

Europe and the US: The Scandinavian Model

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The Welfare State in Scandinavia

Table 4.1a

The anatomy of the Scandinavian model

	Government expenditure (percentage of GDP), 2005	Rank	Government employment (percentage of working age population), 2005	Rank	Average net unemployment benefit replacement rate, 2004	Rank	Employment protection, 2003	Rank	Expenditure on active labour market policy (percentage of GDP), 2004	Rank	Expenditure on active labour market policy (percentage of total expenditure on unemployment), 2004	Rank
Denmark	52.6	3	23.2	1	70	1	1.8	12	1.8	1	40.8	8
Finland	50.5	4	17.4	3	65	6	2.1	10	1.0	6	32.2	17
Sweden	56.2	1	23.0	2	63	8	2.6	4	1.2	3	48.4	2
Average Scandinavian countries	53.1		21.2		66.0		2.2		1.4		40.5	
Austria	49.5	6	-		57	10	2.2	9	0.6	12	30.0	19
Belgium	50.0	5	11.4	7	61	9	2.5	5	1.2	4	32.3	16
France	53.9	2	14.2	4	57	11	2.9	3	1.0	7	36.1	12
Germany	46.7	9	7.7	13	66	4	2.5	6	1.1	5	32.9	14
Greece	46.3	10	-		35	19	-		-		-	
Ireland	34.5	16	9.6	8	64	7	1.3	16	0.6	11	41.1	7
Italy	48.1	7	9.2	10	22	20	2.4	7	0.6	13	43.7	5
Netherlands	45.7	11	8.6	12	66	5	2.3	8	1.4	2	39.2	9
Portugal	47.8	8	13.1	6	68	3	3.5	1	0.7	10	34.7	13
Spain	38.2	14	9.1	11	49	14	3.1	2	0.7	9	32.4	15
Average euro area except Finland	46.1		9.7		55		2.6		0.9		35.8	
Switzerland	-		-		69	2	1.6	14	0.8	8	43.1	6
UK	44.8	12	13.8	5	53	13	1.1	18	0.5	14	64.2	1
US	34.6	15	9.6	8	36	18	0.7	19	0.2	18	30.2	18
Australia	-		-		46	16	1.5	15	0.4	16	37.9	11
New Zealand	-		-		54	12	1.3	17	0.4	15	43.8	4
Average Anglo-Saxon countries	-		-		47.3		1.1		0.4		44.0	
Japan	39.5	13	6.5	14	48	15	1.8	13	0.3	17	38.4	10
South Korea	-		6.5	14	42	17	2.0	11	0.2	19	44.1	3

The Welfare State in Scandinavia

Table 4.1b

The anatomy of the Scandinavian model

	Average tax wedge on labour (at average worker earnings), 2004	Rank	Marginal tax rate on labour (at 167% of average wage)	Rank	Unionisation (percentage of employees), 2003	Rank	Coverage of collective agreements (percentage of employees), 2000	Rank	Coordination of wage bargaining, 1995-2000	Rank
Denmark	33.6	9	63.0	3	74.4	3	80	6	4	3
Finland	36.7	6	59.5	6	77.7	2	90	2	5	1
Sweden	42.0	1	67.2	2	78.0	1	90	2	3	12
Average Scandinavian countries	37.4		63.2		76.7		87		4	
Austria	31.0	11	41.9	16	34.3	6	95	1	4	3
Belgium	39.7	2	68.4	1	55.8	4	90	2	4.5	2
France	38.1	4	59.6	5	8.2	18	90	2	2	14
Germany	37.8	5	44.3	13	23.2	10	68	12	4	3
Greece	34.8	8	60.6	4	-	-	-	-	-	-
Ireland	10.2	20	49.8	11	36.3	5	-	-	4	3
Italy	38.8	3	59.1	7	34.0	7	80	6	4	3
Netherlands	35.6	7	52.0	9	22.3	12	80	6	4	3
Portugal	24.3	13	55.6	8	23.4	9	80	6	3	12
Spain	33.5	10	37.0	18	13.8	16	80	6	4	3
Average euro area except Finland	32.4		52.8		27.9		83		3.7	
Switzerland	19.8	18	42.8	15	21.5	14	40	13	4	3
UK	20.7	15	47.7	12	30.5	8	30	14	1	16
US	20.3	16	43.3	14	12.2	17	14	17	1	16
Australia	20.9	14	51.4	10	22.8	11	80	6	2	14
New Zealand	20.2	17	39.0	17	22.1	13	25	15	1	16
Average Anglo-Saxon countries	20.5		45.4		21.9		37		1.3	

Income Inequality in Scandinavia

Table 4.2

Income distribution (earnings/income ratios between 9th and 1st decile)

	Gross earnings inequality ^a					Household income inequality ^b				
	1994	Rank	2003	Rank	Difference	1994	Rank	2001	Rank	Difference
Denmark	2.5	4	2.6	3	+0.1	2.6	2	2.7	1	+0.1
Finland	2.4	3	2.4	2	0.0	2.8	3	3.2	5	+0.4
Sweden	2.2	1	2.3	1	+0.1	2.5	1	2.8	2	+0.3
Average Scandinavian countries	2.3		2.5		+0.2	2.6		2.9		+0.3
Austria	-		-		-	3.2	5	3.2	6	0.0
Belgium	-		-		-	3.2	6	3.0	3	-0.2
France	3.1	10	3.1	8	0.0	3.4	7	3.6	7	+0.2
Germany	2.7	7	3.0	6	+0.3	3.5	8	3.6	8	+0.1
Greece	-		-		-	4.7	13	4.5	12	-0.2
Ireland	4.1	13	3.3	10	-0.8	4.2	10	4.2	11	0.0
Italy	-		-		-	4.8	14	4.8	13	0.0
Netherlands	2.6	5	2.9	4	+0.3	3.2	4	3.1	4	-0.1
Portugal	-		-		-	4.3	11	4.1	9	-0.2
Spain	4.2	14	3.5	12	-0.7	5.1	15	4.8	14	-0.3
Average euro area (except Finland)	3.3		3.2		-0.1	4.0		3.9		-0.1
Switzerland	2.7	6	3.2	9	+0.5	-		-		-
UK	3.4	11	3.5	11	+0.1	4.1	9	4.1	10	0.0
US	4.5	15	4.7	14	+0.2	6.0	16	5.5	16	-0.5
Australia	2.9	8	3.1	7	+0.2	-		-		-
New Zealand	2.3	2	2.9	3	+0.6	-		-		-
Average Anglo-Saxon countries	3.3		3.5		+0.2	-		-		-
Japan	3.0	9	3.0	5	0.0	4.4	12	5.0	15	+0.6
South Korea	3.6	12	4.0	13	+0.4	-		-		-

Notes: ^a Gross earnings refer to full-time workers. ^b Household incomes are after taxes and transfers and are adjusted for the number of persons in the household.

Sources: Gross earnings inequality: OECD earnings database. Household income inequality: Förster and Mira d'Ercole (2005).

GDP per hour Growth in Scandinavia

Table 4.4
Growth in GDP per hour (annual averages), percent, 1970–2004

	1970–79	1980–89	1990–94	1995–99	2000–04
Denmark	3.6	2.4	2.4	1.8	1.4
Finland	3.8	2.9	2.1	2.7	2.8
Sweden	2.4	1.5	2.0	2.4	2.6
Weighted average Scandinavian countries	3.1	2.1	2.1	2.3	2.3
Austria	4.4	1.4	0.9	3.2	1.4
Belgium	4.0	2.1	2.9	2.7	0.6
France	4.0	3.0	1.5	2.1	1.5
Germany	4.0	2.2	3.0	1.9	1.2
Greece	4.9	0.1	0.1	2.2	2.9
Ireland	4.8	3.6	3.2	6.3	4.2
Italy	4.0	2.1	2.0	1.2	-0.4
Netherlands	3.7	2.2	1.0	1.7	0.7
Portugal	3.7	2.0	3.9	2.1	0.5
Spain	6.0	3.2	2.7	0.1	0.1
Weighted average euro area	4.3	2.4	2.2	1.7	0.8
UK	3.1	2.4	3.2	1.9	2.0
US	1.7	1.5	1.4	2.3	2.8

Sources: Groningen Growth and Development Centre, Total Economy Growth Accounting Database and Total Economy Database.

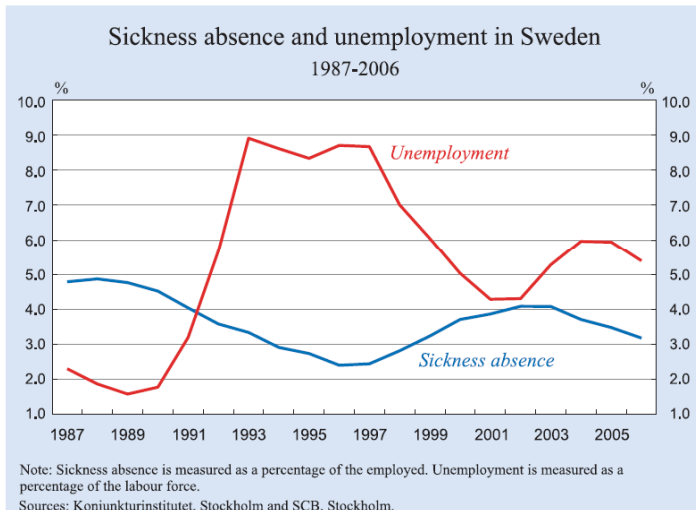
GDP per capita Growth in Scandinavia

Table 4.3
GDP growth per capita (annual averages), percent, 1970-2005

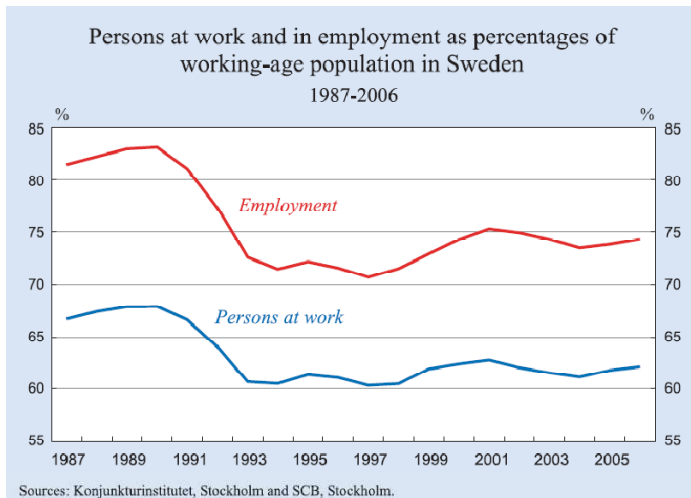
	1970-79	1980-89	1990-94	1995-99	2000-05
Denmark	1.8	1.6	1.8	2.2	1.0
Finland	2.9	3.0	-2.5	4.1	2.0
Sweden	1.6	2.1	-0.8	2.8	1.8
Weighted average Scandinavian countries	2.0	2.2	-0.5	3.0	1.6
Austria	3.6	1.9	1.4	2.7	1.0
Belgium	3.0	1.7	1.0	2.1	1.0
France	2.8	1.6	0.5	2.1	0.9
Germany	2.8	1.9	4.7	1.5	0.6
Greece	4.0	0.3	0.4	2.6	3.9
Ireland	3.3	2.7	2.8	8.3	3.7
Italy	2.5	2.3	0.8	1.4	0.1
Netherlands	2.2	1.5	1.1	3.2	0.3
Portugal	3.5	2.9	1.1	3.7	0.1
Spain	2.7	2.4	1.0	3.5	1.6
Weighted average euro area	2.7	1.9	2.0	2.1	0.9
UK	2.3	2.7	1.1	2.7	2.0
US	2.5	2.4	1.1	3.0	1.5

Sources: OECD Economic Outlook and National Accounts Databases.

Sickness and Unemployment in Sweden



Employment Rate and "People at Work"-Rate in Sweden



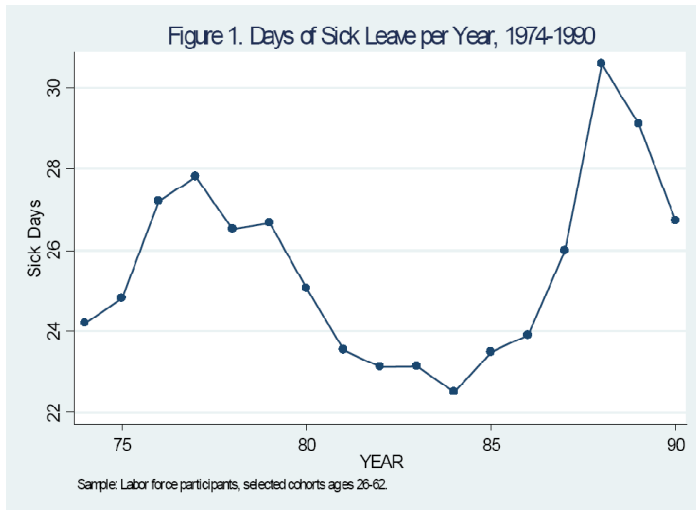
Taxes and Sick Leave Choice

- There is a large empirical literature that tries to estimate the behavioral responses of individuals to changes in the tax and transfer system
- In general the studies focus on labor supply elasticities of changes in the marginal tax rates with respect to working hours and employment participation
- Ljunge (2005) uses sick leave as the behavioral margin to adjust work effort
 - Idea: variation in marginal tax rates leads to variation in opportunity costs of sick leave and this affects the individual choice

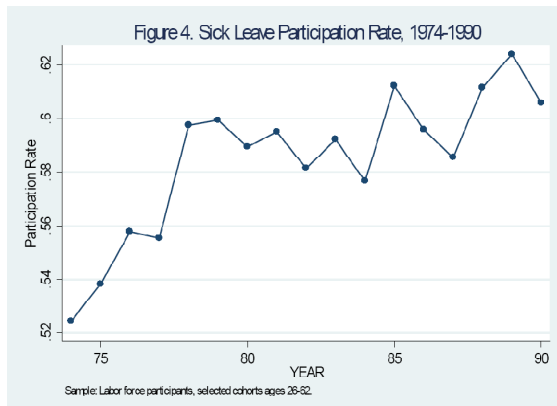
Data for the analysis: register data

- Scandinavian countries have great data
- Ljunge (2005) uses register data which follow 3% of the population over time (1974 to 1990)
- Data include information about days of sick leave, taxable income and demographic information (age, education, gender, children)
- Identification: variation of marginal tax rates over time and region

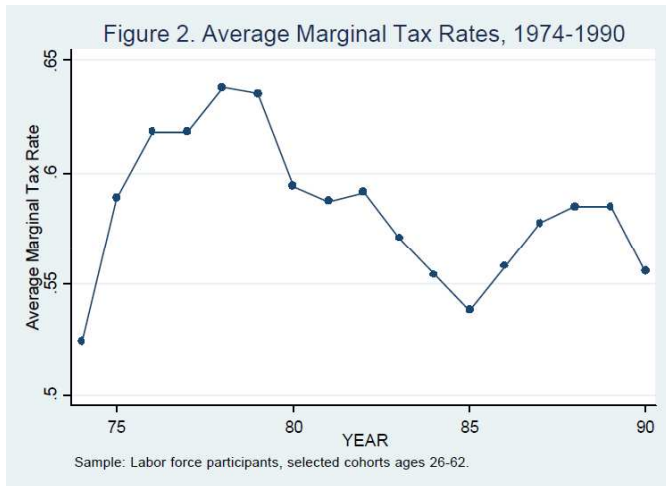
Average Number of Sick Days in Sweden



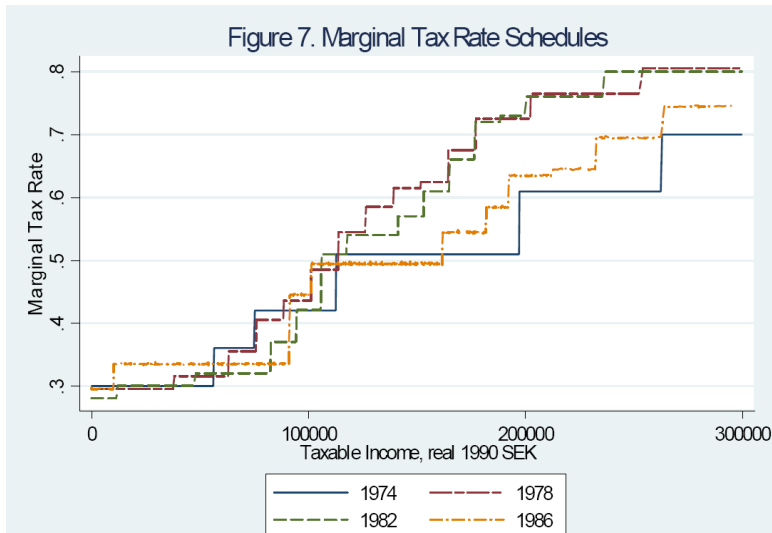
Sick Leave Participation in Sweden



Average marginal tax rate in Sweden



Marginal Tax Rates over Time



Estimation Results: Tax Rates and Sick Leave Days

Table 2: In-hh regressions of sick leave days									
Dependent Variable: Days of Sick Leave									
Tax Rate Measure: Marginal income tax rate at 0 days of sick leave									
Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Marginal Effect									
log(1- τ)	-10.66	-15.18	-15.02	-19.10	-19.08	-20.27	-21.26	-25.09	-25.04
Coefficient Estimates									
log(1- τ)	-19.17	-25.98	-25.61	-32.56	-32.51	-34.54	-36.24	-42.76	-42.66
	(.631)	(.642)	(.619)	(.631)	(.637)	(.630)	(.664)	(.672)	(.686)
Replacement cap	-20.37	-20.87	-21.85	-12.50	-11.85	-11.69	-12.77	-7.50	-0.02
	(.807)								
Age	0.41	7.06	7.02	7.30	9.80	7.74	7.62	8.26	
	(.812)	(.852)	(.891)	(.892)	(1.279)	(.901)	(.91)	(.926)	
Age sq.	-0.127	-0.241	-0.240	-0.250	-0.281	-0.200	-0.271	-0.200	
	(.02)	(.021)	(.021)	(.021)	(.03)	(.021)	(.021)	(.021)	
Age cu.	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	
	(.0002)	(.0002)	(.0002)	(.0002)	(.0002)	(.0002)	(.0002)	(.0002)	
Age in 1968	-2.64	-1.60	-2.06	-2.06	-2.03	-3.03	-2.63	-2.27	
	(.654)	(.647)	(.696)	(.698)	(.647)	(.688)	(.694)	(.661)	
Months with infant x Female	30.9	30.8	30.9	31.3	31.0	31.0	31.0	31.0	
	(214)	(215)	(210)	(204)	(214)	(214)	(214)	(214)	
Child 7 months-2 years	9.2	10.1	10.0	11.0	10.2	10.4	10.5		
	(.56)	(.592)	(.593)	(.634)	(.593)	(.591)	(.591)		
Child 3-6	1.07	1.07	1.09	1.73	1.90	2.19	2.16		
	(.417)	(.410)	(.410)	(.501)	(.410)	(.410)	(.410)		
Child 7-15	-1.88	-1.87	-1.80	-2.76	-1.60	-1.47	-1.44		
	(.33)	(.334)	(.334)	(.471)	(.334)	(.332)	(.332)		
Income lag				(.032)	(.032)	(.032)	(.032)	(.032)	
				-12.21	-9.28	-11.65	-12.53	-11.81	
Capital income lag				(1.388)	(2.88)	(2.1)	(2.0)	(2.0)	
husband's income lag				-0.018	-0.005	0.009	-0.015	-0.020	
				(.007)	(.011)	(.008)	(.008)	(.009)	
Wife's income lag				0.047	0.066	0.020	0.060	0.052	
				(.010)	(.012)	(.010)	(.010)	(.011)	
Gender, Marital status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Fraternities		Yes	Yes	Yes	Yes	Yes	Yes	Yes	
BUSINESS CYCLE CONTROLS				Yes	Yes	Yes	Yes	Yes	
Permanent Income					Yes				
Permanent Income Spline						Yes	Yes		
Year effects							Yes		
Labor Supply Elasticity	0.055	0.078	0.077	0.058	0.104	0.109	0.129	0.128	
Sick Leave Elasticity	0.42	0.50	0.50	0.76	0.76	0.79	0.83	0.86	
Observations	579681	579681	579681	579681	587926	579681	579681	579681	

Notes: replacement cap is an indicator of income above the maximum replacement for sick leave benefits. Months with infant counts the number of months there is a child of up to 7 months of age in the household. Education controls are fixed effects for 3+ years of college, <3 years of college, high school, <high school. Permanent income is an estimated individual fixed effect of earnings on demographic and BC controls. Permanent income spline is a 3 piece spline with knots at quartiles. Business Cycle (BC) controls are average regional earnings, unemployment and employment rates. Individual panel data from 1974-1990, annually. Income variables divided by 1000. Standard errors in parenthesis. Sample: Labor force participants, 26-62 years old.

Estimation Results by groups: Tax Rates and Sick Leave Days

Table 4. Tobit regressions of sick leave days for sub samples.

Sample	Men	Women	Women w/o children 0-2	College 3+ years	College <3 years	High School	<High School
Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Marginal Effect							
log(1-t)	-20.75	-43.72	-39.15	-5.16	-13.45	-23.93	-49.59
Coefficient Estimates:							
log(1-t)	-37.33	-71.50	-68.89	-12.13	-23.57	-39.13	-82.69
	(.82)	(1.19)	(1.21)	(1.22)	(1.93)	(1.03)	(1.23)
Replacement cap	10.90	9.37	2.84	6.83	13.33	7.31	-7.63
	(.99)	(3.64)	(3.85)	(1.19)	(2.5)	(1.33)	(2.68)
Age, Age sq., Age cu.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age in 1908	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Child Variables, Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gender, Marital status	Yes	Yes	Yes	Yes	Yes	Yes	Yes
BC controls, income lags	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Permanent Income Spline	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Labor Supply Elasticity	0.105	0.230	0.203	0.025	0.067	0.122	0.263
Sick Leave Elasticity	-0.97	-1.46	-1.43	-0.52	-0.70	-0.96	-1.59
Program Participation Rate	0.556	0.611	0.568	0.425	0.571	0.512	0.600
Observations	306193	273251	261085	64635	42946	200876	270754

Notes: Replacement cap is an indicator of income above the maximum replacement for sick leave benefits.

Months with infant counts the number of months there is a child of up to 7 months of age in the household.

Education controls are fixed effects for 3+ years of college, <3 years of college, high school, <high school.

Permanent income is an estimated individual fixed effect of earnings on demographics and BC controls.

Permanent income spline is a 5 piece spline with knots at quintiles.

Business Cycle (BC) controls are average regional earnings, unemployment and employment rates.

Elasticities are with respect to the net of marginal tax rate.

Individual panel data from 1974-1990, annually. Income variables divided by 1000.

Standard errors in parenthesis. Sample: Labor force participants, 26-62 years old.

Estimation Results: Tax Rates and Sick Leave Participation

Table 5. Sick Leave Participation.

Specification	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: Indicator of Positive Sick Leave						
Tax Rate Measure: Marginal income tax rate at 0 days of sick leave						
Linear probability model regressions						
ln(1.1)	-0.087 (.003)	-0.117 (.003)	-0.106 (.003)	-0.095 (.003)	-0.107 (.003)	-0.092 (.003)
Replacement cap	-0.079 (.004)	-0.003 (.004)	-0.002 (.004)	-0.070 (.004)	-0.040 (.004)	-0.035 (.004)
Age in 1968		-0.011 (.0002)	-0.014 (.0004)	-0.014 (.0004)	-0.013 (.0004)	-0.013 (.0004)
Age, age sq.		Yes	Yes	Yes	Yes	Yes
Child Variables		Yes	Yes	Yes	Yes	Yes
Gender, Marital status		Yes	Yes	Yes	Yes	Yes
Education		Yes	Yes	Yes	Yes	Yes
Lagged Income Controls		Yes	Yes	Yes	Yes	Yes
Business Cycle controls			Yes	Yes	Yes	Yes
Permanent Income				Yes		
Permanent Income Spline					Yes	Yes
Lagged Own Income Spline						Yes
Observations	5/9661	5/9444	5/9444	5/9444	5/9444	5/9444

Notes: Replacement cap is an indicator of income above the maximum replacement for sick leave benefits.

Months with infant counts the number of months there is a child of up to 7 months of age in the household.

Child Variables are number of children ages 7 months, 7 years, 3-6, and 7-15.

Education controls are fixed effects for 3+ years of college, <3 years of college, high school, <high school.

Permanent income is an estimated individual fixed effect of earnings on demographics and BC controls.

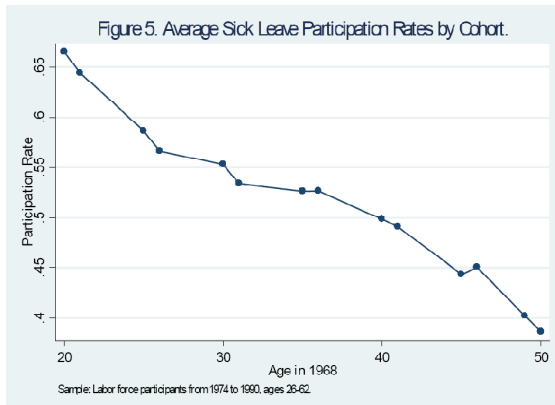
Permanent income spline is a 5 piece spline with knots at quintiles.

Business Cycle (BC) controls are average regional earnings, unemployment and employment rates.

Individual panel data from 1974-1990, annually. Income variables divided by 1000.

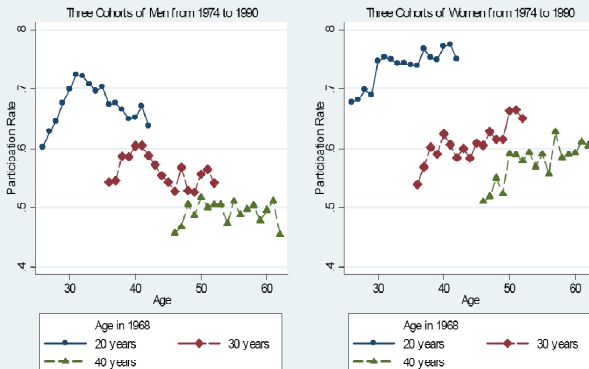
Standard errors in parenthesis. Sample: Labor force participants, 25-62 years old.

Sick Leave: Age vs Cohort effects



Cohort-Age Profiles of Sick Leave

Figure 6. Sick Leave Participation for Men and Women.



Sample: Labor force participants, ages 25-62

Estimation Results: Cohort effects

