Incidence of Social Security Contributions: Evidence from France

Antoine Bozio, Thomas Breda et Julien Grenet

Paris School of Economics

PSE Public and Labour Economics Seminar

Paris, 15 September 2016

Motivation

- **Social Security contributions (SSCs)**
  - compulsory payments paid to general government that confer *entitlement* to receive a future social benefit
  - taxation of earnings (not capital income)
  - nominally split between employee and employers
 - usually capped at threshold (hence regressive)

Motivation

- **Social Security contributions (SSCs)**
    - compulsory payments paid to general government that confer *entitlement* to receive a future social benefit
    - taxation of earnings (not capital income)
    - nominally split between employee and employers
    - usually capped at threshold (hence regressive)

- **Large share of tax revenues**
    - 26% of tax revenues in OECD (9% GDP in 2013)
        - France: 17% of GDP
        - US: 6% of GDP
        - Denmark: 0.01% of GDP
    - large increase since 1960s
    - substantial variation in employer/employee split

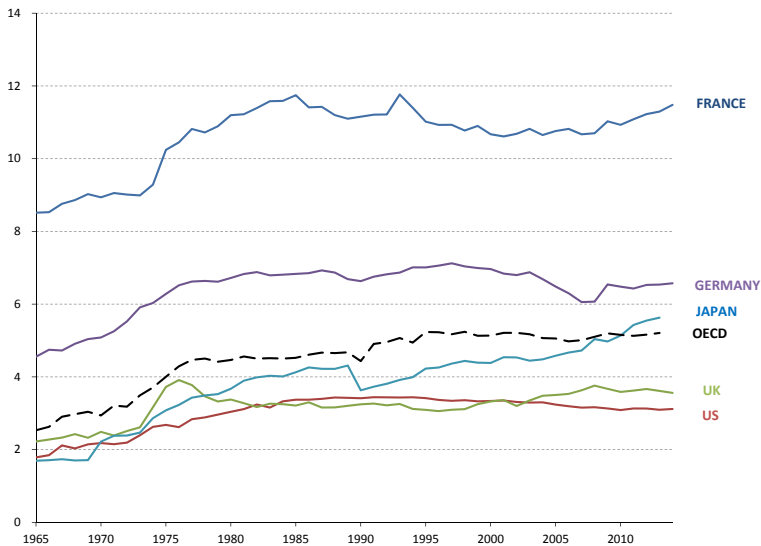# Social Security Contributions as a % of GDP, 2013
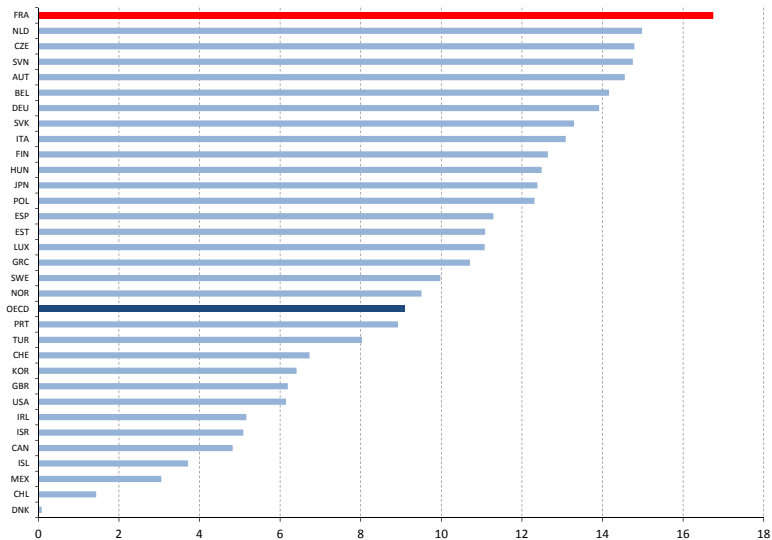
Source: OECD.Stat

Social Security Contributions as a % of GDP, 1965–2014

FRANCE

GERMANY

JAPAN

OECD

UK

US
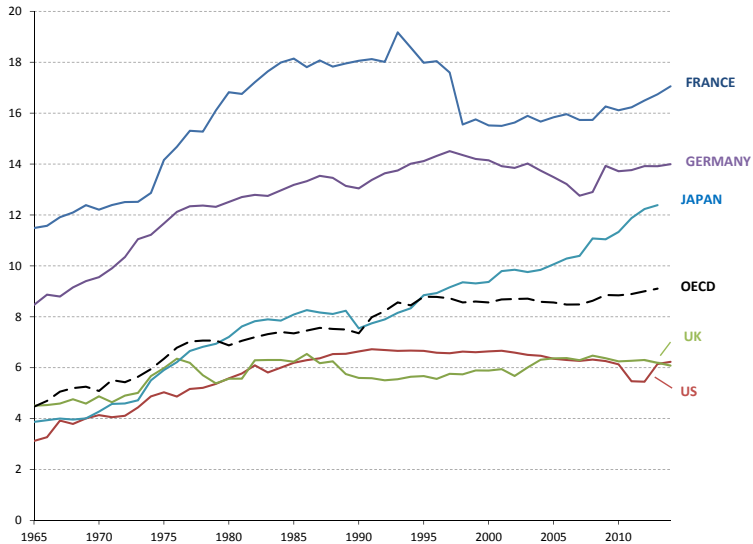
Source: OECD.Stat

Employer SSCs as a % of GDP, 1965–2014

FRANCE
GERMANY
JAPAN
OECD
UK
US

Source: OECD.Stat

Motivation

- **Rationale for funding social insurance through SSCs**
  - Tax-benefit linkage in SSCs credited with lower efficiency cost (Musgrave, 1959; Summers, 1989; Gruber, 1997)

Motivation

- **Rationale for funding social insurance through SSCs**
  - Tax-benefit linkage in SSCs credited with lower efficiency cost (Musgrave, 1959; Summers, 1989; Gruber, 1997)
  - Workers should incorporate future entitlement into their labour supply response

Motivation

- **Rationale for funding social insurance through SSCs**
  - Tax-benefit linkage in SSCs credited with lower efficiency cost (Musgrave, 1959; Summers, 1989; Gruber, 1997)
  - Workers should incorporate future entitlement into their labour supply response

- **However, potentiel efficiency costs**
  - Tax-benefit linkage not always salient
  - Nominal split might matter in short run
  - At the minimum wage, increases in employer SSCs are incident on employers

Motivation

- **Research question: what is the incidence of SSCs?**
    - does incidence of employer/employee SSCs differ?
    - is short-run incidence different from long-run?
    - does tax-benefit linkage matter for incidence?

Motivation

- **Research question: what is the incidence of SSCs?**
  - does incidence of employer/employee SSCs differ?
  - is short-run incidence different from long-run?
  - does tax-benefit linkage matter for incidence?

- **Textbook view**
  - *"knowledge of statutory incidence tells us essentially nothing about who really pays the tax"* (Rosen, 2002)
  - *"payroll taxes are borne fully by workers"* (Gruber, 2007)

Motivation

- **Research question: what is the incidence of SSCs?**
    - does incidence of employer/employee SSCs differ?
    - is short-run incidence different from long-run?
    - does tax-benefit linkage matter for incidence?

- **Textbook view**
    - *"knowledge of statutory incidence tells us essentially nothing about who really pays the tax"* (Rosen, 2002)
    - *"payroll taxes are borne fully by workers"* (Gruber, 2007)

- But relatively **little empirical evidence** to date

Literature

- **Early studies**
  - Time series and cross-country regressions (Brittain, 1972; Hamermesh, 1979; Holmlund, 1983)
  - Mixed results: from full shifting to employees to fully incident on employers

Literature

- **Early studies**
  - Time series and cross-country regressions (Brittain, 1972; Hamermesh, 1979; Holmlund, 1983)
  - Mixed results: from full shifting to employees to fully incident on employers

- **Gruber (1997)**
  - Exploit privatisation of 1981 Chilean pension system
  - Evidence of full shifting of employer SSCs to employees
  - Similar findings in Gruber (1994); Anderson & Meyer (1997)

Literature

- **Early studies**
  - Time series and cross-country regressions (Brittain, 1972; Hamermesh, 1979; Holmlund, 1983)
  - Mixed results: from full shifting to employees to fully incident on employers

- **Gruber (1997)**
  - Exploit privatisation of 1981 Chilean pension system
  - Evidence of full shifting of employer SSCs to employees
  - Similar findings in Gruber (1994); Anderson & Meyer (1997)

- **Saez et al. (2012)**
  - Exploit SSC changes across adjacent cohorts in Greece
  - Tax incidence equals nominal incidence in the long run

Paper's Contribution

- **What we do**
  - Estimate incidence of employer SSCs
  - Exploit large SSC reforms in France over the period 1976–2009
  - DiD analysis based on administrative panel data on earnings

Paper's Contribution

- **What we do**
  - Estimate incidence of employer SSCs
  - Exploit large SSC reforms in France over the period 1976–2009
  - DiD analysis based on administrative panel data on earnings

- **Contributions**
  - Consider more typical SSC variations than previous literature
  - Estimate long-run vs. short-run incidence
  - Provide evidence on how tax-benefit linkage matters for incidence

Outline

Outline

Conceptual framework

- **Labour demand/supply equations**

$$
\begin{aligned}
D &= D(z) \\
S &= S\big(z * (1 - (1 - q)\tau)\big)
\end{aligned}
$$

- **Notations**:
    - z: labour cost per hour worked
    - τ: tax rate (employer SSC rate in our case), assumed flat
    - q: tax-benefit linkage = extent to which employees value employer contributions (Gruber, 1997)

Incidence Formulas

- **Incidence formula with possible linkage**

$$\varepsilon_{z|1-\tau} = -(1-q)\frac{\varepsilon^S}{\varepsilon^D + \varepsilon^S}$$

Incidence Formulas

- **Incidence formula with possible linkage**

$$\varepsilon_{z|1-\tau} = -(1-q)\frac{\varepsilon^S}{\varepsilon^D + \varepsilon^S}$$

- **Three polar cases**:
  - (1) $\varepsilon^D >> \varepsilon^S \Rightarrow$ full incidence on workers ($\varepsilon_{z|1-\tau} \approx 0$)
    (Usual assumptions in the labour supply/elasticity of taxable income literature)

Incidence Formulas

- **Incidence formula with possible linkage**

$$\varepsilon_{z|1-\tau} = -(1-q)\frac{\varepsilon^S}{\varepsilon^D + \varepsilon^S}$$

- **Three polar cases**:
  - (1) $\varepsilon^D >> \varepsilon^S \Rightarrow$ full incidence on workers ($\varepsilon_{z|1-\tau} \approx 0$)
    (Usual assumptions in the labour supply/elasticity of taxable income literature)
  - (2) Full linkage ($q = 1$) $\Rightarrow$ full incidence on workers
    ($\varepsilon_{z|1-\tau} \approx 0$)

Incidence Formulas

- **Incidence formula with possible linkage**

$$\varepsilon_{z|1-\tau} = -(1-q)\frac{\varepsilon^S}{\varepsilon^D + \varepsilon^S}$$

- **Three polar cases**:
  - (1) $\varepsilon^D >> \varepsilon^S \Rightarrow$ full incidence on workers ($\varepsilon_{z|1-\tau} \approx 0$) (Usual assumptions in the labour supply/elasticity of taxable income literature)
  - (2) Full linkage ($q = 1$) $\Rightarrow$ full incidence on workers ($\varepsilon_{z|1-\tau} \approx 0$)
  - (3) No linkage ($q = 0$) and $\varepsilon^S >> \varepsilon^D \Rightarrow$ full incidence on employers ($\varepsilon_{z|1-\tau} \approx -1$)

Hours and Behavioral Responses

- Often, only earnings $z.h$ are observed. Need to shift focus to the elasticity of taxable earnings $\varepsilon_{zh|1-\tau}$

Hours and Behavioral Responses

- Often, only earnings $z.h$ are observed. Need to shift focus to the elasticity of taxable earnings $\varepsilon_{zh|1-\tau}$

- Under assumption of full incidence on workers $\varepsilon_{zh|1-\tau} = \varepsilon^S$ only measures behavioural responses

Hours and Behavioral Responses

- Often, only earnings $z.h$ are observed. Need to shift focus to the elasticity of taxable earnings $\varepsilon_{zh|1-\tau}$

- Under assumption of full incidence on workers $\varepsilon_{zh|1-\tau} = \varepsilon^S$ only measures behavioural responses

- Otherwise, $\varepsilon_{zh|1-\tau}$ captures a mix of incidence and behavioural responses

Hours and Behavioral Responses

- Often, only earnings $z.h$ are observed. Need to shift focus to the elasticity of taxable earnings $\varepsilon_{zh|1-\tau}$

- Under assumption of full incidence on workers $\varepsilon_{zh|1-\tau} = \varepsilon^S$ only measures behavioural responses

- Otherwise, $\varepsilon_{zh|1-\tau}$ captures a mix of incidence and behavioural responses

- Employer SSCs increases can lead to
  - Behavioral responses which draw h down
  - $\varepsilon_{zh|1-\tau} \ll \varepsilon_{z|1-\tau}$
  - $\varepsilon_{zh|1-\tau} \approx 1$ suggests full incidence on employers and limited behavioural responses

Outline

SSC Reforms in France

- **SSCs in France**
  - Many different SSCs
    - contributory: pensions, unemployment insurance
    - non-contributory : family, health care
  - Different SSC schedule for public/private wage earners and executives/non-executives

SSC Reforms in France

- **SSCs in France**
  - Many different SSCs
    - contributory: pensions, unemployment insurance
    - non-contributory : family, health care
  - Different SSC schedule for public/private wage earners and executives/non-executives

- **SSC schedule**
  - Rates applied to gross (posted) earnings
  - Reference to earnings cap: Social Security Threshold (SST)
  - SSC schedule applied to different earnings brackets:
    0–1 SST (∼P70), 1–4 SST (∼P98), 4–8 SST (∼P99.5)
  - SSC schedule applied to hourly wage

SSC Reforms in France

- **Reform 1: Uncapping of Health Care SSCs**
    - Health care employer SSCs capped at the SST until 1980
    - Uncapped in 2 years (Nov. 1981 and Jan. 1984)
    - Employer SSC rate above the SST: $+9.5$ ppts
    - No change in employee SSC rate

SSC Reforms in France

- **Reform 1: Uncapping of Health Care SSCs**
  - Health care employer SSCs capped at the SST until 1980
  - Uncapped in 2 years (Nov. 1981 and Jan. 1984)
  - Employer SSC rate above the SST: $+9.5$ ppts
  - No change in employee SSC rate

- **Reform 2: Uncapping of Family SSCs**
  - Family employers SSCs capped at the SST until 1988
  - Uncapped in 2 years (1989-90)
  - Employer SSCs above the SST: $+8.2$ ppts
  - Small reduction in employer SSC rate below the SST
  - No employee SSCs

Marginal SSC rates before/after reforms

	Employer SSCs			Employee SSCs		

Reform 1: Uncapping of health care SSCs (1981 and 1984)

	Under SST	1 to 3 SST	Difference	Under SST	1 to 3 SST	Difference
1980	38.1	10.2	−28.0	12.8	8.1	−4.7
1984	39.0	19.7	−19.3	15.2	9.7	−5.5
Difference	0.9	9.5	8.7	2.4	1.6	−0.8

Reform 2: Uncapping of family SSCs (1989 and 1990)

	Under SST	1 to 3 SST	Difference	Under SST	1 to 3 SST	Difference
1988	39.2	20.2	−19.0	17.0	10.9	−6.1
1991	36.3	28.4	−8.0	17.3	11.3	−6.0
Difference	−2.9	8.2	11.0	0.3	0.4	0.1

Sources: IPP Tax and Benefit Tables (April 2015); TAXIPP 0.4.

SSC Reforms in France

- **Reform 3: Non-executives Pensions SSCs**
  - Gradual increase (2000–2005) in SSC rates for earnings between 1 and 3 SST
  - Employer SSCs : $+7.8$ ppts
  - Employee SSCs: $+4.5$ ppts
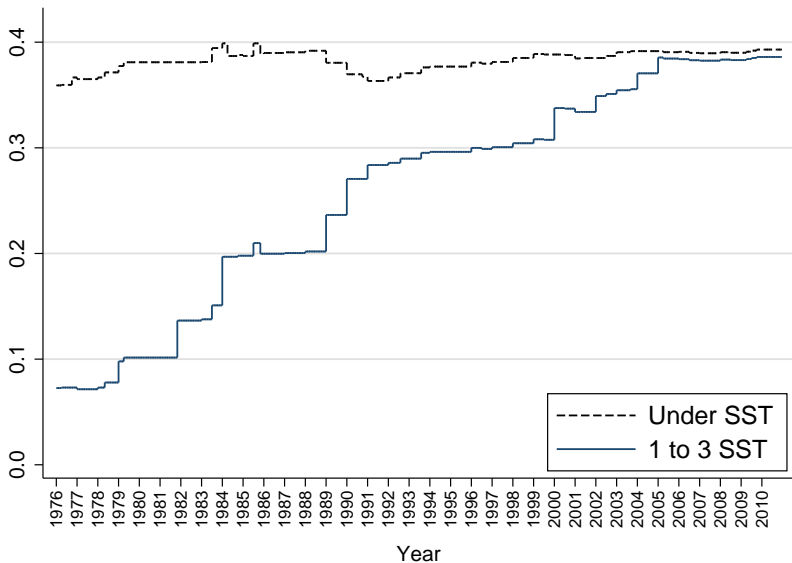 - Strong tax-benefit linkage: point-based pension systems (Arrco)

Marginal SSCs before/after reforms

Reform 3: Increase in contributory pension SSCs – non-executives (2000–2005)						
	Under SST	1 to 3 SST	Difference	Under SST	1 to 3 SST	Difference
1999	38.9	30.8	−8.1	13.4	7.5	−6.0
2005	39.1	38.5	−0.6	13.6	12.2	−1.5
Difference	0.2	7.7	7.5	0.2	4.7	4.5

Sources: IPP Tax and Benefit Tables (April 2015); TAXIPP 0.4.

Marginal Employer SSC Rates, Non-Executives, 1976–2010

*Sources: IPP Tax and Benefit Tables* (April 2015) ; TAXIPP 0.4.

Marginal Employer SSC Rates, Non-Executives, 1976–2010

Sources: IPP Tax and Benefit Tables (April 2015) ; *TAXIPP 0.4.*

Marginal Employer SSC Rates, Non-Executives, 1976–2010

Sources: IPP Tax and Benefit Tables (April 2015) ; TAXIPP 0.4.

Marginal Employer SSC Rates, Non-Executives, 1976–2010

Reform 1
Uncapping
of heath
SSCs

+9.5 ppts

Reform 2
Uncapping
of family
SSCs

+8.2 ppts

Reform 3
Increase
in pensions
SSCs

+7.8 ppts

- - - - Under SST
——— 1 to 3 SST

Year
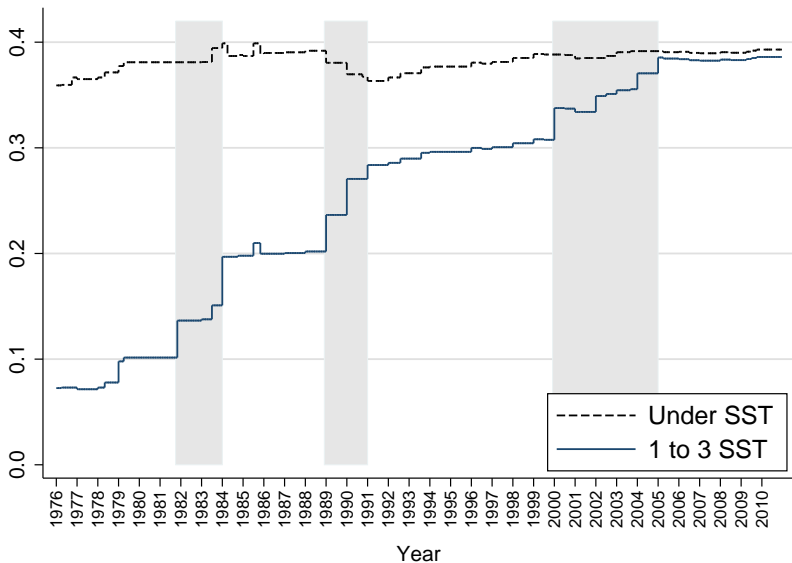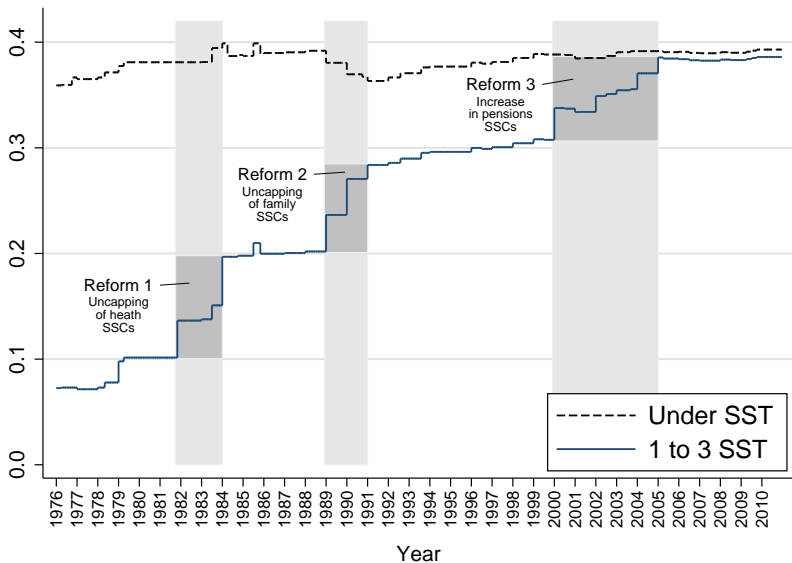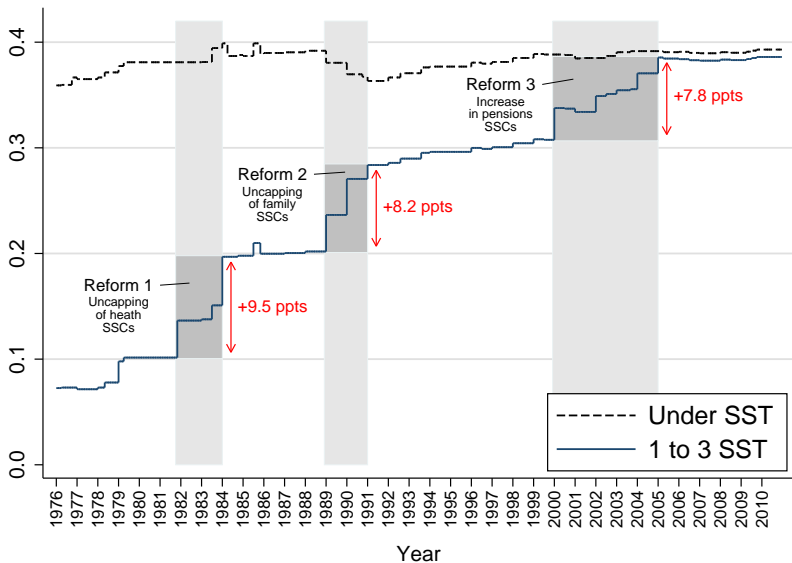
Sources: IPP Tax and Benefit Tables (April 2015) ; TAXIPP 0.4.

Outline

Empirical strategy

- **Difference-in-differences estimation**
  - Treated: workers with gross earnings $>$ SST before reform
  - Control: workers with gross earnings $<$ SST before reform
  - Before/after comparisons: up to 9 years post reforms

- **First stage:** relative change in average employer SSCs for treated vs. control

- **Reduced-form outcomes:** relative changes in
  - labour cost and gross earnings (all reforms)
  - hourly labour cost and hourly wage (reform 3)

- **2SLS:** Share of employer SSCs borne by employers

Empirical strategy
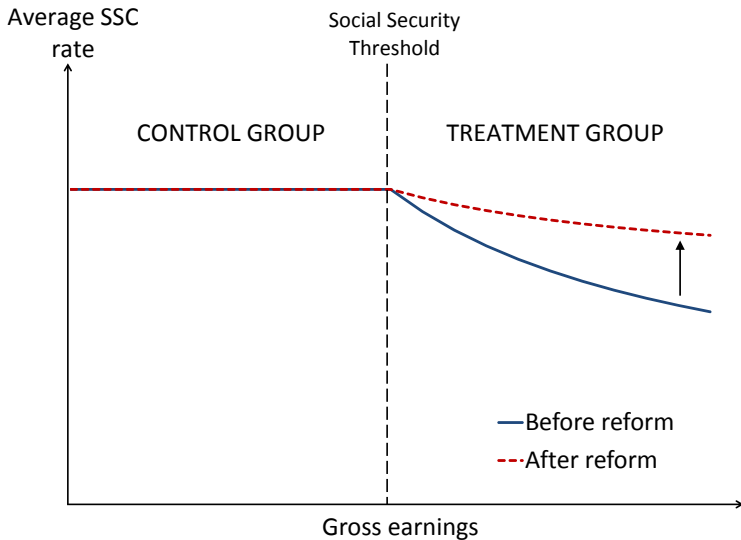
Data

- **DADS panel 2010**
    - Employer-employee administrative data reported by employers to SS schemes
    - 1/25 sample for years 1976-2001, 1/12 from 2002 onwards
    - 1.1 million workers each year (2.2 million in recent years)
    - Some missing years: 1981, 1983, 1990

Data

- **DADS panel 2010**
  - Employer-employee administrative data reported by employers to SS schemes
  - 1/25 sample for years 1976-2001, 1/12 from 2002 onwards
  - 1.1 million workers each year (2.2 million in recent years)
  - Some missing years: 1981, 1983, 1990

- **Available information**
  - Start and end of job spell, firm size, sector, occupation
  - Net taxable earnings available throughout the period
  - Gross earnings and hours available from 1993 onwards

Earnings concepts
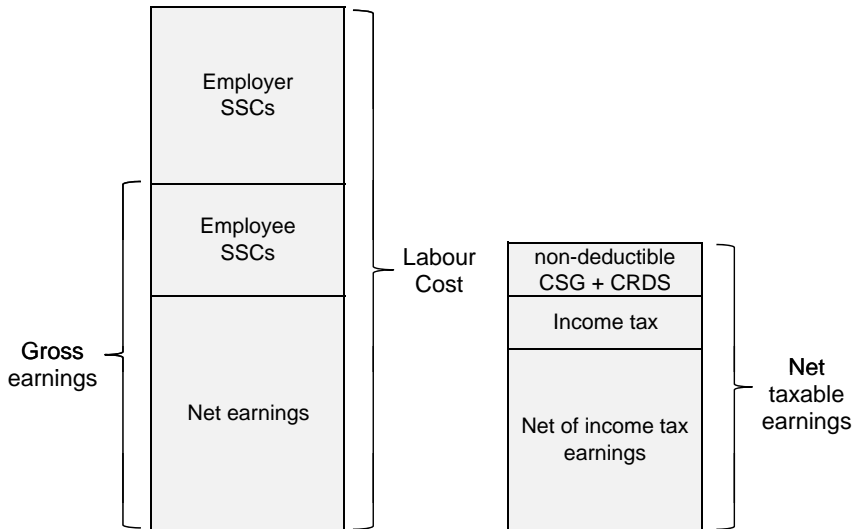
Data

- **Computing gross earnings**
    - gross earnings estimated by INSEE pre 1993: does not reflect specific changes in SSCs (sector average)
    - computation of gross earnings from taxable earnings using IPP microsimulation model (TAXIPP)

Data

- **Computing gross earnings**
  - gross earnings estimated by INSEE pre 1993: does not reflect specific changes in SSCs (sector average)
  - computation of gross earnings from taxable earnings using IPP microsimulation model (TAXIPP)

- **Simulating SSCs using TAXIPP**
  - we compute all SSCs (over 50 schedules!) to get labour cost
 - very detailed simulations of SSCs

Outline

Graphical evidence

- **Sample restrictions**
  - Full-time, full-year non-executive workers
  - Observed in reference year (i.e., last pre-reform year)
  - Construct unbalanced panel around reform years

- **Definition of treated/controls**
  - Trade-off: proximity to threshold vs. treatment intensity
  - Groups defined based on gross earnings in reference year
    - Treated: between SST and 1.4 SST
    - Controls: between 0.9 SST and SST

- **Graphical evidence**
  - Normalise earnings at 100 in reference year
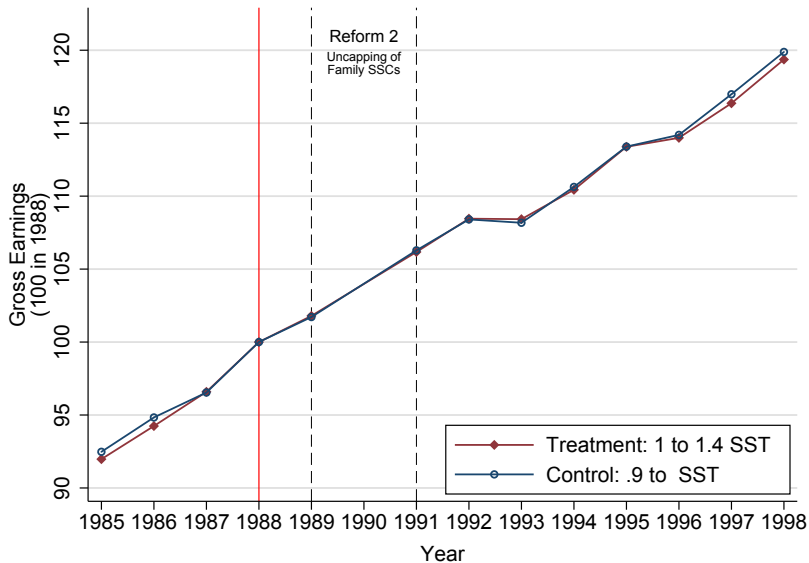 - Compare gross earnings/labour cost before/after reform

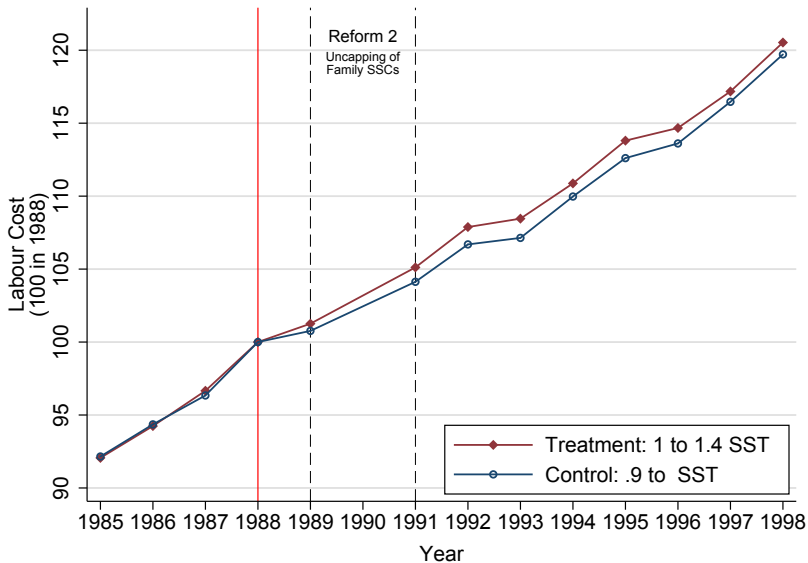# Reform 1 (Uncapping of Health care SSCs): Gross Earnings

Sources: DADS Panel 2010; TAXIPP 0.4.
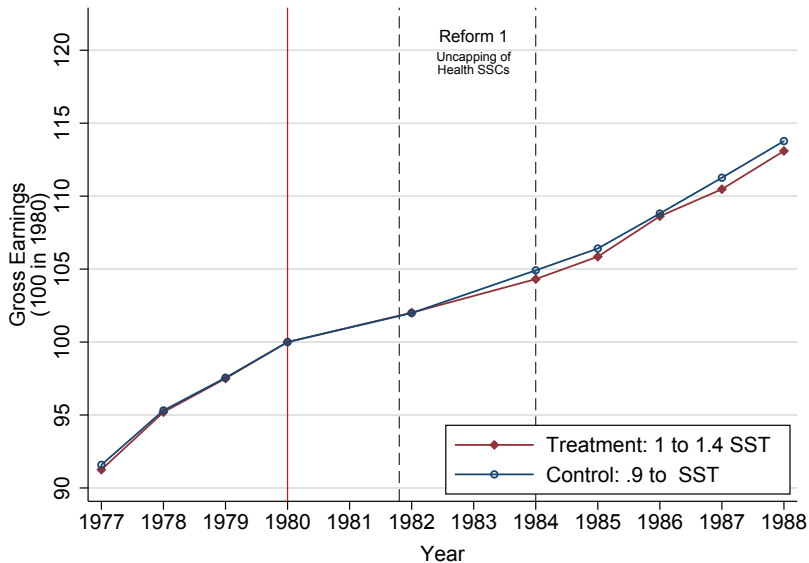
Reform 1 (Uncapping of Health care SSCs): Labour Cost
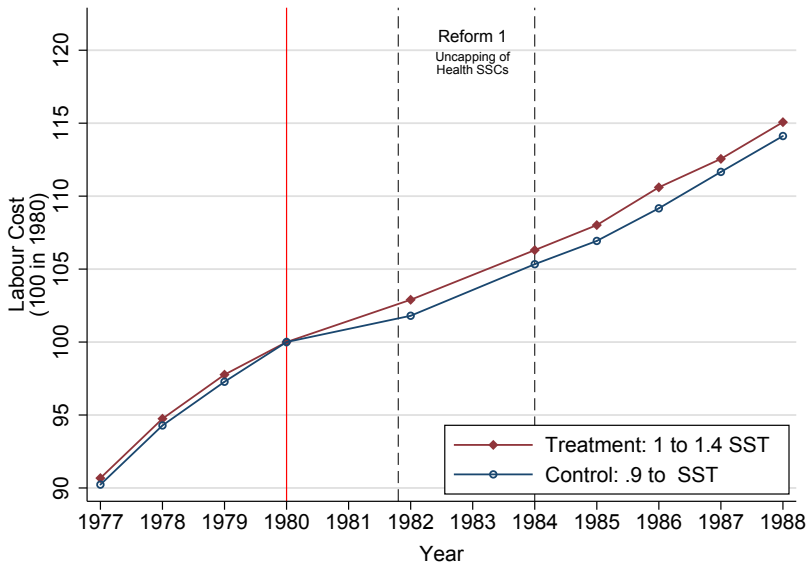
Reform 2 (Uncapping of Family SSCs): Gross Earnings

Sources: DADS Panel 2010; TAXIPP 0.4.

Reform 2 (Uncapping of Family SSCs): Labour Cost
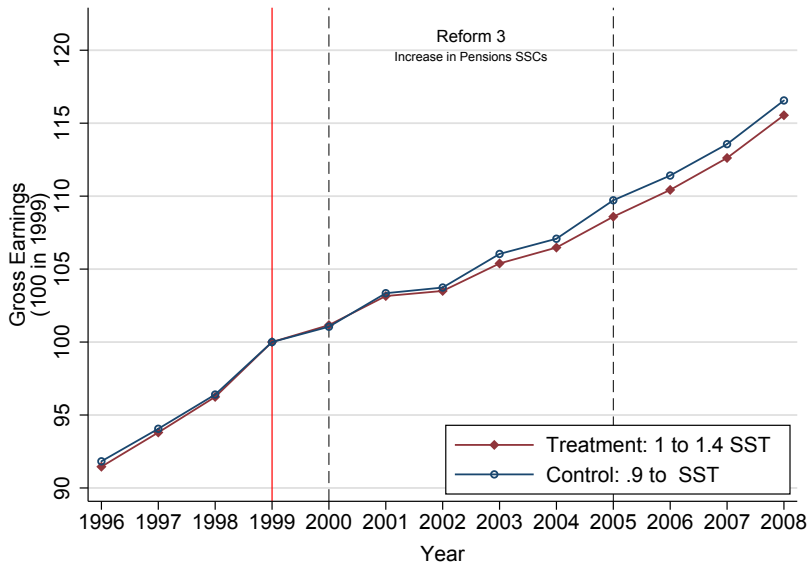

Sources: DADS Panel 2010; TAXIPP 0.4.

Reform 3 (increase in Pensions SSCs): Gross Hourly Wage
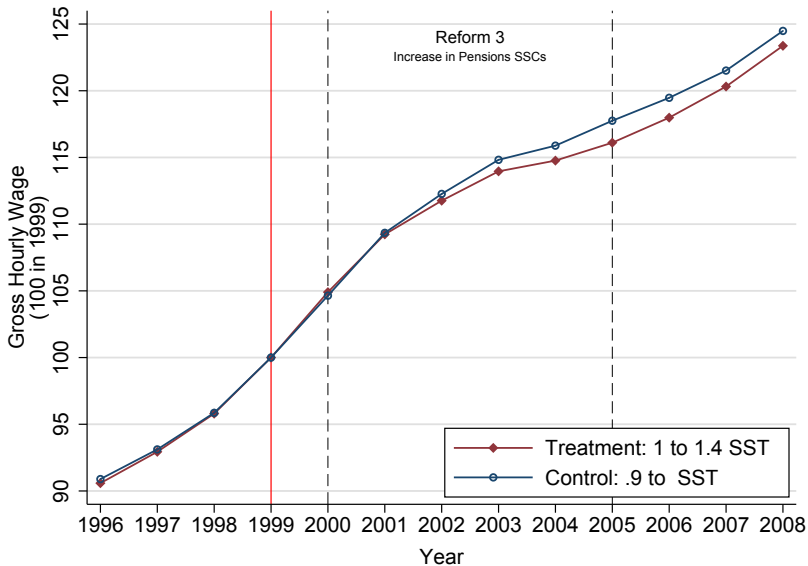
Reform 3 (increase in Pensions SSCs): Gross Hourly Cost

Reform 3
Increase in Pensions SSCs
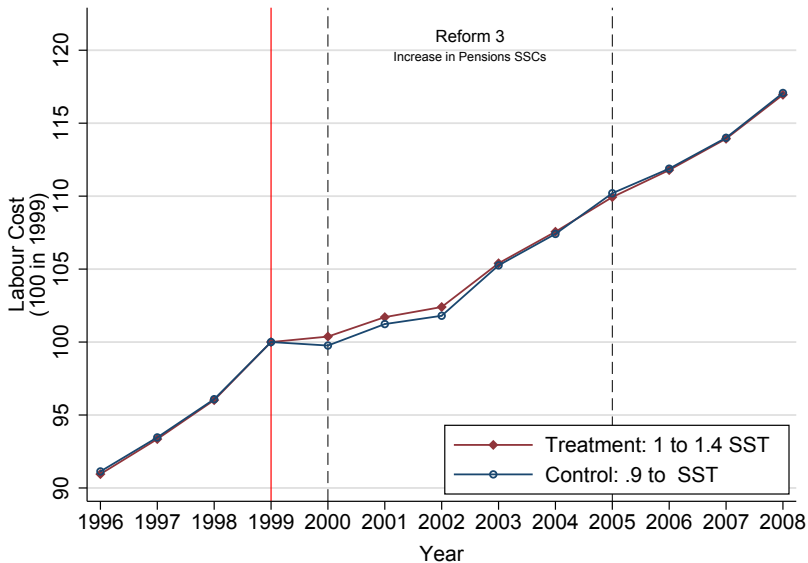
Hourly Labour Cost
(100 in 1999)

Treatment: 1 to 1.4 SST
Control: .9 to SST
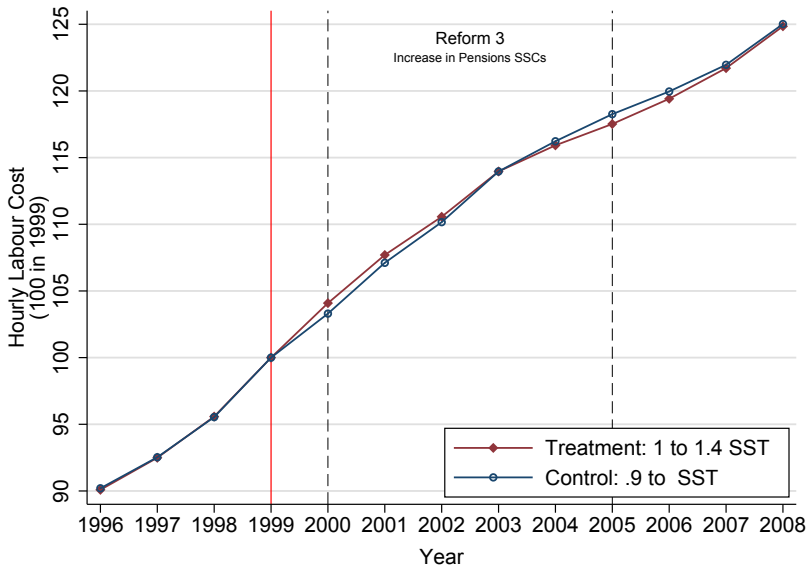
Year

Reform 3 (increase in Pensions SSCs): Gross Earnings

Sources: DADS Panel 2010; TAXIPP 0.4.

Reform 3 (increase in Pensions SSCs): Labour Cost

Reform 3
Increase in Pensions SSCs

Labour Cost
(100 in 1999)

Treatment: 1 to 1.4 SST
Control: .9 to SST

Year

Sources: DADS Panel 2010; TAXIPP 0.4.

Estimation

- **Specification 1: Reduced form**

$$\log(1 - \tau_{it}) = \alpha + \theta_i + \theta_t + \sum_{k=1}^{K} \beta_k (T_i \times \mathbb{1}\{t = k\}) + \varepsilon_{it} \qquad (1)$$

$$\log(z_{it}) = \tilde{\alpha} + \tilde{\theta}_i + \tilde{\theta}_t + \sum_{k=1}^{K} \gamma_k (T_i \times \mathbb{1}\{t = k\}) + \tilde{\varepsilon}_{it} \qquad (2)$$
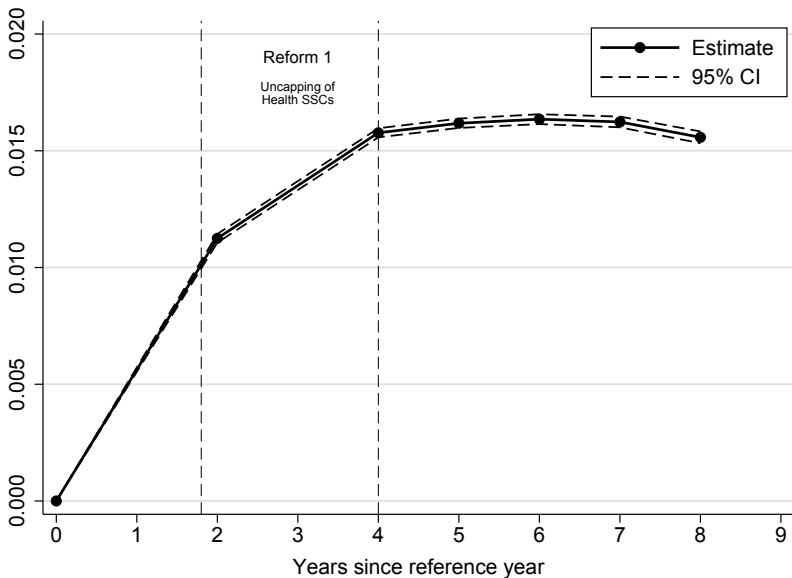
β_k, γ_k: reduced-form effects of reform after k years
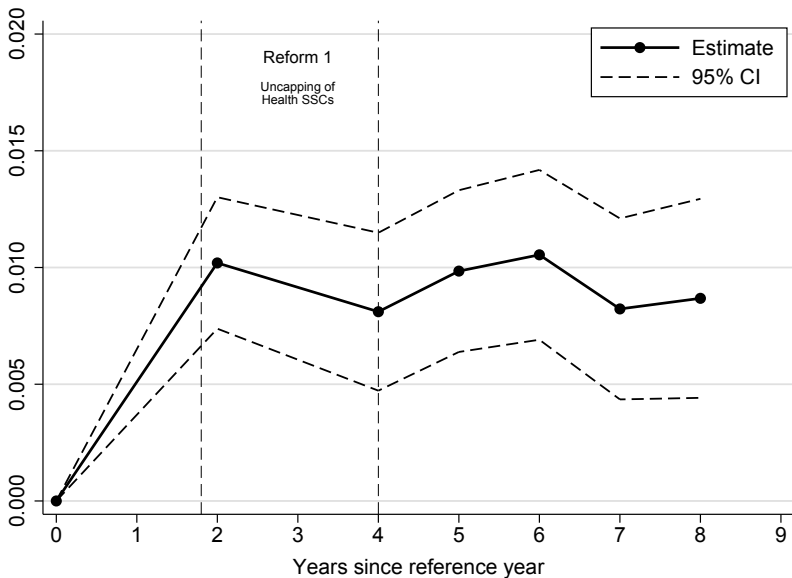
- **2SLS estimate of share of SSC borne by employers**:

$$\text{incidence after } k \text{ years} = \hat{\gamma}_k / \hat{\beta}_k$$

- Standard errors clustered at the individual level

Reform 1: First stage, log(1-SSCs)

Reform 1

Uncapping of
Health SSCs

Legend:
- Estimate
- 95% CI

X-axis: Years since reference year
Y-axis: 0.000, 0.005, 0.010, 0.015, 0.020

Reform 1: Reduced-form, log(zh)

Reform 1

Uncapping of Health SSCs

Estimate
95% CI

Years since reference year

Reform 1: Employer Share of Incidence (2SLS)

Reform 1
Uncapping of
Health SSCs

Legend:
— Estimate
- - - 95% CI

X-axis: Years since reference year
Y-axis: -0.5 to 2.0

Reform 2: First stage, log(1-SSCs)

Reform 2

Uncapping of
Family SSCs

Estimate
95% CI

Years since reference year

Reform 2: Reduced-form, log(zh)

Reform 2

Uncapping of
Family SSCs

Estimate
95% CI

Years since reference year

Reform 2: Employer Share of Incidence (2SLS)

Reform 2
Uncapping of
Family SSCs

Legend: Estimate; 95% CI

x-axis: Years since reference year

Reform 3: First stage, log(1-SSCs)

Reform 4

Increase in Pensions SSCs

Legend:
- Estimate
- 95% CI

X-axis: Years since reference year

Reform 3: Reduced-form, log(z)

Sources: DADS Panel 2010; TAXIPP 0.4.

Reform 3: 2SLS – z

Reform 3
Increase in Pensions SSCs

Legend:
- Estimate
- 95% CI

X-axis: Years since reference year
Y-axis values: -1.0, -0.5, 0.0, 0.5, 1.0, 1.5

Reform 3: 2SLS – zh

Sources: DADS Panel 2010; TAXIPP 0.4.

Estimation

- **Specification 2**
    - relax common-trend assumption by including individual-specific linear time trends $\theta_i.t$
    - individual trends are fitted based on up to 5 years of pre-reform data

- Standard errors clustered at the individual level

Reform 1: Employer Share of Incidence – zh – with trends

Reform 1
Uncapping of
Health SSCs

Estimate
95% CI

Years since reference year

Reform 2: Employer Share of Incidence – zh – with trends

Reform 2
Uncapping of
Family SSCs

Estimate
95% CI

Years since reference year
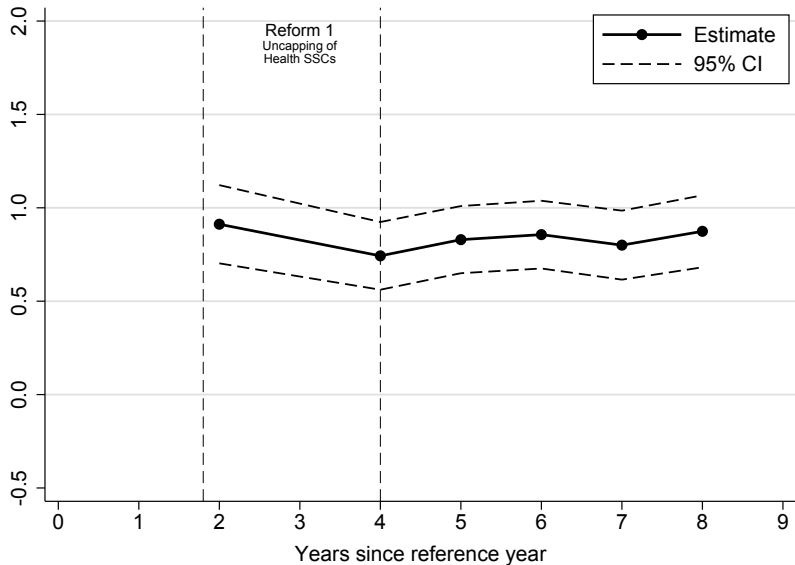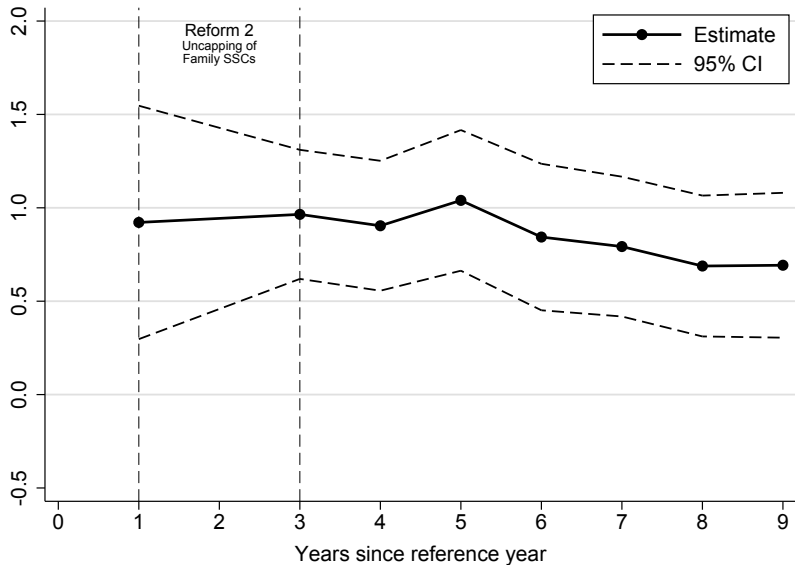
Reform 3: Employer Share of Incidence – z – with trends

Reform 3
Increase in Pensions SSCs

Legend:
- Estimate
- 95% CI

X-axis: Years since reference year
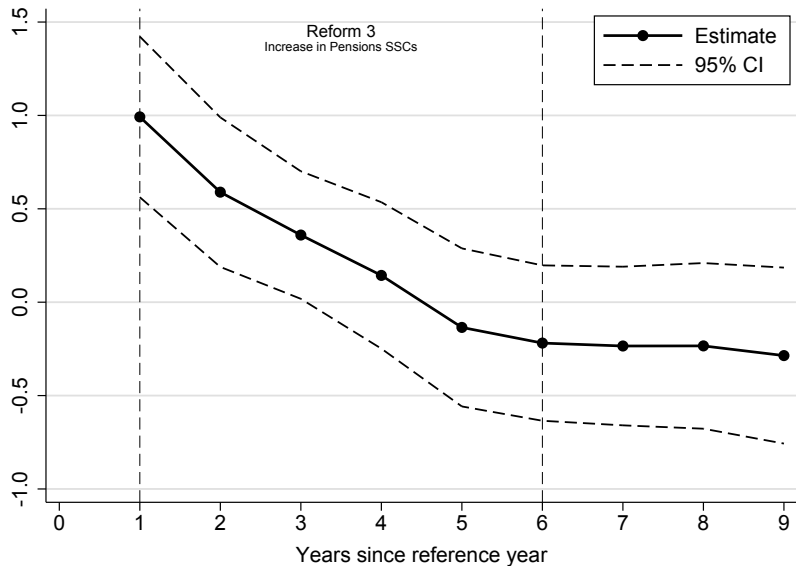
Placebo reform

- **No reform between 1992 and 1999**
  - Check common trend assumption
  - Estimate pseudo reform in 1996 (reference year in 1995)
  - Compare evolution of labour cost/gross earnings for treated vs. control

Placebo Reform (1996): Real Gross Earnings
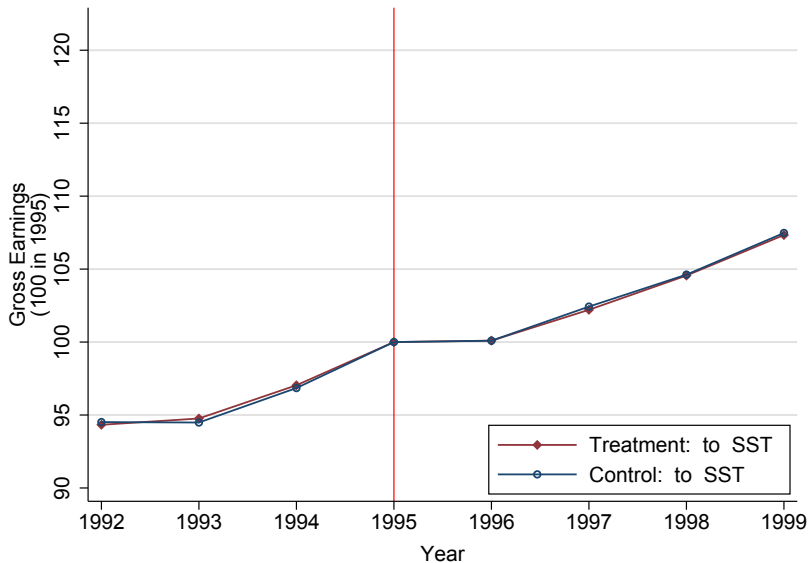
Placebo Reform (1996): Labour Cost

Sources: DADS Panel 2010; TAXIPP 0.4.
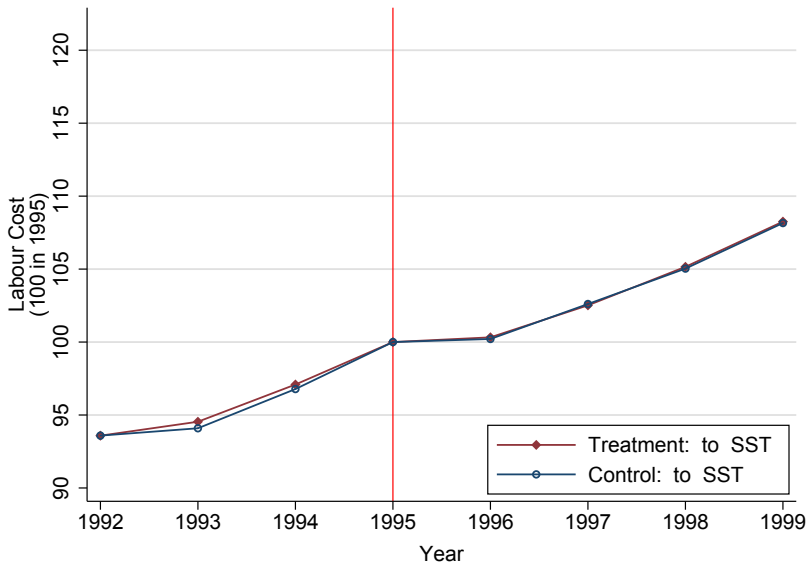
Placebo Reform: differential log(labour cost) – no trends
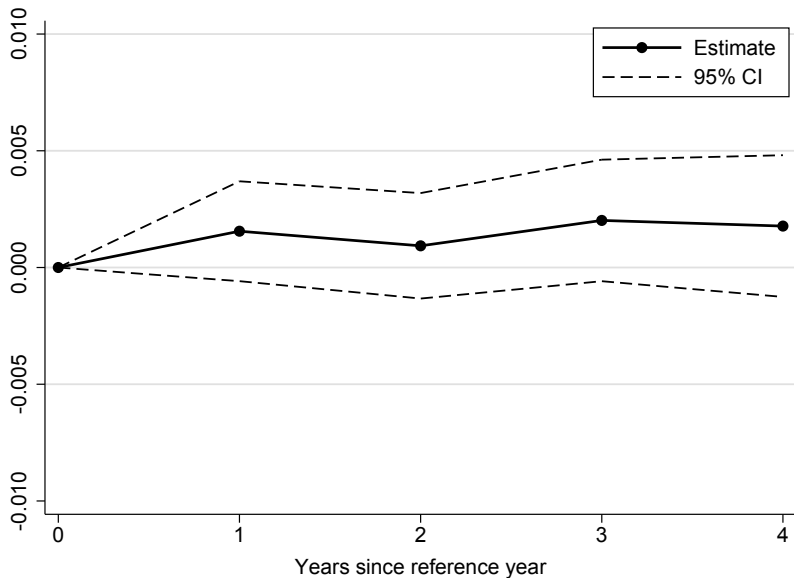
Placebo Reform: differential log(labour cost) – w/ trends
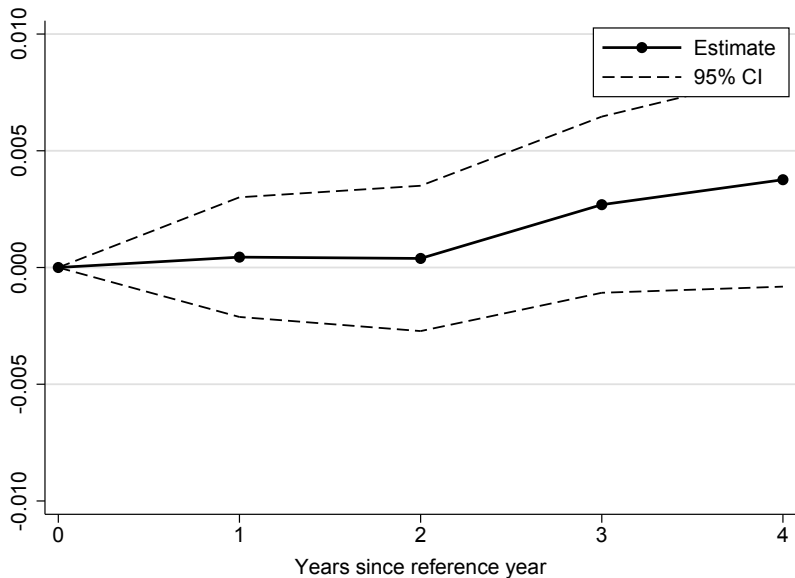
Robustness checks

- **Sensitivity to definition of treatment group**
  - Closer group to SST: better identification
  - Further away from SST: stronger first stage
  - Groups in 1–1.2 SST or in 1.2–1.4 SST

- **Results**
  - Similar conclusions
  - Beyond 1.4 SST, common trend assumption does not hold

Reform 1: Uncapping of Health Care SSCs

Treatment group:	1-1.2 SST		1.2-1.4 SST	
	(1)	(2)	(3)	(4)
T_0+2	0.668***	0.726***	1.139***	1.099***
	(0.186)	(0.150)	(0.117)	(0.096)
T_0+3	n/a	n/a	n/a	n/a
	n/a	n/a	n/a	n/a
T_0+4	0.337**	0.623***	0.654***	0.850***
	(0.173)	(0.135)	(0.091)	(0.079)
T_0+5	0.531***	0.778***	0.669***	0.875***
	(0.174)	(0.134)	(0.091)	(0.079)
T_0+6	0.519***	0.775***	0.740***	0.930***
	(0.185)	(0.135)	(0.094)	(0.079)
T_0+7	0.232	0.681***	0.712***	0.909***
	(0.201)	(0.137)	(0.096)	(0.080)
T_0+8	0.223	0.764***	0.802***	0.976***
	(0.233)	(0.143)	(0.109)	(0.084)
Individual-specific trends	No	Yes	No	Yes
Nb of obs.	563,275	563,275	416,754	416,754

Notes: Standard errors are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
Sources: DADS Panel 2010; TAXIPP 0.4.

Reform 2: Uncapping of Health Care SSCs

Treatment group:	1-1.2 SST		1.2-1.4 SST	
	(1)	(2)	(3)	(4)
T_0+1	0.887	0.887	1.075***	0.944***
	(0.692)	(0.602)	(0.254)	(0.220)
T_0+3	1.200***	1.198***	0.981***	0.792***
	(0.305)	(0.297)	(0.125)	(0.131)
T_0+4	1.329***	1.149***	0.916***	0.718***
	(0.294)	(0.296)	(0.120)	(0.133)
T_0+5	1.832***	1.337***	1.149***	0.808***
	(0.395)	(0.317)	(0.154)	(0.145)
T_0+6	1.024**	1.093***	0.875***	0.648***
	(0.472)	(0.328)	(0.181)	(0.152)
T_0+7	1.471***	1.138***	0.735***	0.515***
	(0.300)	(0.310)	(0.122)	(0.146)
T_0+8	0.876***	0.946***	0.552***	0.477***
	(0.284)	(0.311)	(0.120)	(0.148)
T_0+9	0.709**	0.986***	0.383***	0.449***
	(0.299)	(0.318)	(0.129)	(0.154)
Individual-specific trends	No	Yes	No	Yes
Nber of obs.	504,213	504,213	359,456	359,456

Notes: Standard errors are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
Sources: DADS Panel 2010; TAXIPP 0.4.

Reform 3: Increase in Pensions SSCs – z

Treatment group:	1-1.2 SST		1.2-1.4 SST	
	(1)	(2)	(3)	(4)
T_0+1	1.308***	1.103***	0.987***	0.885***
	(0.382)	(0.327)	(0.209)	(0.184)
T_0+2	1.009**	0.735**	0.684***	0.441**
	(0.328)	(0.300)	(0.182)	(0.173)
T_0+3	0.616	0.542**	0.367***	0.169
	(0.248)	(0.253)	(0.139)	(0.150)
T_0+4	0.144	0.258	0.219	0.022
	(.297)	(0.286)	(0.165)	(0.174)
T_0+5	-0.393	-0.070	-0.104	-0.203
	(0.337)	(0.314)	(0.174)	(0.185)
T_0+6	-0.630**	-0.134	-0.204	-0.310*
	(0.312)	(0.304)	(0.168)	(0.184)
T_0+7	-0.435	-0.076	-0.226	-0.406**
	(0.320)	(0.311)	(0.169)	(0.188)
T_0+8	-0.531	0.005	-0.274	-0.498**
	(0.365)	(0.321)	(0.189)	(0.199)
T_0+9	-0.612	-0.059	-0.230	-0.540**
	(0.406)	(0.340)	(0.218)	(0.212)
Individual-specific trends	No	Yes	No	Yes
Nber of obs.	493,800	493,800	338,842	338,842

Notes: Standard errors are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
Sources: DADS Panel 2010; TAXIPP 0.4.
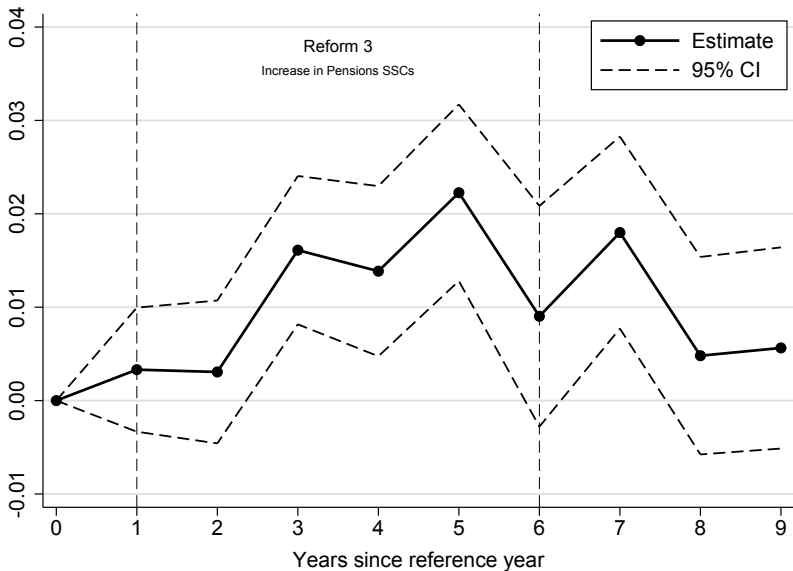
Behavioural responses

- **Intensive margin responses**
  - We observe hours only for Reform 3
  - We can estimate labour supply responses at the intensive margin
  - We find no statistical effects on hours

- **Extensive margin responses**
  - We would like to test for employment effects
  - Sample is not well suited for detecting these effects (based on individuals present in the sample in reference year)
  - Future work should try to address potential extensive margin responses

Reform 3: hours responses – no trends

Reform 3
Increase in Pensions SSCs

Legend:
— Estimate
--- 95% CI

Years since reference year

Discussion: incidence vs. earnings responses

- **Incidence is a change in wage rate**
    - Hours not observed in the data before 1993
    - Not possible to distinguish incidence from behavioural response
    - Need to assume no behavioural response

Discussion: incidence vs. earnings responses

- **Incidence is a change in wage rate**
  - Hours not observed in the data before 1993
  - Not possible to distinguish incidence from behavioural response
  - Need to assume no behavioural response

- **Incidence or behavioural responses?**
  - We use only full-time employees in balanced panel
  - Substitution effects would lead to a reduction in hours, hence lower earnings (opposite for income effects)
  - We interpret our earnings responses as being close approximation of incidence

Discussion

- **Standard view on SSC incidence called into question**
  - Confirms Saez et al. (2012) with more typical SSC reforms
  - Does not rule out incidence on employee at firm level

Discussion

- **Standard view on SSC incidence called into question**
  - Confirms Saez et al. (2012) with more typical SSC reforms
  - Does not rule out incidence on employee at firm level

- **Candidate explanations for marked difference in SSC incidence between reforms 1/2 and 3**
  - Different time period?
  - Tax-benefit linkage?

Conclusion

- **What have we found?**
  - Provide first evidence suggesting that tax-benefit linkage does matter for SSC incidence
  - The textbook view of SSC incidence is likely to be inaccurate

Conclusion

- **What have we found?**
  - Provide first evidence suggesting that tax-benefit linkage does matter for SSC incidence
  - The textbook view of SSC incidence is likely to be inaccurate

- **Future research**
  - Who pays ultimately the employer SSCs?
  - Extensive margin responses

Incidence of Social Security Contributions: Evidence from France

Antoine Bozio, Thomas Breda et Julien Grenet

Paris School of Economics

PSE Public and Labour Economics Seminar

Paris, 15 September 2016