

JERONIMAS STROINOVSKIS LECTURE 2024

THE DYNAMICS OF LIFETIME EARNINGS

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WHY CARE ABOUT LIFETIME INCOMES ?

A major problem in interpreting evidence on the distribution of income is the need to distinguish two basically different kinds of inequality ; temporary, short-run differences in income, and differences in long-run income status....

Consider two societies that have the same distribution of annual income. In one there is great mobility and change so that the position of particular families in the income hierarchy varies widely from year to year. In the other, there is great rigidity so that each family stays in the same position year after year. Clearly, in any meaningful sense, the second would be the more unequal society. The one kind of inequality is a sign of dynamic change, social mobility, equality of opportunity ; the other, of a status society.

Milton Friedman (1962)

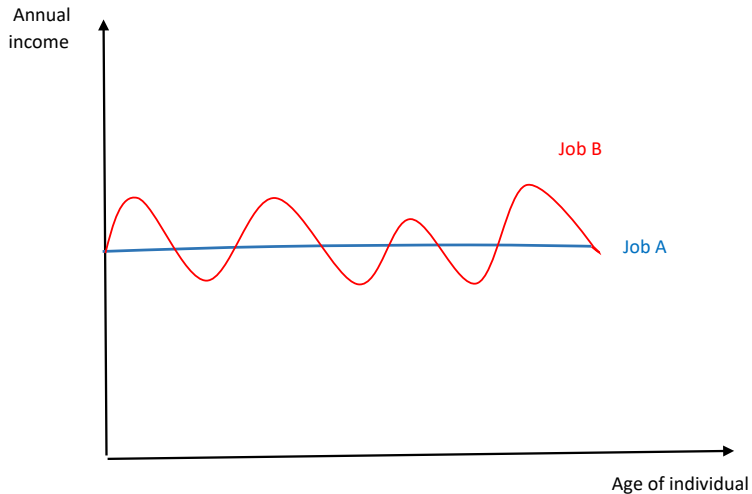
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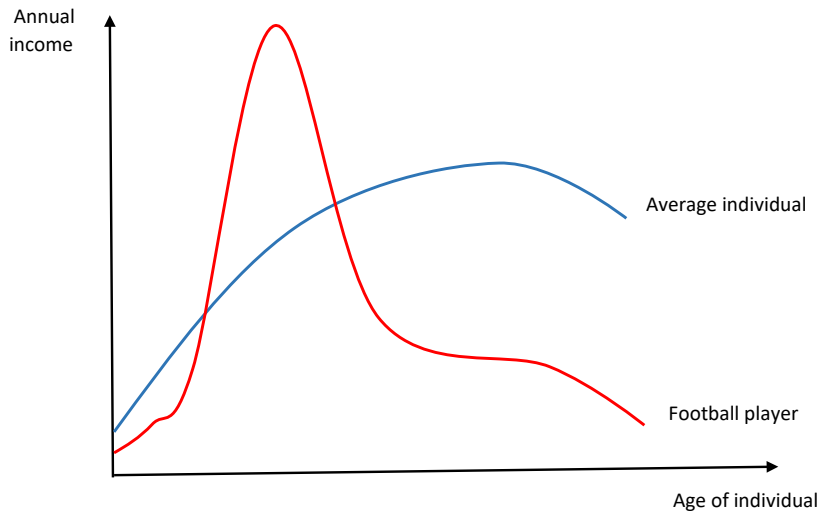
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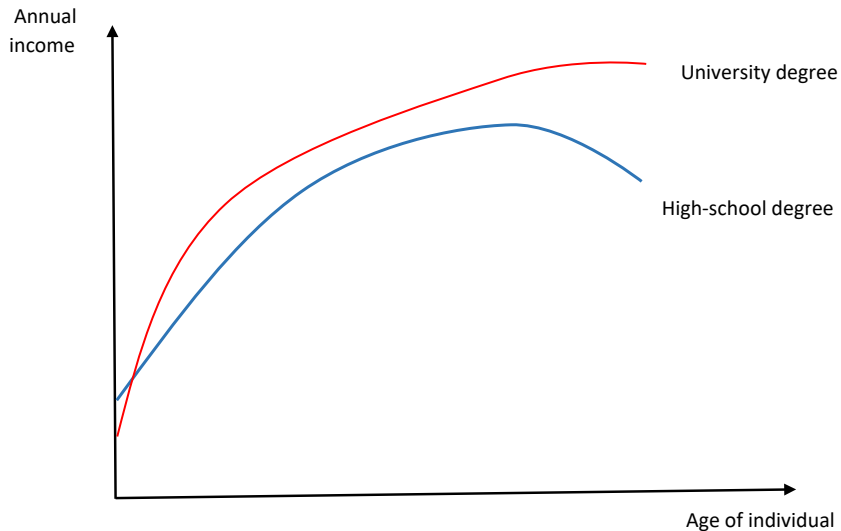
LIFETIME EARNINGS PATTERNS I



LIFETIME EARNINGS PATTERNS II



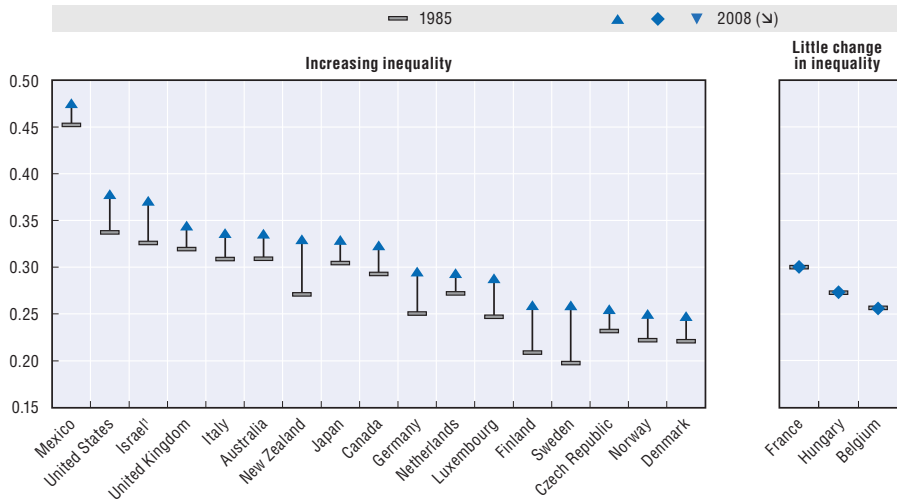
LIFETIME EARNINGS PATTERNS III



WHY CARE ABOUT LIFETIME INCOMES ?

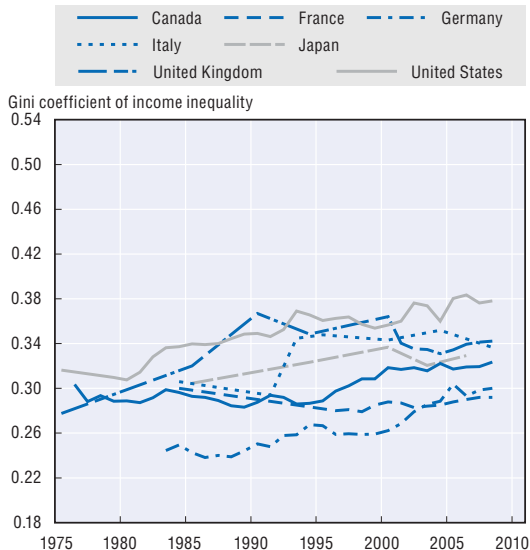
- Many economic decisions are based on lifetime earnings
 - Consumption patterns – permanent income hypothesis
 - Investment in education
- Yet data on lifetime income/earnings/consumption are rarely available
- The way data on current incomes inform policy decisions may not be the same depending on patterns of lifetime incomes
- Particularly relevant in the wake of recent inequality trends

EARNINGS INEQUALITY RISING IN MANY COUNTRIES



Source : Divided We Stand, OECD 2011

EARNINGS INEQUALITY RISING IN MANY COUNTRIES



Source : Divided We Stand, OECD 2011

WHY CARE ABOUT LIFETIME INCOMES ?

- Evaluating the significance of changes in income inequality
 - How much should we intervene to curb rising inequality?
 - ▶ Income dynamics
 - Motivation behind literature on persistent/transitory shocks
- Sound policy analysis
 - Pension system reform
 - ▶ Income dynamics
 - Measuring the real tax burden
 - Crucial with progressive tax rates
 - ▶ Income dynamics
 - Important for interventions in the housing market
 - Lenders look at current earnings, borrowers wish to base decisions on lifetime incomes

WHAT DO WE KNOW ?

- Long history of studies attempting to measure lifetime incomes :
Farr (1853), Clark (1937), Friedman and Kuznets (1954),
Nordhaus (1973), Mincer (1974), Lillard (1977), Bowlus and Robin
(2004), Leonesio and Del Bene (2011)...
- Lack of panel data covering the entire working life required various shortcuts
 - Synthetic cohorts to compute average lifetime income
 - Short panel data sets + statistical models to simulate lifetime incomes
- But statistical models often fit poorly
- Recent access to administrative data allow us to **truly compute** lifetime earnings.

THIS TALK

Based on two recent articles

- **Lifetime Incomes in the United States over Six Decades**, Fatih Guvenen, Greg Kaplan, Jae Song, Justin Weidner, American Economic Journal : Applied Economics, October 2022
 - Use 57-year panel on individual earnings from Social Security records for the US
 - Cohorts that entered the labour market between 1957 and 1983
- **Trends and Inequality in Lifetime Earnings in France**, with Bertrand Garbinti, Vladimir Pecheu and Frédérique Savignac
 - Use 51-year panel on individual earnings from firm payroll records for France
 - Cohorts that entered the labour market between 1967 and 1987

THIS TALK : QUESTIONS

- How much have average lifetime earnings changed since the 1960s?
- How much has lifetime earnings inequality changed since the 1960s?
- Has lifetime inequality followed the same patterns as cross-sectional inequality?
- What explains differences across individuals in lifetime earnings?

THIS TALK : WHY FRANCE ?

- Work by Guvenen et al. (2022) has received much attention
 - Mark differences between women and men
- Similar analyses are rare because of data availability but French data permit a similar approach
- France is an interesting case to study
 - Moderate (cross-sectional) earnings growth
 - Annual earnings inequality has remained relatively stable except for those at the very top (Garbinti et al. 2018)
 - The minimum wage is binding and has a large coverage
 - Gender patterns - more married women working and less employment segregation than in the US (Dolado et al. 2001)

Data

DATA SOURCE – US

- Source : Continuous Work History Subsample which is an extract from the US Social Security records between 1957 and 2013
- Coverage :
 - Individuals working in commerce and industry
 - Information on earnings, date of birth and gender
- Information for cohorts entering the labour market (\equiv aged 25) between 1957 and 1983.
- Variable of interest is **yearly earnings** (labour income), net of all social security contributions but not of income taxes, deflated by the Personal Consumption Expenditure deflator.

DATA SOURCE – FRANCE

- Source : EDP 2019 (DADS Panel 1967-2017, Census 1968-2017, etc.)
- DADS coverage :
 - Individuals born in even years, between October 1st and 4th
 - Cover approx. 0.5% of the population
- Information for 11 cohorts entering the labour market (\equiv aged 25) between 1967 and 1987.
- Variable of interest is **yearly earnings** (labour income), net of all social security contributions but not of income taxes, deflated by the Personal Consumption Expenditure deflator.

INCOME CONCEPT

- Lifetime earnings measure in both papers

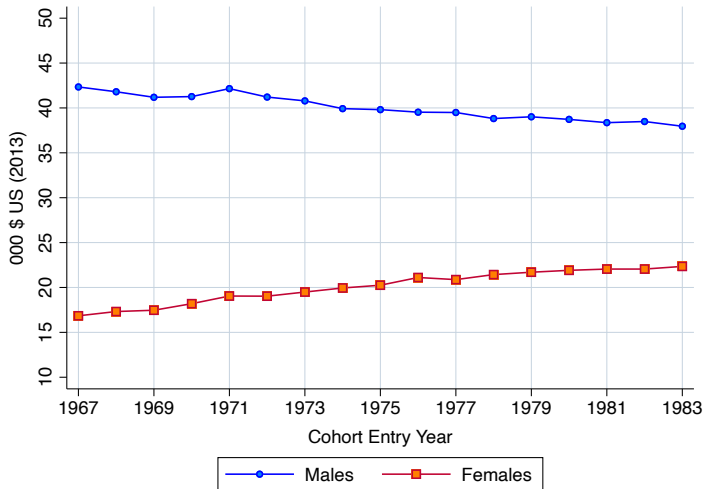
$$\bar{y}_i = \frac{1}{31} \sum_{t=25}^{55} y_{it}$$

FRENCH PANEL LIMITATIONS AND ADVANTAGES

- Sample restrictions as close as possible in both papers
 - Workers employed in commerce and industry
 - Self-employed are excluded as only available from 1978 (1986) for the US (France)
 - Civil servants excluded by definition of sector
- We have more information than the US Social Security data
 - US – only birth data and gender
 - France reports in firm data : whether individuals work full or part time
 - French firm data linked to census : education, marital status, children, place of residence and of birth.

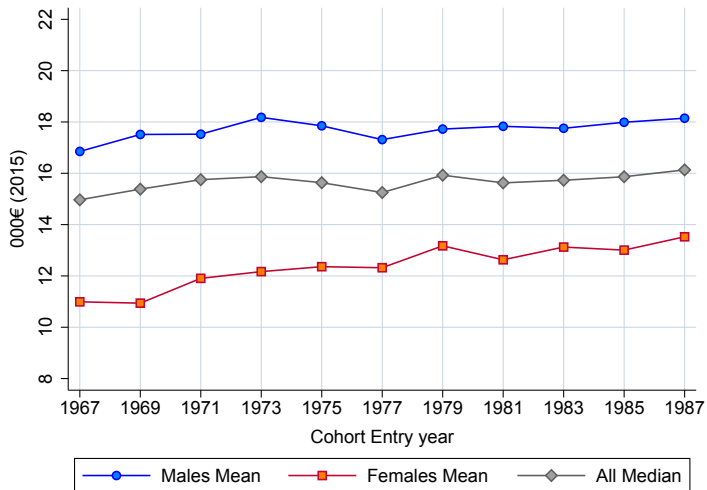
Comparing France to the US

MEDIAN LIFETIME EARNINGS BY COHORT : US



Source : Guvenen et al. (2022)

MEDIAN LIFETIME EARNINGS BY COHORT : FRANCE



MEDIAN EARNINGS GROWTH : FRANCE VS US

Cumulative LTE growth (in %), 1967-1983

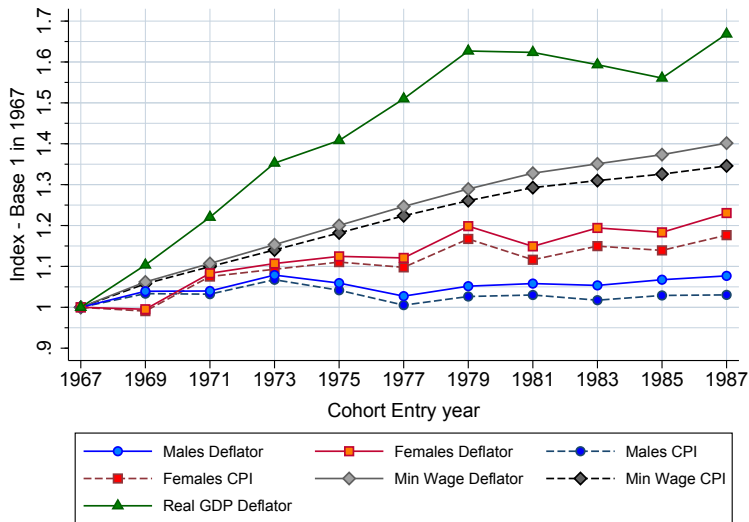
	France		US	
	Men	Women	Men	Women
Median	5.36	19.41	-10.34	32.67

CONCLUSION I

- Patterns of median lifetime earnings are highly country specific
- The decline observed for men in the US is not universal
- Gender differences are much greater in some countries than in others
- But growth of LTE not as fast as for GDP

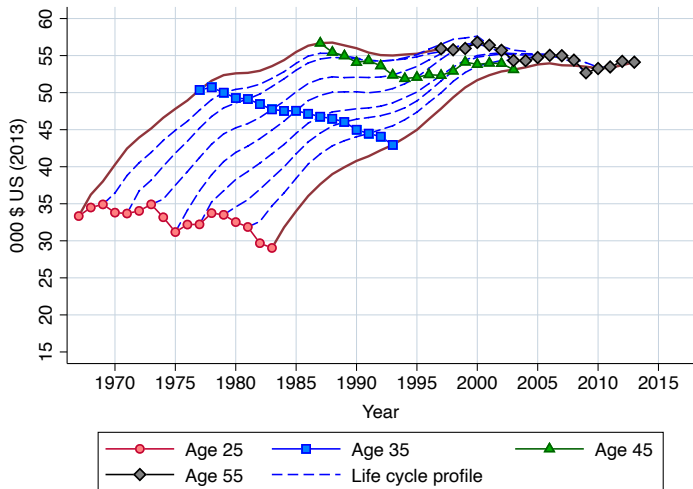
GROWTH NOT AS FAST AS GDP

GROWTH OF LTE, GDP AND THE MINIMUM WAGE IN FRANCE

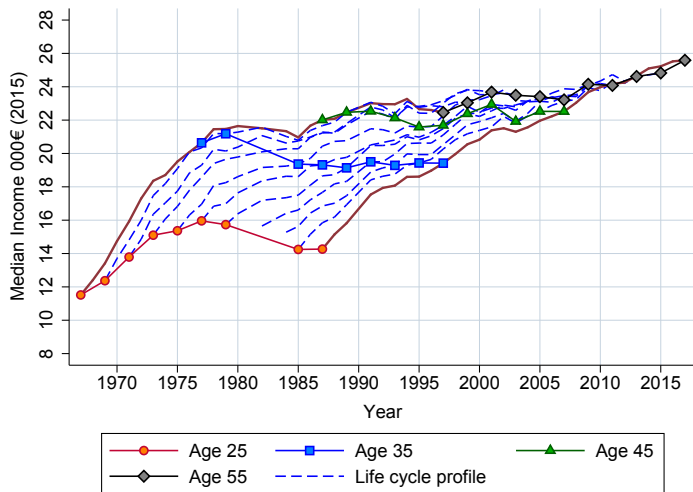


Comparing France to the US : Age Profiles

AGE PROFILES OF MEDIAN LTE : MEN US

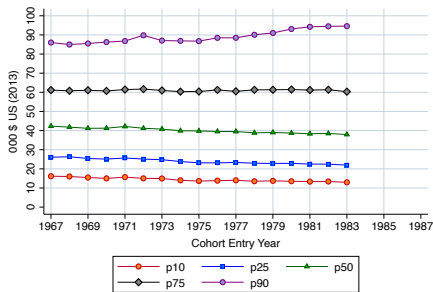


AGE PROFILES OF MEDIAN LTE BY COHORT : MEN FRANCE



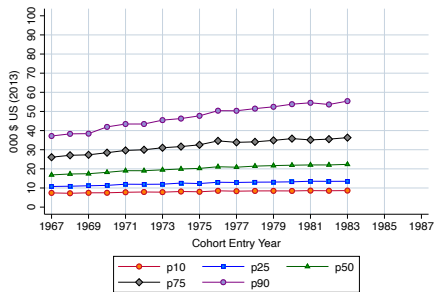
Comparing France to the US : Inequality

SELECTED PERCENTILES OF LIFETIME EARNINGS : US, MEN AND WOMEN



Source: Guvenen et al. (2021)

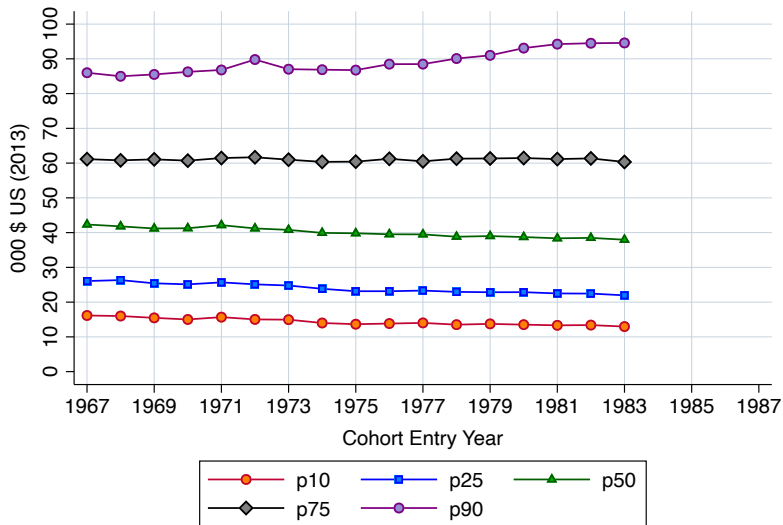
Men



Source: Guvenen et al. (2021)

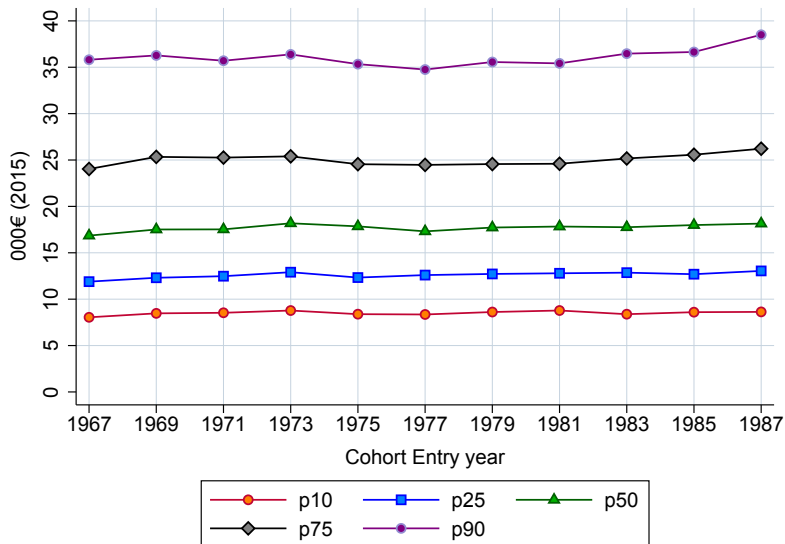
Women

SELECTED PERCENTILES OF LIFETIME EARNINGS : US, MEN



Source: Guvenen et al. (2021)

SELECTED PERCENTILES OF LIFETIME EARNINGS : FRANCE, MEN

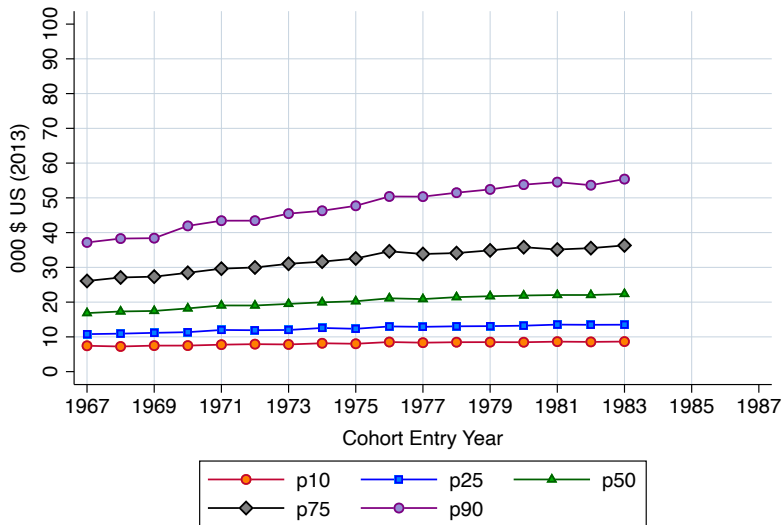


INEQUALITY : FRANCE VS US, MEN

Cumulative LTE growth for various percentiles (in %), 1967-1983

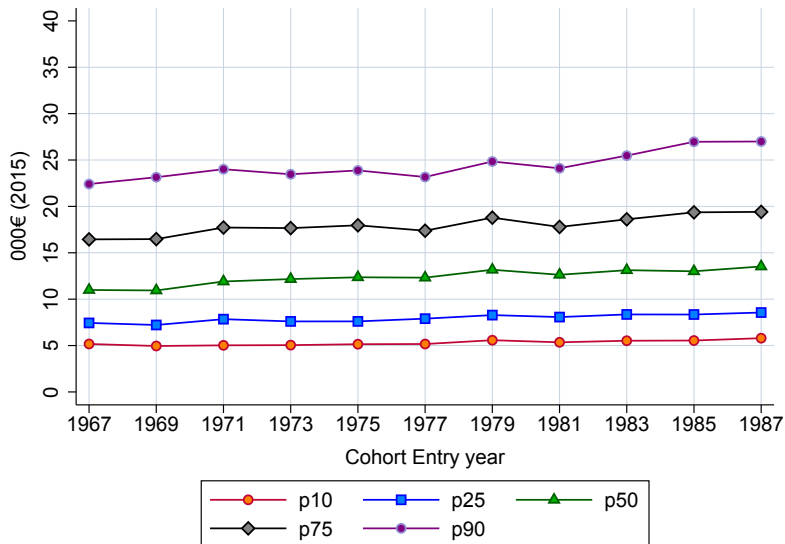
	France		US	
	France Men	France Women	US Men	US Women
p10	4.17		-19.77	
p50	5.36		-10.34	
p90	1.82		9.98	
p99	-2.29		49.09	

SELECTED PERCENTILES OF LIFETIME EARNINGS : US, WOMEN



Source: Guvenen et al. (2021)

SELECTED PERCENTILES OF LIFETIME EARNINGS : FRANCE, WOMEN



INEQUALITY : FRANCE VS US

Cumulative LTE growth for various percentiles (in %), 1967-1983

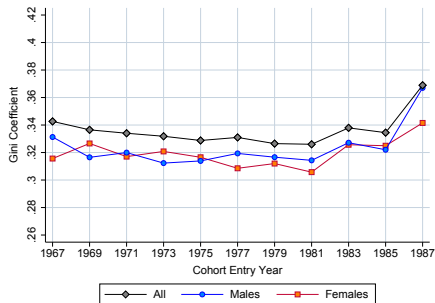
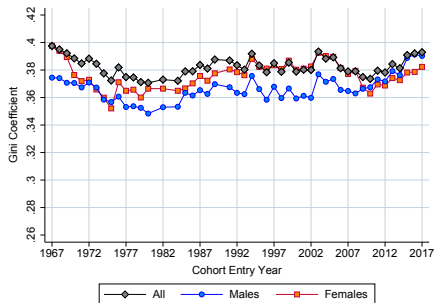
	France		US	
	France Men	France Women	US Men	US Women
p10	4.17	6.75	-19.77	16.31
p50	5.36	19.41	-10.34	32.67
p90	1.82	13.68	9.98	17.48
p99	-2.29	19.56	49.09	107.57

CONCLUSION II

- Age profiles are important, since *when* in the lifecycle income is received matters
- Well-established differences in cross-sectional earnings inequality across France and the US appear also in LTE
- Notable, the contrast between US and French women
 - Moderate increase inequality for the French and very large one for American women
 - In France, patterns for women much more similar to those of men than in the US

Inequality in France

CROSS-SECTIONAL AND LTE INEQUALITY



Gini of cross-sectional earnings

Gini of LTE

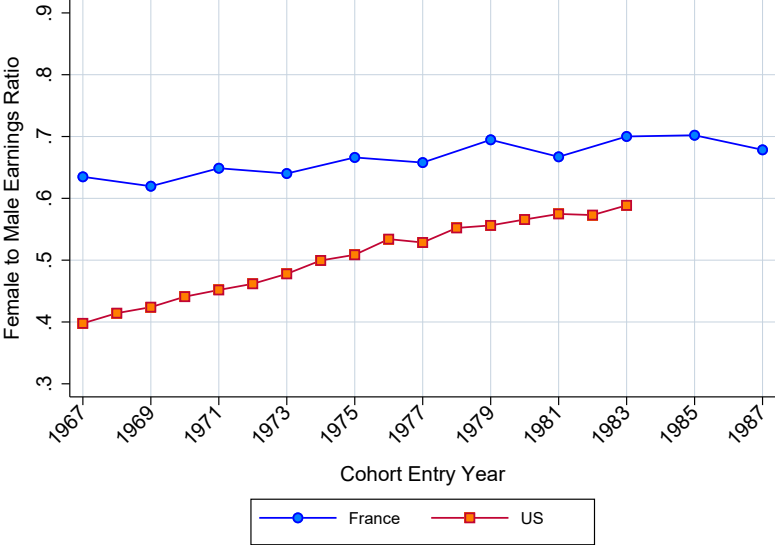
CONCLUSION III

- As expected - earnings inequality is higher for the cross-section than for lifetime earnings
 - Importance of transitory earnings shocks
- But the gap varies
 - For overall inequality, it was initially 6 Gini points, for latest cohort about 3 points
 - For women, between 4 and 8 points
- In both cases, recent increase in inequality is driven by male earnings

Explaining the Gender Gap in Lifetime Earnings in France

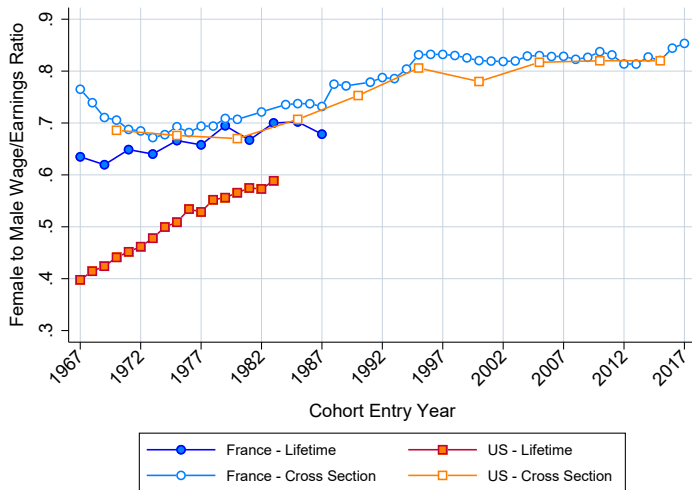
GENDER EARNINGS GAP

Figure – Female to Male Earnings Ratios by Cohort



GENDER GAP : LTE VS CROSS SECTION EARNINGS

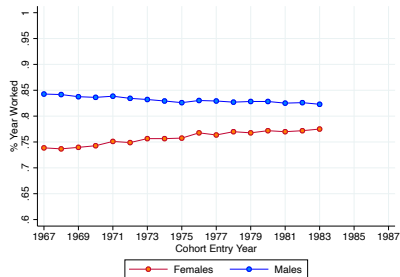
Figure – Female to Male Earnings Ratios



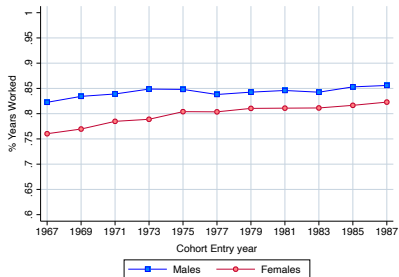
- US Source : FRB St. Louis' calculations from U.S. Census & CPS
- Cross section selection : Annual income > \$1,200 in 2015

MEDIAN YEARS OF WORK : US AND FRANCE

PERCENTAGE OF TOTAL YEARS WORKED



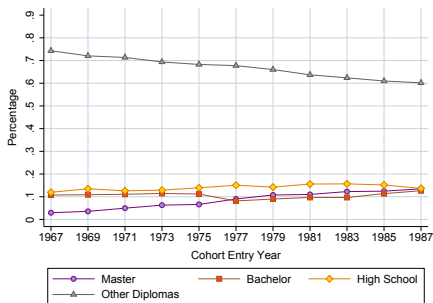
US



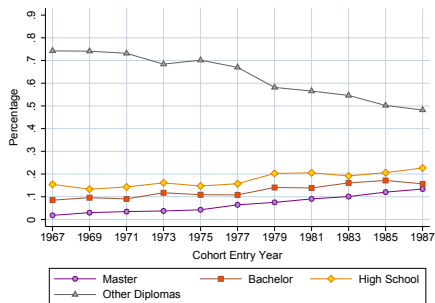
France

EVOLUTION OF DIPLOMAS : FRANCE

PERCENTAGE OF INDIVIDUALS WITH DIPLOMAS



Men



Women

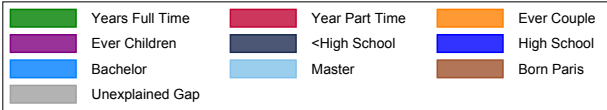
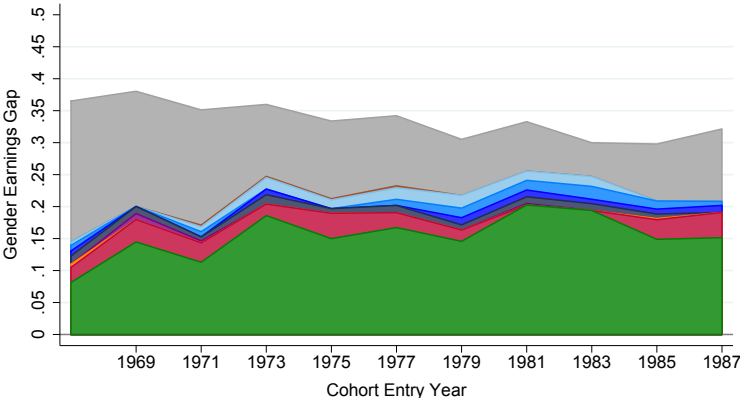
OAXACA-BLINDER DECOMPOSITION

- Difference ΔLTE_t can be written as :

$$\Delta LTE_t = LTE_{f,t} - LTE_{h,t} = \beta_t(X_{f,t} - X_{h,t}) + \bar{X}_t(\beta_f - \beta_h)$$

- where :
 - $X_{f,t}$ includes demographics : place of birth, children, couple status ; and labor variables : years worked full and part time, highest diploma
 - $\beta_t(X_{f,t} - X_{h,t})$ is the “explained” part of the gender gap by the evolution of individual characteristics
 - $\bar{X}_t(\beta_f - \beta_h)$ is the unexplained part

OAXACA DECOMPOSITION GENDER EARNINGS GAP



CONCLUSION IV

- In France, the gender gap in LTE has fallen, but only moderately
- Partly due to the fact that French working women of early cohorts had 'good characteristics' in terms of education and working time (positive selection already in the 1960s?)
- Role of education moderate and has become more favourable to women
- Role of working time essential—some increase in years worked by women but more prevalence of part-time than for early cohorts

CONCLUSION

- Median Lifetime Earnings
 - Considerable decline for men in the US
 - In France, growth of median LTE for the first cohorts of men came to a halt but no decline
 - Women and men show similar (very different) dynamics across cohorts in France (the US)
 - In France, recent cohorts face lower earnings when young but faster growth during their careers
- Inequality in LTE
 - Inequality in lifetime earnings reproduces (to a large extent) cross-country patterns found in the cross-section
 - Gap between cross-sectional and LTE inequality (in France) not constant over time
- Gender Earnings Gap
 - Smaller in France than in the US partly due to stronger attachment of French women to labor market
 - But French women have tended to work more part time despite overtaking men in education preventing a strong catch-up

Appendix

BASE SAMPLE SELECTION

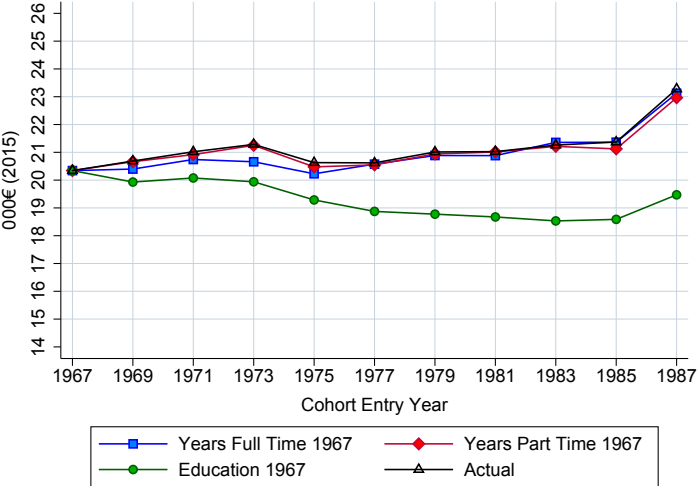
- Restrictions as in GKS_W (2022) :
 - Exclude **Civil Servants**
 - Keep ages **25-55** \equiv lifetime period
 - Sufficiently committed to labour market
 - Earning at least $1/16^{th}$ of the yearly minimum wage earnings in **at least 15 years over their lifetime**
 - Earning at least $1/16^{th}$ of the yearly minimum wage earnings **on average** in their lifetime
- GKS_W restrictions we cannot implement due to limitations of our data :
 - Exclusion of **self employed jobs**
 - Exclusion of **educational and social services**
- Advantage of our data :
 - **No top-coding** of earnings

EXPLAINING LIFE TIME EARNINGS

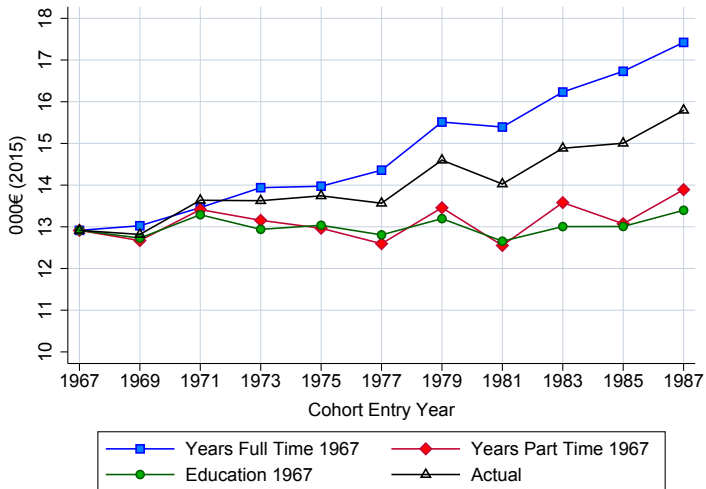
Dependent variable : Life Time Incomes by cohort, Men and women, selected years

	Men 1967	Men 1977	Men 1987	Women 1967	Women 1977	Women 1987
% Years Full Time	29.16*** (1.741)	30.29*** (1.499)	35.33*** (4.016)	21.83*** (1.332)	24.14*** (0.918)	28.00*** (1.135)
% Years Part Time	15.13*** (3.631)	5.186** (2.628)	11.00* (6.271)	8.094*** (1.818)	12.67*** (1.159)	15.96*** (1.342)
% Years IDF	7.978*** (0.741)	7.765*** (0.697)	13.57*** (1.711)	5.256*** (0.536)	5.535*** (0.425)	7.662*** (0.492)
Junior High	6.623*** (1.374)	4.535*** (1.337)	3.394 (3.222)	2.380** (0.933)	2.119*** (0.697)	1.743** (0.862)
High School	12.06*** (0.973)	6.739*** (0.926)	5.994** (2.413)	6.005*** (0.802)	3.896*** (0.606)	3.284*** (0.727)
Bachelor	22.19*** (1.019)	11.18*** (1.073)	9.814*** (2.465)	8.201*** (0.924)	6.690*** (0.650)	5.887*** (0.764)
Master	27.45*** (1.641)	24.81*** (1.051)	32.63*** (2.457)	11.38*** (1.613)	9.103*** (0.743)	14.54*** (0.788)
Ever Couple	3.353** (1.304)	3.421*** (1.066)	3.259 (2.296)	0.731 (0.641)	-0.801 (0.703)	0.984 (0.639)
Ever Children	0.0842 (0.654)	0.862 (0.607)	2.807** (1.310)	0.640 (0.450)	0.732* (0.395)	0.0702 (0.382)
Observations	1,821	2,459	2,905	847	1,623	2,153
R-squared	0.452	0.429	0.177	0.537	0.558	0.551

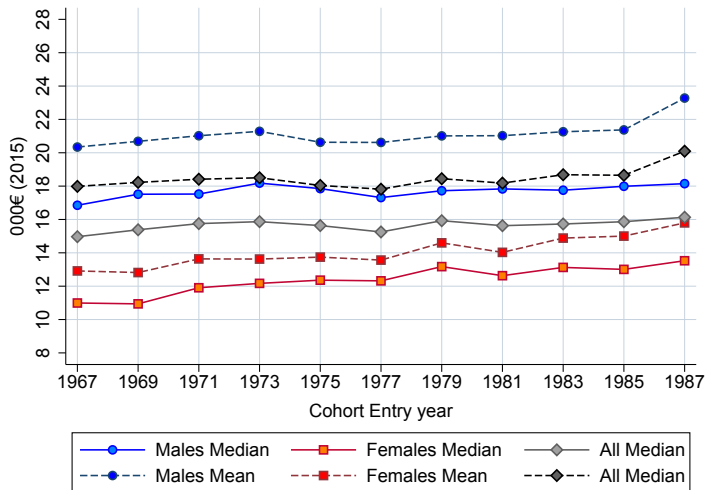
COUNTERFACTUAL ANALYSIS, MEN



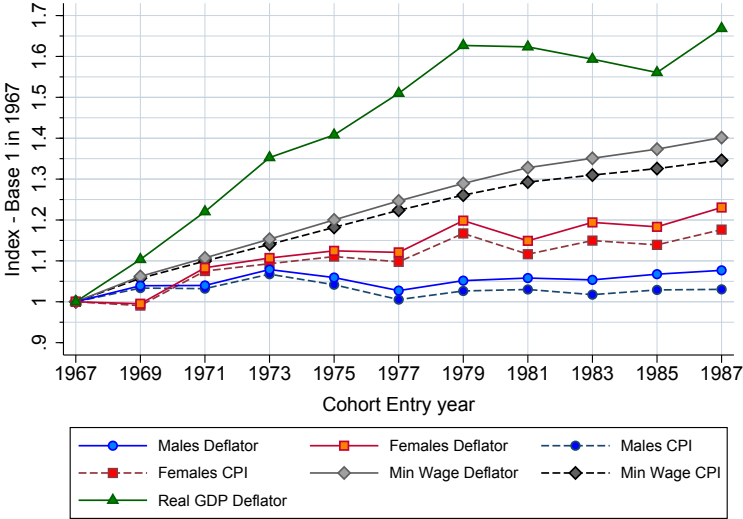
COUNTERFACTUAL ANALYSIS, WOMEN



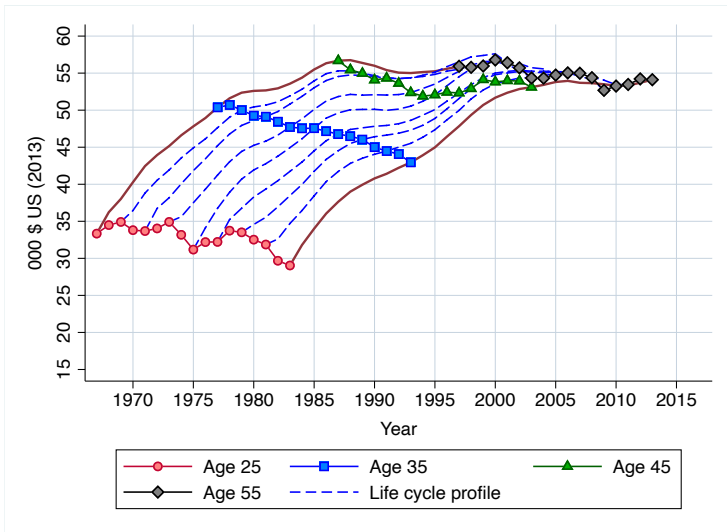
MEDIAN AND MEAN LIFETIME EARNINGS BY COHORT



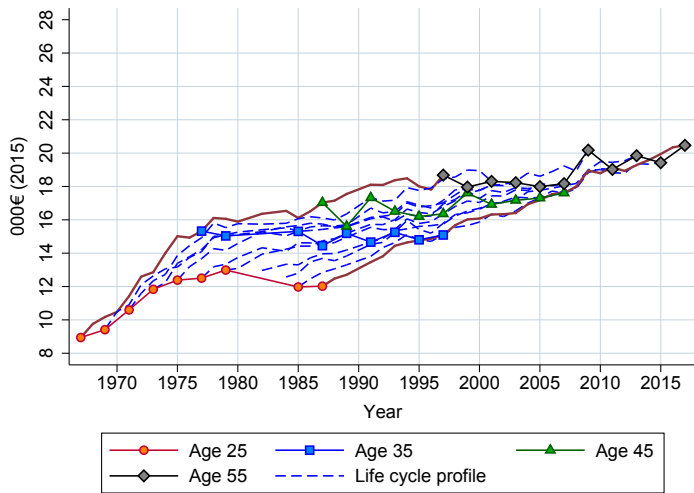
GROWTH OF LTE, GDP AND THE MINIMUM WAGE



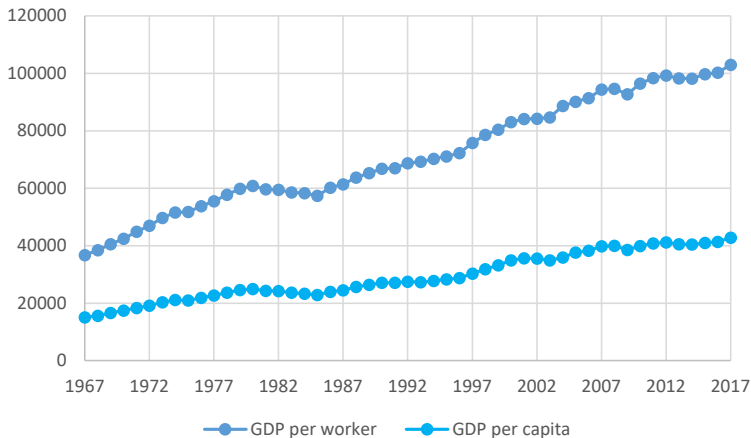
AGE PROFILES OF MEDIAN LTE : MEN US



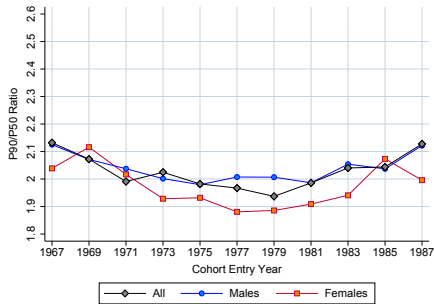
AGE PROFILES OF MEDIAN LTE BY COHORT : WOMEN FRANCE



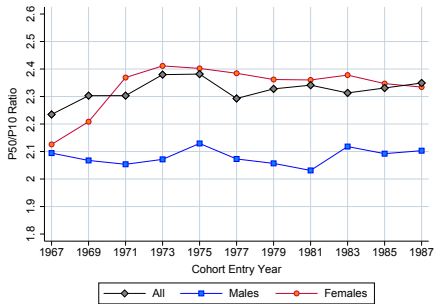
GROWTH OF GDP PER WORKER AND GDP PER CAPITA : 1967-2017



PERCENTILE RATIOS OF LTE : P90/P50 AND P50/10

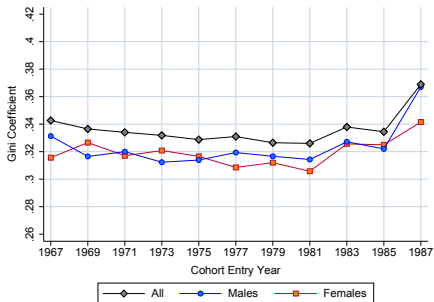
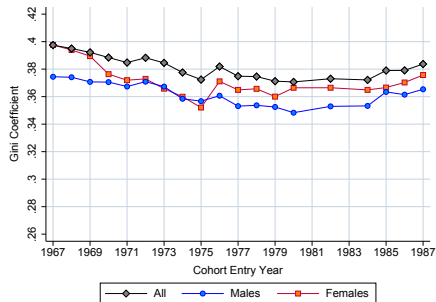


P90/P50



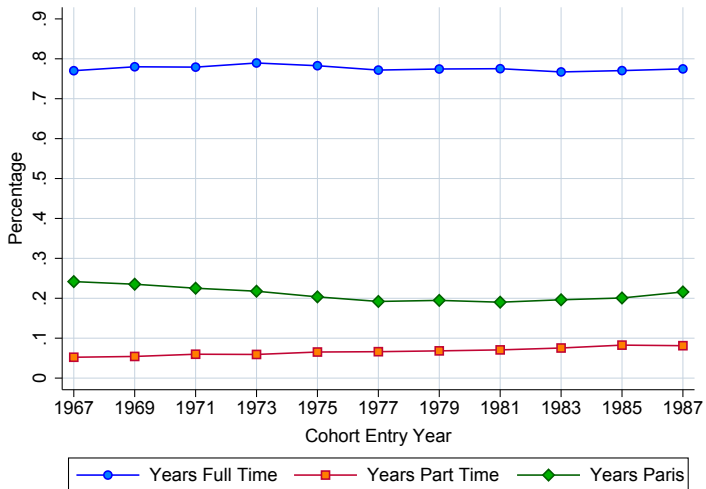
P50/P10

CROSS-SECTIONAL INEQUALITY : GINI 1967-87

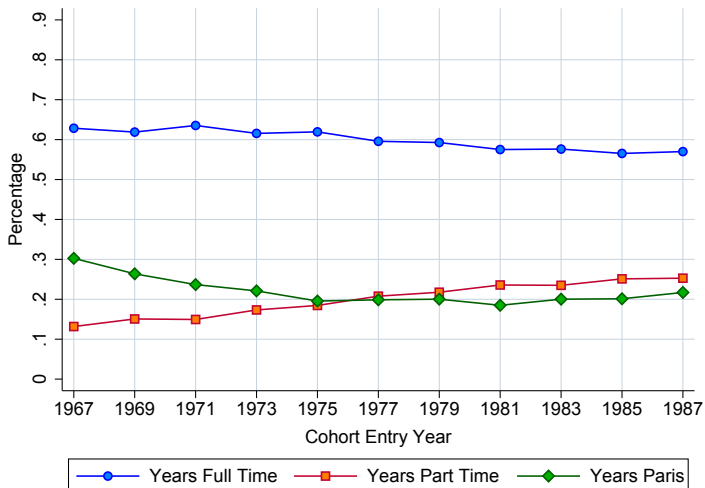


▶ Back

YEARS OF WORK : MEN

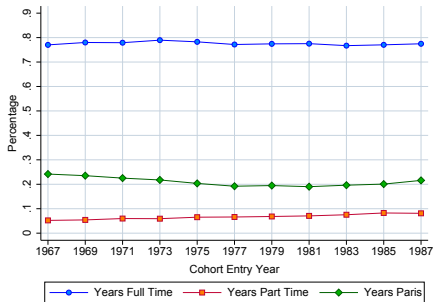


YEARS OF WORK : WOMEN

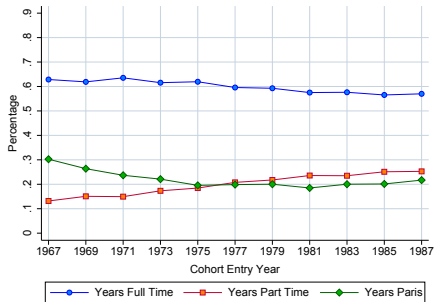


YEARS WORKED FULL, PART TIME, GEOGRAPHY

Figure – Years Worked Full, Part Time, in Paris Region



Men



Women