Lecture 4: Funding the Welfare State

Antoine Bozio

Paris School of Economics (PSE)
École des hautes études en sciences sociales (EHESS)

Master PPD
Paris – February 2025

Funding the Welfare State

- **The efficiency of Social Security contributions**
  - Funding insurance through SSCs are an efficient taxation
- **Welfare state against employment ?**
  - Rise of unemployment in 1970s in Europe
  - Employer payroll taxes as culprit
- **The quest for other source of funding**
  - Broadening the tax base
  - Debate about social VAT
  - Recent report in France : Bozio-Wasmer (2014)

Lecture outline

I. **Facts and recent trends**
   1. SSCs and payroll taxation
   2. Increased reliance on general taxation

II. **Funding through Social Security contributions**
   1. Basics economics of SSCs
   2. Incidence of SSCs
   3. Employment effects of SSCs

III. **Alternative funding to SSCs**
   1. Policies reducing payroll taxation
   2. VAT option
   3. Personal income taxation

I. Facts and recent trends

Social Security contributions (SSCs) and payroll taxation

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

- **Payroll tax**
  - In EU or OECD : general tax on earnings remitted by firms

  e.g., *taxe sur les salaires* in France
  - In the U.S., payroll tax = Social Security contributions

Social Security contributions

- **SSSc as a the cost of social insurance**
  - quid pro quo tax (Musgrave, 1968) : the price of insurance provided in actuarially fair terms
  - not a tax, through tax-benefit linkage
  - in practice wide variations in degree of linkage

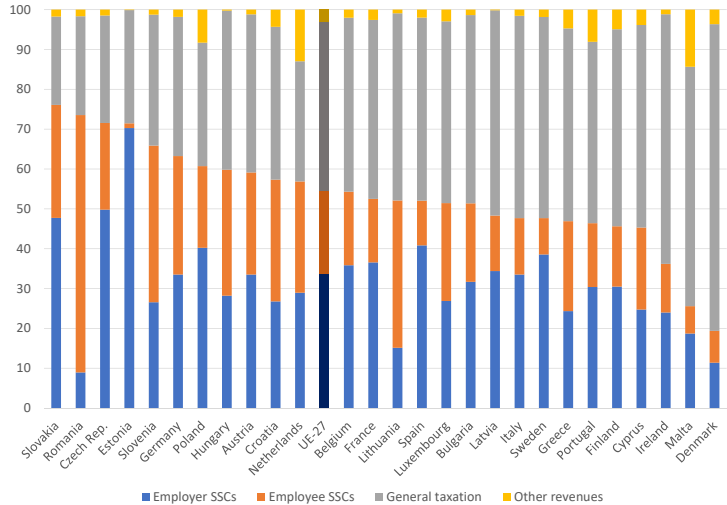
"Social Security in our sense means mandatory provision for economic contingencies, financed out of contributions on a quid pro quo basis. Thus, all those subject to certain contingencies must contribute and the actuarial value of each person's benefits must match the cost of his contribution."

Richard A. MUSGRAVE (1968) p. 68

Social Security contributions

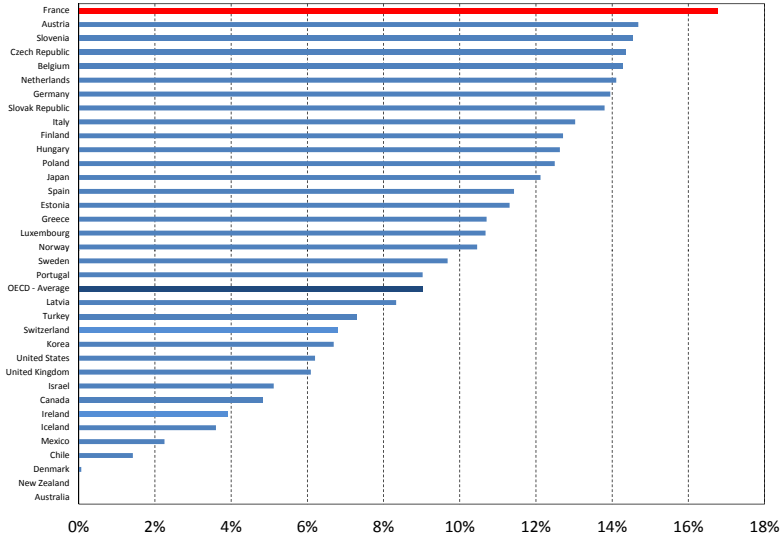
- **SSSc as the main source of funding for Bismarckian welfare states**
  - 26% of tax revenues in OECD in 2013
  - Large heterogeneity across countries
    - France : 17% of GDP
    - Japan : 12% of GDP
    - OECD average : 9% of GDP
    - Germany : 14% of GDP
    - U.S. : 6% of GDP
  - large increase since 1960s
  - substantial variation in employer/employee split

Figure 1 – Structure of funding for social spending in Europe, 2021



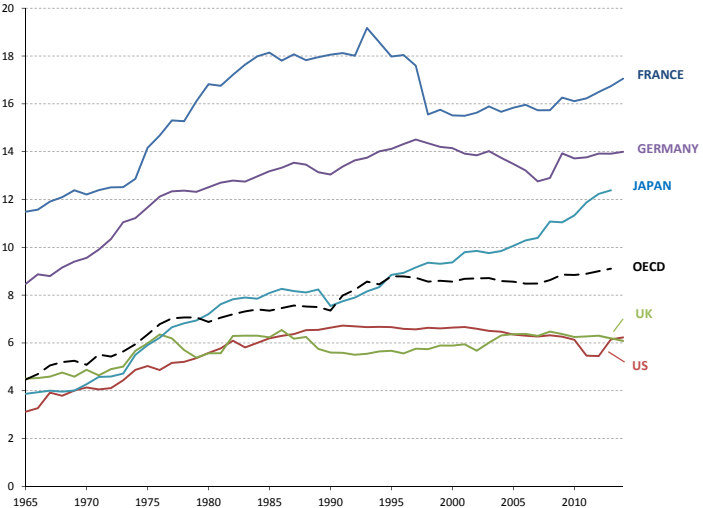
Source : Drees, *La protection sociale en France et en Europe en 2022* (2023), Fig. 1, p. 100.

Figure 2 – Social Security Contributions as a % of GDP, 2015



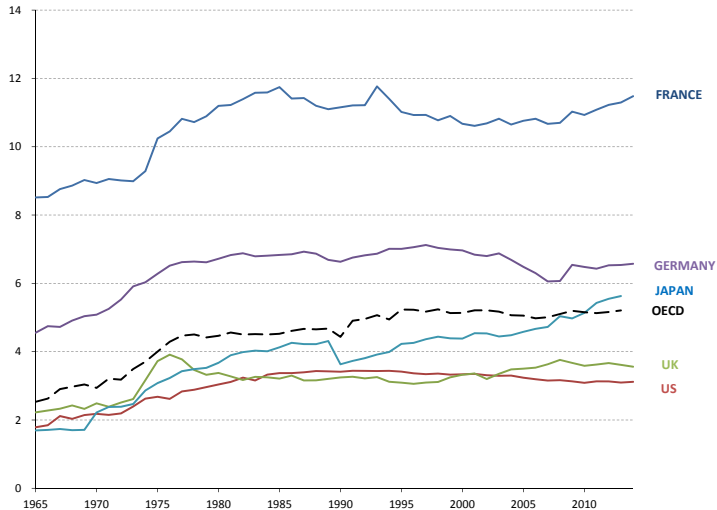
Source : OECD.Stat

Figure 3 – Social Security Contributions as a % of GDP, 1965–2014



Source : OECD.Stat

Figure 4 – Employer SSCs as a % of GDP, 1965–2014



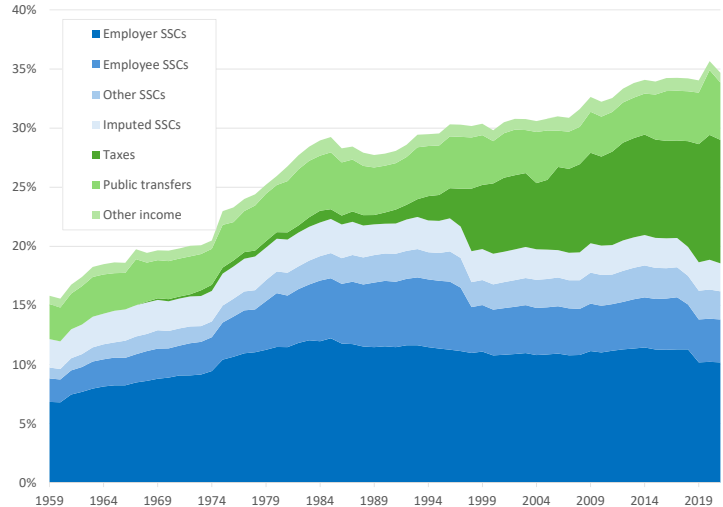
Source : OECD.Stat

Increased reliance on general taxation

- **General taxation as main source of funding for Beveridgian welfare states**
  - Universal benefits funded by general taxation in most countries
    e.g., child benefits
  - Means-tested benefits funded by general taxation in most countries
    e.g., income support, minimum pension
  - Some countries use general taxation for most social spending
    e.g., Denmark, Ireland, UK

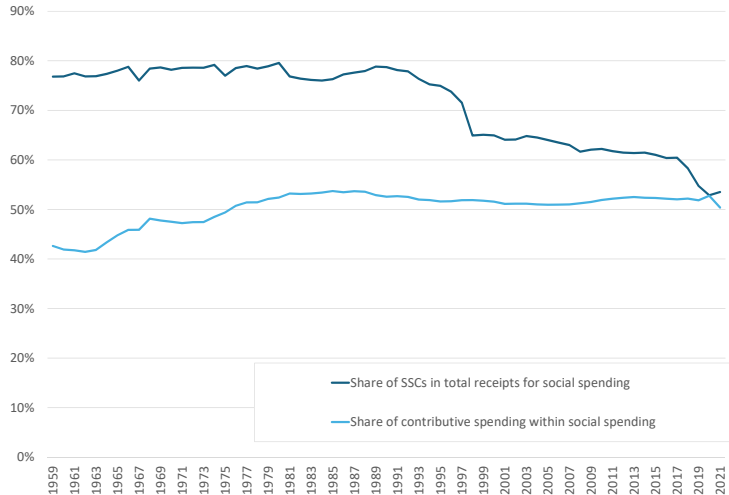
- **Increased reliance on general taxation**
  - Bismarckian countries have used general taxation to fund additional spending
  - Policies to switch SSCs with general taxation
    e.g., France creation of CSG to replace employee SSCs
    e.g., Belgium creation of Solidarity payroll tax
  - Share of SSCs among all revenues in decline

Figure 5 – Structure of funding for social spending in France, 1959–2022



SOURCE : Bozio and Wasmer (2024), Fig. 6.1, p. 249.

Figure 6 – Share of SSCS vs contributory social spending in France, 1959–2021



Source : Bozio and Wasmer (2024), Fig. 6.3, p. 252.

II. Funding through Social Security contributions

1. Basics economics of SSCs
2. Incidence of SSCs
3. Employment effects of SSCs

Basics economics of SSCs

- **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)

Basics economics of SSCs

- **Incidence formula**

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

- **Quid pro quo tax** $q = 1$
  - $\Rightarrow$ full incidence on workers ($\varepsilon_{z|1-\tau} \approx 0$)
  - $\Rightarrow$ no impact on employment
  - $\Rightarrow$ no deadweight loss

- **Usual assumption :** $0 < q < 1$ **and** $\varepsilon^D >> \varepsilon^S$

  $\Rightarrow$ full incidence on workers ($\varepsilon_{z|1-\tau} \approx 0$)

Figure 7 – Impact of SSCs on wages and employment

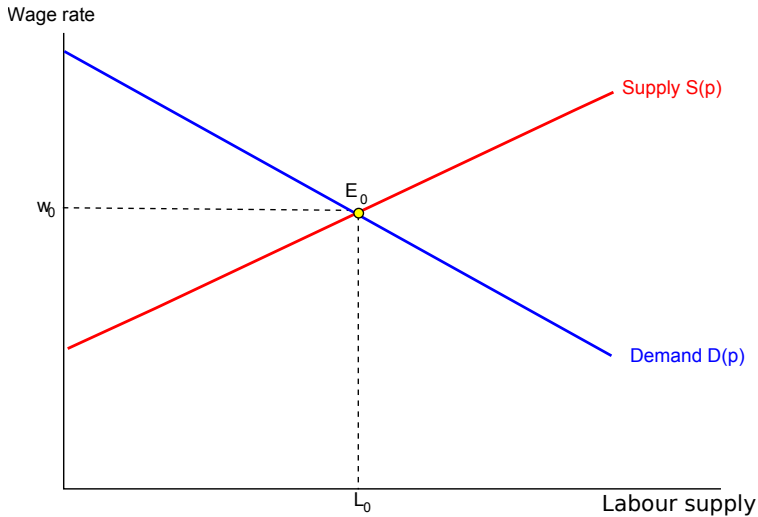


Figure 8 – Impact of SSCs on wages and employment

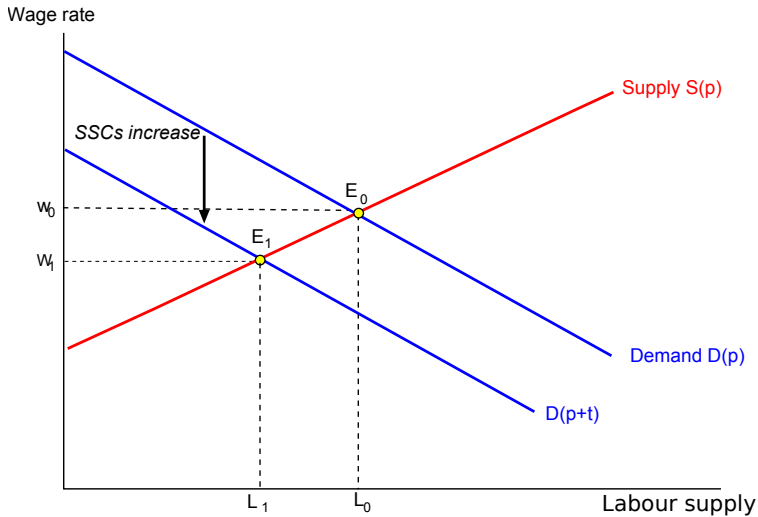
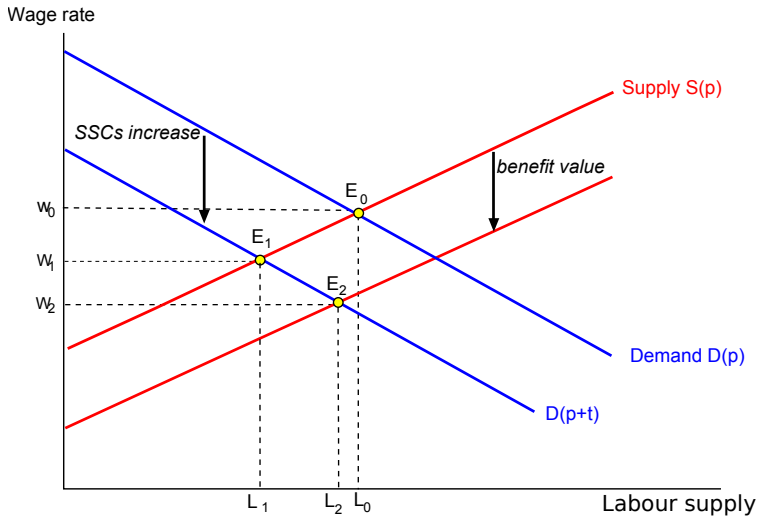


Figure 9 – Impact of SSCs on wages and employment



Early empirical estimates

- **Macro evidence**
  - Labour income shares fairly stable
  - Cross-country studies (Brittain, 1971 ; OECD, 1990 ; Tyrvainen, 1995 ; Alesina and Perotti, 1997 ; Daveri and Tabellini, 2000 ; Nunziata, 2005 ; Ooghe et al, 2003)
- **Early micro studies**
  - Hamermesh (1979) ; Neubig (1981) ; Holmlund (1983)
- **Quasi-experimental studies**
  - Gruber (1994) : Mandated maternity benefits
  - Anderson and Meyer (1997, 2000) : US UI
  - Bennmarker et al. (2009) ; Korkeamäki (2011) ; Lehmann et al. (2013) : reductions in SSCs

Gruber (JOLE, 1997)

- **The Chilean reform**
  - Chile privatized its public pension system in 1981
  - Large cut in SSCs
  - Expected increase in private pension savings
- **Methodology**
  - Time-series and cross-section estimation
  - Use firm data and firm-level SSC change
- **Results**
  - No employment effect and full-shifting of SSCs to wages (i.e., wage increase of similar magnitude to drop in SSC)

Gruber (JOLE, 1997)

- Difference Specification

$$\Delta log(W_{ijt}/E_{ijt}) = a + b_1 \Delta t_{ijt} + e_{ijt}$$

- Triple DiD (across blue and white collar)

Table 1 – Coefficient on Contributions/Wages in Cross-Sectional Regressions

	Pooled		Blue-collar		White-Collar	
	Wages	Employment	Wages	Employment	Wages	Employment
Basic difference	-1.120	0.008	-0.899	0.190	-1.350	-0.183
	(0.099)	(0.106)	(0.108)	(0.130)	(0.172)	(0.170)
DDD	-1.022	-0.113				
	(0.180)	(0.165)				
N	6,066	6,066	3,298	3,298	2,768	2,768

SOURCE : Gruber (1997), Tab. 3., p. S95.

The textbook view : recap

- **Incidence of SSC : Full shifting to workers**
  - Theory : larger elasticity of demand than supply
  - Empirics : evidence of full shifting to workers (Gruber, 1997)
- **Textbook quotes**
  - *"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)
- **Implications for employment**
  - High level of employer SSCs is not inefficient : lower wages to pay for higher benefits
  - Policymakers, trade-unionist and business people are wrong to consider SSCs as being paid by employers
    $\Rightarrow$ economists should explain incidence mechanisms

The textbook view : recap

- **Except at the minimum wage**
  - Employers cannot shift increased in employer SSCs into lower wages
    $\Rightarrow$ increased labour cost at minimum wage
    $\Rightarrow$ negative employment effect at minimum wage
- **Reduced employer SSCs at the minimum wage should foster employment**
  - Policies of targeted cut to employer SSCs (e.g., France, Belgium, Finland)

Saez, Matsaganis and Tsakloglou (QJE, 2012)

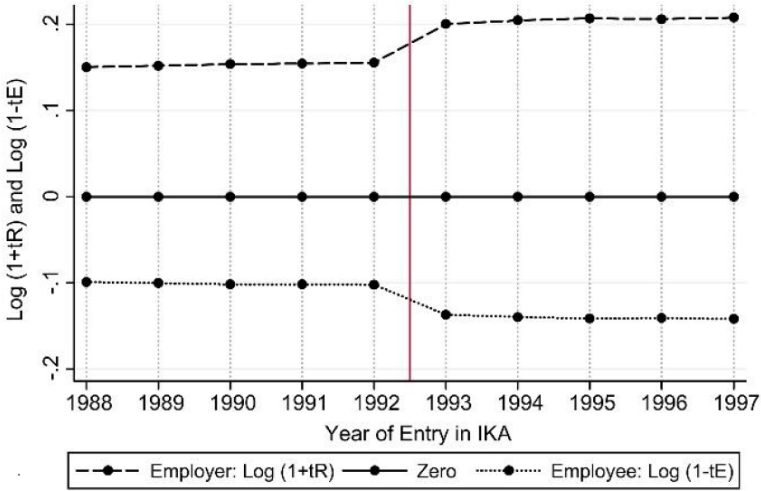
- **The 1992 Greek reform**
  - Greece has high SSC rates (28% employer, 16% employee)
  - SSCs up until a threshold (2432 euros monthly earnings)
  - Increase of threshold to 5,543 euros for new entrants

  $\Rightarrow$ Reform led to different SSC schedules for adjacent cohort

- **Methodology : Regression Discontinuity Design**
  - RDD approach based on date of entry
  - Estimate long-run incidence effects
  - Use administrative data from Greek social insurance

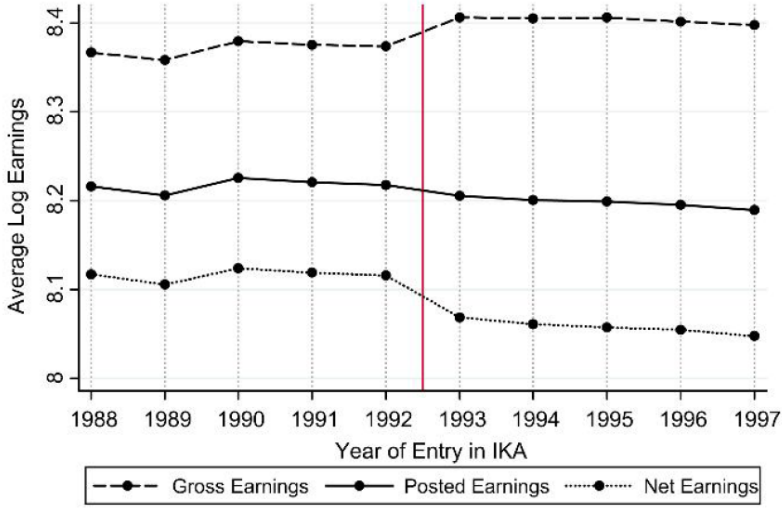
- **Results**
  - No labour supply effect (neither intensive nor extensive)
  - Incidence of SSCs similar to nominal incidence (i.e., employer SSCs fall on employers, employee SSCs fall on employees)

Figure 10 – First stage : Average Tax Rates Above Old Cap



Source : Saez et al. (2012), Fig. V.A, p. 522.

Figure 11 – Tax Incidence : Average Earnings Above Old Cap



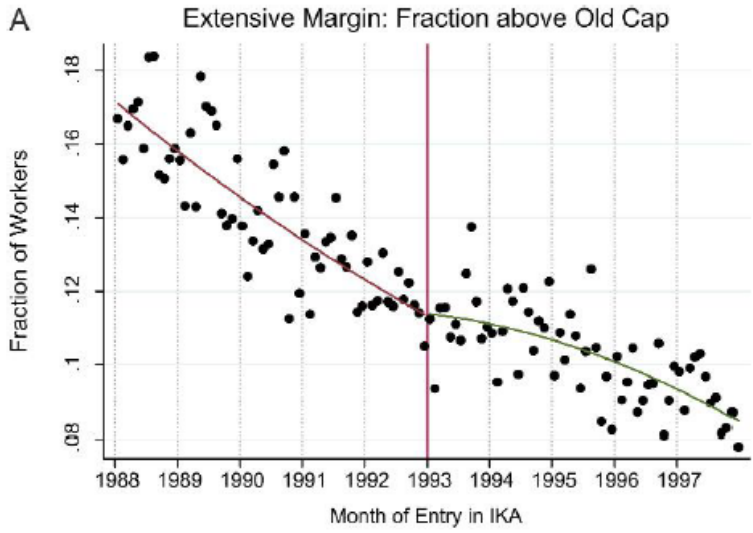
Source : Saez et al. (2012), Fig. V.B, p. 522.

Table 2 – Tax Incidence Effects : RDD estimates

Sample :	1988–1997 entrants	1991–1994 entrants only	1988–1997 entrants	1988–1997 entrants	1988–1997 entrants
	(1)	(2)	(3)	(4)	(5)
Panel B. Gross, posted, and net earnings (above old cap)					
Log gross earnings z	0.031	0.033	0.029	0.021	0.040
	(0.007)	(0.012)	(0.007)	(0.011)	(0.016)
Log posted earnings w	-0.013	-0.009	-0.015	-0.021	0.001
	(0.008)	(0.013)	(0.008)	(0.012)	(0.017)
Log net earnings c	-0.047	-0.043	-0.050	-0.055	-0.031
	(0.009)	(0.014)	(0.009)	(0.013)	(0.018)
Number of observations	50,084	18,846	50,084	50,084	50,084
Controls					
Linear entry date trends	Yes	Yes	Yes	Yes	Yes
Monthly dummies			Yes	Yes	Yes
Quadraticdate trends				Yes	Yes
Cubic entry date trends					Yes

SOURCE : Saez et al. (2012), Tab. V, p. 523.

Figure 12 – Labour supply response : extensive margin

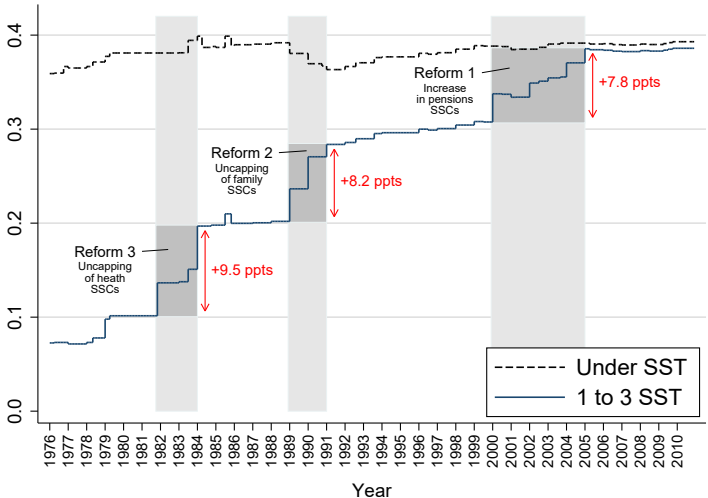


Source : Saez et al. (2012), Fig. IV.A, p. 516.

Bozio, Breda, Grenet and Guillouzouic (2019) – France

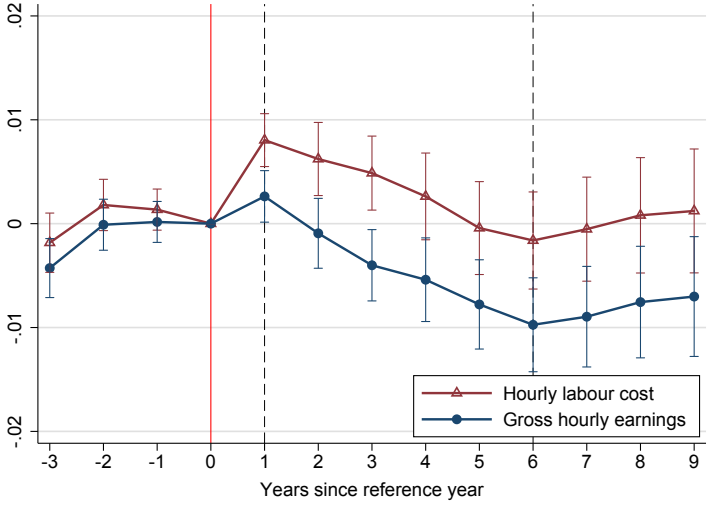
- **French SSC reforms**
  - Exploit three uncapping reforms in France
  - Different tax-benefit linkage
- **Methodology**
  - DD approach based on pre-reform earnings w.r.t threshold
  - Estimate long-run incidence effects
  - Use administrative data (DADS data)
- **Results**
  - Incidence of SSCs on employers for reforms with no tax-benefit linkage
  - Incidence of SSCs on employees in reform with strong tax-benefit linkage

Figure 13 – Marginal Employer SSC Rates, Non-Executives, 1976–2010



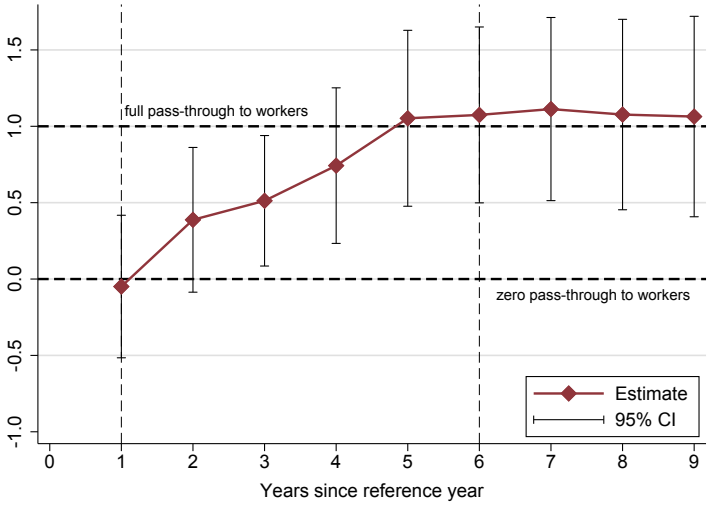
Sources : *IPP Tax and Benefit Tables* (April 2016 ; TAXIPP 0.4)

Figure 14 – Reform 1 : log(z) vs log(w)



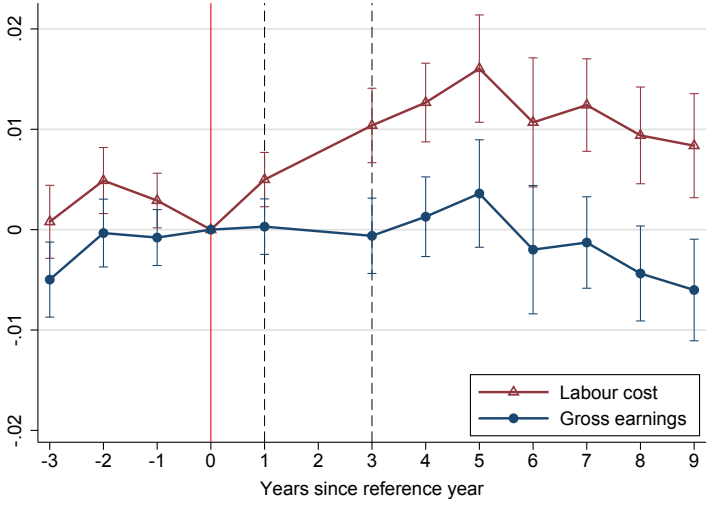
Source : Bozio et al. (2019).

Figure 15 – Reform 1 : Pass-Through Rate on Workers – w – with trends



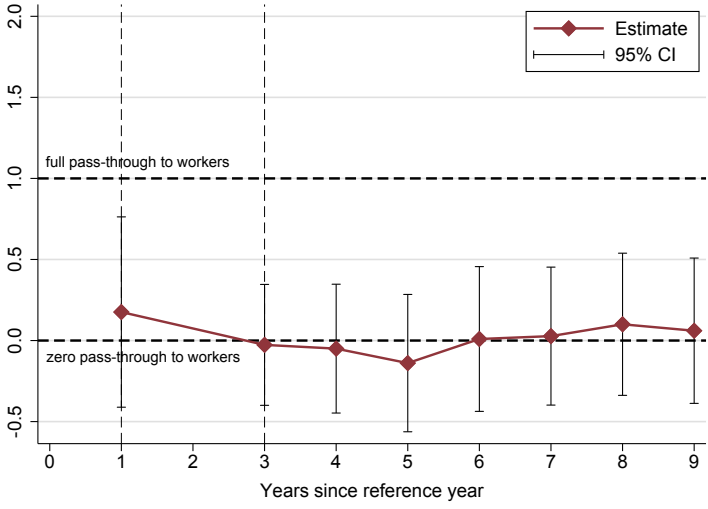
Source : Bozio et al. (2018).

Figure 16 – Reform 2 : log(zh) vs log(wh)



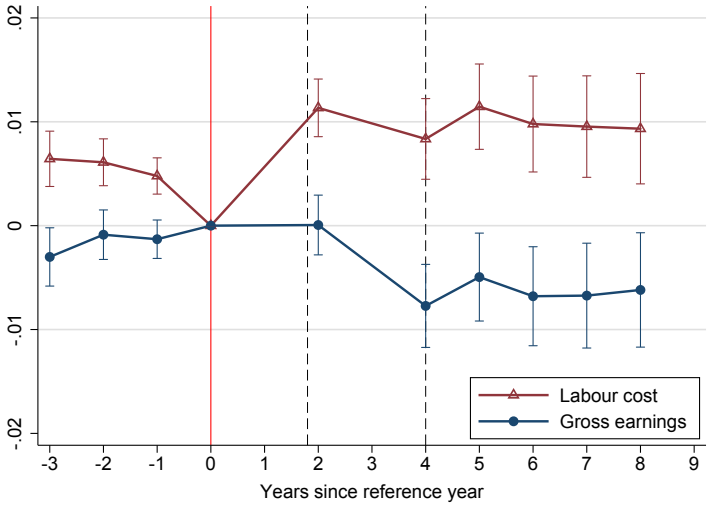
Source : Bozio et al. (2019).

Figure 17 – Reform 2 : Pass-Through Rate on Workers– with trends



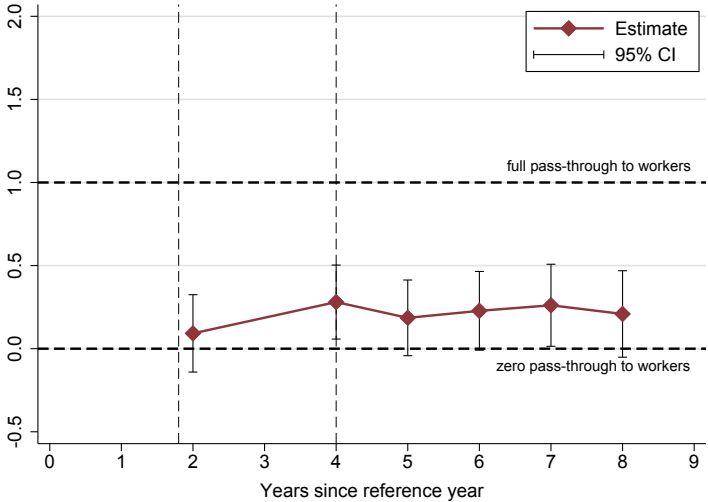
Source : Bozio et al. (2019).

Figure 18 – Reform 3 : log(zh) vs log(wh)



Source : Bozio et al. (2019).

Figure 19 – Reform 3 : Pass-Through Rate on Workers – with trends



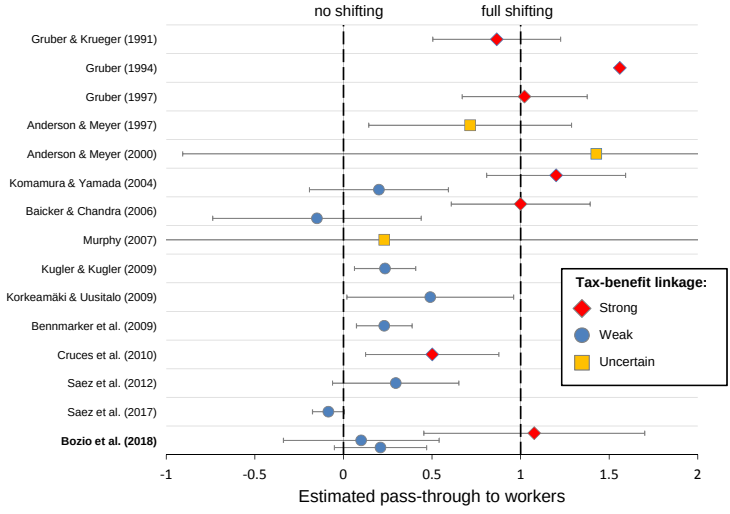
Source : Bozio et al. (2019).

Bozio et al. (2019) : Summary

Table 3 – Baseline estimates of pass-through rate on workers

Reform :	**Reform 1**		**Reform 2**	**Reform 3**
Dep. var. :	log(hourly wage)	log(earnings)	log(earnings)	log(earnings)
Panel A. Without controlling for individual-specific trends				
t_0+8	0.934***	0.812***	0.186	0.384**
	(0.303)	(0.293)	(0.166)	(0.172)
t_0+9	0.906***	0.969***	0.215	n/a
	(0.327)	(0.324)	(0.170)	n/a
Panel B. Controlling for individual-specific trends				
t_0+8	1.077***	1.112***	0.100	0.209
	(0.318)	(0.291)	(0.224)	(0.133)
t_0+9	1.064***	1.157***	0.061	n/a
	(0.335)	(0.308)	(0.229)	n/a

Figure 20 – Meta-Analysis of Payroll Tax Incidence



III. Alternative source of funding

1. Policies reducing payroll taxation
2. VAT option
3. Personal income taxation

Policies reducing payroll taxation

- **Targeted payroll tax cuts**
  - Targeted at the minimum wage : France, Belgium
  - Targeted to young workers : Sweden
  - Targeted to older workers : Hungary, France
  - Targeted to regional areas : France, Finland

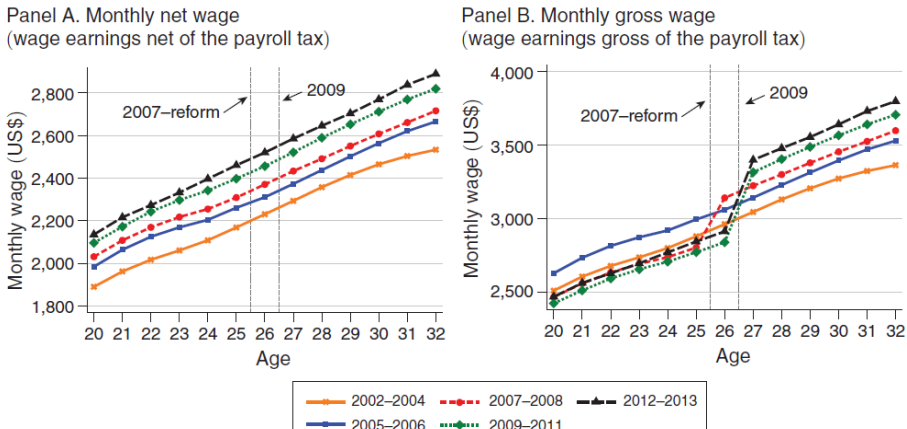
- **General rationales**
  - By lowering employer SSCs, foster employment effects which is beneficial to the welfare state

  $\Rightarrow$ lower unemployment, less benefits, more tax/SSC receipts

Saez, Schoefer and Seim (AER, 2019) – Sweden

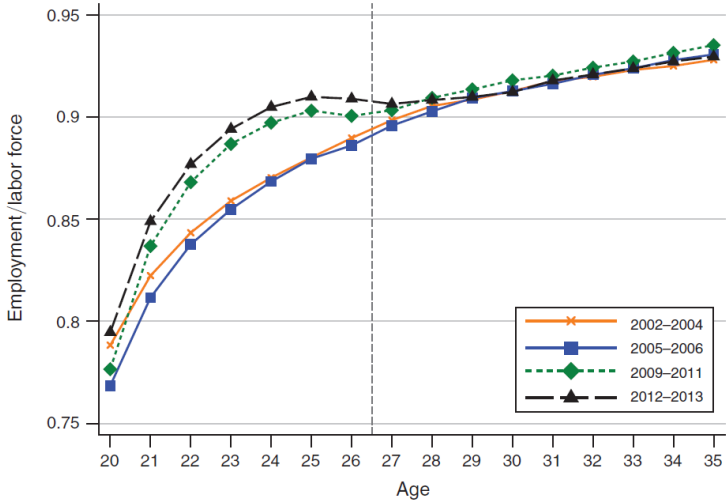
- **The Swedish reform**
  - 2007 cut to payroll tax rate (from 31.4% to 21.3%) for workers aged 19–25
  - 2009 cut to 15.5% for workers aged 19–26
  - Reform repealed in 2015-16
- **Methodology (1) : worker-level**
  - RDD approach based on age
  - Estimate long-run incidence effects + employment
  - Use administrative data from Swedish social insurance
- **Results**
  - No shifting at individual level to wages (100% pass-through to firms)
  - Large impact on employment

Figure 21 – The effect of the payroll tax cut on wages



SOURCE : Saez, Schoefer and Seim (2019), Fig. 2, p. 1727.

Figure 22 – Employment impact

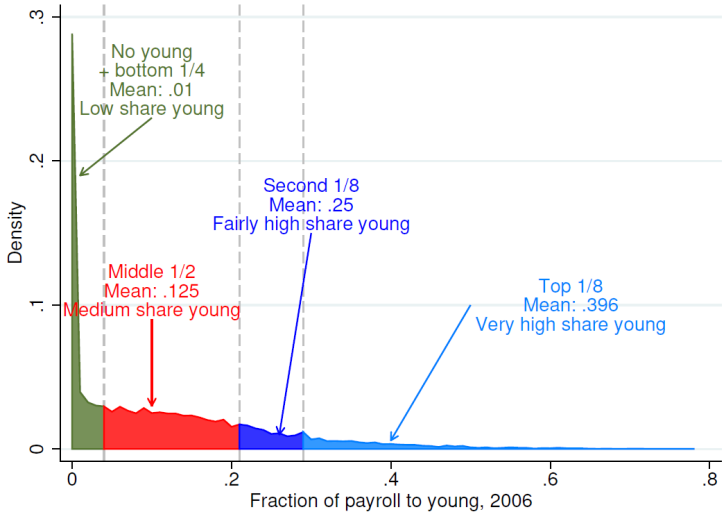


Source : Saez et al. (2019).

Saez et al. (AER, 2019) – Sweden

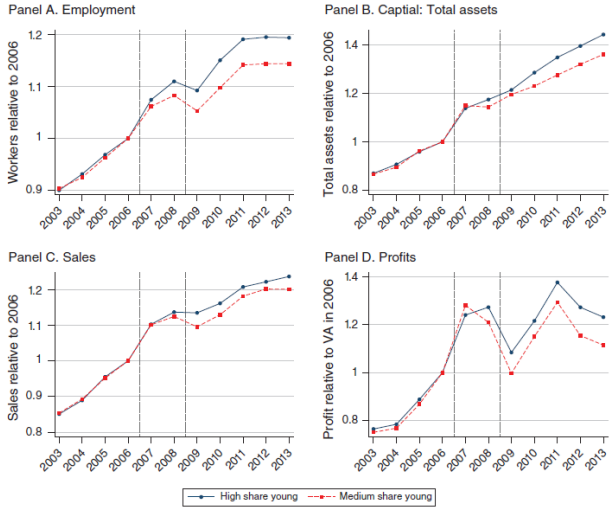
- **Methodology (2) : firm-level**
  - DiD between firms with high share of young vs low share
  - Estimate impact on scale (employment, valued-added, profit, etc.)
  - Estimate firm-level incidence (impact on total wage)
  - Merge employee data with firm-level accounting data
- **Results**
  - Large impact on activity (+value-added, +employment, + profit)
  - Large impact on wage of all workers
  - Incidence : fully shifted to workers at firm-level

Figure 23 – Heterogeneity in exposure



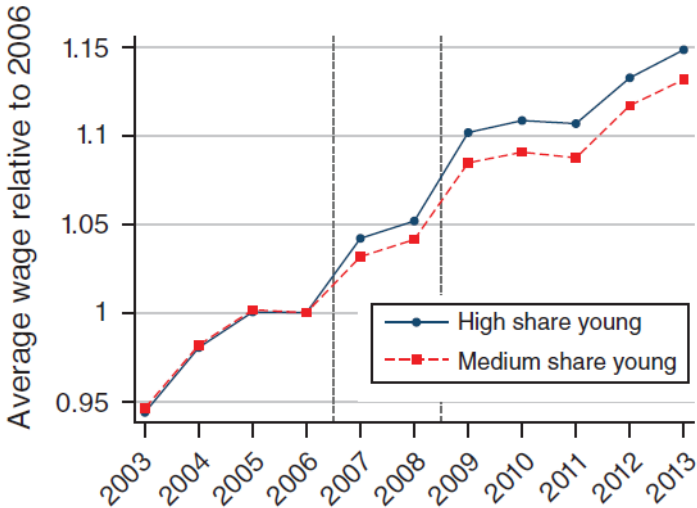
Source : Saez et al. (2019).

Figure 24 – Firm-level impacts



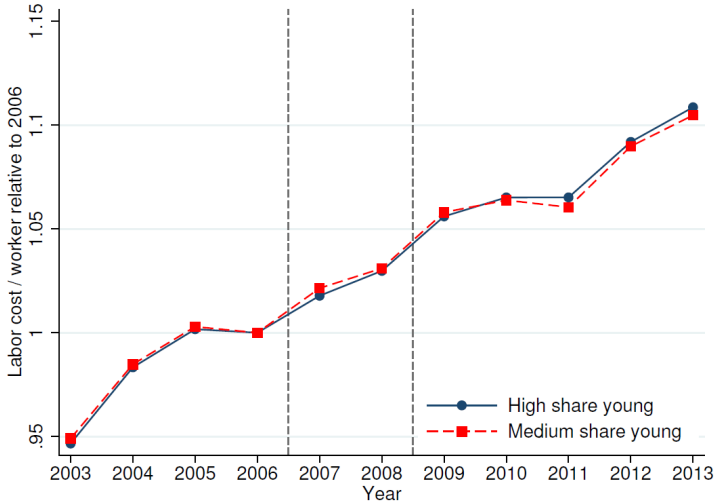
SOURCE : Saez et al. (2019), Fig. 6, p. 1743.

Figure 25 – Net wage on firms with high share of young



Source : Saez et al. (2019).

Figure 26 – Average labour cost per worker : high vs medium share of young

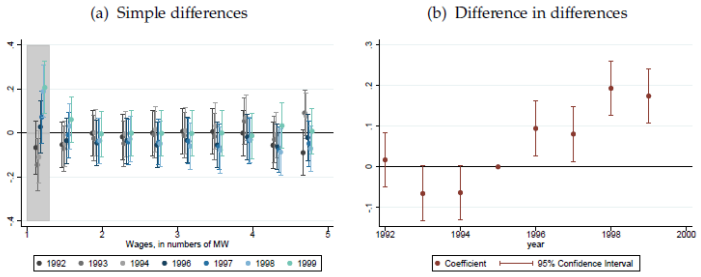


Source : Saez et al. (2019).

Payroll tax cuts in France

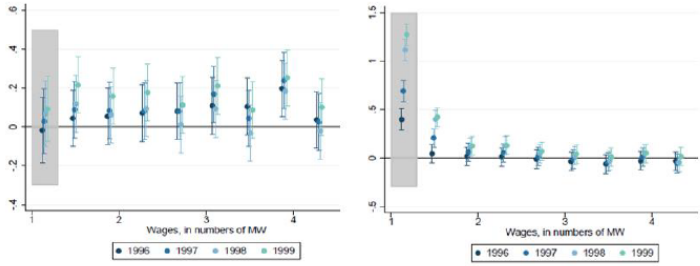
- **Main reforms in the 1990s**
  - Introduced in 1993
  - Expanded in 1995
  - Further expansion in 2000
  - Further expansion in 2013
- **Impact evaluations**
  - Kramarz et Philippon, (2001) ; Crepon-Deplatz (2001)
  - Cahuc, Carcillo and Le Barbanchon (2019)
  - Cottet (2024)
- **Results**
  - Large impact on employment in the 1990s
  - In large part due to a firm-level impact

Figure 27 – Employment impact of 1996 French payroll tax cuts



SOURCE : Cottet (2024).

Figure 28 – Employment impact at the firm level



(a) Q1 (e) Q5

Source : Cottet (2024).

Policies to switch funding to VAT

- **Debates about the use of VAT**
  - Switch payroll taxation to VAT
  - "Social VAT"
  - Regressivity vs emplyoyment effects
- **General rationales**
  - VAT taxes imports and not exports (like devaluation)
  - Shift labour taxation to larger base (labour and capital and retirees)
  - Regressivity of shift ? uncertain incidence ?

References

–

– Anderson, P. and Meyer, B. (2000), "The Effects of the Unemployment Insurance Payroll Tax on Wages, Employment, Claims and Denials", *Journal of Public Economics*, 78 (1-2) : 81-106.

– Brittain, J. (1971), "The Incidence of Social Security Payroll Taxes". *The American Economic Review* 61 (1) : 110-125.

– Bozio, A., Breda, T. Grenet, J. and Guillouzouic, A. (2019) "Does Tax-Benefit Linkage Matter for the Incidence of Social Security Contributions ?", PSE working paper.

– Cahuc P, Carcillo S and T Le Barbanchon. The Effectiveness of Hiring Credits. The Review of Economic Studies, 86(2), March 2019.

– Gruber, J. (1997) "The Incidence of Payroll Taxation : Evidence from Chile". *Journal of Labor Economics* 15 (S3) : S72-101.

– Hamermesh, D. (1979) "New Estimates of the Incidence of the Payroll Tax". *Southern Economic Journal* 45 (4) : 1208.

– Holmlund, B. (1983) "Payroll Taxes and Wage Inflation : The Swedish Experience". *The Scandinavian Journal of Economics*, 1-15.

– Korkeamäki, Ossi, and Roope Uusitalo (2009), "Employment and Wage Effects of a Payroll-Tax Cut-evidence from a Regional Experiment'. *International Tax and Public Finance* 16 (6) : 753-72.

– Musgrave, Richard A. (1968) "The Role of Social Insurance in an Overall Programme for Social Welfare", in William Bowen, Frederick Harbison, Richard Lester, and Herman Somers, eds., The Princeton Symposium on The American System of Social Insurance, McGraw-Hill, pp. 23–40.

– OECD (1990), "Employment Outlook".

– Ooghe, Erwin, Erik Schokkaert, and Jef Flechet. 2003. "The Incidence of Social Security Contributions : An Empirical Analysis'. Empirica 30 (2) : 81-106.

– Saez, E., Matsaganis, M. and Tsakloglou, P. (2012), "Earnings Determination and Taxes : Evidence From a Cohort-Based Payroll Tax Reform in Greece", *The Quarterly Journal of Economics* 127 (1), pp. 493–533.

– Saez, E., Schoefer, B. and Seim, D. (2019) "Payroll Taxes, Firm Behavior, and Rent Sharing : Evidence from a Young Workers' Tax Cut in Sweden" *American Economic Review* Vol. 109, No. 5, pp. 1717–63.