

# Payroll Taxes and Wage Inequality: France 1967-2015

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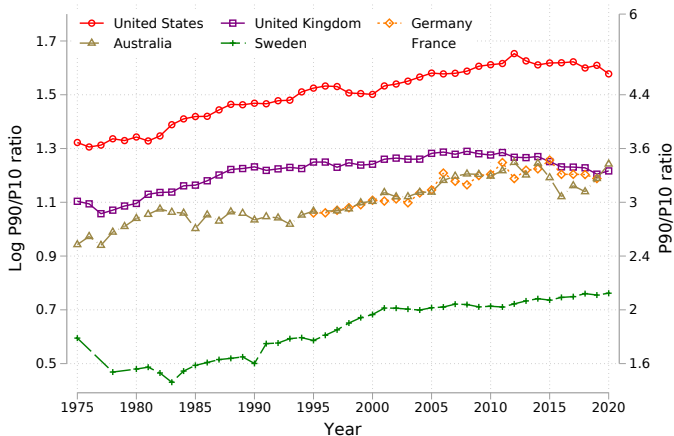
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ASSA Conference  
8th January 2022

# Motivation

## Increase in wage inequality in developed countries

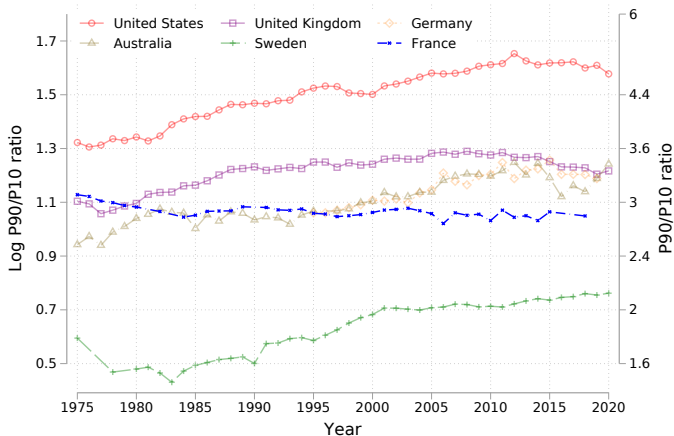
Figure 1: Wage inequality (P90/P10 log gross wage ratio)



# Motivation

## with the exception of France

Figure 2: Wage inequality (P90/P10 log gross wage ratio)



# French case challenges the usual consensus

- **Standard explanations for increase in inequality**
  - Demand shifts arising from skill-biased technological change (SBTC), job polarization and globalization
  - Possibly mitigated by institutional factors: minimum wage, unions, educational policies, etc.

# French case challenges the usual consensus

- **Standard explanations for increase in inequality**
  - Demand shifts arising from skill-biased technological change (SBTC), job polarization and globalization
  - Possibly mitigated by institutional factors: minimum wage, unions, educational policies, etc.
- **French case seems puzzling**
  - Wage compression and mixed evidence regarding the role of technology (Card et al., 1999; Goux and Maurin, 2000; Koubi et al. 2005; Verdugo 2014; Charnoz et al., 2014; Harrigan, Reshef and Toubal, 2017; Albertini et al., 2018; Dares Analyses, 2015, 2017)
  - Even though exposed to SBTC and trade competition

# This paper

## **Study the contribution of payroll taxation (= Social Security Contributions) to wage inequality**

- ① Compute labor cost, posted wage, and net wage measures of inequality
    - Labor cost inequality increased in France by about 10% between 1967 and 2015 (25% between 1980 and 2015)
- ⇒ French case is no exception

# This paper

## **Study the contribution of payroll taxation (= Social Security Contributions) to wage inequality**

- ① Compute labor cost, posted wage, and net wage measures of inequality
  - Labor cost inequality increased in France by about 10% between 1967 and 2015 (25% between 1980 and 2015)
  - ⇒ French case is no exception
- ② Discuss the impact of payroll taxes on inequality
  - SSC tax schedule has become very progressive incidentally
    - Original objective was to reduce unemployment
  - Not obvious that payroll tax reforms have reduced inequality
    - Contributive nature of payroll taxes
    - Incidence at the individual level subject to debate

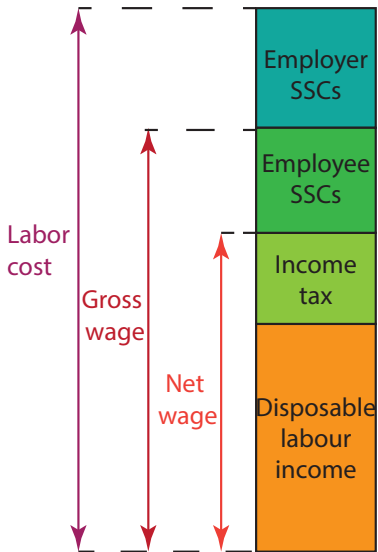
1 Measures of wage and labor cost inequality

2 Redistribution through social security contributions

# Data

- Déclarations Annuelles de Données Sociales (DADS), 1967-2015
  - Administrative data based on social security records
  - Sample : 1/24 before 1993, 1/12 after 1993
  - Wage variable: annual net earnings
- *EU-SILC, 2007-2018*
  - Sample selection similar to that of the DADS
  - European comparisons in the recent period
- *DADS-EDP, 1976-2015*
  - Used to revisit skill-biased technical change using labor cost
  - National censuses (1975, 1982, 1990, 1999 and 2004 to 2015). Sample : 4/365. Matched with DADS panel
  - Educational attainment, demographic information

Figure 3: Illustration of main wage concepts



# Computation of wage concepts

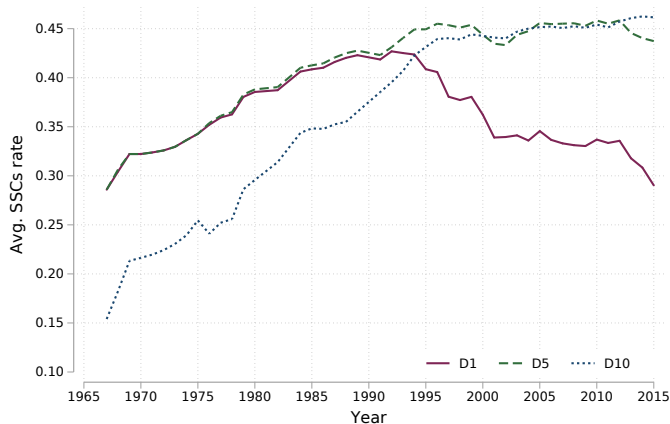
- **Net wage** = **Gross wage** – employee SSCs
  - Directly observed in DADS data (annual earnings of individuals working full-time the whole year).
- **Gross wage** = **Posted wage** = **net wage** + employee SSCs
  - Computed using the tax simulator of IPP, **TAXIPP**.
- **Labor cost**: total cost of the employee for the firm = **gross wage** + **employer SSCs**
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- **Net-of-income tax wage**: **net wage** – individual labor income tax
  - Computed assuming wage earners have no capital income and they are taxed individually

# Social Security contributions (SSCs)

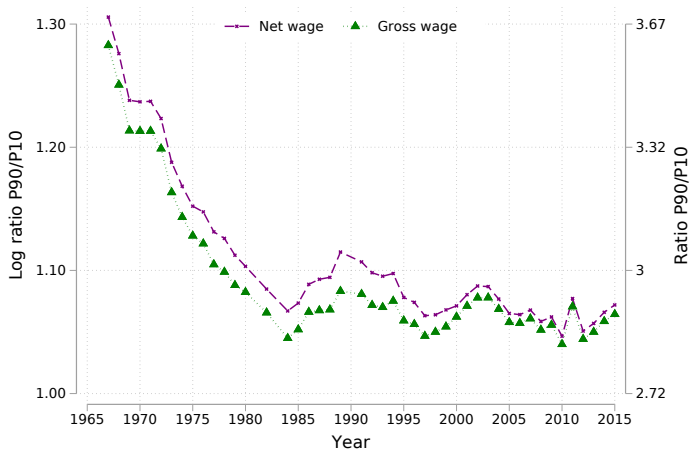
Figure 4: Total SSCs as a fraction of labor costs (by decile)



Sources: DADS data 1967-2015.

# Wage inequality: 3 measures

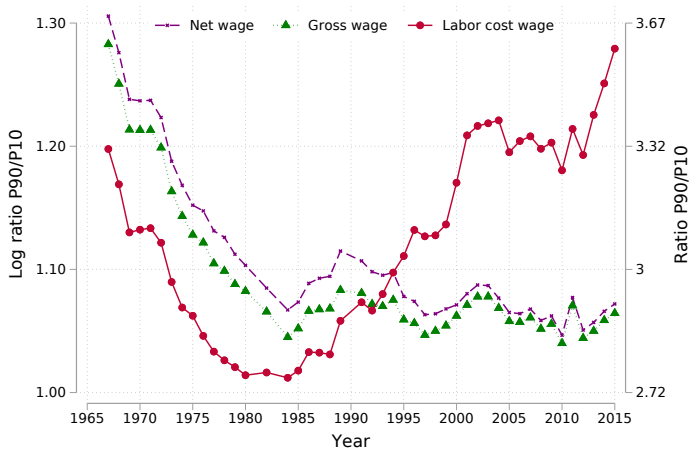
Figure 5: P90-P10 ratio, full-time full-year workers



Sources: DADS data 1967-2015.

# Wage inequality: 3 measures

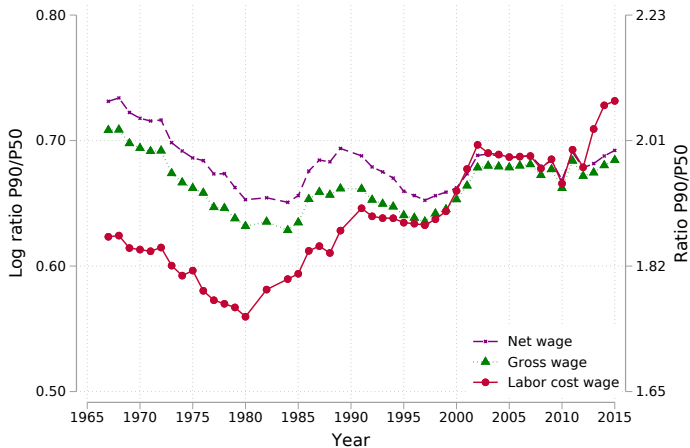
Figure 6: P90-P10 ratio, full-time full-year workers



Sources: DADS data 1967-2015.

# Upper-tail wage inequality

Figure 7: P90-P50 ratio, full-time full-year workers



Source: DADS data 1967-2015.

# Lower-tail wage inequality

Figure 8: P50-P10 ratio, full-time full-year workers



Source: DADS data 1967-2010.

# Wage inequality: international comparisons

Table 1: Changes in P90/P10 by country, 1980-2015.

|                          | 1980 | 2000 | 2015 | % change, 1980-2015 |
|--------------------------|------|------|------|---------------------|
| Poland                   | 2.81 | 3.56 | 3.92 | 0.39                |
| United States            | 3.83 | 4.49 | 5.04 | 0.32                |
| <b>France labor cost</b> | 2.76 | 3.22 | 3.59 | <b>0.30</b>         |
| New Zealand              | 1.62 | 1.98 | 2.09 | 0.29                |
| Sweden                   | 2.30 | 2.62 | 2.97 | 0.29                |
| United Kingdom           | 2.99 | 3.46 | 3.50 | 0.17                |
| Italy                    | 2.83 | 3.01 | 3.29 | 0.16                |
| Finland                  | 2.22 | 2.22 | 2.59 | 0.16                |
| Australia                | 2.47 | 2.41 | 2.56 | 0.04                |
| <b>France net wage</b>   | 3.01 | 2.92 | 2.92 | <b>-0.03</b>        |

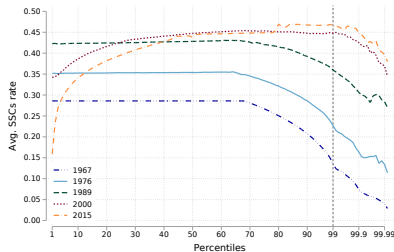
Notes: net, gross and labor cost wages from the DADS data 1980-2010 for France, gross wage from the OECD for the other countries.

1 Measures of wage and labor cost inequality

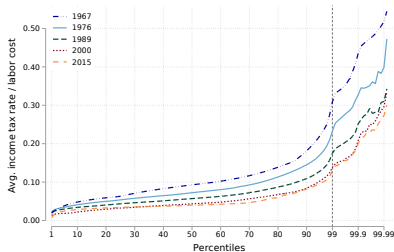
2 Redistribution through social security contributions

# A more progressive payroll tax schedule

## SSC tax schedule



## Income tax schedule

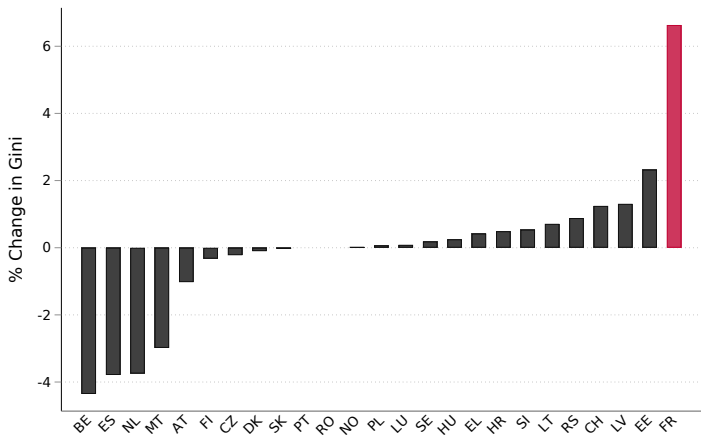


- For SSCs: drop of 15pp at bottom and rise of 30 to 40 pp at the top
- For income tax: drop of 10 to 20pp above P90, mostly at the very top

⇒ SSCs have become more progressive, while income tax has become less so

# Comparison with other European countries

**Figure 9:** Reduction in Gini index when moving from labor cost to gross wage distribution



Notes: relative change from gini in labor cost to gross wage (monthly).

# Redistribution through payroll taxation?

- **Take aways**

- For wage earners, SSCs have become more progressive than the income tax, especially at the bottom
- While some redistribution occurs with SSCs in other countries, this policy mix seems unique in the world

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- **Can we really attribute declining French inequality to payroll taxes?**

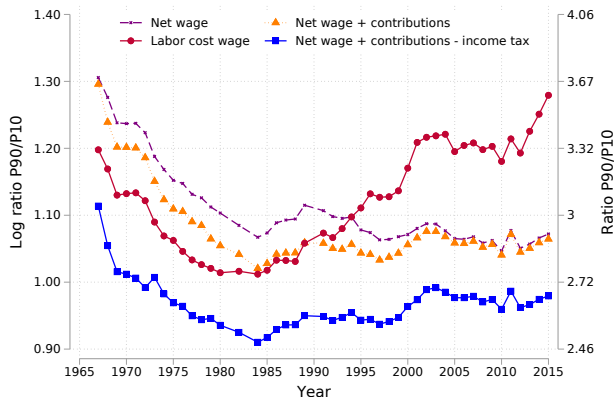
- 1 Are changes in contributions linked to corresponding changes in benefits?
- 2 Have changes in contributions really reduced wage inequality?
  - Depends on the incidence
  - At the bottom: incidence is forced by the minimum wage
  - At the top: international comparisons may suggest incidence on workers

# Accounting for future benefits

- **Social insurance model:** social benefits conditioned to past contributions
- **In practice:** direct linkage at the individual level with benefits for some contributions (e.g. pensions) but not others (e.g. health care)
- **Detailed information** on each specific contribution, allowing us to distinguish between contributive and non-contributive ones
- **Augmented net wage:** net wage + contributive SSCs (both employee and employer)
  - Measures the wage received by a worker plus the future benefits she will get from working, assuming that the present value of these future benefits is equal to the contribution paid

# Accounting for future benefits

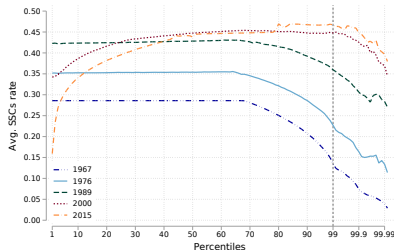
Figure 10: Inequality in terms of wages plus future benefits from SSCs



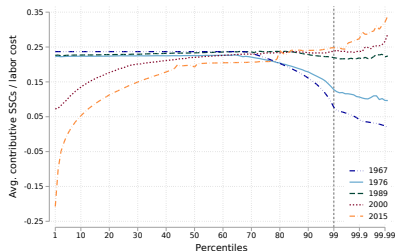
SOURCE: DADS data 1967-2015.

# Implicit SSC rates (net of future benefits)

Evolution of SSC tax schedule



Evolution of SSC tax schedule, net of future benefits



# The incidence of SSCs: existing evidence

- **Conventional wisdom:** employer SSCs, while nominally incident on firms, are eventually passed on workers
- **Challenged by recent studies:** Greece (Saez et al., 2012), Sweden (Saez et al., 2019) and France (Bozio et al., 2020)
  - zero pass-through of employer SSCs to wages at individual level in the short- to medium-run
  - But SSCs can be passed on workers at firm level (Saez et al., 2019)
- **No clear idea on the incidence in the very long-run** (after jobs reallocation, firm creation and destruction, etc.)

# Have changes in contributions reduced wage inequality?

- **At the top:**
  - Probably not in the short to medium run
  - We have no good micro evidence to provide. We note that wage inequality increased at the top in most other developed economies
    - The fact that it did not in France cannot be accounted for by the supply of skilled workers
  - Suggests long-run incidence on workers is possible

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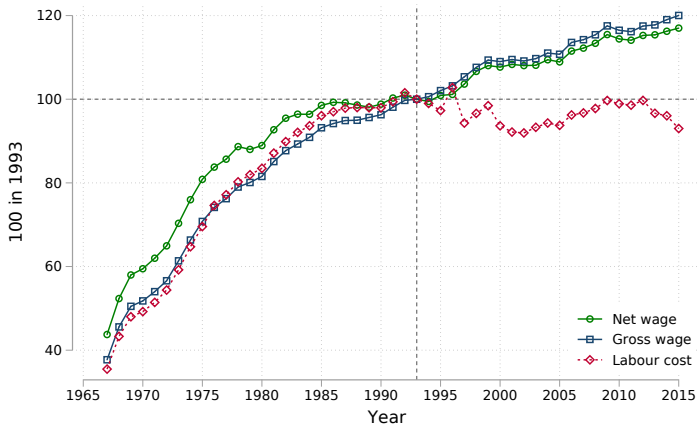
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- **At the bottom**

- Employer payroll tax cuts cannot be analyzed separately from the concomitant evolution of the minimum wage
- The minimum wage mechanically shifts part of the reductions on workers: we quantify this effect

# Evolution of the minimum wage

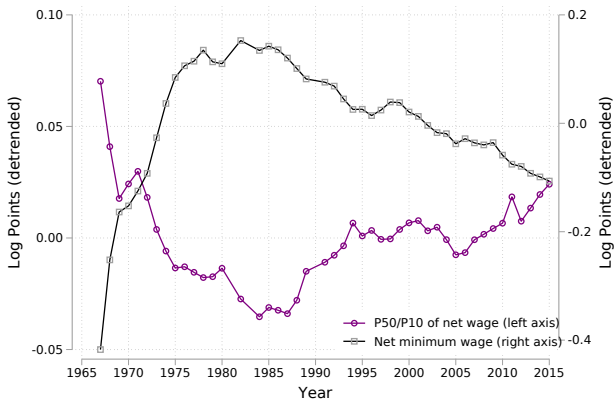
Figure 11: Evolution of the minimum net wage, gross wage and labor cost (in real terms).



FTFY non-executive employee paid at the minimum wage in the private sec

# Link between the minimum wage and net wage inequality at the bottom

**Figure 12:** Evolution of the P50/P10 log net wage ratio (detrended) and of the log net minimum wage in real terms (detrended).



# Correlation of the minimum wage with bottom net wage inequality

Table 2: Correlations between the inequality ratios and the minimum wage (net wage concept)

|              | log(real minimum wage) |              |                  |
|--------------|------------------------|--------------|------------------|
|              | Raw series             | De-detrended | First difference |
| log(P50/P10) | -0.986                 | -0.944       | -0.795           |
| log(P90/P50) | -0.676                 | -0.800       | -0.210           |
| log(P90/P10) | -0.981                 | -0.948       | -0.612           |

# Incidence of SSCs at the minimum wage (1)

- **Notations:**

- $w_t^{min}$ : net real min wage in year  $t$
- $z_t^{min}$ : labor cost at min wage in year  $t$
- $\tau_t^{min}$ : average payroll tax rate at min wage in year  $t$
- $w_t^{min} = z_t^{min}(1 - \tau_t^{min})$

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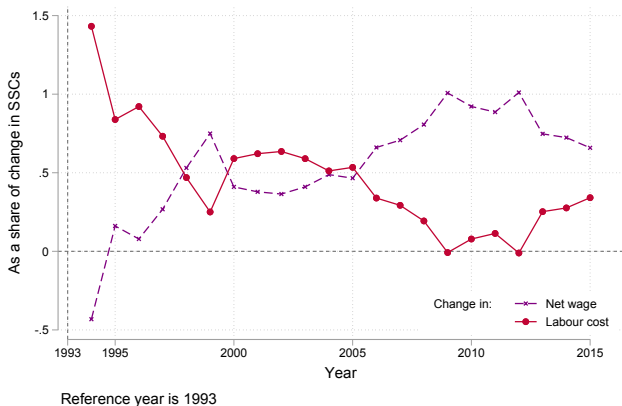
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- $w_t^{min} = z_t^{min}(1 - \tau_t^{min})$

- **Counterfactual hypothesis:** net wages of workers paid the minimum wage would have remained constant in real terms in the absence of any change in the minimum wage
  - Assumes in particular that payroll tax cuts are fully incident on employers in absence of the minimum wage
- **Under this hypothesis,**  $\frac{w_t^{min} - w_{1993}^{min}}{\tau_{1993}^{min} - \tau_t^{min}}$  captures the “cumulative” share of the payroll tax reductions that have been mechanically shifted to workers due to changes in the *real* minimum wage

# Incidence at the minimum wage

**Figure 13:** Cumulative share of the SSCs reductions at the minimum wage mechanically shifted to employers and employees



SOURCE: DADS data 1967-2015.

NOTE: The figure shows the cumulative changes in minimum labor cost and (opposite of) minimum net wage as a share of the cumulative changes in SSCs at the minimum wage

# Conclusions

- **Labor cost inequality in France**
  - Using labor cost changes the assessment on French data
  - France is no exception after all
  - Reinforces demand-side explanations for increased wage inequality (not shown)

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- **Labor cost inequality in France**
  - Using labor cost changes the assessment on French data
  - France is no exception after all
  - Reinforces demand-side explanations for increased wage inequality (not shown)
- **SSCs used to reduce wage inequality**
  - Demand-shifts provide macro-level suggestive evidence for long-run incidence of SSCs on employees at the top
  - Interactions between minimum wage increases and SSCs reductions contributed to reduce inequality at the bottom

# Conclusions (Continued)

- **High minimum wage + targeted cut in payroll taxes**
  - Allows to jointly boost supply and demand at the bottom
  - Alternative to working tax credits
  - Guarantees that lower taxation of lower earners is not captured by employers in the form of even lower wages (Rothstein 2010, Azmat 2019)
  - Ensures a minimum pay for work
  - Drawback: poor targeting at household level

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  - Ensures a minimum pay for work
  - Drawback: poor targeting at household level
- **Political economy aspect: unnoticed redistribution**
  - Strong policy focus on the income tax (the “normal” redistributive tool)
  - Employer SSCs not primarily intended to do redistribution
  - Avoids standard political economy issues, but large confusion in the public eyes on the real impact of those policies

# Payroll Taxes and Wage Inequality: France 1967-2015

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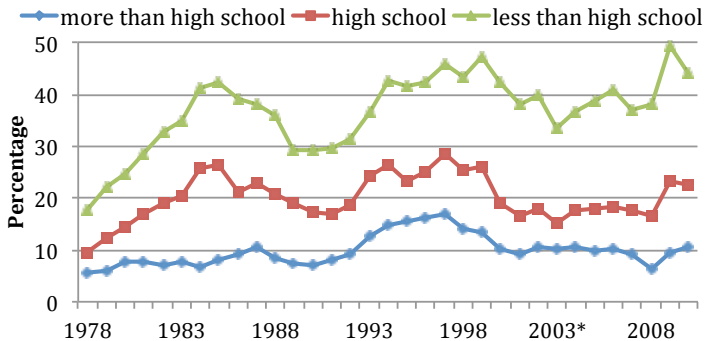
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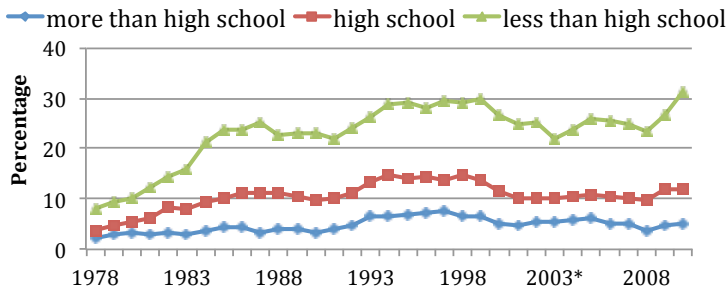


**Figure 15:** Unemployment rate by educational attainment, 1978-2010: Workers with less than five years of experience



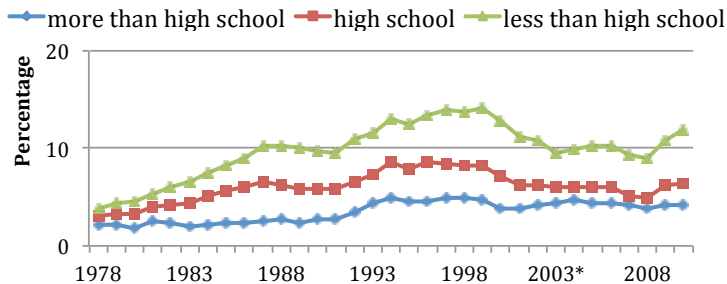
SOURCE: Labor force survey 1978-2010.

**Figure 16:** Unemployment rate by educational attainment, 1978-2010: Workers with five to ten years of experience



SOURCE: Labor force survey 1978-2010.

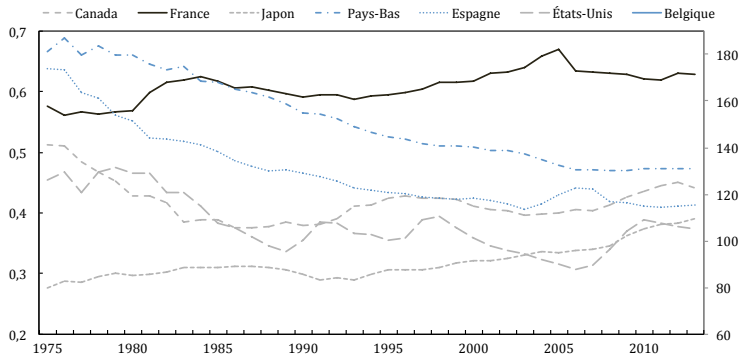
**Figure 17:** Unemployment rate by educational attainment, 1978-2010: Workers with more than ten years of experience



SOURCE: Labor force survey 1978-2010.

## II-Minimum wage and inequality

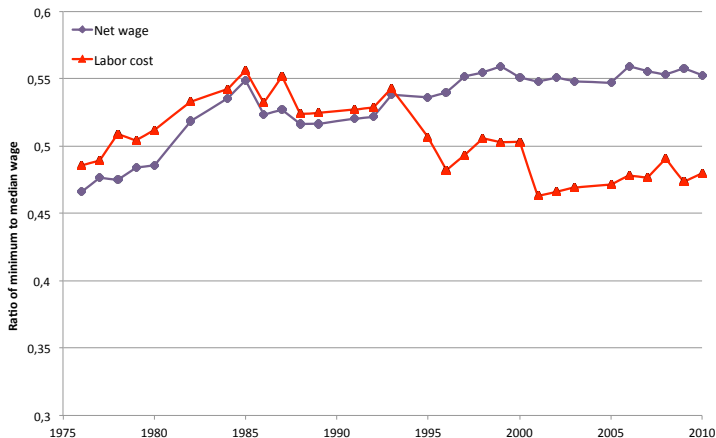
Figure 18: Ratio of minimum to median gross wage, OECD countries, 1975-2013



SOURCE: OECD.

## II-Minimum wage and inequality

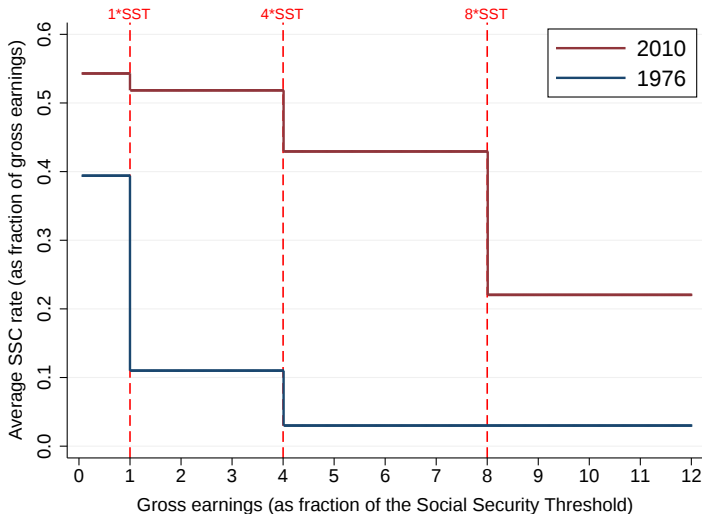
Figure 19: Ratio of minimum to median wage, France: net versus labor cost



SOURCE: DADS data 1967-2010.



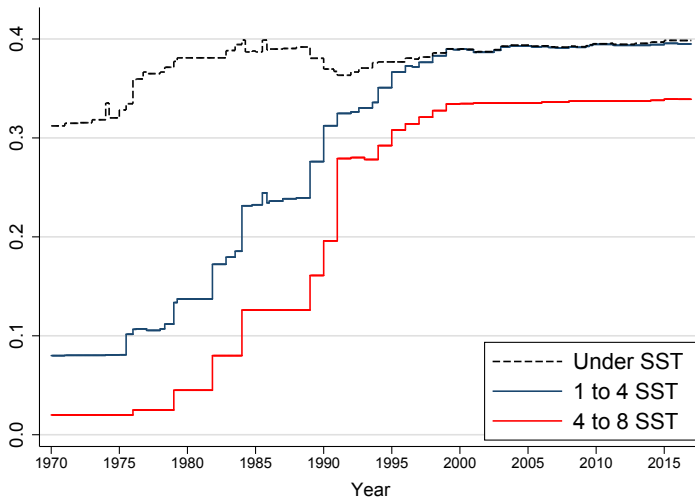
**Figure 21:** Marginal SSC rates by brackets of earnings for executives in 1967 and 2010.



NOTE : : Employer+Employee rate. SST at  $\approx$  p70, 8SST at  $\approx$  p99.95



**Figure 23:** Marginal employer SSC rates for executives, private sector, 1970-2016



**Figure 24:** Marginal employer SSC rates for non-executives, private sector, 1970-2016

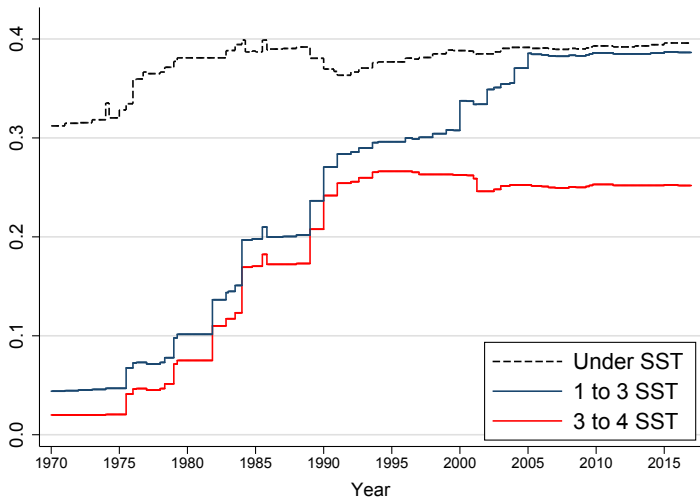


Figure 25: Marginal employee SSC rates for non-executives, private sector, 1970-2016

