and computer codes are available on-line. In a companion paper (Garbinti et al., 2016), we develop similar methods in order to construct prototype micro-files of wealth distribution that are fully consistent with the income files presented in this paper.

We should stress that the present paper focuses upon the distribution of pretax income (with a distinction between pretax national income and pretax factor income that we will later explain, depending on how we treat pension income and other replacement income). In another companion paper, we include taxes and transfers in our prototype micro-files in order to measure the after-tax after-transfers distribution of income (Bozio et al., 2018). We should also mention that the present paper belongs to a broad international project aimed at improving inequality measurement, namely the WID.world project. Its general objective is to extend these methods and estimates and to develop homogenous ‘Distributional National Accounts’ (DINA) in as many countries as possible in the coming years (see Alvaredo et al. (2016) for general guidelines on the DINA methodology; see Piketty et al. (2018) and Saez and Zucman (2016) for an application to the U.S. case).¹

Although the present paper is primarily methodological, we also come with a number of novel substantial conclusions. Generally speaking, our DINA-based estimates allow for a much richer analysis of the long-run pattern found in previous tax-based series, i.e. a long-run decline in income inequality, largely due to a sharp drop in the concentration of wealth and capital income following the 1914–1945 capital shocks (Piketty, 2001, 2003, 2014). First, our new series deliver higher inequality levels than the usual tax-based series for the recent decades, because the latter miss a rising part of capital income. In particular, growth incidence curves look dramatically different for the 1950–1983 and 1983–2014 sub-periods. During the 1950–1983 period, per adult real income rose at almost 3.5% per year for most of the

population, except for very top percentiles, whose incomes grew at about 1.8% per year. Between 1983 and 2014, we observe the opposite pattern: for most of the population real growth rates were about 1% per year or less, except for very top percentiles, who enjoyed real growth rates up to 3% per year.

Next, our detailed breakdowns by age and gender allow us to explore new dimensions of inequality dynamics together with the top income dimension. For instance, we find that gender inequality in labor income declined in recent decades, albeit fairly slowly among top labor incomes e.g. female share among top 0.1% earners was only 12% in 2012 (vs. 7% in 1994 and 5% in 1970).

Finally, since our new series are anchored to national accounts, they allow for more reliable comparisons across countries. We find that distributional changes can have large impact on comparisons of well-being across countries e.g. average pretax income among bottom 50% adults is 20% larger in France than in the U.S., in spite of the fact that aggregate per adult national income is 30% smaller in France. Post-tax comparisons are likely to exacerbate this conclusion.

The paper is organized as follows. Section 2 relates our work to the existing literature. Section 3 presents our concepts, methods and data sources. In Section 4 we present our long run results regarding the general evolution of the distribution of national income over the 1900–2014 period. In Section 5 we present detailed inequality breakdowns on labor income vs capital income. In Section 6 we present detailed inequality breakdowns by age and gender for the 1970–2014 period. In Section 7 we compare our French findings to the US DINA series. The conclusion (Section 8) discusses a number of venues for future research. This paper is supplemented by an extensive Online Data Appendix including complete series and additional information about data sources and methodology.

2. Related literature

This paper follows a long tradition of research trying to combine national accounts with distributional data. The famous social tables of King produced in the late 17th century were in fact distributional national accounts, showing the distribution of England's income, consumption, and saving across 26 social classes in the year 1688, from baronets to vagrants (see e.g. Stone, 1984). Most modern work in this area follows the pioneering contribution of Kuznets (1953), who first combined income tax tabulations (which have been produced annually since the creation of the U.S. federal income tax in 1913) with national income series to estimate top income shares in the U.S. over the period 1913–1948.

Kuznets' methods were further extended by Piketty (2001, 2003), who constructed top income shares series for France on the basis of income tax tabulations and national income series available on an annual basis since the creation of the French income tax in 1914. This work contributed to create a new interest to the study of income inequality over the long run using tax return data (see e.g. Piketty and Saez (2003) for the U.S.; Atkinson (2005) for the UK and Atkinson and Piketty (2007, 2010) for a global perspective on top incomes). This interest has led to the creation in 2011 of *The World Top Incomes Database* (WTID), a database that gathers homogenous long-term series of top income shares broken down by income source for thirty-one countries. All these contributions used similar sources (income tax tabulations and national accounts) and methods (Pareto interpolation techniques).

As pointed out by Atkinson et al. (2011), these series suffer however from important limitations. In particular they are based on fiscal income, which can diverge from national income because of tax exempt income, tax avoidance and evasion. They focus on pretax and pre-transfer income inequality and are therefore silent on redistributive effects of public policies between and across countries. Finally, these series measure only top income shares (typically top 10% and top 1%) and hence give no information on the evolution occurring within the

¹ All updated files and results will be made available on-line on the World Wealth and Income Database (WID.world) website: see <http://www.WID.world>.

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