

Inequality and Redistribution in France (1990-2018): Evidence from Distributional National Accounts (DINA)

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This paper presents the authors' views and should not be interpreted as reflecting those of their institutions

Motivation (1/2)

Deaton (Nobel Prize Lecture, 2016): “While we often must focus on aggregates for macroeconomic policy, it is impossible to think coherently about national well-being while ignoring inequality and poverty, neither of which is visible in aggregate data. Indeed, and except in exceptional cases, macroeconomic aggregates themselves depend on distribution. These arguments are much more widely accepted today than they were thirty years ago.”

August 28, 2018: Senate Democratic Leader Chuck Schumer and U.S. Senator Martin Heinrich, introduced the “Measuring Real Income Growth Act of 2018”, which would require the Bureau of Economic Analysis (BEA) to report how economic growth is distributed across the income spectrum. This data would help to put quarterly GDP growth numbers in context

[▶ Source](#)

Motivation (2/2)

- Large disconnect between the study of inequality and macro
 - Macro: national accounts with no distribution information
 - Inequality: surveys and tax data data inconsistent with national aggregates
- Redistributive impact of public policies?
 - Pretax income inequality are raising
 - Tax and transfer system = 50% GDP

The DINA Project

Multi-country project: Distributional National Accounts (DINA)

- Provide long-term series on distribution of income and wealth
 - Homogeneous across countries and over time
 - Consistent with National Income and Wealth Accounts
 - Covering all the distribution from bottom to top
 - Covering pretax **AND** post-tax income inequality
- For France: three papers
 - Wealth inequality
 - Pretax income inequality
 - Today: Post-tax income inequality

Research question

What is the redistributive impact of taxes and transfers on inequality ?

① Methodological contribution:

- Construction of long-term homogeneous series of post-tax income inequality
- Detailed breakdown by age, tax and transfer categories

② Empirical contributions:

- Analyze the redistributive impact of taxes and transfers in France and in the U.S

Main Findings

- Taxes and transfers have counteracted the increase in pre-tax inequality in France (but not in the U.S)
- But over the period 1990-2018 the tax system reduces more inequality in the U.S than in France
- Differences in overall inequality between France and US are explained by differences in primary inequality (pretax inequality) rather than in secondary redistribution
- The profile of taxation is structurally regressive in France
- Monetary transfers mostly benefit older age groups and leave unaffected the low relative position of younger age groups

Literature

- **Income inequality**
 - **Top income shares:** Kuznets (1955), Piketty (2001), Atkinson and Piketty (2007, 2010)
 - **Growing literature on DINA series:** U.S: Piketty, Saez and Zucman (2018); France: Garbinti, Goupille-Lebret and Piketty (2018); China: Piketty, Yang and Zucman (2017); Russia: Novokmet, Piketty and Zucman (2017); Brazil: Morgan (2017); Middle-East: Alvaredo, Assouan and Piketty (2018),...
- **Progressivity of tax and transfer systems (Pechman and Okner, 1974)**
 - **In France:** Bourguignon (1998); Chanchole et Lalanne (2012); Eidelman, Langumier and Vicard (2013); Landais, Piketty and Saez (2011); Bozio, Breda and Guillot (2018) and several Insee works (Amar et al (2008), Accardo et al. (2009), Le Laidier (2009))
 - **Cross-country comparison:** Piketty and Saez (2007); Mirrlees and al. (2010); Sutherland and Figari (2013) with EUROMOD; OECD work by Zwiijnenburg, Bournot and Giovannelli (2016)
- **Role of taxes and transfers on inequality dynamics:**
 - Kaymak and Poschke (2016); Hubmer et al.(2017); PPVR (2018)
- **Determinants of pretax income inequality**
 - education policies (Godlin and Katz, 2008; Chetty et al., 2017), minimum wage (Lee, 1999), compensation bargaining (Piketty, Saez and Stantcheva, 2014), international trade and technological change (Rosen, 1981)

Outline

Data and methodology

How does secondary redistribution reduce inequality?

Decomposition by taxes

Decomposition by transfer categories and age groups

Appendix

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Income concepts

- **Factor income**

- sum of all income flows going to labor and capital, **before** taking into account the operation of the pension system and other taxes and transfers.

- **Pretax income**

- sum of all income flows going to labor and capital, **after** taking into account the operation of the pension system, **but before** taking into account other taxes and transfers.
= Factor income - pension and unemployment contributions + pension and unemployment distributions

- **Post-tax disposable income**

= Pretax income - all taxes + monetary transfers

- **Post-tax income** = Pretax income - all taxes + all transfers
(monetary + in-kind + collective)

- Equal-split-adults series: income of married couples divided by two

The French tax and transfer system

- Taxes regrouped into five categories
 - **Indirect taxes:** sales and excise taxes, professional taxes, and residence taxes
 - **Capital taxes:** corporate taxes, wealth taxes, property taxes, and bequest taxes.
 - **Flat income taxes:** CSG, CRDS, other social charges
 - **Progressive income taxes:** IR
 - **Non-contributive social contributions:** all SSCs that are not dedicated to the financing of the pension and unemployment system + taxes on wages
- Transfers decomposed into three categories:
 - **Monetary transfers:** various types of housing benefits, family benefits, and social benefits
 - **In-kind transfers:** all transfers that are not monetary and can be individualized (health, education, culture and recreational goods and services)
 - **Collective expenditure:** all consumption services that benefit to the community in general and cannot be individualized (defense, police, the justice system, public infrastructure, etc.)

Data sources and methodology

- Data sources
 - National account series from INSEE
 - Microfiles of income tax returns: 1970-2016
 - Household surveys (Wealth surveys from 1986 and Housing surveys from 1973)
- Methodology to recover pre-tax income (developped in Garbinti, Goupille-Lebret, Piketty 2018 [▶ Details](#))
 - Start from fiscal income reported in microfiles
 - Impute missing components such as to match pre-tax national income social contributions, imputed rents, retained earnings, corporate tax, production taxes, etc.

Simulations and imputations

From pretax income to post tax disposable income :

- 1 Simulate precisely all monetary transfers and taxes levied on income (progressive and flat income taxes, and social contributions).
- 2 Use estimated variables as a proxy for tax base when simulating wealth taxes, property taxes, and residence taxes
- 3 Impute the remaining taxes based on rules and tax incidence assumptions
 - Consumption taxes are assumed to be borne by consumers only
 - Corporate taxes are allocated proportionally to financial income

For 2017 and 2018 : We take into account changes in taxation, based on the data from 2016.

Outline

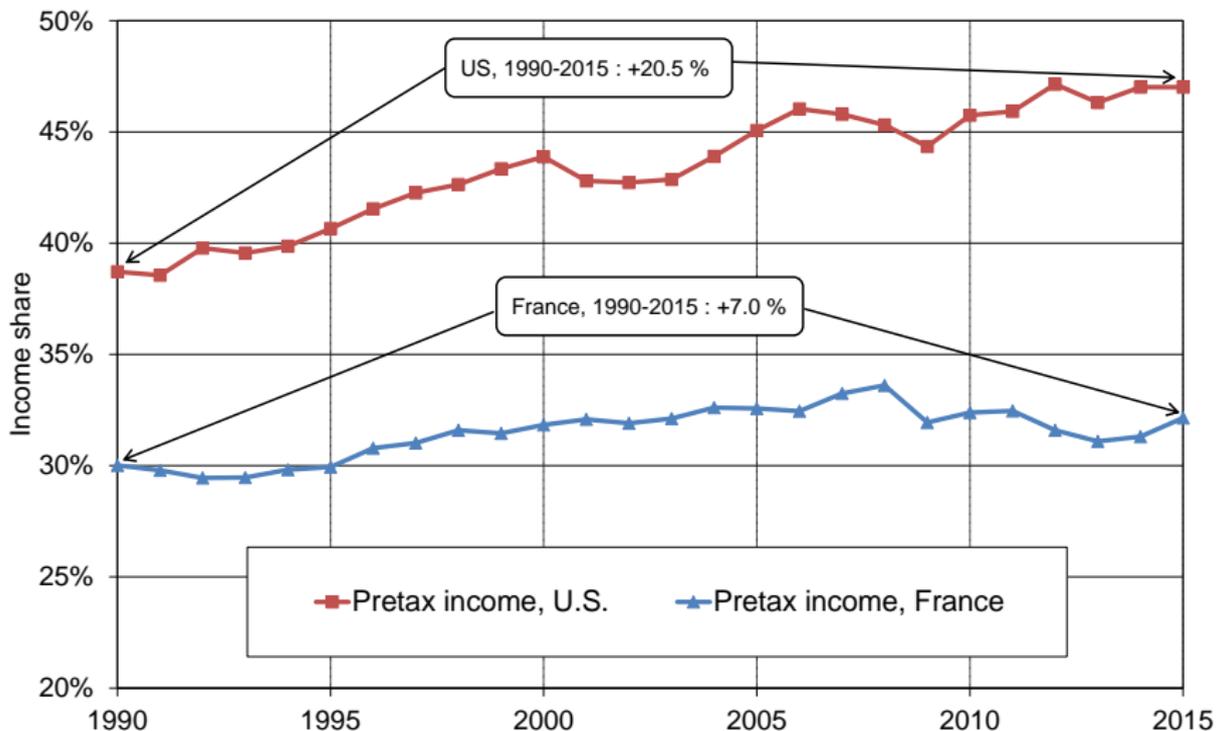
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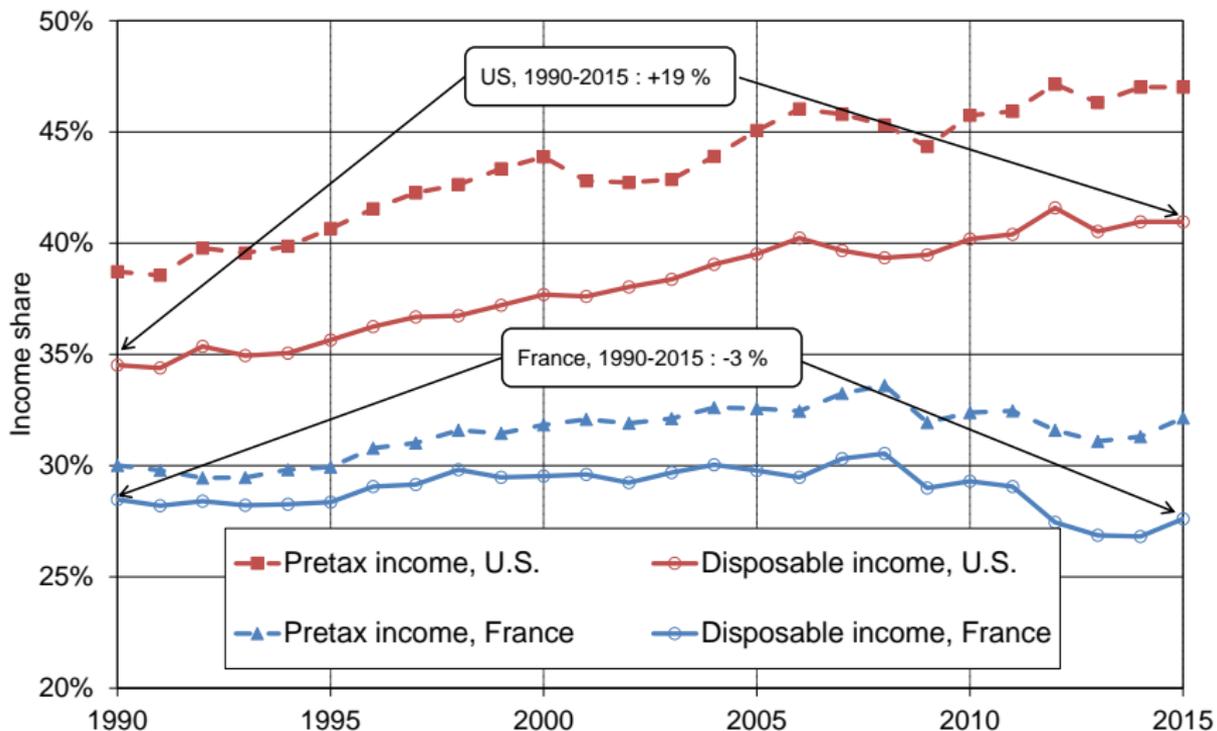
Decomposition by transfer categories and age groups

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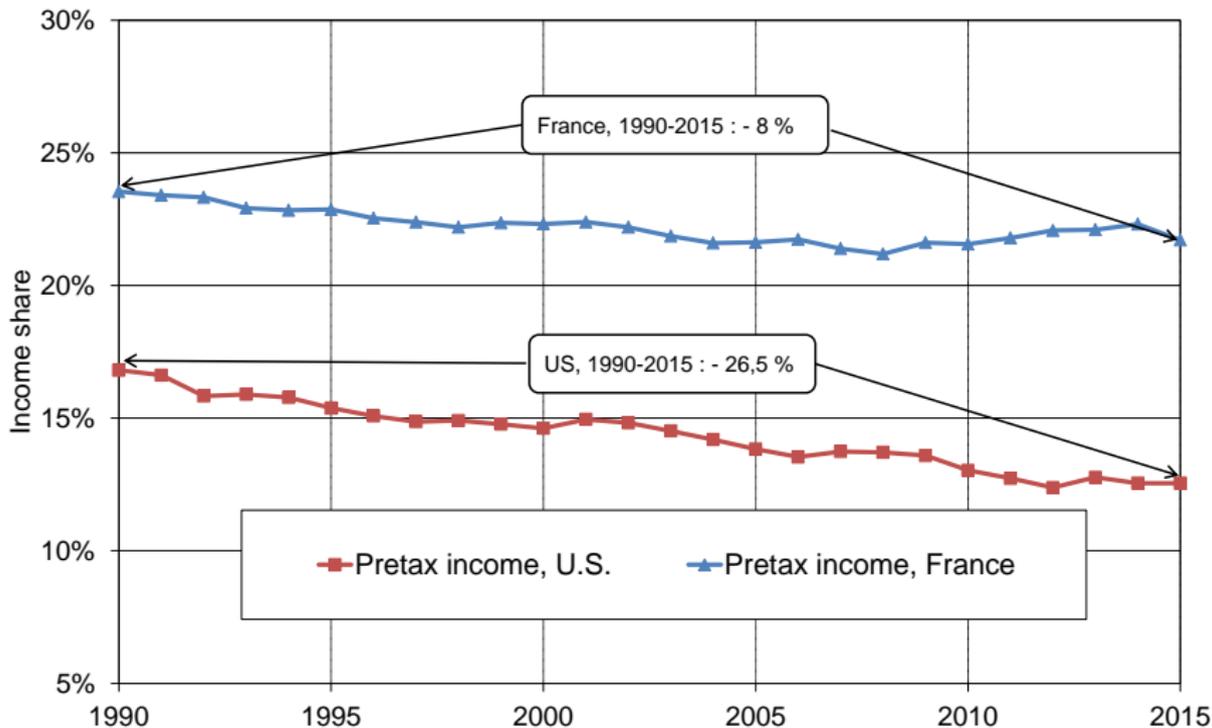
FIGURE 1 – Top 10% income shares (Pretax income): France vs. U.S

Note: Distribution of pretax and disposable income among adults. Equal-split-adults series (income of married couples divided by two). [▶ Long term evolution](#)

FIGURE 2 – Top 10% income shares: France vs. U.S.

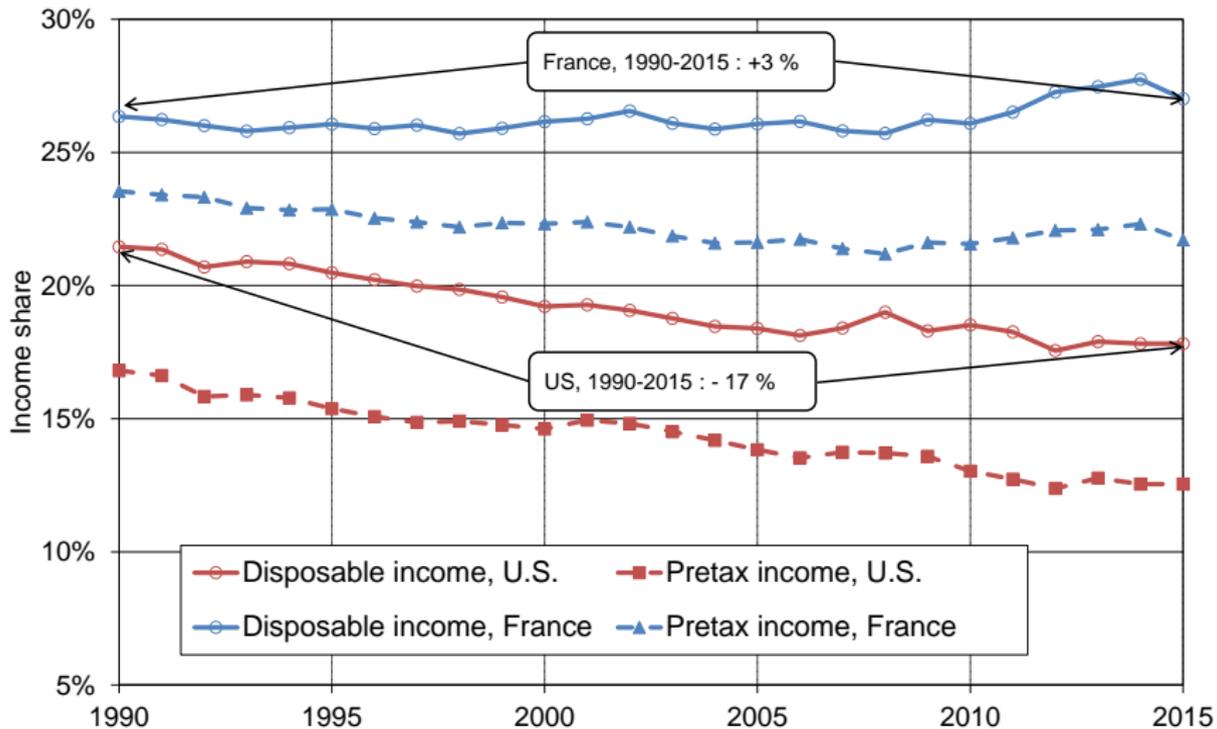


Note: Distribution of pretax and disposable income among adults. Equal-split-adults series (income of married couples divided by two).

FIGURE 3 – Bottom 50% income shares: France vs. U.S.

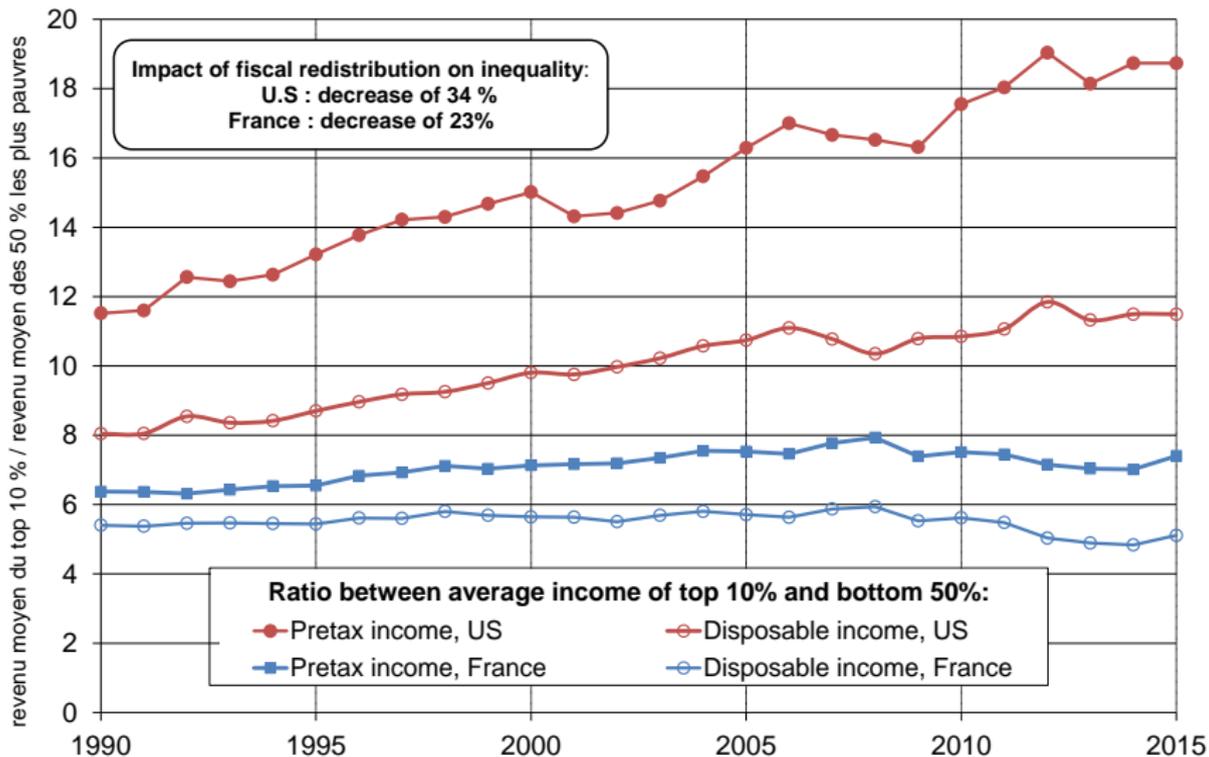
Note: Distribution of pretax and disposable income among adults. Equal-split-adults series (income of married couples divided by two).

FIGURE 4 – Bottom 50% income shares: France vs. U.S.



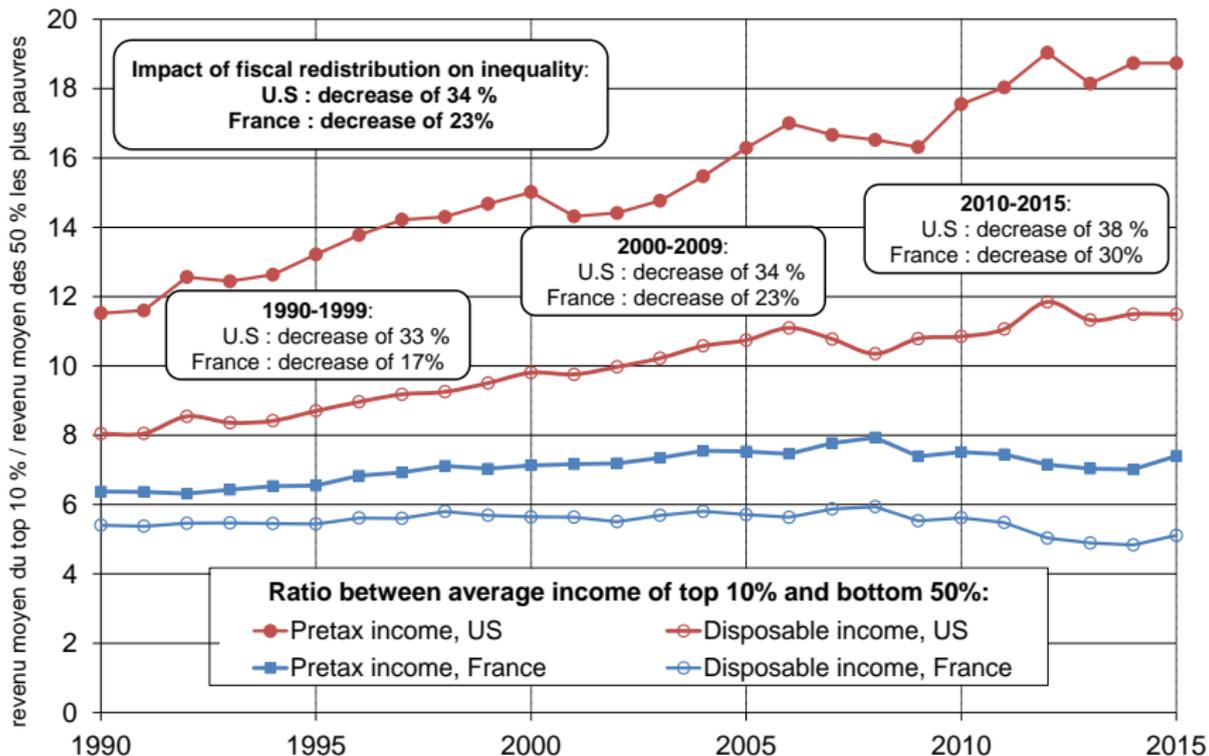
Note: Distribution of pretax and disposable income among adults. Equal-split-adults series (income of married couples divided by two).

FIGURE 5 – Inequality and secondary redistribution in France



Note: Distribution of pretax and disposable income among adults. Equal-split-adults series (income of married couples divided by two).

FIGURE 6 – Inequality and secondary redistribution in France



Note: Distribution of pretax and disposable income among adults. Equal-split-adults series (income of married couples divided by two).

Other inequality indicators

Change from pretax to disposable income (in %)	France (1990-2018)	US (1990-2015)
Mean Top 10/B50	-23	-34
Mean Top10/M40	-6	-13
Mean M40/B50	-18	-24
Mean Top10/B10	-61	-67
Mean Top10/B20	-42	-51
Palma ratio	-27	-39
p75/p25	-19	-25
Gini index		
Absolute difference	-6	-8
Relative difference	-14	-14
Theil index		
Absolute difference	-8	-17
Relative difference	-20	-22

First finding

- Increasing pretax income inequality in France and the U.S. since 1990
- Taxes and transfers have counteracted the increase in pre-tax inequality in France (but not in the U.S.)
- But the tax system reduces more inequality in the U.S. than in France
- Differences in overall inequality between France and US. explained by differences in primary inequality rather than in secondary redistribution
- **Key role of primary redistribution on inequality**
 - Education and health system, labor market institutions (minimum wage, unions), etc.

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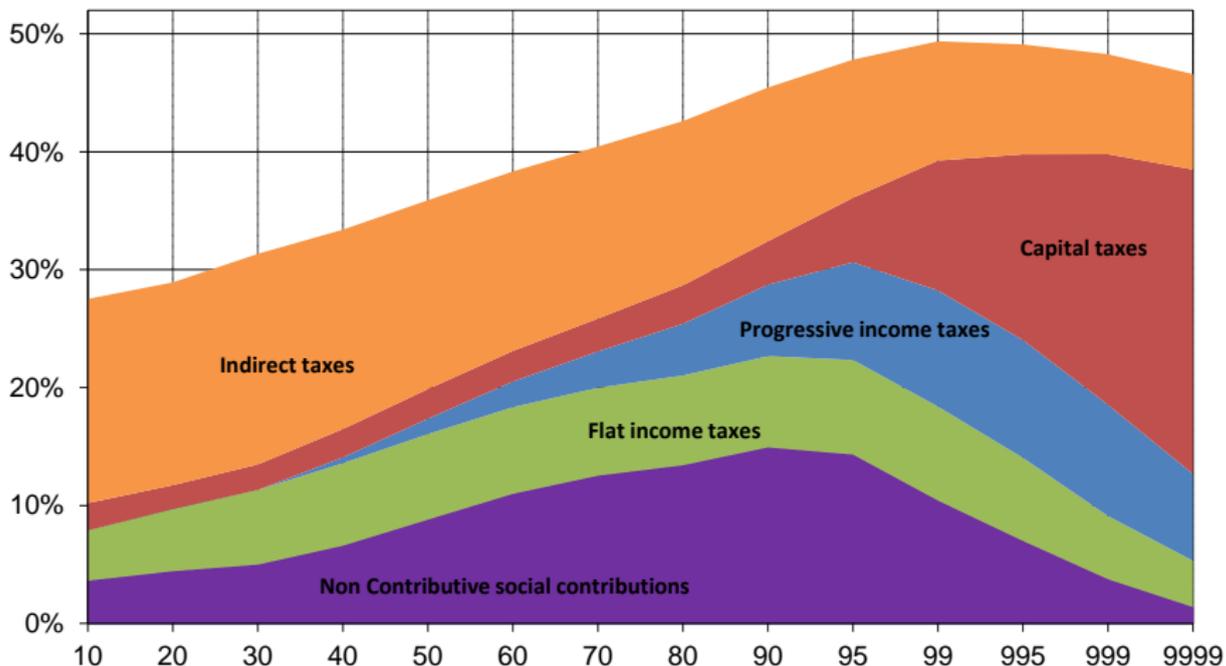
Decomposition by taxes

Decomposition by transfer categories and age groups

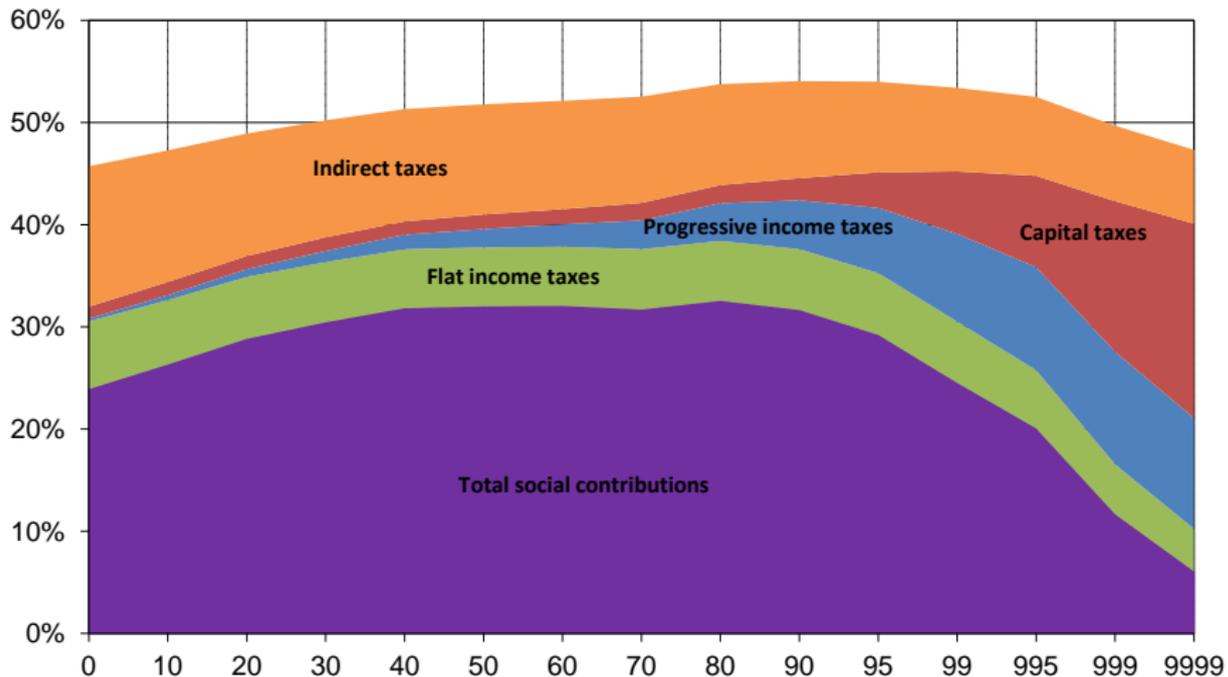
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Different concepts of contributive capacities can be used

- Lifetime income: not possible in France!
- Pretax income among adults
 - Include overall population
 - But give too much weight on temporary situations (unemployment, youth)
- Factor income among working adults
 - Closer to permanent income
 - But exclude large fraction of population (retired and unemployed individuals)

FIGURE 7 – Taxes paid by percentile of pretax income, France 2018

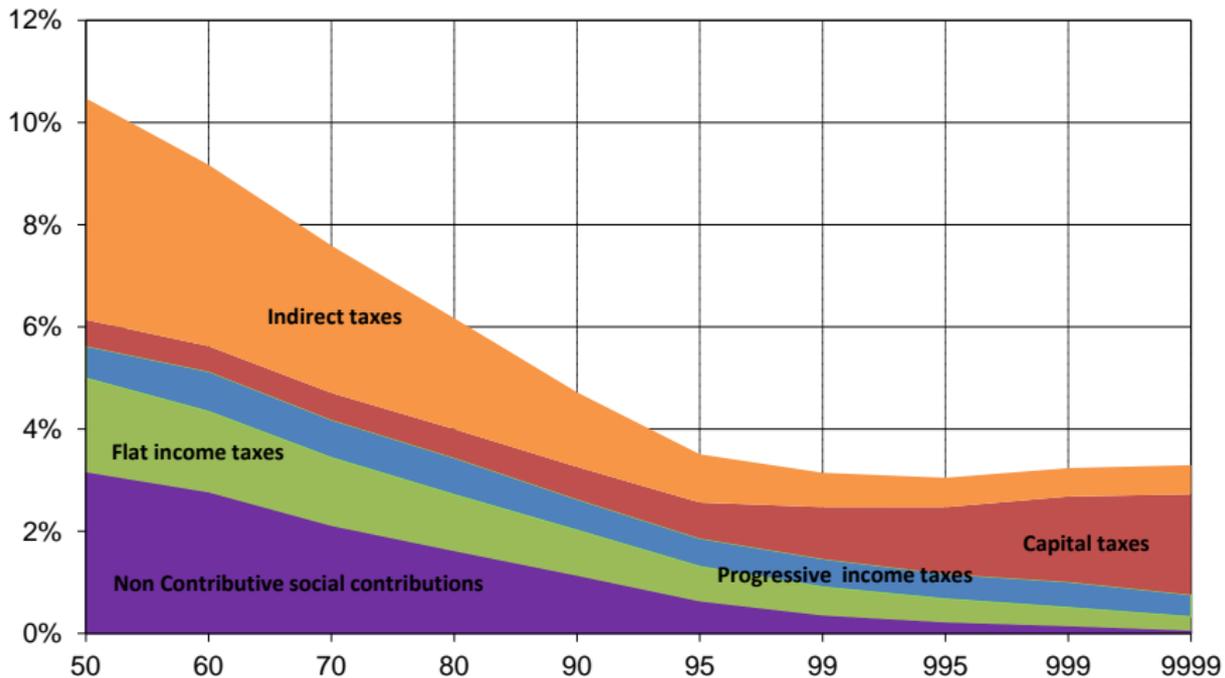
Distribution of pre-tax national income among adults.
Equal-split-adults series (income of married couples divided by two).

FIGURE 8 – Taxes paid by percentile of factor income, France 2018

Distribution of factor national income among working population, i.e. adults aged 25-60 y.o working at least part-time.

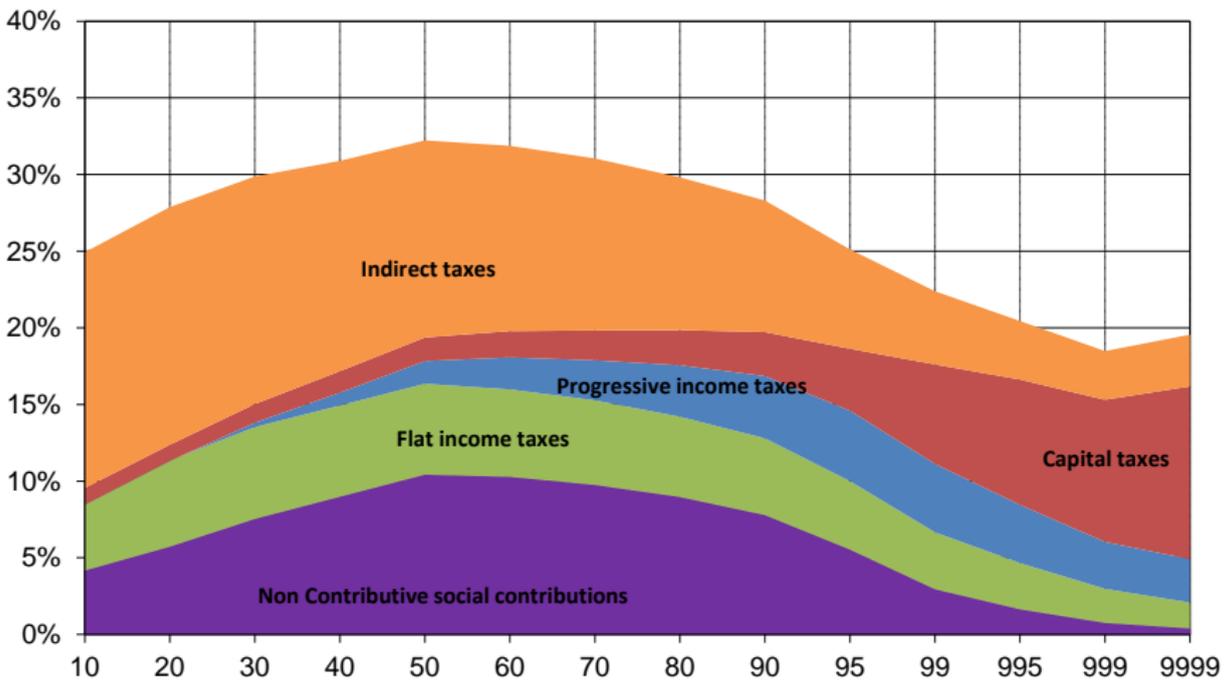
Wealth vs. income

- Wealth as an indicator of contributive capacities
 - Wealth is a complementary indicator of contributive capacities
 - Several taxes are based on wealth (wealth, property and inheritance taxes, ...)
 - Ideally one would be interested in considering lifetime income, which is a combination of income and inherited wealth.
- Complementary indicators of contributive capacities
 - Wealth
 - “Augmented income”: sum of income and wealth divided by life expectancy

FIGURE 9 – Taxes paid by percentile of wealth, France 2018

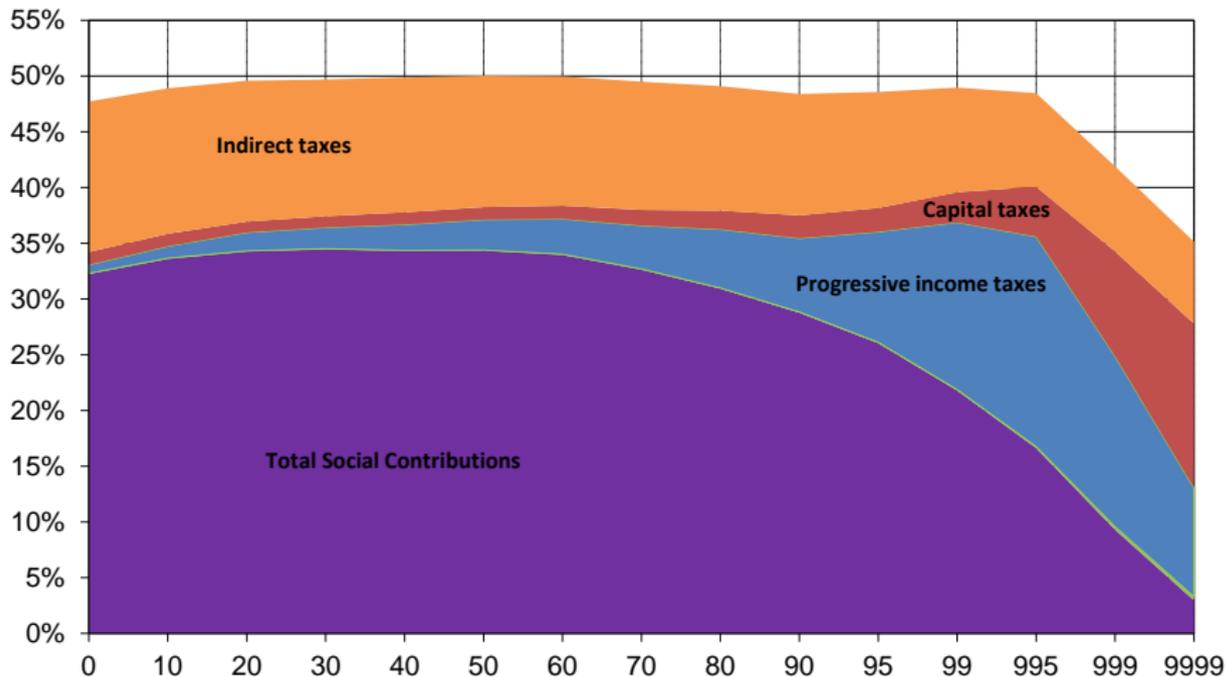
Distribution of wealth among equal-split adults (wealth of married couple divided by two).

FIGURE 10 – Taxes paid by percentile of augmented income, France 2018

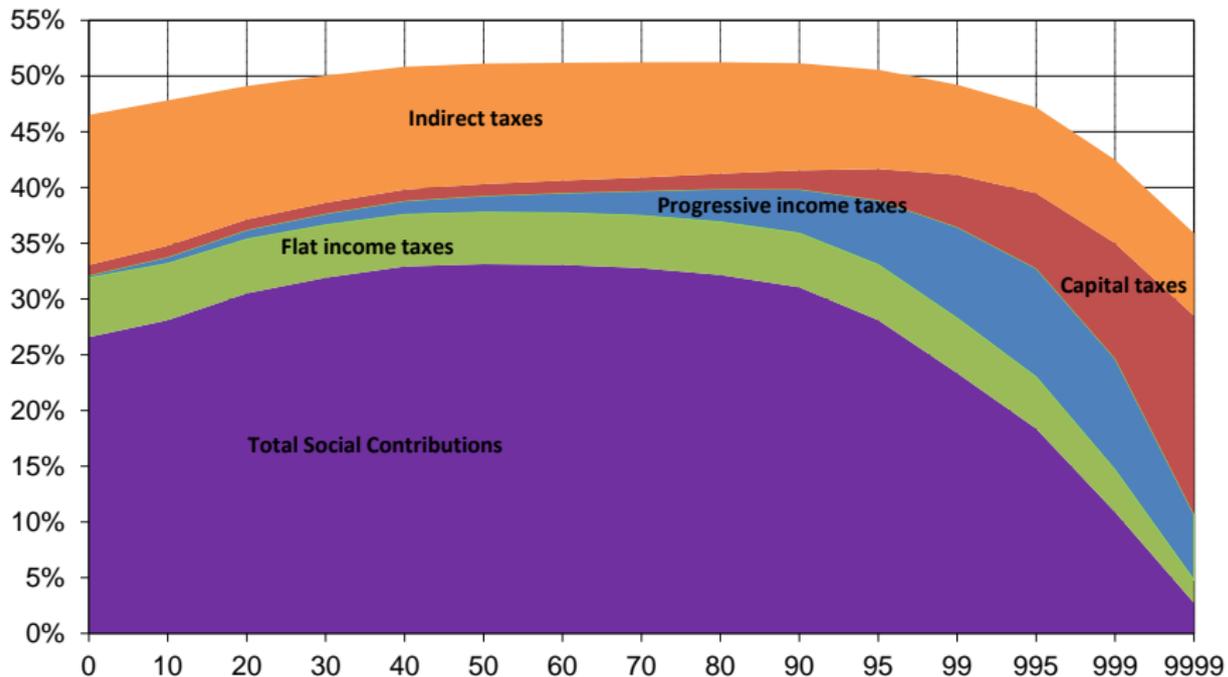


Distribution of augmented income among adults (pretax income + wealth divided by life expectancy).
 Equal-split-adults series (income of married couples divided by two).

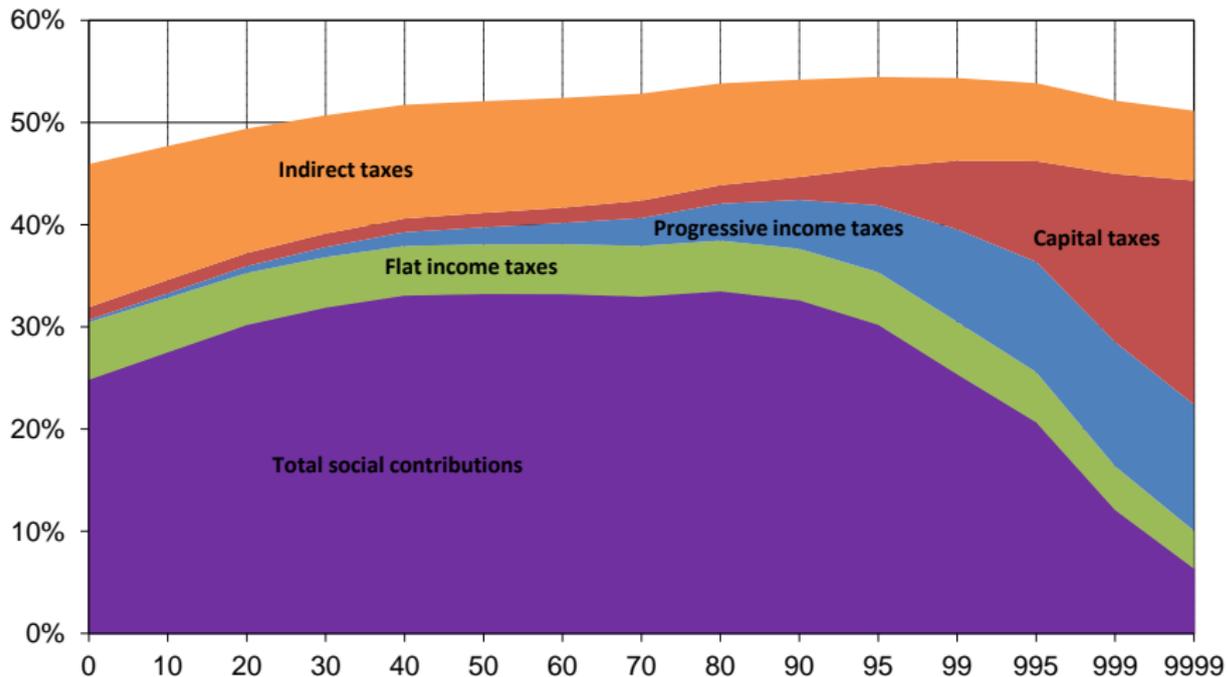
Taxes paid by income groups (factor income): 1990-2018

FIGURE 11 – Taxes paid by percentile of factor income, France 1990

Distribution of factor national income among working population, i.e. adults aged 25-60 y.o working at least part-time.

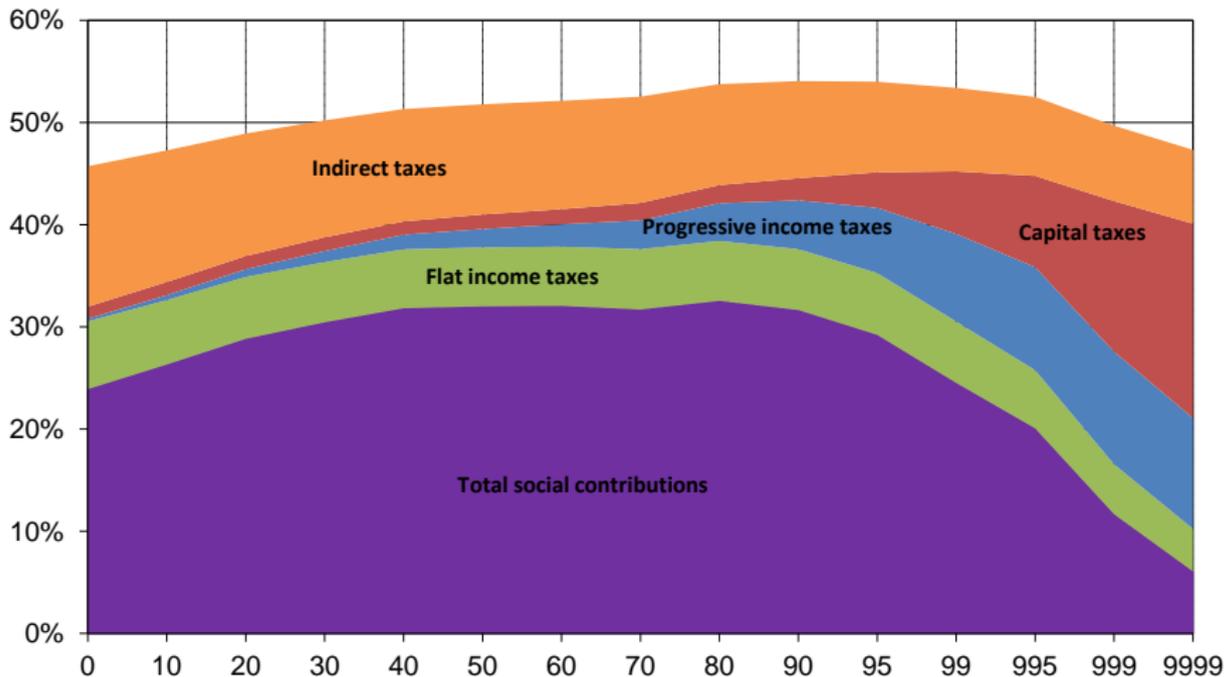
FIGURE 12 – Taxes paid by percentile of factor income, France 2010

Distribution of factor national income among working population, i.e. adults aged 25-60 y.o working at least part-time.

FIGURE 13 – Taxes paid by percentile of factor income, France 2016

Distribution of factor national income among working population, i.e. adults aged 25-60 y.o working at least part-time.

FIGURE 14 – Taxes paid by percentile of factor income, France 2018



Distribution of factor national income among working population, i.e. adults aged 25-60 y.o working at least part-time.

Methods

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Inequality

○○○○○○○○

Tax

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Transfers

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Appendix

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Second findings

- The overall profile of taxation is only mildly progressive
- Redistribution of the French tax and transfer system has increased
 - Reductions in non-contributive SSC for the bottom 50%
 - Tax increase for top 10%
- But tax profile remains regressive at the very top
 - This top-end regressivity was temporary halted in 2013-2016
 - It reappeared in 2017-2018

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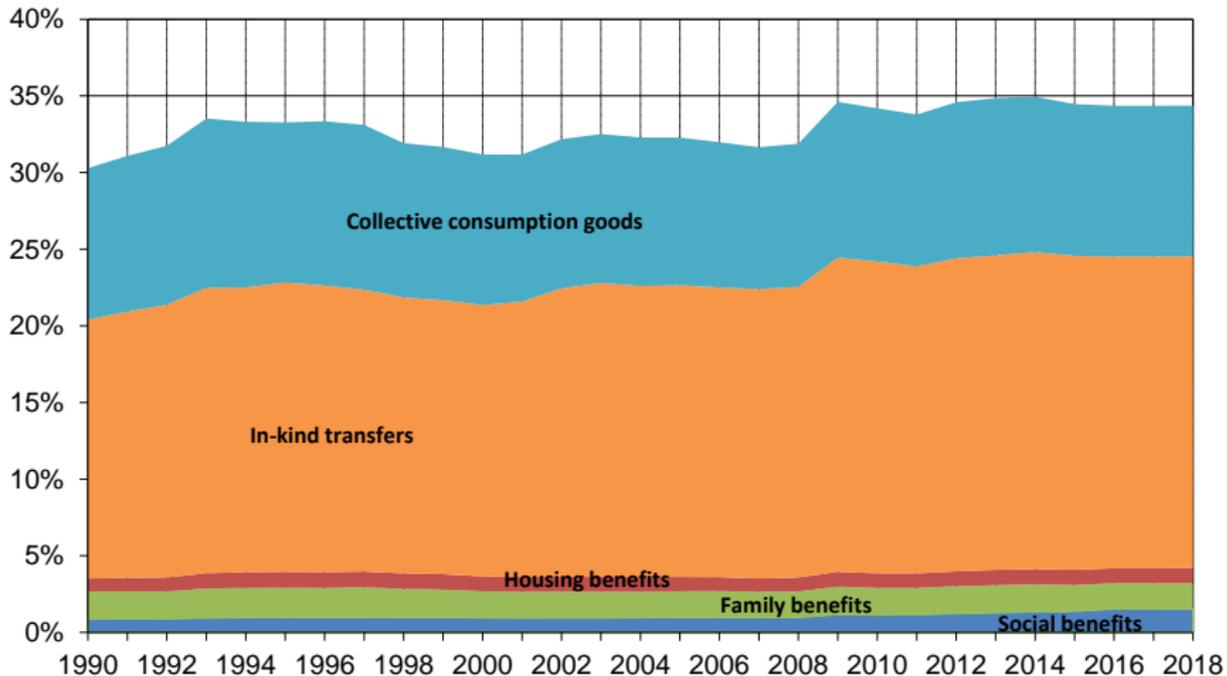
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Decomposition by transfer categories

- Transfers (excluding pensions and unemployment benefits) represent a stable part of national income in France over the 1990-2018 period (30-35%)
- Monetary transfers represent a modest part of these transfers (4% of national income)
 - Family, housing and social benefits

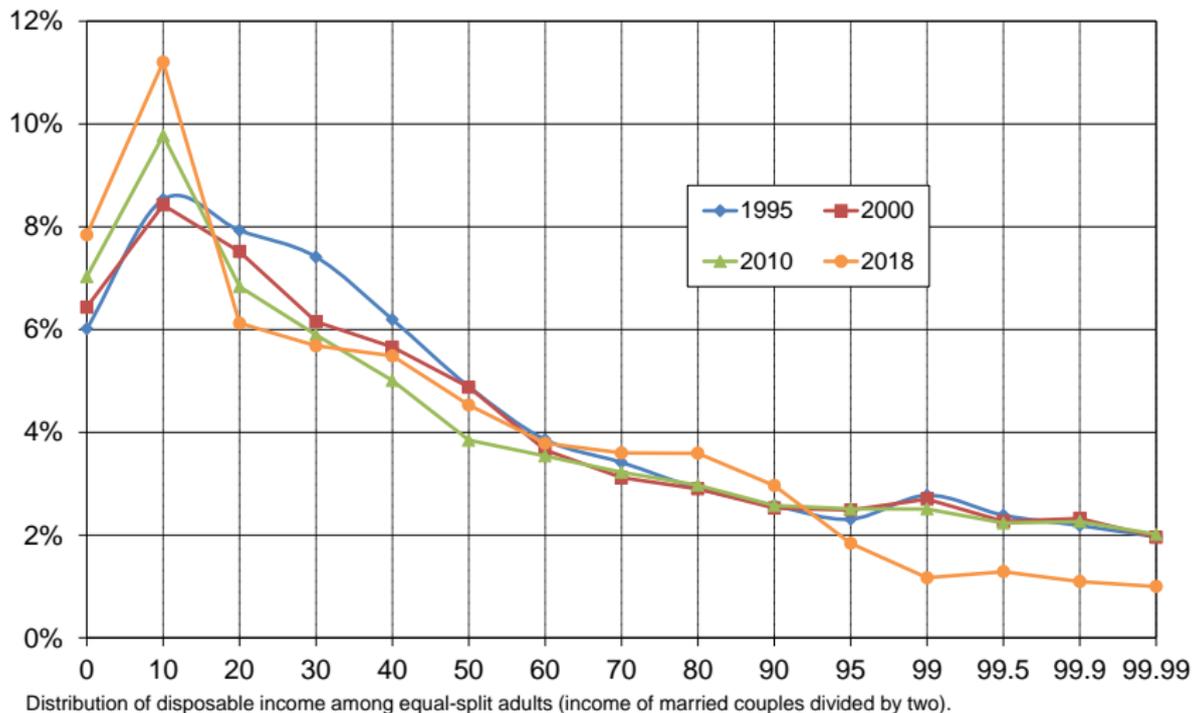
FIGURE 15 – Structure of transfers (% national income), France 1990-2018

Distribution of pre-tax and post-tax national income among adults.
Equal-split-adults series (income of married couples divided by two).

Who benefits from monetary transfers?

- No significant changes over the 1990-2018 period
- Monetary transfers are mainly targeted toward lower income groups
 - Low bottom income groups receive about 8% of average national income in monetary transfers
- But richer individuals still benefit from monetary transfers
 - Middle class: 4% of average national income
 - Top income groups: about 2%

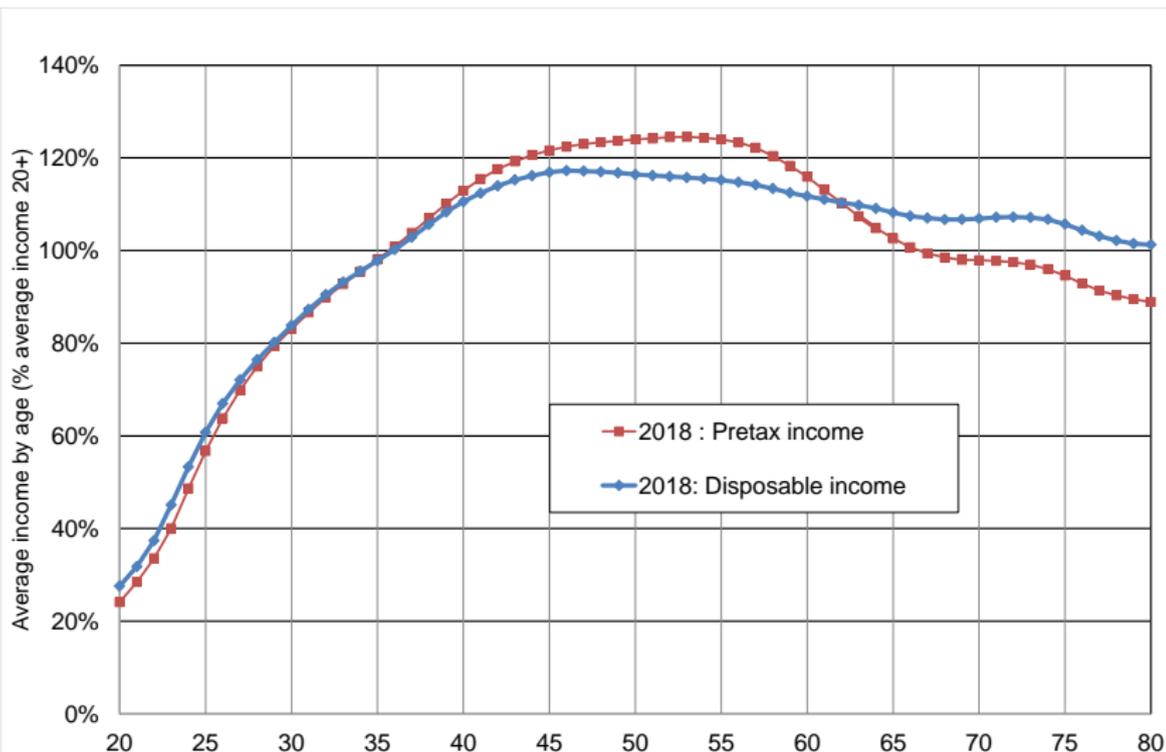
FIGURE 16 – Monetary transfers received (% average income) by disposable income groupe



Intergenerational redistribution?

- Age-based inequality is relatively large
- But secondary redistribution seems to have little impact on the relative income of the different age groups
- The relative low position of the younger (20-30 yo) seems virtually unaffected
 - Most younger individuals are excluded from social and family benefits
- Older individuals (> 60 yo) tend to benefit a little more than the others, mostly at the expense of the 50-60 yo.

▶ 1995

FIGURE 17 – Age-income profile in France in 2018, Pretax vs Disposable

Distributions of pretax national income and disposable among adults.
Equal-split-adults series (income of married couples divided by two).

Conclusion

- Estimation of post-tax (disposable) Distributional National Accounts (DINA) for France
 - Series can be broken down by percentiles age, tax and transfer categories over the 1990-2018 period
 - Next step: extend series back to 1900
- Main findings
 - Taxes and transfers have counteracted the increase in pre-tax inequality in France (but not in the U.S)
 - But the tax system reduces more inequality in the U.S than in France
 - Differences in overall inequality between Fr and US explained by differences in primary inequality rather than in secondary redistribution
 - Key role of primary redistribution on inequality
- Need to duplicate this work to other countries to better understand the respective role of primary and secondary redistribution on inequality

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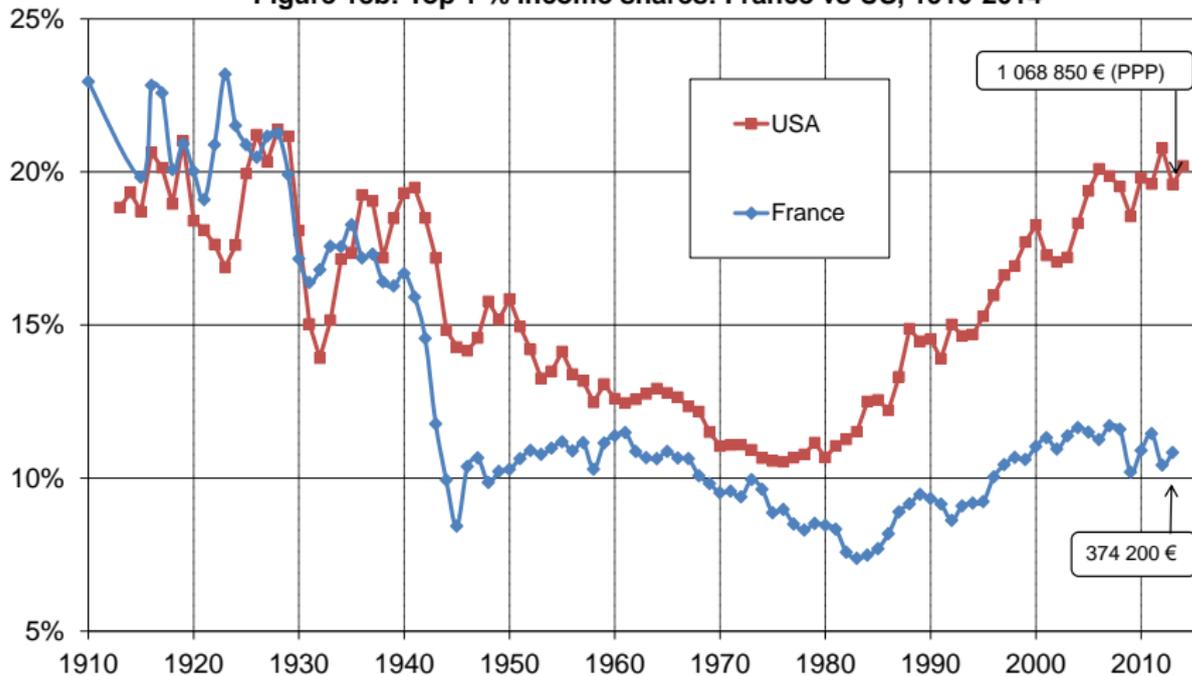
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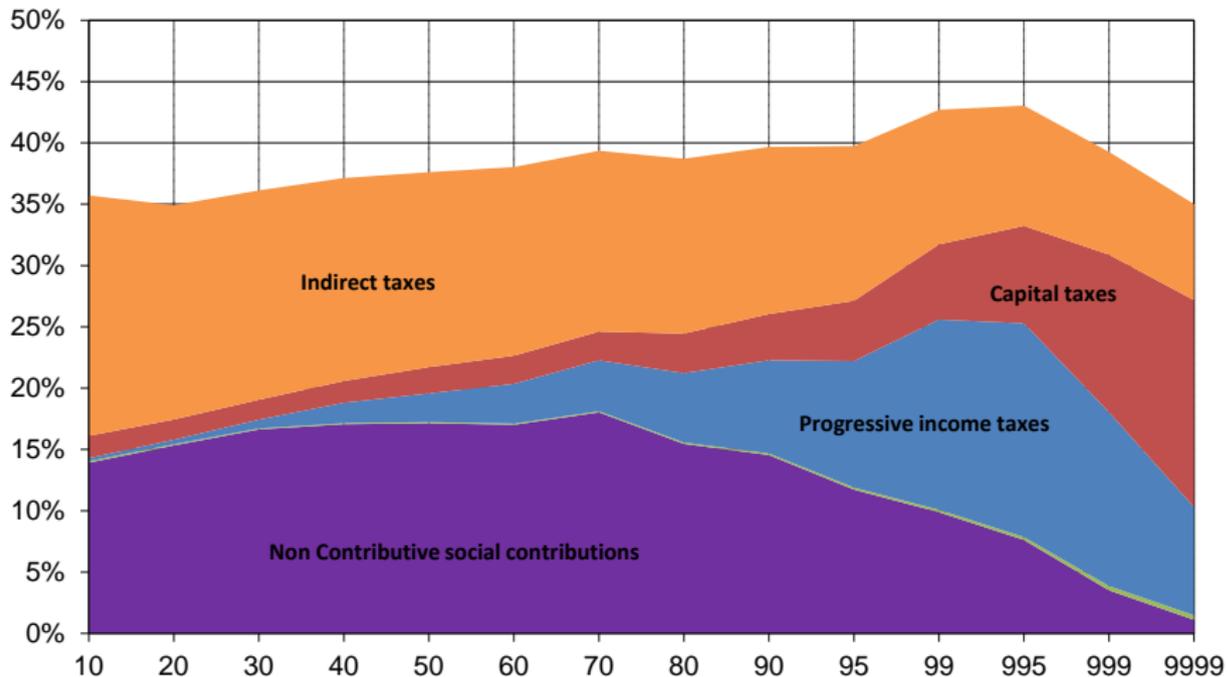
FIGURE 18 – Top 10% income shares (Pretax income): France vs. U.S

Figure 18b: Top 1 % income shares: France vs US, 1910-2014



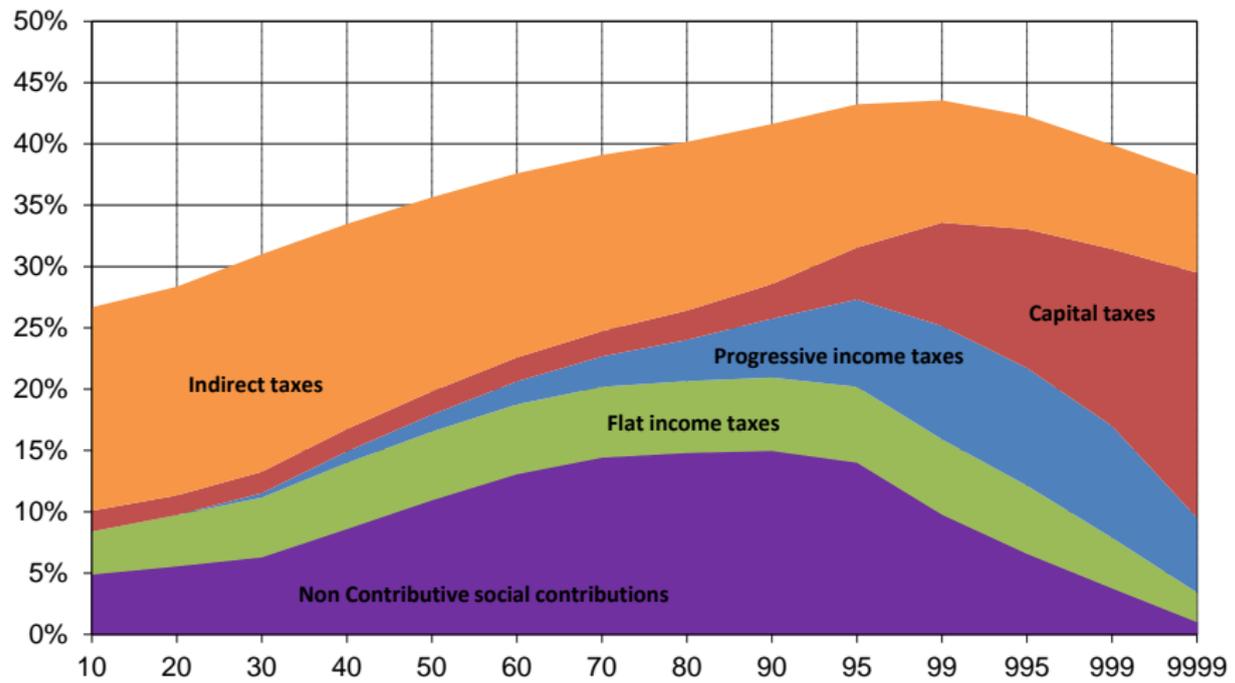
Distribution of pretax national income (before all taxes and transfers, except pensions and unempl. insurance) among adults. Equal-split-adults series (income of married couples divided by two).

Note: Distribution of pretax and disposable income among adults. Equal-split-adults series (income of married couples divided by two). [▶ Back](#)

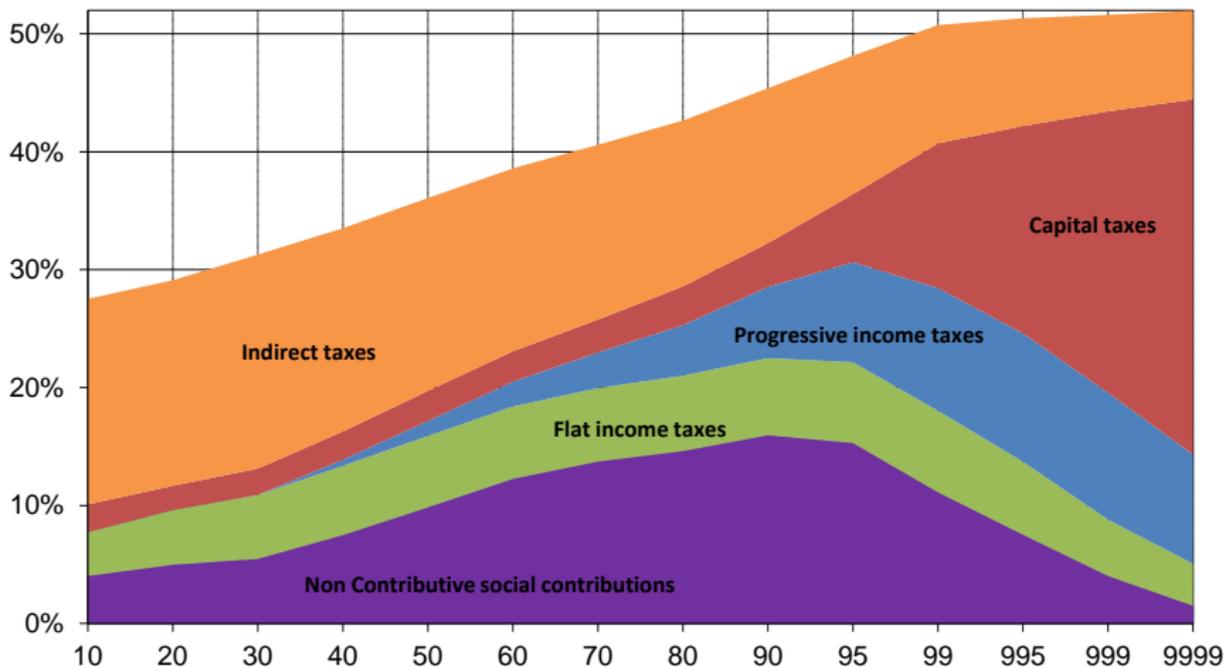
FIGURE 19 – Taxes paid by percentile of pretax income, France 1990

Distribution of pre-tax national income among adults. Equal-split-adults series (income of married couples divided by two).

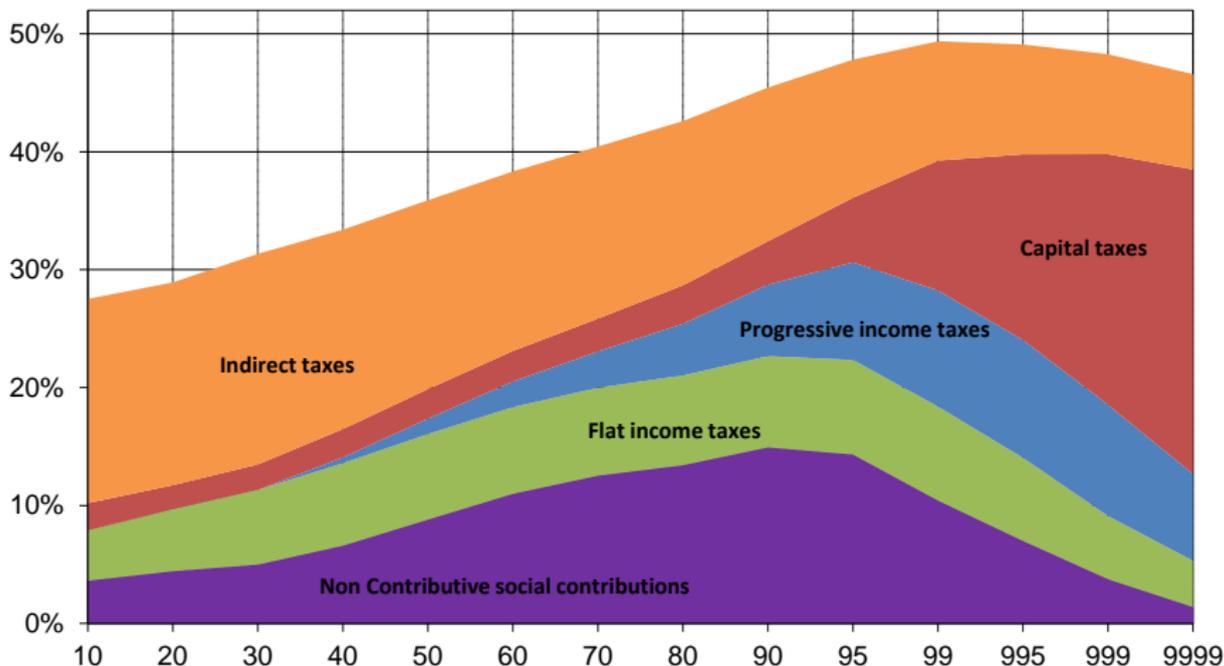
FIGURE 20 – Taxes paid by percentile of pretax income, France 2010



Distribution of pre-tax national income among adults.
Equal-split-adults series (income of married couples divided by two).

FIGURE 21 – Taxes paid by percentile of pretax income, France 2016

Distribution of pre-tax national income among adults.
Equal-split-adults series (income of married couples divided by two).

FIGURE 22 – Taxes paid by percentile of pretax income, France 2018

Distribution of pre-tax national income among adults.
Equal-split-adults series (income of married couples divided by two).

FIGURE 23 – Age-income profile in France in 1995. Pretax vs Disposable

From fiscal income to pretax income

The gap between fiscal income and national income can be decomposed into three components:

- 1 Tax-exempt labor income
- 2 Tax-exempt capital income
- 3 Production taxes

How we deal with them:

- 1- **Tax-exempt labor income:** mainly non-contributive social security contributions (SSCs) and, to a lesser extent, non-taxable compensation items (health benefits and a number of other in-kind benefits)
 - We compute SSCs (employer and employee) by simulating the complexity of the different SSC schemes each year
 - In the absence of specific information, we simply impute non-taxable compensation items in proportion to fiscal labor income.

From fiscal income to pretax income

2- Tax-exempt capital income:

- Fully tax-exempted capital income components: income from life insurance assets, imputed rents and deposit and saving accounts
⇒ Imputations based on wealth and housing surveys on the basis of labor income, financial income and age. We then attribute the corresponding asset income flows on the basis of average rates of return observed in national accounts for each asset class
- Some capital income components are included into the income tax returns but their aggregate may differ from those reported in national accounts (due to tax avoidance or tax evasion)
⇒ We simply adjust proportionally each of these capital income components in order to match their counterpart in national accounts. Assumption: tax evasion and tax avoidance behaviors do not vary along each income-specific distribution (which is very conservative)
- Corporate retained earnings and corporate taxes are not directly received or paid by individuals and are therefore excluded from income tax
⇒ We impute them in proportion to individual dividends, life insurance income, and interests

From fiscal income to pretax income

3- Production taxes: are split into 4 categories: i) sales and excise taxes (which include value added taxes and several taxes on energy products, tobacco, alcohol beverages, among others); ii) professional taxes; iii) household property taxes; iv) taxes on wages.

- Commercial taxes and, sales and excise taxes are borne by consumers only, proportionally to consumption
- We assume that household property taxes only fall on housing assets and attribute them to individuals in proportion to their housing assets.
- We consider taxes on wages only fall on labor and impute them proportionally to social security contributions

⇒ Our implicit tax incidence assumptions are relatively rudimentary and could be improved in future estimates. However, we have tested a number of alternative tax incidence assumptions, and found only second-order effects on the level and time pattern of our pretax income series