

Online appendix

A Descriptive tables

The full sample includes 7,532,106 employee-year observations. Table A.1–A.6 report statistics by pension fund (see main text). Table A.6 reports for each pension fund and each year the resulting number of included participants. Particularly, the pension fund for workers in the public sector (ABP) and the one for the health industry (PFZW) are large. In our sample, about one third of the participants is enrolled in the ABP pension fund, and another twenty per cent participates in the PFZW pension fund. Collective labor agreements are sector-wide, which means that wage rates and some features of the pension contribution scheme are simultaneously determined for the entire sector. As such, within-pension fund dependence is larger than between-pension fund dependence (Figure A.1).

Table A.7 reports the descriptive statistics of individual characteristics; we include age, gender, partner, and having children as control variables. In our sensitivity analysis we alternatively exclude the banking sector, public sector workers, and include those whose labor costs are above 50,000 euro. The latter includes many extra observations, however, often above a cap (Table A.3) which may distort the below-cap effects of marginal and average wages. In our base sample, almost 60% are men and the average age is 40 years. Most participants are couples with children. Each individual is weighted by the inverse of the size of the pension fund to ensure that each pension fund has an identical weight in the estimation (Section 4.1). That is, the observations of each of the 30 pension funds in our sample have a total weight of 3.3%.¹

Table A.8 presents some characteristics for the average pension schemes in our sample period. Due to the lower income threshold of 11,780 euro (full time basis) for the contributions the marginal tax (18.36%) rate exceeds the average tax rate (14.16%). The statutory incidence of pension contributions is on average for 69% ($9.8/(9.8 + 4.37)$) on the employer and for 31% on the employee, however with large diversity. In particular in the banking sector, the employer contribution rate is more volatile and higher on average, whereas the employee contribution rate is much lower

¹Without weighting, the share of the public sector fund would increase to 35.3%. In contrast, the total share of the banking sector (ABN Amro, ING, and Rabobank) would decrease to 4%. A strong tilt towards large pension funds could be problematic for our identification strategy, since within-fund differences are much smaller (Figure A.1). The descriptive statistics of the household control variables are very similar with and without the weighting scheme. In other words, pension fund size is unrelated to the control variables.

if existent at all (Table A.9).

Table A.1: Labor cost ($\times \text{€ } 1,000$), mean by pension fund and year.

	2009	2010	2011	2012	Total
ABN Amro financial services	46.7	46.7	51.4	58.0	50.4
Agriculture	32.7	33.1	34.4	39.0	34.8
Bakery	28.1	28.8	29.3	33.4	29.9
Catering industry	24.3	24.9	25.5	28.7	25.9
Cleaning and window cleaning business	18.6	18.8	19.4	22.0	19.7
Commercial transport	40.5	41.5	42.4	47.5	42.9
Construction industry	41.9	42.8	43.7	47.7	44.0
Fashion, interior, carpeting, textiles	35.3	36.0	37.3	41.4	37.5
Graphic arts industry	37.4	37.7	38.2	42.4	38.9
Groceries	22.6	23.1	23.5	26.7	24.0
Hairdressers	15.7	15.8	16.0	18.1	16.4
Health industry	29.9	30.7	31.4	36.0	32.0
Heineken brewing company	52.8	53.5	54.8	58.3	54.6
Hoogovens steel producer	53.4	52.2	54.9	60.6	55.0
House painters, finishers, and glaziers	41.8	42.9	44.0	49.3	44.5
Housing corporation industry	44.5	45.5	46.5	51.7	47.0
Housing industry	30.2	30.3	30.6	34.7	31.5
ING banking and insurance	52.3	50.7	55.0	59.8	53.7
KLM cabin crew	36.9	36.8	39.4	44.6	39.4
KLM Royal Dutch airlines	45.0	45.9	47.0	51.6	47.3
Meat, meat products, and convenience food industry	33.2	33.5	34.5	40.4	35.3
Metal and electronics industry	41.4	41.7	42.9	48.1	43.4
Metal and engineering industry	38.3	38.6	39.8	45.2	40.4
Pharmacy industry	25.4	26.3	26.9	31.4	27.5
Philips	53.4	56.4	59.1	60.4	57.1
Public sector	39.2	40.4	41.3	46.0	41.7
Rabobank	42.6	42.9	45.7	48.9	44.9
Railways	48.4	50.0	51.3	57.3	51.5
Retail business	21.6	21.9	22.2	25.3	22.7
Wholesale agriculture and food supply	35.2	36.1	36.5	40.7	37.1
Mean (unweighted)	35.7	36.3	37.4	41.0	37.6

Table A.2: Threshold on pensionable wage($\times \text{€ } 1,000$), mean by pension fund and year.

	2009	2010	2011	2012	Total
ABN Amro financial services	11.4	11.6	11.8	12.0	11.7
Agriculture	12.0	12.2	12.3	12.7	12.3
Bakery	0.0	0.0	0.0	0.0	0.0
Catering industry	10.3	10.5	10.7	10.8	10.6
Cleaning and window cleaning business	10.5	10.5	10.7	10.9	10.6
Commercial transport	10.4	10.6	10.8	10.9	10.7
Construction industry	12.5	12.7	12.9	13.1	12.8
Fashion, interior, carpeting, textiles	13.5	13.9	14.0	14.1	13.9
Graphic arts industry	13.6	14.0	13.8	14.0	13.9
Groceries	13.4	14.3	14.3	14.4	14.1
Hairdressers	0.0	0.0	0.0	0.0	0.0
Health industry	10.3	10.5	10.7	10.8	10.6
Heineken brewing company	11.6	11.8	12.0	12.2	11.9
Hoogovens steel producer	15.0	15.3	15.5	14.7	15.1
House painters, finishers, and glaziers	12.4	12.7	12.7	13.0	12.7
Housing corporation industry	12.5	12.7	12.9	13.1	12.8
Housing industry	9.7	9.8	9.9	10.1	9.9
ING banking and insurance	18.3	19.0	19.0	19.6	18.9
KLM cabin crew	12.5	12.7	12.9	13.1	12.8
KLM Royal Dutch airlines	12.7	12.8	12.9	13.3	12.9
Meat, meat products, and convenience food industry	10.9	11.0	11.2	11.3	11.1
Metal and electronics industry	14.8	15.1	15.3	15.6	15.2
Metal and engineering industry	15.0	15.3	15.3	15.6	15.3
Pharmacy industry	11.6	11.9	12.1	12.1	11.9
Philips	15.3	15.3	12.1	12.2	13.9
Public sector	10.4	10.5	10.7	10.9	10.6
Rabobank	14.6	14.6	14.8	15.0	14.8
Railways	12.5	12.7	12.9	13.1	12.8
Retail business	12.0	12.1	12.2	12.4	12.2
Wholesale agriculture and food supply	15.2	15.5	15.7	15.9	15.6
Mean (unweighted)	11.6	11.8	11.9	11.9	11.8

Table A.3: Cap on pensionable wage ($\times \text{€ } 1,000$, if existent), mean by pension fund and year.

	2009	2010	2011	2012	Total
ABN Amro financial services					
Agriculture	47.8	48.7	49.3	50.1	49.0
Bakery	48.7	48.7	50.0	51.1	49.6
Catering industry	32.4	33.2	33.4	33.9	33.2
Cleaning and window cleaning business	47.8	48.7	49.3	50.1	49.0
Commercial transport	47.6	48.5	49.3	50.1	48.9
Construction industry	50.6	53.5	54.1	54.4	53.1
Fashion, interior, carpeting, textiles	145.1	149.4	150.2	152.0	149.1
Graphic arts industry	47.8	48.7	49.3	50.1	49.0
Groceries	47.8	48.7	49.3	50.1	49.0
Hairdressers	47.8	48.7	49.3	50.1	49.0
Health industry					
Heineken brewing company					
Hoogovens steel producer	253.9	255.2	258.4	262.9	257.4
House painters, finishers, and glaziers	44.3	45.1	45.4	46.3	45.3
Housing corporation industry					
Housing industry	47.8	48.7	49.3	50.1	49.0
ING banking and insurance	82.3	85.6	85.6	88.2	85.1
KLM cabin crew					
KLM Royal Dutch airlines					
Meat, meat products, and convenience food industry	57.7	58.5	59.1	60.0	58.8
Metal and electronics industry	64.1	65.2	66.3	67.7	65.8
Metal and engineering industry	73.3	75.5	75.5	77.4	75.4
Pharmacy industry					
Philips					
Public sector					
Rabobank	47.8	48.7	49.3	50.1	48.9
Railways					
Retail business	47.8	48.7	49.3	50.1	49.0
Wholesale agriculture and food supply	32.5	33.3	33.6	34.0	33.3
Pension fund average, if cap applies	65.7	67.1	67.8	69.0	67.3

Table A.4: Marginal pension contribution rate (employee and employer contribution as % of gross wage), mean individual rate by pension fund and year.

	2009	2010	2011	2012	Total
ABN Amro financial services	25.9	24.2	33.3	37.8	30.0
Agriculture	12.0	12.1	14.4	15.7	13.6
Bakery	10.8	11.2	10.8	11.7	11.1
Catering industry	10.0	10.0	10.5	11.5	10.5
Cleaning and window cleaning business	16.9	17.4	17.4	19.3	17.7
Commercial transport	19.9	20.8	20.3	21.5	20.6
Construction industry	15.1	17.0	17.6	18.4	17.1
Fashion, interior, carpeting, textiles	20.0	20.0	22.2	22.2	21.1
Graphic arts industry	14.2	14.4	14.4	14.8	14.4
Groceries	16.7	16.7	16.7	17.0	16.8
Hairdressers	6.2	6.2	6.9	8.2	6.9
Health industry	20.2	20.7	20.9	21.3	20.8
Heineken brewing company	26.4	27.7	27.7	27.7	27.4
Hoogovens steel producer	23.3	23.3	23.3	25.7	23.8
House painters, finishers, and glaziers	12.3	12.1	11.7	12.2	12.1
Housing corporation industry	28.2	28.3	28.0	28.0	28.1
Housing industry	14.8	14.9	14.9	18.0	15.6
ING banking and insurance	30.8	25.7	31.2	34.9	30.2
KLM cabin crew	25.4	21.8	24.9	27.1	24.8
KLM Royal Dutch airlines	19.9	19.9	19.9	19.8	19.9
Meat, meat products, and convenience food industry	15.8	15.7	15.4	20.8	16.9
Metal and electronics industry	24.2	22.9	22.0	22.9	23.0
Metal and engineering industry	23.9	25.0	26.2	27.7	25.7
Pharmacy industry	21.1	21.1	21.1	23.9	21.8
Philips	15.5	16.0	17.3	18.2	16.6
Public sector	17.9	18.2	19.1	20.9	19.0
Rabobank	22.0	20.2	21.0	21.2	21.1
Railways	16.7	16.7	16.7	16.7	16.7
Retail business	14.4	14.3	14.3	16.1	14.8
Wholesale agriculture and food supply	6.8	6.9	7.0	6.9	6.9
Mean (unweighted)	17.9	17.8	18.4	19.4	18.4

Table A.5: Average pension contribution rate (employee and employer contribution as % of labor cost), mean individual rate by pension fund and year.

	2009	2010	2011	2012	Total
ABN Amro financial services	20.3	18.9	26.6	30.5	23.8
Agriculture	8.3	8.3	10.2	10.9	9.4
Bakery	11.2	11.6	11.2	12.0	11.5
Catering industry	7.9	8.0	8.4	9.3	8.4
Cleaning and window cleaning business	10.4	11.0	10.7	12.1	11.1
Commercial transport	17.4	17.5	17.5	18.1	17.6
Construction industry	11.8	13.0	13.5	13.5	13.0
Fashion, interior, carpeting, textiles	13.1	13.1	14.6	14.6	13.8
Graphic arts industry	11.1	11.0	11.1	11.2	11.1
Groceries	9.9	9.6	9.7	10.0	9.8
Hairdressers	6.2	6.2	6.9	8.2	6.9
Health industry	14.8	15.3	15.5	15.8	15.3
Heineken brewing company	20.8	21.8	21.9	21.7	21.6
Hoogovens steel producer	16.8	16.5	16.7	18.7	17.1
House painters, finishers, and glaziers	20.8	20.9	21.6	23.4	21.7
Housing corporation industry	21.9	22.1	21.8	21.8	21.9
Housing industry	10.8	10.8	10.8	12.9	11.3
ING banking and insurance	21.2	17.3	21.7	24.7	20.8
KLM cabin crew	20.0	17.1	19.8	21.6	19.6
KLM Royal Dutch airlines	14.7	14.7	14.8	14.6	14.7
Meat, meat products, and convenience food industry	10.8	10.8	10.7	14.6	11.7
Metal and electronics industry	15.3	14.4	13.9	14.5	14.5
Metal and engineering industry	14.7	15.1	16.2	17.1	15.7
Pharmacy industry	14.3	14.4	14.4	16.8	15.0
Philips	11.4	12.0	14.4	15.0	13.0
Public sector	13.8	14.1	14.9	16.2	14.7
Rabobank	22.0	20.5	22.8	21.6	21.7
Railways	12.4	12.5	12.5	12.5	12.5
Retail business	8.1	8.2	8.2	9.3	8.5
Wholesale agriculture and food supply	7.9	8.0	8.0	8.1	8.0
Mean (unweighted)	13.7	13.6	14.3	15.1	14.2

Table A.6: Number of participants ($\times 1,000$) by pension fund and year.

	2009	2010	2011	2012	Total
ABN Amro financial services	4.9	5.0	4.8	4.3	18.9
Agriculture	16.2	16.7	17.3	17.2	67.5
Bakery	6.8	7.0	7.1	7.1	28.1
Catering industry	21.3	22.0	22.6	22.6	88.5
Cleaning and window cleaning business	17.3	17.3	17.5	17.4	69.5
Commercial transport	33.9	34.8	35.6	35.0	139.2
Construction industry	37.0	38.3	39.5	38.3	153.1
Fashion, interior, carpeting, textiles	2.6	2.6	2.6	2.5	10.3
Graphic arts industry	8.1	8.3	8.4	8.0	32.8
Groceries	17.0	17.6	18.2	18.2	71.1
Hairdressers	5.8	6.1	6.5	7.0	25.3
Health industry	165.2	167.5	171.5	168.4	672.6
Heineken brewing company	0.7	0.8	0.8	0.6	2.9
Hoogovens steel producer	2.8	3.1	2.9	2.4	11.2
House painters, finishers, and glaziers	5.4	5.5	5.7	5.6	22.2
Housing corporation industry	8.3	8.4	8.6	7.8	33.0
Housing industry	5.9	6.0	6.2	6.1	24.2
ING banking and insurance	6.0	5.4	5.5	3.1	20.0
KLM cabin crew	3.4	3.5	3.6	3.4	13.9
KLM Royal Dutch airlines	6.1	6.2	6.1	5.6	24.0
Meat, meat products, and convenience food industry	4.1	4.1	4.2	4.0	16.5
Metal and electronics industry	33.1	33.8	33.6	30.1	130.6
Metal and engineering industry	73.0	76.1	77.7	75.0	301.8
Pharmacy industry	8.0	8.1	8.3	8.3	32.7
Philips	0.7	0.9	0.9	0.5	3.0
Public sector	284.5	289.4	296.5	272.6	1143.0
Rabobank	13.0	13.2	13.2	11.7	51.1
Railways	2.5	2.5	2.5	2.1	9.7
Retail business	21.5	22.0	22.5	22.7	88.7
Wholesale agriculture and food supply	3.4	3.5	3.6	3.4	13.8
Total	818.5	835.8	854.1	811.0	3319.3

Table A.7: Descriptive statistics, characteristics participants

	Shares		Shares
Public sector	3.3%	Singles	20.2%
Banking sector	10.0%	Single parent	3.5%
Men	59.8%	Couple without children	16.5%
Average age (years)	39.5	Couple with children	59.8%
Age class 20-30	4.1%		
Age class 30-40	27.6%		
Age class 40-50	50.3%		
Age class 50+	18.1%		

Notes: The shares are weighted by the inverse of the size of the pension fund. Public sector refers to participants enrolled in a scheme of pension fund ABP. Banking sector refers to participants in the pension funds of ABN Amro, ING Group, and Rabobank. Only employees earning less than 50,000 euro (discounted to 2006 euros).

Table A.8: Descriptive statistics, pension schemes

	2008	2009	2010	2011	2012	Average
no. participants ($\times 1,000$)	1,069	1,081	1,091	1,099	1,104	1,094
w ($\times \text{€ } 1,000$)	30.47	30.86	30.55	30.54	32.29	31.04
w/h ($\times \text{€ } 1,000$)	17.82	18.09	17.88	17.95	19.69	18.38
ρ (%)	13.00	13.72	13.61	14.30	15.06	14.16
ρ_e (%)	3.94	4.09	4.19	4.42	4.78	4.37
ρ_r (%)	9.06	9.63	9.42	9.88	10.27	9.80
τ (%)	16.79	17.85	17.77	18.41	19.44	18.36
τ_e (%)	5.03	5.25	5.41	5.64	6.11	5.60
τ_r (%)	11.80	12.60	12.35	12.77	13.33	12.76
threshold ($\times \text{€ } 1,000$)	10.96	11.57	11.81	11.88	11.88	11.78

Notes: The pension contribution rates and amounts are weighted by the inverse size of the pension fund.

Figure A.1: Scatterplots of all participants (a) and several pension funds (b-k). Change in average contribution rates and change in wages, 2008-2010.

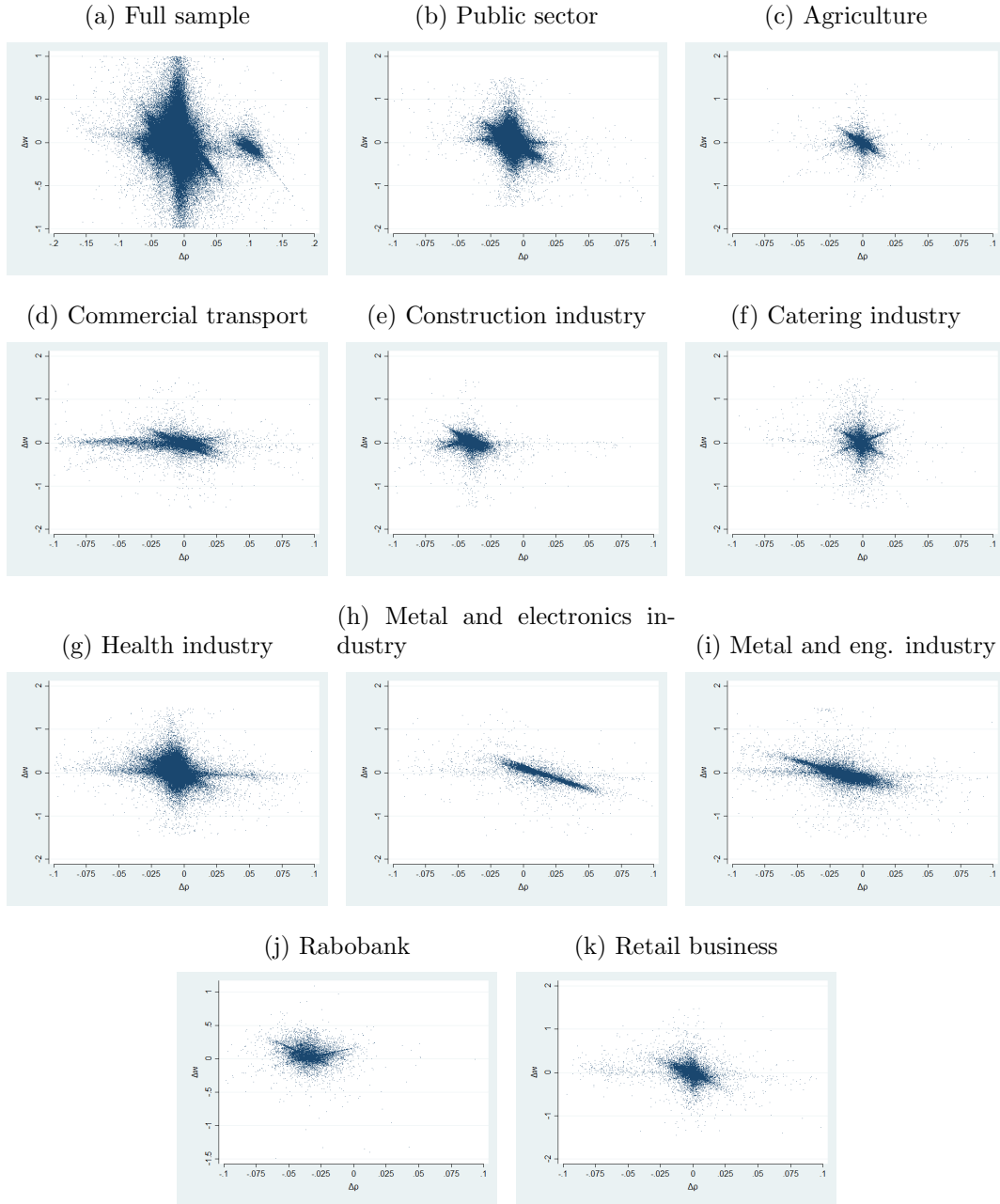


Table A.9: Employee and employer contributions (% labor cost) by pension fund industry and year.

	2009	2010	2011	2012	Total
Employee contribution rate (% labor cost)					
ABN Amro Bank	0.0	0.0	5.2	5.2	1.5
ING financial services	0.0	1.7	1.7	1.8	1.1
Rabobank	0.0	0.0	0.0	0.0	0.0
Other	5.6	5.7	5.8	6.3	5.8
Weighted average	5.3	5.4	5.6	6.1	5.6
Employer contribution rate (% labor cost)					
ABN Amro Bank	26.9	24.6	31.3	39.3	27.1
ING financial services	28.5	20.0	26.8	32.9	29.4
Rabobank	20.7	18.5	21.5	19.5	19.4
Other	11.6	11.7	11.9	12.4	11.9
Weighted average	12.6	12.4	12.8	13.3	12.8

Table A.10: First-stage regression results

Instrument ($\log \bar{\tau}_{it} - \log \tau_{i,t-2}$)	0.432*** (0.028)	$w_{t-2}\text{spl7}$	-0.041 (0.040)
Instrument ($\log \bar{\rho}_{it} - \log \rho_{i,t-2}$)	0.715*** (0.081)	$w_{t-2}\text{spl8}$	0.009 (0.026)
Men	0.000 (0.000)	$w_{t-2}\text{spl9}$	-0.015 (0.017)
Couple. no children	0.001 (0.000)	$w_{t-2}\text{spl10}$	-0.027 (0.024)
Couple. children	0.001 (0.000)	$[w_{t-2} - w_{t-3}]\text{spl1}$	0.002** (0.001)
Single parent	0.001 (0.000)	$[w_{t-2} - w_{t-3}]\text{spl2}$	-0.006 (0.010)
Age	0.000 (0.000)	$[w_{t-2} - w_{t-3}]\text{spl3}$	0.027 (0.020)
2010	-0.003*** (0.001)	$[w_{t-2} - w_{t-3}]\text{spl4}$	-0.035 (0.028)
2011	-0.001 (0.001)	$[w_{t-2} - w_{t-3}]\text{spl5}$	0.013 (0.013)
2012	0.000 (0.001)	$[w_{t-2} - w_{t-3}]\text{spl6}$	0.000 (0.016)
$w_{t-2}\text{spl1}$	0.001 (0.000)	$[w_{t-2} - w_{t-3}]\text{spl7}$	-0.017 (0.018)
$w_{t-2}\text{spl2}$	-0.001 (0.003)	$[w_{t-2} - w_{t-3}]\text{spl8}$	0.009 (0.014)
$w_{t-2}\text{spl3}$	0.005* (0.003)	$[w_{t-2} - w_{t-3}]\text{spl9}$	-0.019 (0.015)
$w_{t-2}\text{spl4}$	0.025** (0.011)	$[w_{t-2} - w_{t-3}]\text{spl10}$	-0.002** (0.001)
$w_{t-2}\text{spl5}$	-0.045 (0.038)	Constant	-0.003 (0.005)
$w_{t-2}\text{spl6}$	0.072* (0.039)		
Fixed effect pension fund		yes	
F-test (1,29)		244.67	
Observations		3,319,343	

Notes: First-stage results (Equation 6) with two-year change in marginal pension contributions as the dependent variable. Reference year is 2009 and reference group are singles. Robust standard errors (in parentheses) are clustered at the pension fund level.

*** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A.11: Labor cost - full results

	(1)		
Marginal rate β_τ	-0.025 (0.035)	$w_{t-2}\text{spl7}$	-0.076*** (0.019)
Marginal rate β_ρ	-0.669*** (0.182)	$w_{t-2}\text{spl8}$	-0.068*** (0.027)
Men	0.029*** (0.003)	$w_{t-2}\text{spl9}$	-0.159*** (0.058)
Couple. no children	0.005*** (0.002)	$w_{t-2}\text{spl10}$	-1.090*** (0.111)
Couple. children	-0.003 (0.003)	$[w_{t-2} - w_{t-3}]\text{spl1}$	-0.535*** (0.028)
Single parent	0.013*** (0.002)	$[w_{t-2} - w_{t-3}]\text{spl2}$	0.972*** (0.140)
Age	-0.001 (0.000)	$[w_{t-2} - w_{t-3}]\text{spl3}$	-0.646*** (0.051)
2010	0.003 (0.004)	$[w_{t-2} - w_{t-3}]\text{spl4}$	0.056 (0.099)
2011	0.008** (0.004)	$[w_{t-2} - w_{t-3}]\text{spl5}$	0.096 (0.125)
2012	0.106*** (0.006)	$[w_{t-2} - w_{t-3}]\text{spl6}$	0.173* (0.100)
$w_{t-2}\text{spl1}$	-0.107*** (0.006)	$[w_{t-2} - w_{t-3}]\text{spl7}$	-0.037 (0.077)
$w_{t-2}\text{spl2}$	0.006 (0.020)	$[w_{t-2} - w_{t-3}]\text{spl8}$	-0.117 (0.141)
$w_{t-2}\text{spl3}$	-0.065*** (0.015)	$[w_{t-2} - w_{t-3}]\text{spl9}$	-0.086 (0.075)
$w_{t-2}\text{spl4}$	-0.031 (0.023)	$[w_{t-2} - w_{t-3}]\text{spl10}$	0.078*** (0.026)
$w_{t-2}\text{spl5}$	-0.074*** (0.019)	Constant	0.915*** (0.058)
$w_{t-2}\text{spl6}$	-0.026 (0.017)		
Fixed effect pension fund		yes	
R^2 (%)		16,3	
Observations		3,319,343	

Notes: Full results Table 1 (column (1)) based on equation (1) which is a 2SLS regression with two-year change in labor cost as the dependent variable. Reference year is 2009 and reference group are singles. Robust standard errors (in parentheses) are clustered at the pension fund level.

*** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A.12: Correlation matrix.

Two year changes weighted by inverse of pension fund size in after-change year.

	Δw	$\Delta \tau$	$\Delta \bar{\tau}$	$\Delta \tau_e$	$\Delta \bar{\tau}_e$	$\Delta \tau_r$	$\Delta \bar{\tau}_r$	$\Delta \rho$	$\Delta \bar{\rho}$	$\Delta \rho_e$	$\Delta \bar{\rho}_e$	$\Delta \rho_r$	$\Delta \bar{\rho}_r$
Δw	1												
$\Delta \tau$	-0.02	1											
$\Delta \bar{\tau}$	-0.07	0.54	1										
$\Delta \tau_e$	-0.02	0.88	0.40	1									
$\Delta \bar{\tau}_e$	-0.07	0.39	0.82	0.49	1								
$\Delta \tau_r$	-0.02	0.96	0.56	0.70	0.28	1							
$\Delta \bar{\tau}_r$	-0.06	0.53	0.94	0.27	0.58	0.63	1						
$\Delta \rho$	-0.23	0.53	0.63	0.37	0.41	0.56	0.66	1					
$\Delta \bar{\rho}$	-0.11	0.52	0.71	0.34	0.44	0.58	0.75	0.90	1				
$\Delta \rho_e$	-0.22	0.39	0.42	0.49	0.55	0.28	0.28	0.76	0.62	1			
$\Delta \bar{\rho}_e$	-0.12	0.38	0.50	0.48	0.63	0.27	0.34	0.67	0.72	0.89	1		
$\Delta \rho_r$	-0.20	0.51	0.63	0.25	0.27	0.61	0.74	0.95	0.89	0.52	0.45	1	
$\Delta \bar{\rho}_r$	-0.09	0.50	0.68	0.21	0.28	0.61	0.80	0.84	0.95	0.38	0.46	0.93	1

Table A.13: Descriptives for each robustness check.

All specifications are based on (2) as a 2SLS regression with (i) two-year changes, (ii) the hourly labor cost as the dependent variable, (iii) the marginal pension contribution rate is instrumented by the two-year lagged predicted rate, (iv) both year and pension fund dummies are included, and (v) gender, age, marital status and having children are individual-specific control variates. Income controls are ten-piece linear splines of level and annual change of log hourly labor cost. Robust standard errors (in parentheses) are clustered at the pension fund level. * Significant at the 5% level.

	(1)	(2)	(3)	(4)	(5)
Observations	3,319,343	3,319,343	2,176,345	3,229,304	3,719,184
no. participants ($\times 1,000$)	1094	1094	1094	1094	1094
w ($\times \text{€ } 1,000$)	31.04	31.14	30.92	30.32	38.75
w/h (€)	18.38	19.16	18.26	17.77	21.90
ρ (%)	14.16	14.51	14.14	13.55	14.75
ρ_e (%)	4.37	5.40	4.36	4.53	4.20
ρ_r (%)	9.80	9.10	9.78	9.02	10.55
τ (%)	18.36	19.59	18.33	17.73	18.09
τ_e (%)	5.60	7.39	5.59	5.84	5.19
τ_r (%)	12.76	12.21	12.74	11.89	12.91
Threshold ($\times \text{€ } 1,000$)	11.78	11.57	11.83	11.57	12.09

B Robustness checks

We have performed a number of robustness checks of our main results on labor cost in Table 1. First, Table B.1 presents the results for labor cost testing for different lag lengths. The two-year difference baseline estimate is in column (1). With a three-year difference and a growth spline, only three different years are effectively available, the years 2010-2012 when funding ratios were low and recovery plans were imposed on pension funds. The first observations in the three-year regressions are changes between 2007 and 2010 with the income growth spline referring to the years 2006 and 2007. Overall, a longer sample period is required to evaluate whether the IIP holds in the long run.

Second, the income level spline aims to account for divergence in the income distribution. Table B.2 shows that this spline has some impact on the results (column (1) and (3)). Since higher marginal rates are associated with higher incomes, the elasticity of labor costs to the marginal rate reflects a divergence in the labor cost distribution when the income spline is omitted as an explanatory variable. The growth spline corrects for transitory income effects. Excluding the growth spline has only a minor impact on the coefficients (column (1) and (2)). The latter is in line with the findings in [Kleven and Schultz \(2014\)](#) who find that income splines are less important in countries with a stable income distribution such as Denmark and the Netherlands.

Then, Table B.3 looks at subsamples for age and gender, and shows that the 70-30% incidence split is robust across subsamples. The results do not vary by age. Concerning gender we find larger elasticities for women than for men, which is in line with literature [Disney \(2004\)](#). Still, both for men and women, the effects from the average net-of-contribution rates are not significantly different from 70%. Again, we cannot reject a 70-30% split.

The finding that the statutory incidence ρ^e/ρ_r is insignificant in Table B.4 column (2) confirms that the statutory incidence is not the dominant driver. The marginal rate β_τ is significantly negative when the average net-of-rate is omitted (column (3)). Vice versa, omitting the marginal net-of-tax rate τ has no effect on the coefficient of the average net-of-rate, β_ρ (column (4)). A likely explanation is the high correlation between the marginal rate $\Delta\tau$ and the average rate $\Delta\bar{\rho}$ (Table A.12).

Next, we consider the three different sources of variations by eliminating one of them each time: (i) variation over time, (ii) within-pension fund variation, and (iii) between-pension fund variation.

(i) Variation over time: We corrected for macro-economic trends by including year fixed effects in our specification. For instance, inflation rates can affect real wages if

nominal wages are sticky. In the Netherlands, real wages appear to exhibit a higher level of downward rigidity than upward rigidity (Deelen and Verbeek, 2015). In our sample period the inflation rate varied between 1.2% and 2.5% which is moderate and above 0%. This suggests a minor impact of real wage rigidities. Still, real wages tend to fall in years with higher inflation rates, which is captured by the year fixed effects. Nonetheless, we estimate the model for separate years (Table B.5). Though the variation over time is not a source of variation in Table B.5, the elasticity for the average net-of-tax rates is in any of the considered years not significantly different from -0.7 and -1 .

(ii) Within-pension fund variation: In Table B.6 we largely eliminate within pension fund variation by considering the effect of contribution rates on labor cost *less the threshold*. Subtracting the threshold largely eliminates differences in average contribution rates within pension funds. To see this, notice that within-pension fund variation in average contribution rates is attributable to the threshold and, to a lesser extent, the cap (Figure 1 and Table A.2-A.3). The estimates in Table B.6 have a three times larger standard error than in Table 1 and Table 2. As a result, the elasticity for the average net-of-tax rates is in any of the considered years not significantly different from -0.7 and -1 . The marginal net-of-rates are still insignificant. Notice that the increase in the standard errors plays a minor role here.

(iii) Between-pension fund variation: Employers can differ in propagating the contribution rate by differences in pension funds, e.g., differences in funding ratios, differences in statutory splits, and labor union membership. This source of variation is eliminated in Table B.7 where we consider the six largest pension funds in isolation. It follows that the elasticities differ wildly between the pension funds. The large differences can be partly explained by the difference in the composition of pension funds. For instance, the labor costs for women are more sensitive to the average rate (Table B.3) and women are overrepresented in the pension fund of the health care sector (PFZW). This composition effect partly explains the higher elasticity for the average rate in Table B.7. Generally speaking, variation between pension funds is a crucial component for our finding of an average incidence of 70-30%.

Table B.1: Labor cost: different time lags and lags in splines.

	(1)	(2)	(3)	(4)	(5)
Marginal rate β_τ	-0.025 (0.035)	-0.047 (0.041)	-0.030 (0.032)	-0.017 (0.059)	-0.038 (0.060)
Average rate β_ρ	-0.669*** (0.182)	-0.657*** (0.183)	-0.742*** (0.138)	-0.706*** (0.215)	-0.877*** (0.181)
R^2 (%)	16.3	9.1	14.2	15.9	15.9
Observations	3314943	3319342	2497732	2500888	2465565
Difference (years)	2	1	1	2	3
Lag splines (years)	2	2	1	2	3
First year	2009	2009	2010	2010	2010

Notes: Weighted by inverse fund size, includes public sector, includes employees of financials, cap on labor cost at 50K (€, 2006). Specification (1) is the baseline specification in Table 1. Controls for gender, age, marital status, year and pension fund dummies.

Table B.2: Labor cost: different splines.

	(1)	(2)	(3)	(4)
Marginal rate β_τ	-0.025 (0.035)	-0.013 (0.037)	(-0.127)** (0.057)	(-0.138)** (0.063)
Average rate β_ρ	-0.669*** (0.182)	-0.682*** (0.184)	-0.533*** (0.183)	-0.49*** (0.195)
R^2 (%)	16.3	12.8	12.1	6.7
Observations	3319343	3319343	3319343	3319343
Level spline	yes	yes	no	no
Growth spline	yes	no	yes	no

Notes: Weighted by inverse fund size, includes public sector, includes employees of financials, cap on labor cost at 50K (€, 2006). Specification (1) is the baseline specification (1) in Table 1. Controls for gender, age, marital status, year and pension fund dummies.

Table B.3: Labor cost: different subgroups

	(1) < 45 years	(2) > 45 years	(3) men	(4) women
Marginal rate β_τ	-0.048 (0.036)	0.028 (0.040)	-0.070** (0.035)	0.117** (0.057)
Average rate β_ρ	-0.666*** (0.191)	-0.687*** (0.181)	-0.607*** (0.214)	-0.903*** (0.174)
R^2 (%)	16.1	18.0	21.7	12.7
Observations	2236582	1082761	1529222	1790121

Notes: The table shows the estimation results of equation (1) for subgroups. Column(1) are individuals younger than 45 years, column (2) individuals 45 years old and above, column (3) are men and column (4) are women.

Table B.4: Labor cost: alternative measures of pension variables

	(1)	(2)	(3)	(4)
Marginal rate β_τ	-0.025 (0.035)	-0.024 (0.035)	-0.311*** (0.107)	
Average rate β_ρ	-0.669*** (0.182)	-0.671*** (0.171)		-0.701*** (0.170)
Include $\frac{\rho e}{\rho r}$		0.029 (0.053)		
R^2 (%)	16.3	17.0	15.4	16.4
Observations	3319343	3317068	3319343	3319343

Notes: Column (1) is the baseline specification. Column (2) includes $\frac{\rho e}{\rho r}$ ratio, column (3) excludes the average tax rate and column (4) excludes the marginal tax rate.

Table B.5: Labor cost, separate years

	2009	2010	2011	2012
Marginal rate β_τ	0.048 (0.057)	-0.001 (0.036)	-0.065 (0.059)	0.059** (0.029)
Average rate β_ρ	-1.712*** (0.601)	-1.561*** (0.531)	-1.198*** (0.448)	-1.386*** (0.389)
R^2 (%)	19.4	17.5	12.0	9.9
Observations	818455	835789	854125	810974

Notes: Each specification is based on equation (1) as a 2SLS regression with (i) two-year changes, (ii) the labor cost as the dependent variable, (iii) the marginal pension contribution rate instrumented by the two-year lagged predicted rate, (iv) both year and pension fund dummies included in X_{t-2} , and (v) gender, age, marital status and having children are individual-specific control variates X_{t-2} . Income controls are ten-piece linear splines of level and annual change of log labor cost. Robust standard errors (in parentheses) are clustered at the pension fund level.

*** Significant at the 1% level.

Table B.6: Labor cost above the threshold

	(1)	(2)	(3)	(4)	(5)	(6)
Marginal rate β_τ	0.271 (0.215)	-0.106 (0.185)		0.287 (0.203)	-0.144 (0.187)	
Average rate β_ρ	-0.880 (0.659)		-0.542 (0.535)	-1.006 (0.608)		-0.647 (0.511)
Labor cost	yes	yes	yes	no	no	no
Labor cost per hour	no	no	no	yes	yes	yes

Notes: The specifications in columns (1)-(3) and columns (4)-(6) are based on respectively equation (1) and (2) as a 2SLS regression with (i) two-year changes, (ii) the labor cost above the threshold as the dependent variable (divided by hours worked in (4)-(6)), (iii) the marginal pension contribution rate instrumented by the two-year lagged predicted rate, (iv) pension fund and year dummies included in X_{t-2} , and (v) gender, age, marital status and having children are individual-specific control variates X_{t-2} . Income controls are ten-piece linear splines of level and annual change of log labor cost per hours worked. Robust standard errors (in parentheses) are clustered at the pension fund level. *** Significant at the 1% level.

Table B.7: Labor cost, six largest pension funds in isolation.

	ABP	PFZW	PMT	PME	BpfBouw	BpfVervoer
Marginal rate β_τ	4.104*** (1.381)	-2.238 (1.940)	1.813 (1.377)	-0.212*** (0.066)	0.114*** (0.045)	0.115*** (0.026)
Average rate β_ρ	-6.835*** (0.576)	-8.754*** (1.141)	-3.134*** (0.369)	3.587*** (0.541)	-3.237*** (0.303)	-2.983*** (0.394)
R^2	12.2%	16.6%	19.5%	28.1%	11.4%	22.2%
Observations	1,157,379	678,523	306,136	132,851	154,894	141,179

Notes: Each specification is based on equation (1) as a 2SLS regression with (i) two-year changes, (ii) regular hours as the dependent variable, (iii) the marginal pension contribution rate instrumented by the two-year lagged predicted rate, (iv) year dummies included in X_{t-2} , and (v) gender, age, marital status and having children are individual-specific control variates X_{t-2} . Additional controls are ten-piece linear splines of level and annual change of log regular hours. Robust standard errors (in parentheses) are clustered at the individual-year level. *** Significant at the 1% level.