

# Intra-cohort Income Inequalities in France

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# Introduction

- Part of the project in distributional issues in French NTA:
  - Consumption and income of the less educated (d'Albis and Badji, 2002)
  - Here, we focus on income inequalities.
- In macro, it is well established that GDP is an imperfect indicator of welfare; some authors suggested to also take inequalities into account:
  - Cordoba and Verdier (JEDC, 2008) highlight the fact that it depends on risk aversion.
  - Fleurbaey and Gaulier (SJE, 2009) show it may change the ranking of countries (even though the correlation with GDP remains strong, see also Dollar et al EP, 2015).
  - Jones and Kleenow (AER, 2016) show it matters for most developed countries.

# Introduction

- In micro, what would be the relevant sample for measuring inequality?
- The main assumption of the paper: inequality within age-group matters.

To whom one's compare?

- Our objective: evaluate those inequality for France and estimate how they evolve over the life-cycle and across cohorts.

## Annual variables over 1996-2014

Gross Income: Total income net of social contributions related to retirement and unemployment.

Disposable income: Disposable after tax income.

“Pre-tax income” in Bozio, Garbinti, Goupille-Lebret, Guillot and Piketty, 2018

## Computation of descriptive statistics

Annual surveys from the INSEE give disposable incomes.

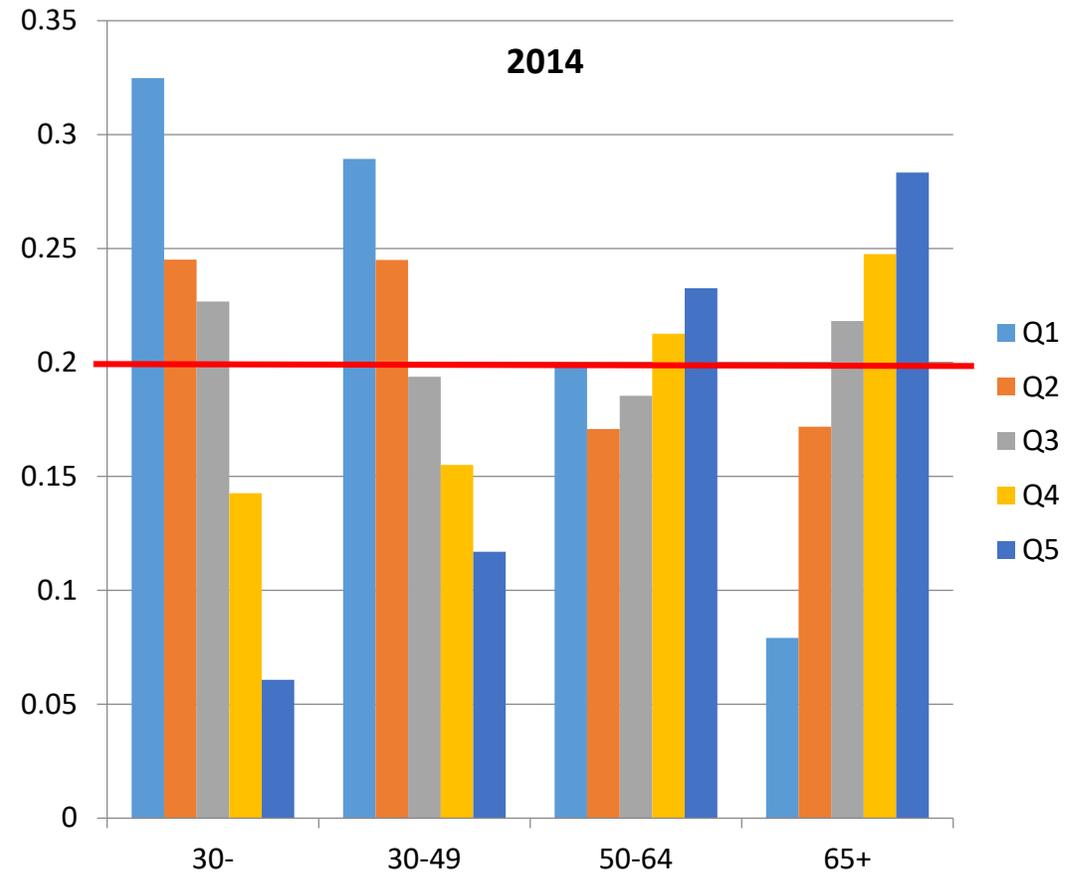
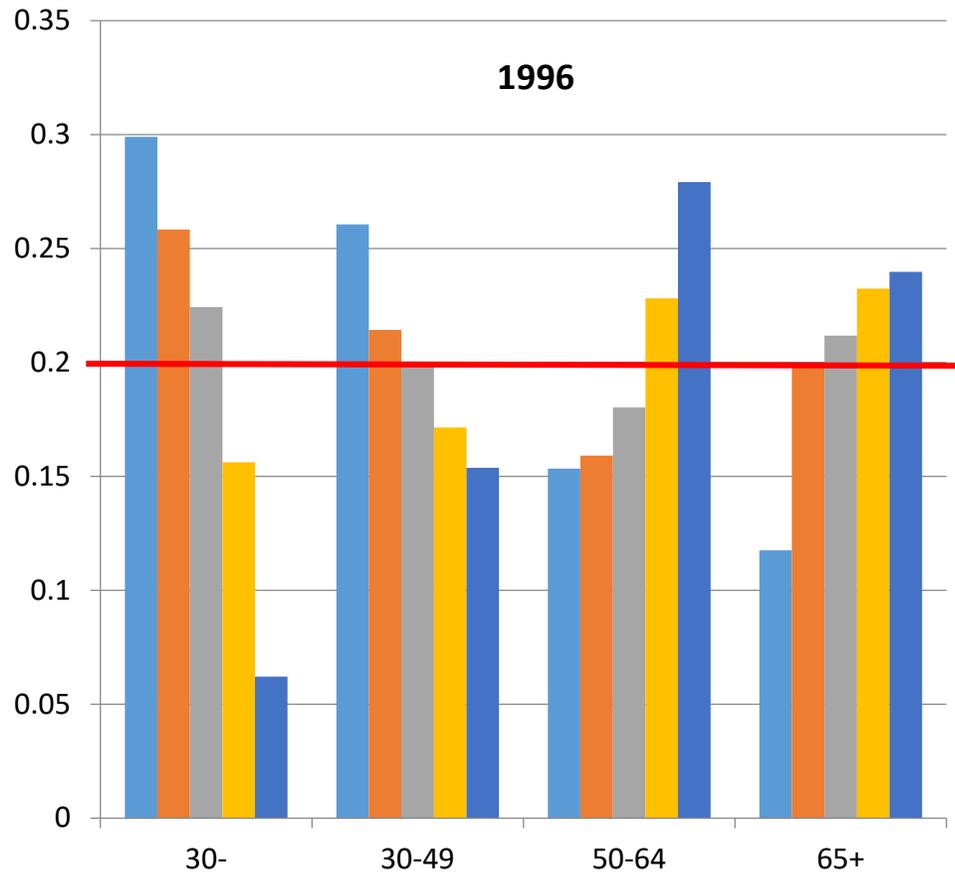
We computed the gross income by applying the relevant social contributions rates.

Households where the person of reference is aged from 25 to 84 years old.

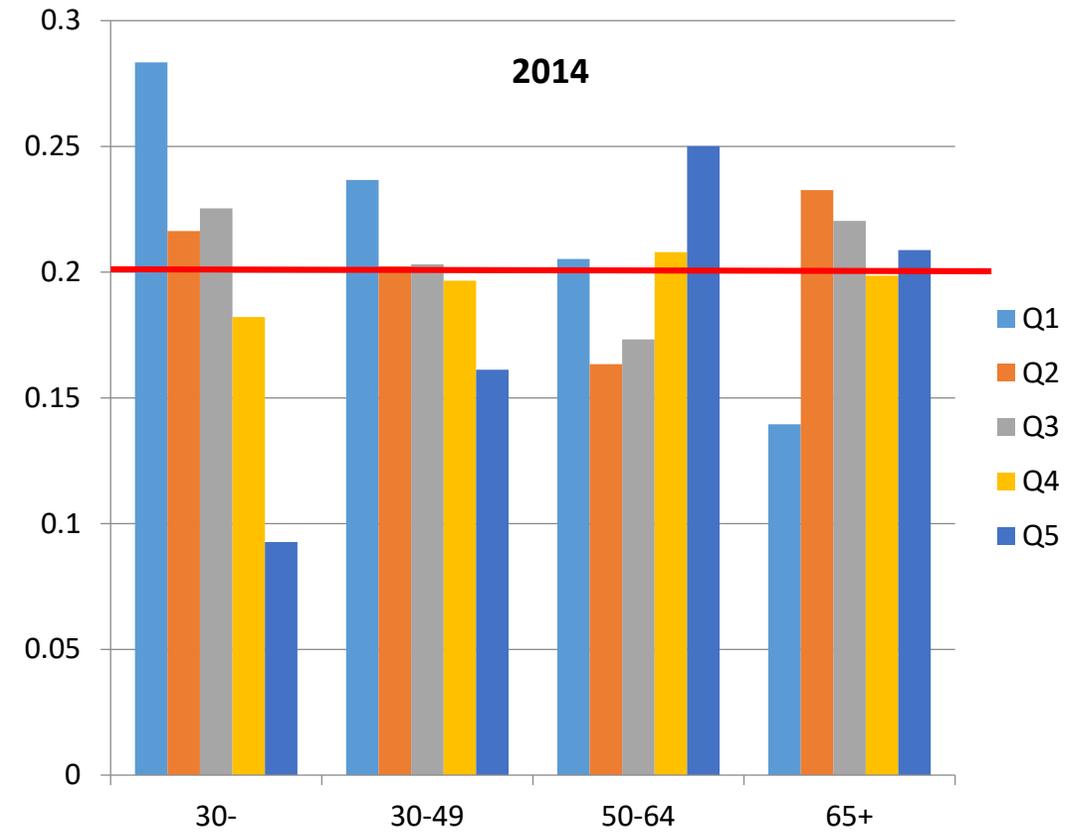
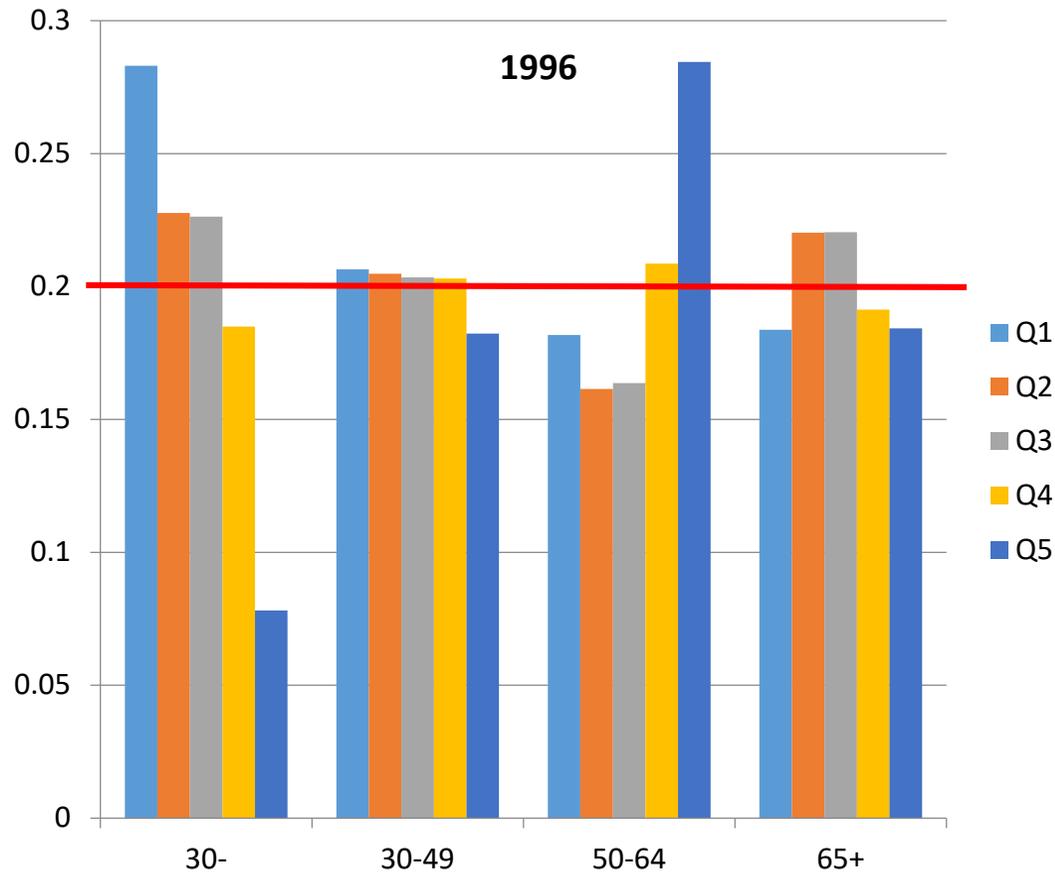
We grouped the observations in various age groups.

Extreme ages are excluded.

# Share of various age group in each quantile, Gross Income



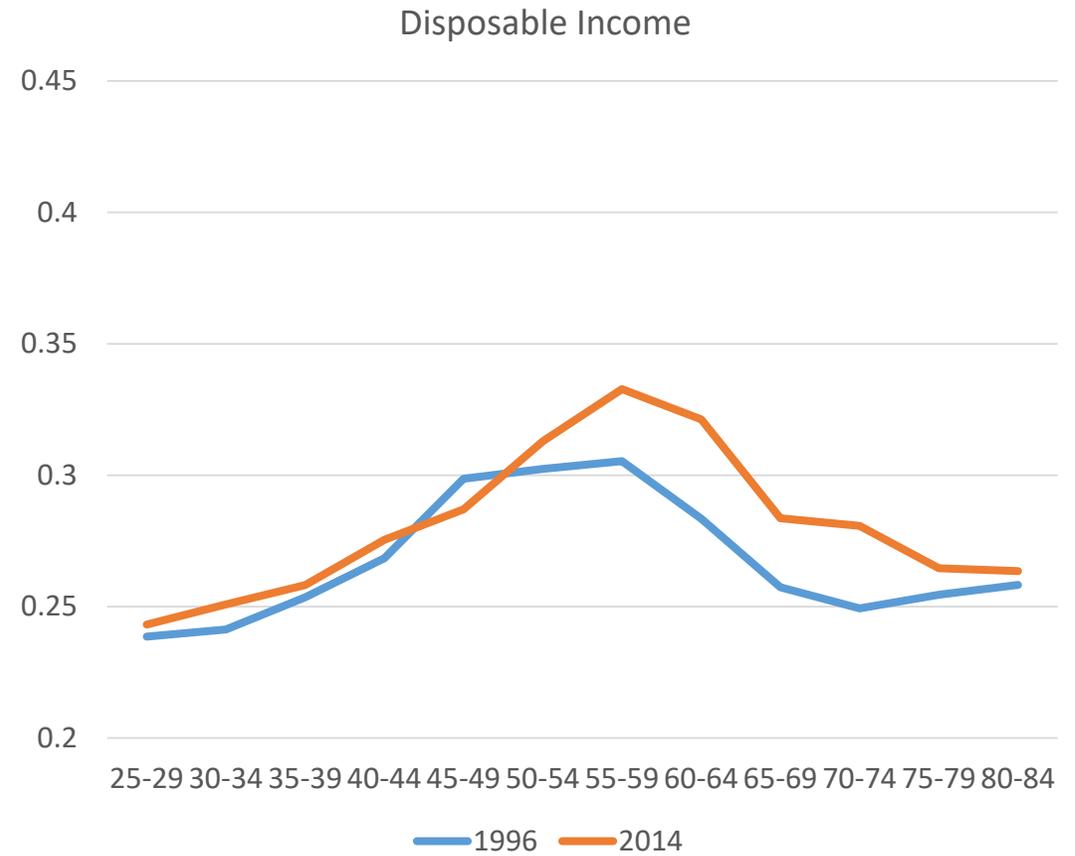
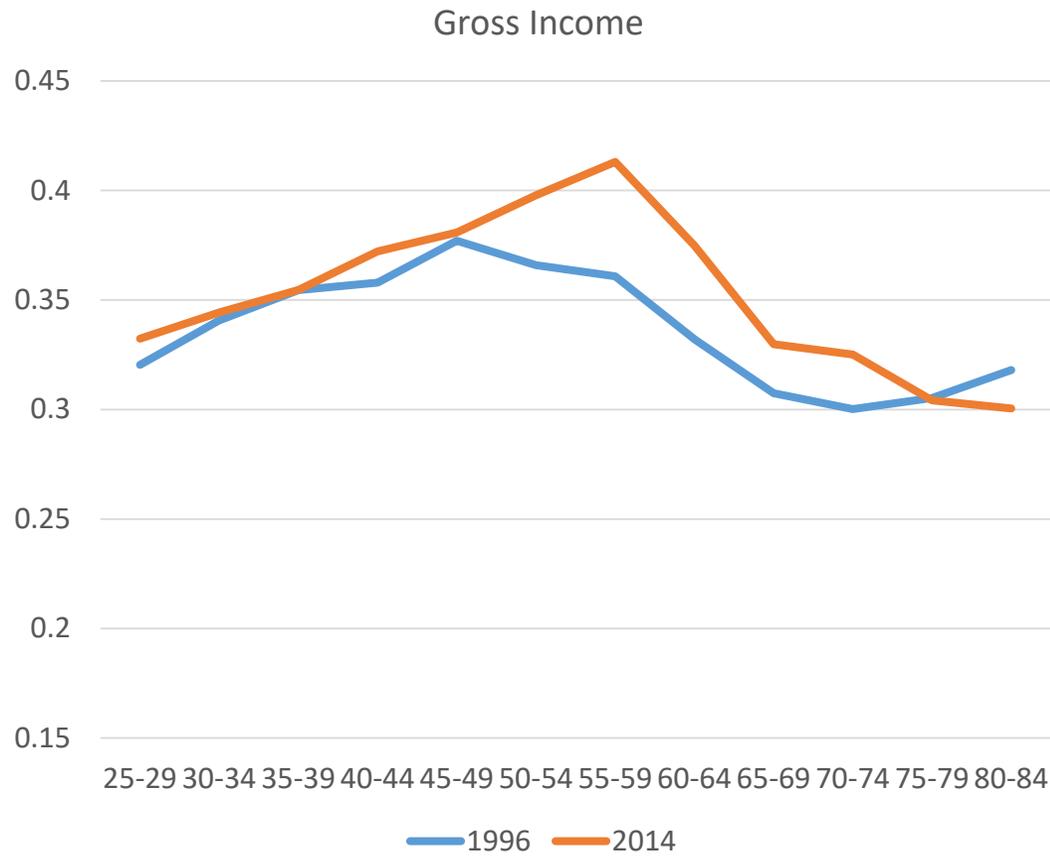
# Share of various age group in each quantile, Disposable Income



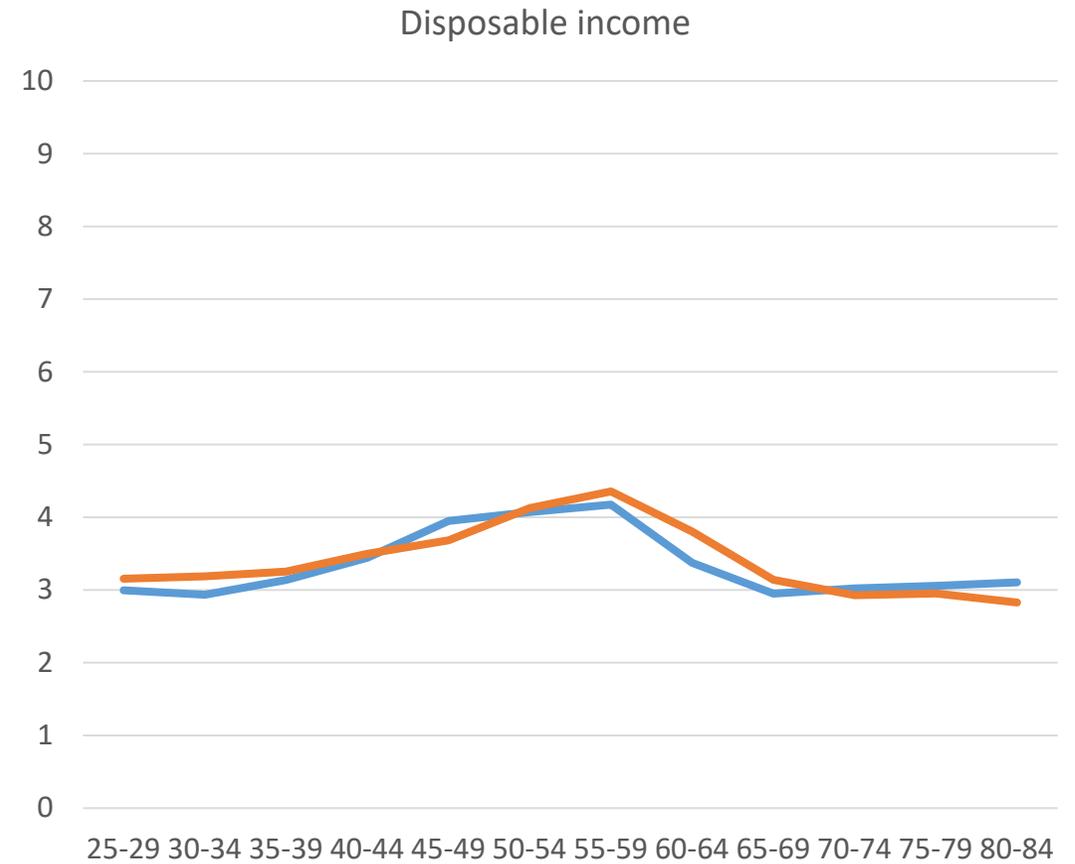
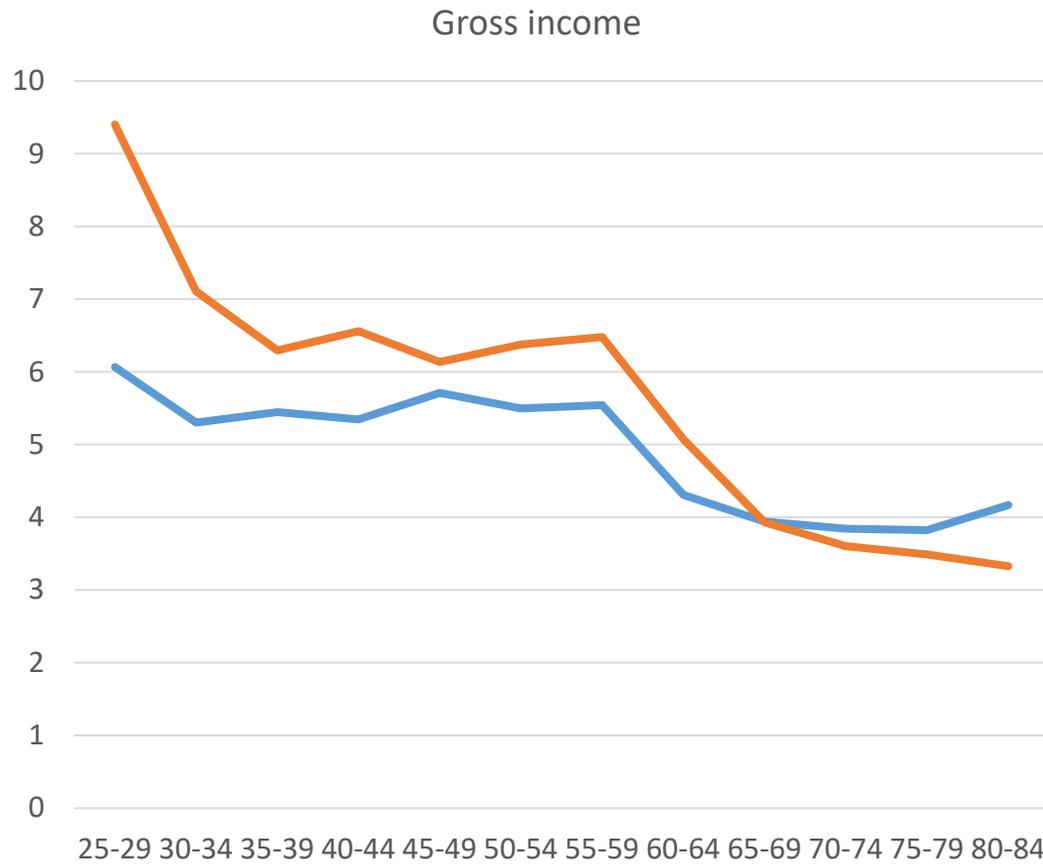
## The analysis of the shares of age groups in the quantiles reveal:

- The young's are more likely to be in Q1 and the old's are more likely to be in Q5.
- Gross income: inequality within age groups have increased except for 50-64 y. o.
- Disposable income: no noticeable change over time.
- The socio-fiscal system:
  - reduces inequalities within ages groups,
  - has compensated for the increase in inequality.

# Gini by age groups in 1996 and in 2014



# Decile ratio by age group in 1996 and in 2014



## Inequality indicators by age reveal:

- A hump-shaped distribution (except for Decile ratios computed with Gross income).
- Inequality seems to increase at middle-ages and the hump-shape becomes more visible.
- The socio-fiscal system strongly reduces inequality among the youth (especially among the extreme part of the distribution).
- Might be that cohort and period effects play a role: we need to control for that.

# Pseudo-cohort estimation strategy (Deaton and Paxson, 1994)

We assume that the three effects (age, cohort and period) that we are seeking to estimate are additive. The model equation is written as follows:

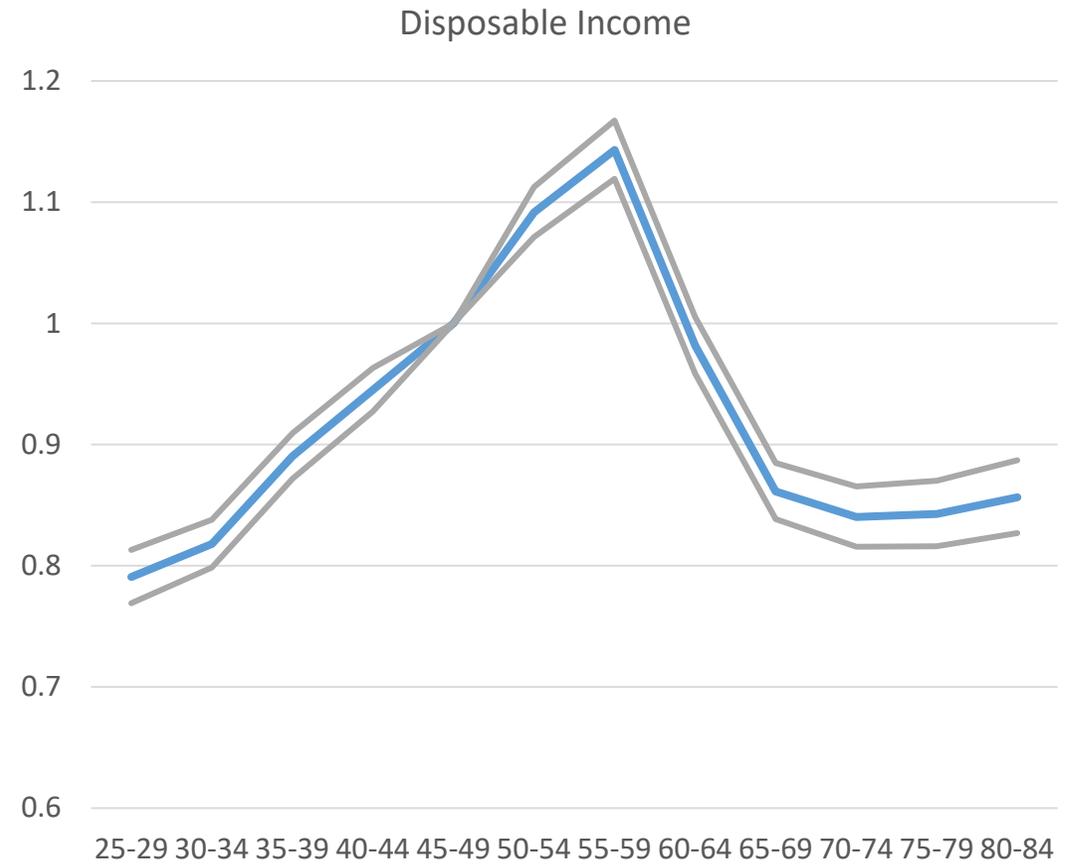
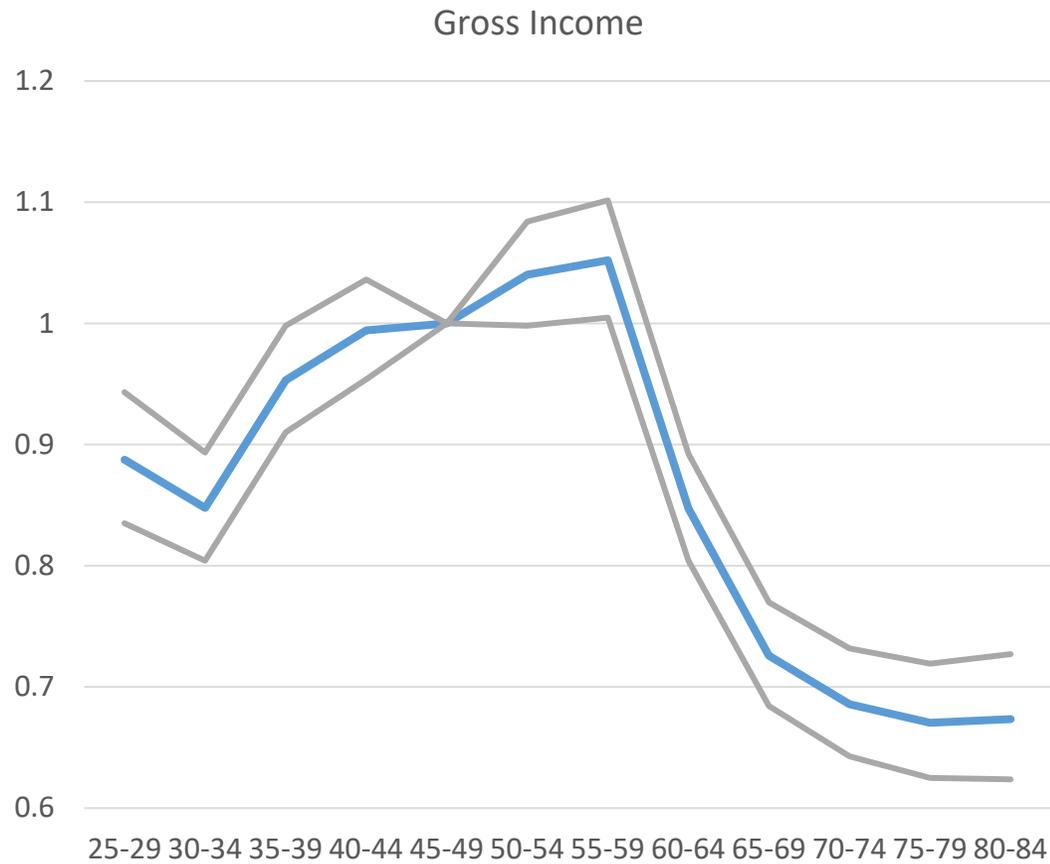
$$\bar{y}_{jt} = \mu + \sum_i \alpha_i 1_{a_{jt}} + \sum_c \beta_c 1_{j=c} + \sum_t \gamma_t 1_{t=p} + \bar{\varepsilon}_{jt}$$

where  $\bar{y}_{jt}$  represents the explained variable (the Gini or the log of the decile ratio) related to cohort  $j = 1913, 1914, \dots, 1988$  and survey dates  $t = 1996, 1997, \dots, 2014$ ,  $1_{a_{jt}}$  represent the indicators of the five-year age brackets from 25-29 years old to 80-84 years old associated with cohort  $j$  at date  $t$ ,  $1_{j=c}$  represent the indicators of the cohorts, and  $1_{t=p}$  represent the indicators associated with survey dates  $t$ .

# Gini as a function of the age group, model controlled for the date of birth and the period. 45-49 y.o.=1

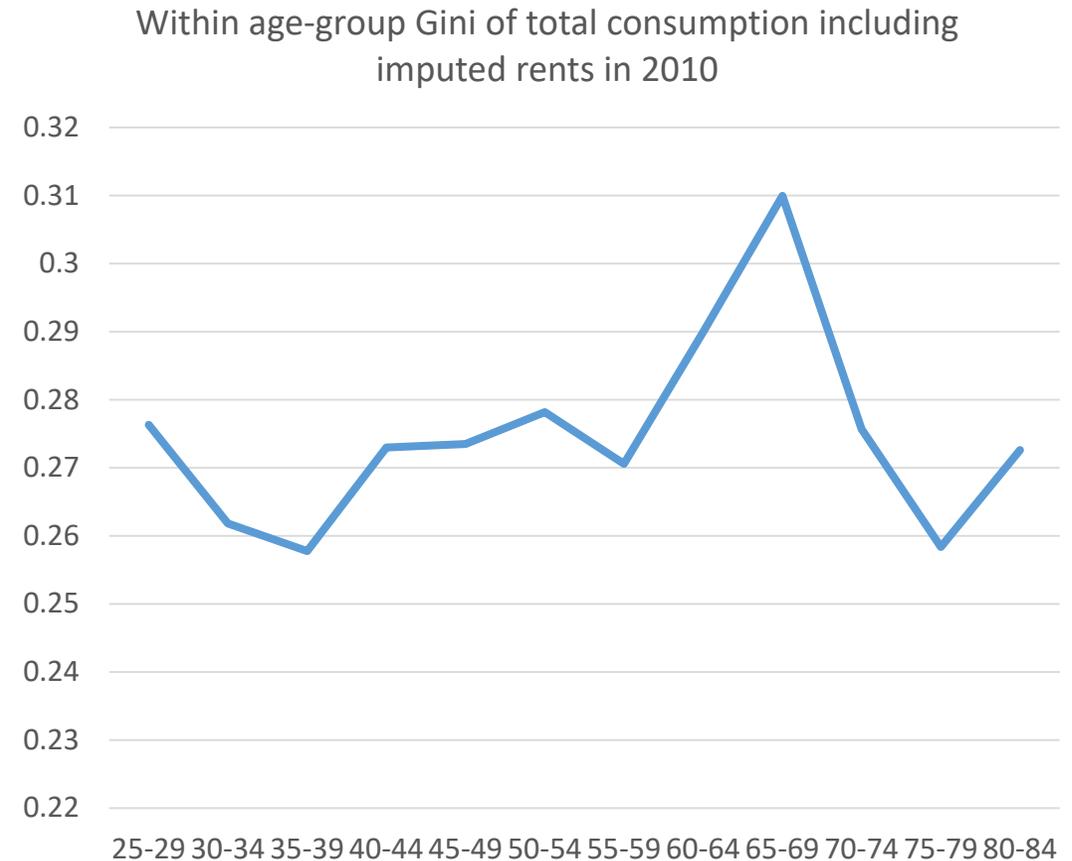


# Decile ratio as a function of the age group, model controlled for the date of birth and the period. 45-49 y.o.=1

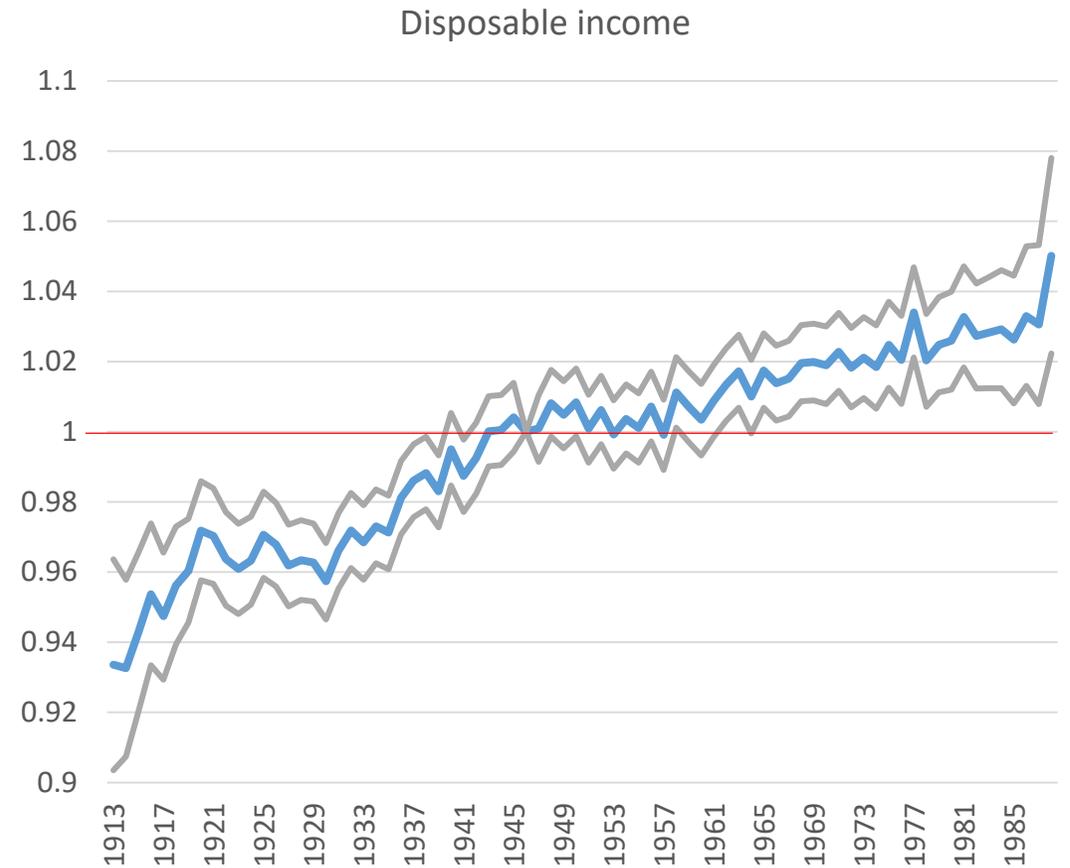
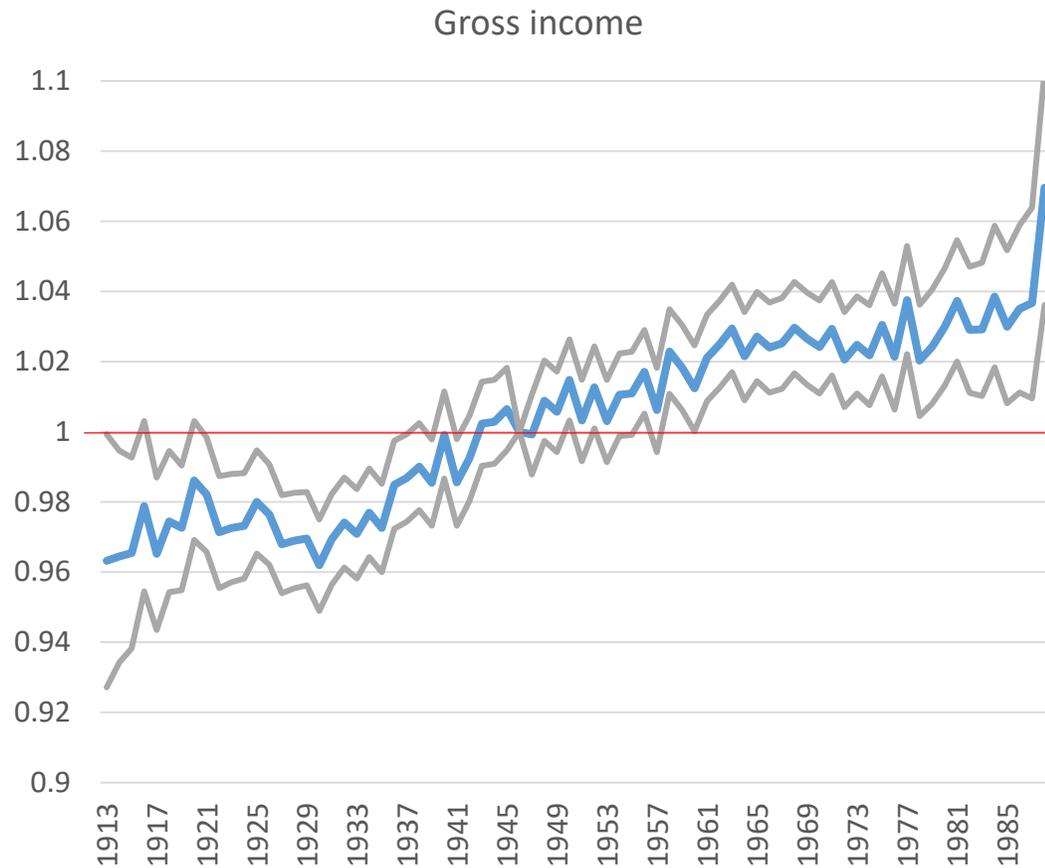


## Strong evidence that within age group inequalities are a hump-shaped function of age.

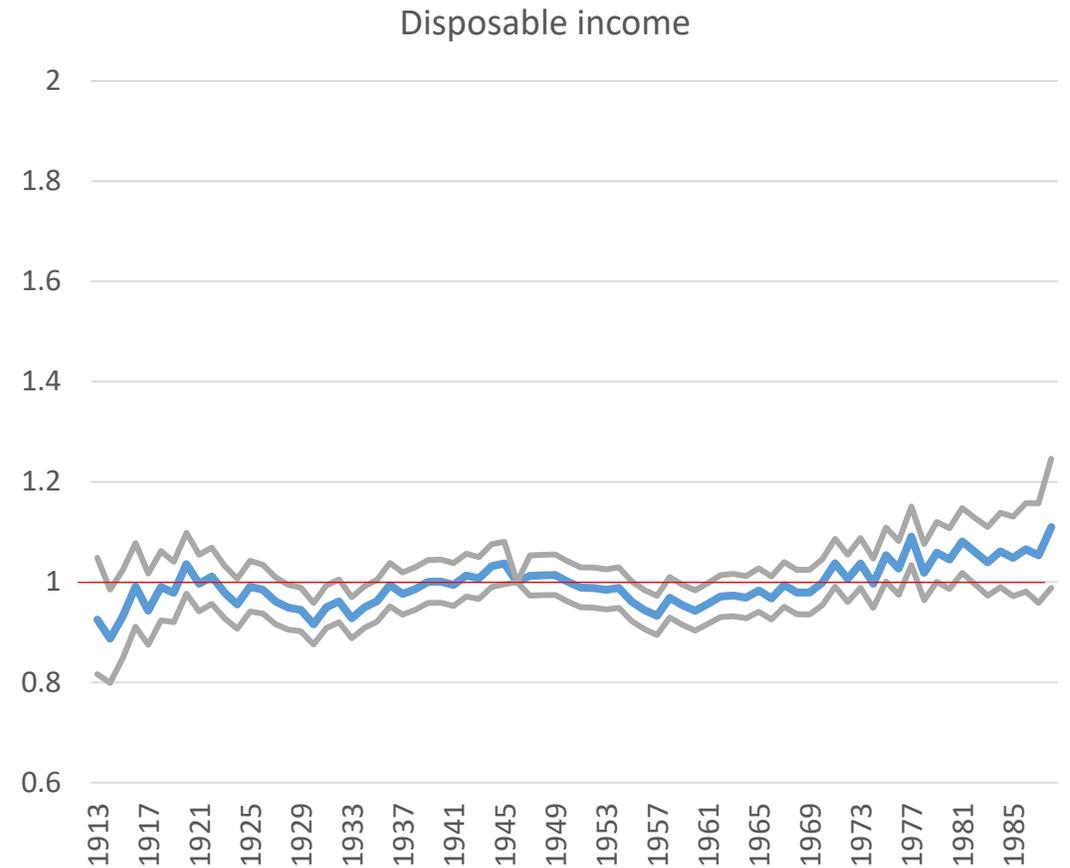
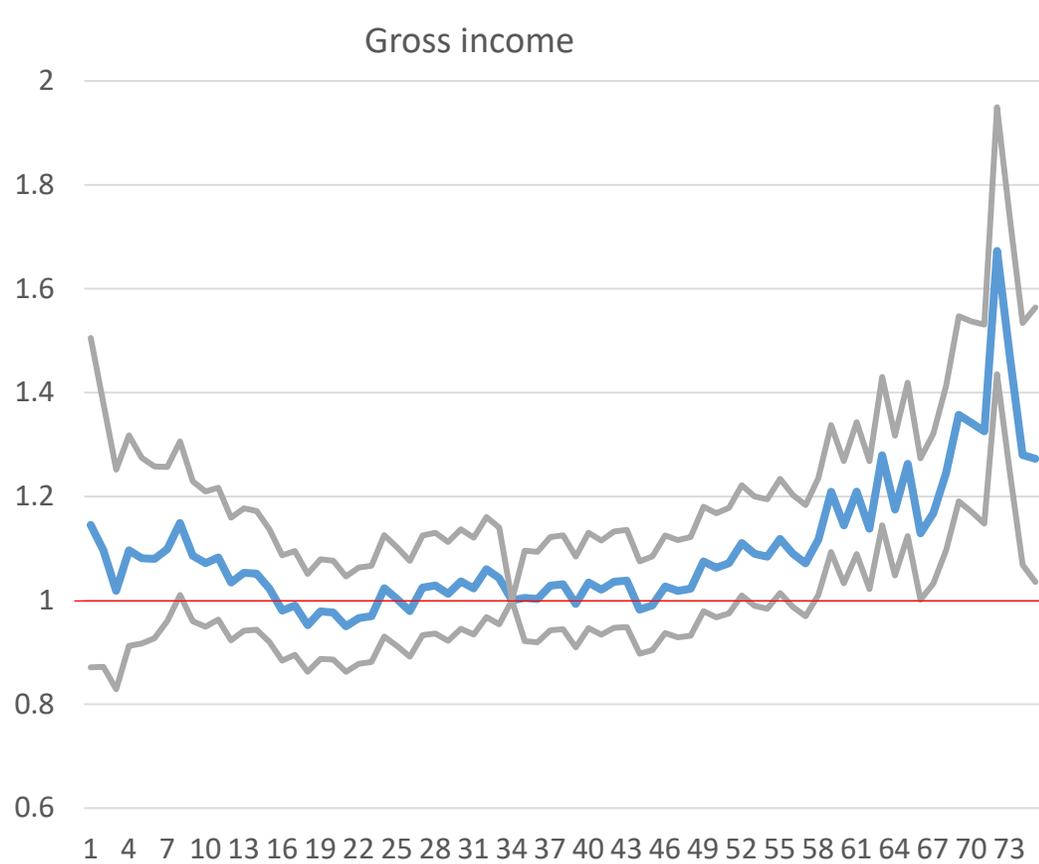
- Robust to other definitions of age, like the prospective age.
- Might also be obtained with consumption data.  
an example for 2010  
with another survey =>
- So why “the youth” (and some “experts”) do not believe in it?



# Gini as a function of the date of birth, model controlled for the age group and the period. 1946=1



# Decile ratio as a function of the date of birth, model controlled for the age group and the period. 1946=1



## Conclusions

- A clear increase in inequality across cohorts.
- A socio-fiscal system that clearly reduce inequality when measured by using the extreme.
- Further research can be done to compute a composite indicator that include both the income and the inequality.