Returns to Work and Showing Up on the Job

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Abstract

Lower taxes increase the returns to working and to exert higher effort. I examine how effort as measured by sick leave is affected by tax prices. I use individual panel data over 17 years, which provide a lot of price variation and allow for detailed individual controls.

The results show a large price responsiveness of effort. I find substantial reductions in sick leave when individuals get to keep more of their earnings after taxes.

1 Introduction

Reductions in the labor income tax have effects on several margins. The immediate effect is to increase the returns to working, which has the flip side that the cost of work absence increases. Lower taxes would induce a substitution effect towards reducing work absenteeism.

We may consider sick leave as a measure of how much effort is supplied in the market. Although some sick leave, for example from a hip bone fracture, has little to do with work effort (or the tax code) other kinds of sick leave are more closely related to effort. In particular short term sick leave due to general illness, cold, etc. may well represent paid leisure. Use of sick leave does not only cost in terms of lost earnings, but may also reduce learning by doing and

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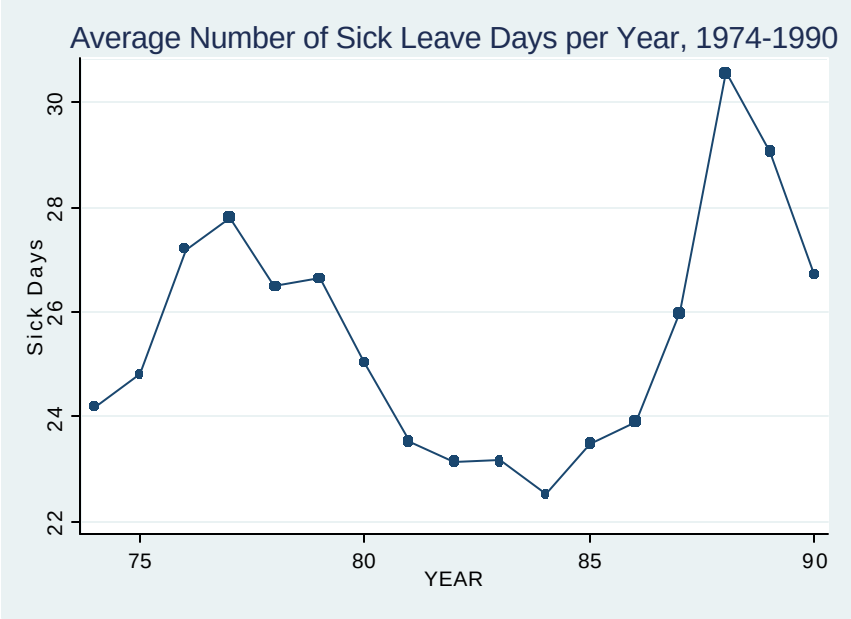
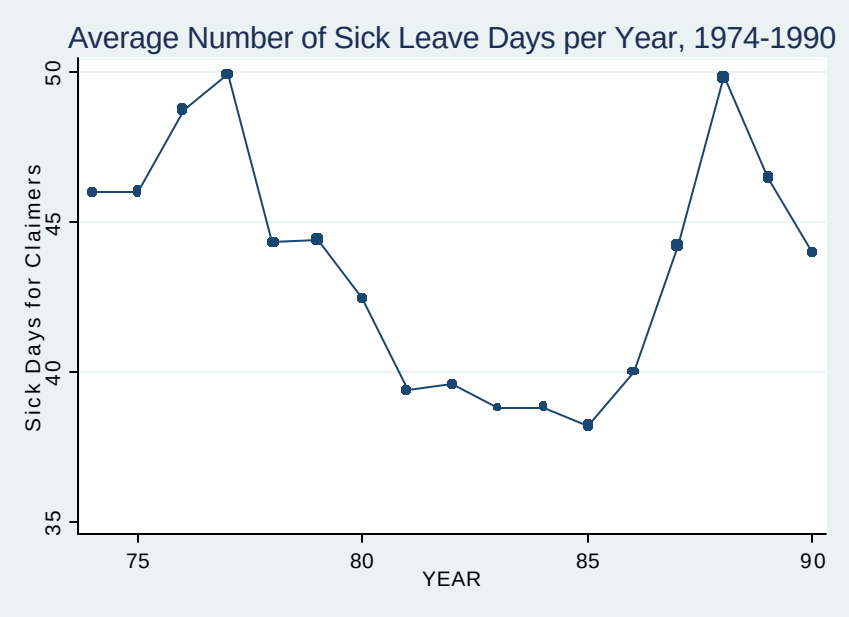
reduce the chances of getting promotions to higher paid positions. When taxes are cut the value of experience and promotions with better pay are increased, which induces a supply of higher effort and lower work absences.

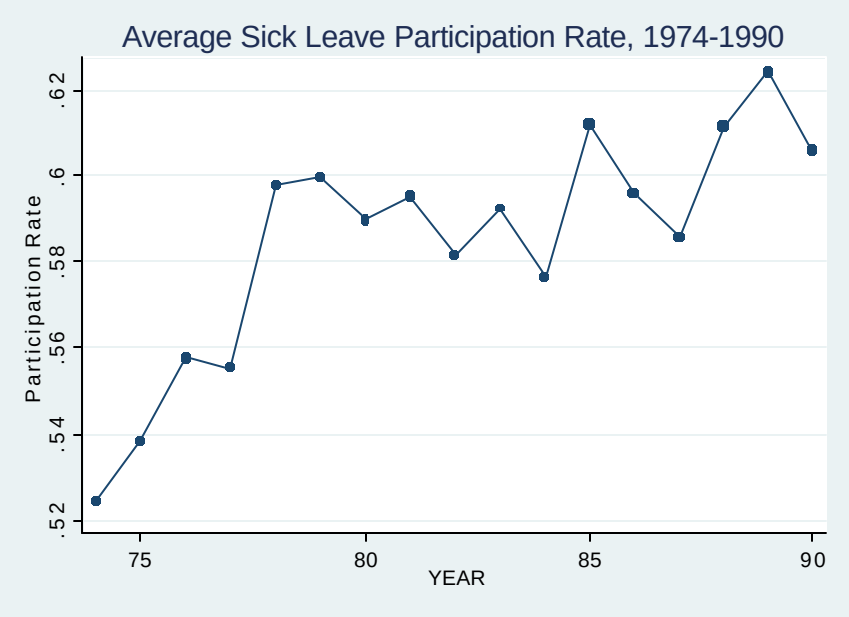
I study the evolution of sick leave in Sweden from 1974 to 1990. Sick leave is covered by a generous and universal sick leave insurance system, which is quite remarkable. The replacement rate for lost earnings is 90%, and the definition of sickness is liberal. For the first week of a spell it is at the individual's discretion to determine if he is sick and can't perform his normal duties at work. The amount of monitoring of actual sickness is very limited. Sick leave provides a very flexible way to adjust labor supply. Sick leave benefits is a significant part of individual income, with benefits averaging about 5% of labor earnings. I present average days of sick leave for labor force participants in the figure below[1]. Benefits first increase through the early 1980's, then decline for a few years, and increase through the later part of the 1980's before dropping off. The only reform of the sick leave insurance is an increase in coverage from 1988 and on, which may account for the large increase that year.

[1] Own computation from a representative sample of selected cohorts. The sample is discussed in the data section.

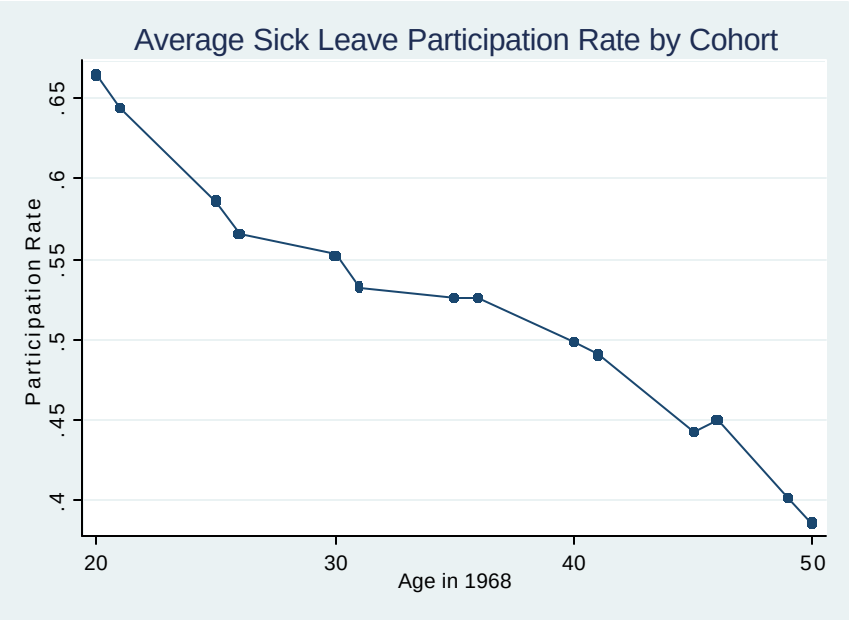


Sick leave can be decomposed into participation and sick days conditional on participation. In the next figure I plot the number of sick leave days conditional on claiming positive days and being in the labor force that year. The pattern is very similar to the previous figure although the level is higher. The figure below plots average participation rates. Participation varies and is generally trending up except in the first half of the 1980's when participation rates are decreasing.


Average Number of Sick Leave Days per Year, 1974-1990
Sick Days for Claimers
35
40
45
50
75
80
85
90
YEAR


Average Sick Leave Participation Rate, 1974-1990
Participation Rate
.52
.54
.56
.58
.6
.62
75
80
85
90
YEAR

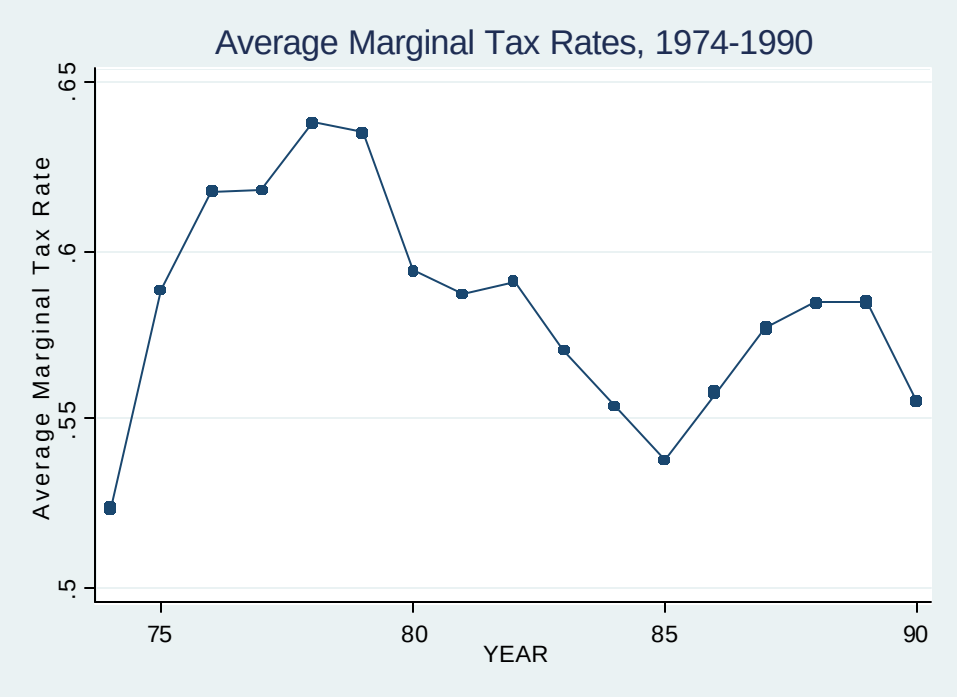
The panel structure of the data allows me to observe the behavior of different cohorts over time. In the graph below I have plotted the average fraction of years in the labor force with any sick leave claims for a number of cohorts. There is a clear increase in average participation rates for younger cohorts. The pattern indicates that younger cohorts adapt to the program and I will have to account for this effect in the analysis.



The price variation I use stem from changes in the marginal tax rates, which determine the value of earning additional income. The period covers many tax reforms with both tax increases and tax cuts as seen in the figure below[2]. The pattern of average marginal tax rates is strikingly similar to the pattern

[2] Own computation from the sample discussed in the data section.

of average sick leave benefits. Tax rates increase through 1980, then decline for a few years before increasing again. These aggregate patterns suggest a relationship between marginal taxes and sick leave, a pattern I will examine closely in this paper.



Several previous studies have look at work absenteeism and how it is affected by changes in specific program both in Sweden (for example Johansson and Palme, 1996, 2002) and the U.S. (Allen, 1981, and Meyer, Viscusi, and Durbin, 1995, and others). There is evidence that individuals use the Swedish sick leave program for other purposes than being sick. Skogman Thoursie

(2004) find that short term sick leave for men spiked during the Calgary Winter Olympics. Although some papers have allowed a role for taxation (Johansson and Palme, 1996, 2002), they do not fully exploit the price variation induced by the tax code. In this project the tax price is the source of price variation facing different individuals. Another limitation of previous studies is that they focus on evaluating a short period of time before and after a policy reform. Furthermore, incentives only change in one direction, either it becomes more or less costly to be absent from work. Here I consider 17 years of data where prices change annually and in both directions. With such variation in prices I argue that it is much more plausible that the results are not driven by omitted trends. It should also be emphasized that previous papers have looked at policy reforms that changed the rules of the sick leave program, which is quite different from this study. I focus on the returns to work as captured by the tax code.

I use individual panel data covering the period 1974 to 1990 for the analysis. The panel data allow me to control for a rich set of individual and household characteristics.

In the next two sections I discuss the sick leave system and the data in more detail. I then present a simple economic model, followed by the empirical framework. The following section present the results.

2 The Sick Leave System

Sweden has a generous sick leave insurance system that covers lost earning in the case of basically any personal injury or illness. The sickness insurance system in Sweden is administered by the government. The system is universal and does not depend on your employer. The system is financed through a flat pay roll tax. There is no fixed allocation of sick leave days, you can use the insurance as long as your sickness requires and for as many spells as you like. The rules governing the sick leave insurance have been remarkably constant over the 1974-1990 period. In 1974 sick leave benefits became taxable income and it is the year data on the benefits become available. The replacement rate for lost earnings due to sickness was set to 90%. The daily benefit is calculated as 90% of normal annual labor earnings divided by 365, up to a cap. The replacement cap is indexed to the so called base amount, which is related to inflation. Only about 6% of the sick leave observations are above the cap. Benefits can be claimed from the second day of the sickness spell. The definition of the second day is, however, quite generous. It is sufficient to call in sick before midnight and that day counts as the first day of the spell. If you think you'll be sick tomorrow you can always call in sick today and the first unpaid day is of no consequence, and if it turns out that you're fit for work tomorrow you can change your mind. If the sickness spell is shorter than 7 days there is no requirement that a physician validates your condition. Spells shorter than 7 days do not pay benefits on weekends. This system was in place until 1987. From 1988 through 1990 the first day of no coverage was abolished. The replacement rate

was still 90% but it covered sickness from the first day of the spell. I can not extend the analysis further than 1990 since another reform makes the data from 1991 and on difficult to compare to previous years. The insurance does not cover individuals above age 65. Most sick leave spells are short. About 95% are shorter than one month (Source: Forsakringskassan).

3 The Data

I use individual panel data from Sweden from 1974 through 1990. The data is based on registries and it is very reliable. I observe individual sick leave benefits, taxable income as recorded by the tax authorities, and a number of demographic characteristics like age, gender, residence location, and marital status. The highest education level is observed in 1990 and I use this value for the whole time period. I define four education groups; college (at least 3 years of college), junior college (<3 years of college), high school (completed high school), and less than high school (not completed high school). The sampled individuals are representative of the population in any given year. The only sampled individuals that disappear from the data are those who die or emigrate. In addition to the sampled individuals their household members are also included in the data, and I observe the number of children of different ages in the household. I observe the month of birth for each child and I can compute the number of months that the parents are eligible for parental leave benefits. These benefits are usually collected by the mother and they are reported as sick

leave benefits. To account for this factor I construct a variable that counts the number of months there is a child of up to seven months of age in the household and interact it with woman.

Here I use a representative sample of the 1968 population.[3] Due to the size of the sample I am using a subset of those individuals. Those included here are of ages 20, 21, 25, 26, 30, 31, 35, 36, 40, 41, 45, 46, 49, and 50 in 1968. These cohorts are followed through 1990. Individuals are dropped beginning the year they reach age 63 since behavior close to retirement seems different than at other ages, and it is not modelled here. I have no reason to believe that the choice of these cohorts affect the results but it would be straightforward to include the other cohorts in the future. I restrict the analysis to individuals who are labor force participants, which is defined as having positive labor earnings in that year. Since the sick leave insurance is designed to replace lost labor earnings this should be the appropriate sample.

3.1 Taxes

Income taxes in Sweden are levied at the national and municipal (kommun) levels. National income taxes are progressive. During the whole period there is a basic amount tax. In 1983 a new tax base was introduced, called the additional amount. The additional amount is a separate tax base where some deductions used for the basic amount are cancelled[4]. Municipal income tax

[3] 1968 is the first year of the data set, although not all data is used in this analysis.

[4] It is similar to the alternative minimum tax in the U.S., although it is additional rather than alternative.

Table 1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Sick Days	25.51	65.22	0	365	579684
Marginal Tax Rate	0.525	0.133	0.255	0.903	579617
Age	45.25	9.318	26	62	579684
Women	0.472	0.499	0	1	579684
# Children 0-2	0.053	0.227	0	2	579684
# Children 3-6	0.109	0.315	0	3	579684
# Children 7-15	0.324	0.478	0	3	579684
College, 3+ years	0.112	0.315	0	1	579684
College, $<$ 3 years	0.074	0.262	0	1	579684
High School Degree	0.347	0.476	0	1	579684
Less than High School Degree	0.467	0.499	0	1	579684
Income, 100's of SEK	1361.622	949.938	1.02	190197	579684
Capital Income, 100's of SEK	22.754	134.032	0	49456	579684

rates are proportional and are set by each of the 280 or so municipalities. There is a fair amount of variation in the cross-section of these taxes (the standard deviation in 1990 is 1.2 percentage points). The tax basis for the national basic amount and the municipal taxes are virtually identical. Sweden has a single filer system. I observe taxable income as recorded by the tax authorities and I know the tax schedules for each year. Given this information I can compute marginal income taxes for each individual in the sample. Average marginal tax rates for each year are plotted in the introduction.

4 Economic Model

In this section I present a simple static economic model for sick leave. Consider an economy where agents have utility over consumption C and sick leave S,

$$U(C, S) \tag{1}$$

with utility increasing and concave in both arguments, that is, individuals enjoy both consumption and leisure from sick leave but at a diminishing rate. Decisions, which are made under certainty, are subject to the budget constraint

$$C = w\left(\bar{H} - S\right) + \delta w S + Y \tag{2}$$

The net of tax wage rate is w, δ is the sick leave replacement rate, and Y is non-labor income. $\bar{H}$ is a given labor contract that stipulates the number of work days. We require S to be no greater than $\bar{H}$. The first order conditions for this problem are, where λ is the multiplier on the budget constraint,

$$\begin{aligned} U_C &= \lambda \\ U_S &\leq \lambda w\left(1-\delta\right) \quad for\ S < \bar{H} \end{aligned} \tag{3}$$

Assume that consumption and sick leave are additively separable in the utility function and consider a exponential utility function for sick leave such that

$$U_S = \exp\left(-\frac{1}{b}\left(S + f\right)\right) \tag{4}$$

where both b and f are parameters. The parameter b determines how responsive marginal utility is to additional sick leave and f shifts the curve. Some individuals have f:s such that they will choose no sick leave, and others may find it optimal to choose $S = \bar{H}$. It is straightforward to allow the utility to depend on individual characteristics. The shifter f could be parameterized to have an individual specific component and an idiosyncratic shock. Another extension would be that it depends group characteristics such as birth cohort, which could explain different participation rates across cohorts.

5 Empirical Model

Consider a model where days of sick leave for individual i at time t, denoted by $SL_{i,t}$, are chosen according to the following model.

$$SL_{i,t} = \beta \log(1 - \tau_{i,t}) + \delta X_{i,t} + u_i + e_{i,t} \tag{5}$$

where $\tau_{i,t}$ is the marginal tax rate, $X_{i,t}$ are individual characteristics, u_i is an individual random effect, and $e_{i,t}$ is an unobserved i.i.d. shock. Both the random effect and the shock are assumed to be normally distributed. The choices of sick leave days are censored at 0 and 365. Since a substantial fraction of individuals don't claim any sick leave during a year the censoring at 0 is particularly important. To account for this I use a random effects tobit model that incorporates both the lower and upper censoring points.

I choose to model taxes as the net of tax rate, since the net of tax rate is what an individual takes home on the margin. It is the relevant price facing the individual. One incentive in the sick leave insurance is the capped benefits. I control for the cap by an indicator if the individuals earnings exceed the cap.

5.1 Days of Sick Leave

My data contains direct data on claimed sick leave benefits by year and I want to transform it to days of sick leave. There are two reasons for this specification. First, economic models usually stipulate that agents choose days of sick leave so examining this measure more in accordance with these theories. Second, examining days of sick leave makes it easier to interpret the estimated coefficients

without transforming estimates into elasticities. Sick leave benefits for each individual are linear in the number of days claimed. Daily benefits are 90% of normal earnings up to a cap above which it is a flat amount per day. For individuals below the cap, days of sick leave are sick leave benefits divided by normal daily earnings qualifying for sick leave benefits. Normal earnings are according to the rules what you would have earned if you had worked, and may or may not correspond to actual earnings. I measure normal earnings based on a fixed effects regression. I regress real earned income on demographic interactions and business cycle controls and an individual fixed effect for labor force participants over the sample period 1974-1990[5]. The fitted values of this regression are then the normal earnings for each individual. Normal annual earnings are divided by 365 to get daily earnings. For individuals above the replacement rate cap the procedure is simpler. The daily replacement rate is the level of the cap divided by 365. Days of sick leave are then observed sick leave benefits divided by the maximum daily sick leave benefit.

5.2 Marginal Tax Rates

The marginal tax rate is a function of earnings. Since sick leave affects earnings there is a potential endogeneity bias in that tax rates are a function of sick leave, in particular if sick leave spells are long or frequent. First consider the direction of the bias. Since sick leave decreases income it will reduce marginal tax rates

[5] The demographic variables are interactions of gender and education with age and age squared. The business cycle controls are average regional earnings, employment rates, and unemployment rates.

(if the tax schedule is progressive). More sick leave will reduce the marginal tax rate and increase the net of marginal tax rate. The bias will be positive, more sick leave means a higher net of tax rate. Since my main hypothesis is that higher net of tax rates will reduce sick leave this bias will work against me. Also note that for individuals with no sick leave there is no such bias.

I observe taxable income, which depends on sick leave choices. I also observe sick leave benefits, and using the compensation rules I can compute taxable income if no sick leave would have been claimed. I apply the tax code to this adjusted taxable income and obtain marginal tax rates at 0 sick leave days[6]. This is the relevant tax rate facing an individual before he is deciding whether to call in sick or not. The marginal tax rate at 0 days of sick leave is what I will use for most of the analysis. For comparison I will also present some results for actual tax rates, that is, the marginal tax rate at observed sick leave choices.

6 Results

I run a number of different specifications of sick leave on the net of marginal tax rate. I consistently find negative and significant estimates, indicating an effect of prices on effort. Some specifications yield quite high estimates with elasticities in excess of one.

In the first set of regressions I use marginal tax rates measured at no sick leave. For the net of tax rate I report both the marginal effect and the esti-

[6] For most individuals this means adding one ninth of sick leave benefits to taxable income. The procedure assumes that these additional earnings would not have been subject to any additional deductions.

mated coefficient. The marginal effect equals the estimated coefficient times the program participation rate of 0.58. The second control is an indicator for if the individual's income is above the cap for maximum benefits in the sick leave system. About 6% of the person-years of sick leave are above the cap as measured by normal income. In column one I estimate of the log net of tax rate of -18, which is the estimated coefficient. To transform it into a marginal effect we need to multiply the coefficient by the program participation rate, which is 0.58 among labor force participants over the sample period. The coefficient of the cap indicator is quite large indicating that individuals above the cap take substantially less sick leave than those below. Since no other controls are included this effect may proxy for other factors like an income effect or age (older individuals tend to earn more). In the second column I add a age polynomial of degree 3 and a linear cohort trend. The estimate on the net of tax rate increases and the cap indicator decreases. The estimated age profile is quite weak here although there is a significant cohort trend. Some additional demographics are added in column 3. First is the variable "Months with infant x Woman" that measures the number of months during the year there is an infant in the household interacted with woman. Infant is defined as age up to 7 months, which is chosen due to the parental leave system in place during most of the sample where parental leave benefits are reported as sick leave benefits. The additional variables are number of children in the household of ages 7 months to 2 years, 3 to 6 years, 7 to 15 years, as well as gender and marital status. Grade school starts at age 7 in Sweden. Including these variables has a substantial effect on

the age profile. The profile is quite flat up until age 50 when it increases. The estimate on months with infant shows that women claim benefits for about 30 days per month there is an infant in the household, which indicates full take up of the parental leave benefits. There is an effect of children less than 2 years old but not much for older children. In the following column I add fixed effects for the four education groups. In this specification the effect of the net of tax rate increases to -32.5. In the following column I add individual income controls. I use lags since current incomes may be somewhat endogenous. I control for own earned income, capital income, and spouse's income. It does not affect the tax responsiveness. In the following specifications there are fewer observations since I reduce the sample size to decrease the run time of the regressions. I column 6 I add business cycle controls. They are average regional earnings, employment rates, and unemployment rates. The tax responsiveness increases a bit. In the next specification I add a measure of permanent income. It is an estimated individual fixed effect from a regression of earned income on demographic interactions and the business cycle controls over the period 1974-1990. Including this permanent income control has a modest effect on the tax responsiveness. However, the effects of permanent income seems highly non-linear. If I instead include a five piece spline (with knots at quintiles) of the permanent income variable the tax responsiveness jumps to -42. The income effect on the lowest quintile is positive while the others are negative. The highest magnitude is with the fourth quintile. In the last column I use year fixed effects instead of the business cycle controls to capture aggregate effects. It does not affect the

estimates much.

In the next set of regressions I use a different tax rate measure, that is, the marginal income tax rate at observed sick leave choices. The specifications are similar to table 1 where I used the marginal tax rate at 0 sick days. Estimates of the tax responsiveness are generally smaller in magnitude but still negative and significant. The tax responsiveness increase as more controls are added. Again we see that the demographic controls age, children and education has a large impact on the estimates. Controls like lagged income and the business cycle has small effects. Including the permanent income variable increases the tax responsiveness, and including the five piece spline increases it further. Including the year effects do not affect the results much.

Now I return to the first tax rate measure, that is, tax rate at no sick leave, and I look at some subgroups of the population in table 3. In the first row I report the marginal effect of the log net of tax rate, which is computed as the coefficient estimate times the program participation rate. The marginal effects are directly comparable across sub groups. First I look at men and women separately and I focus on specification 8 from table 1 where I include the spline of the permanent income control. I run the regressions separately for each group. The response of sick leave to the net of tax rate in table 1 was -42 for the full sample. Restricting the sample to men provides a somewhat smaller tax responsiveness of -34. For women the effect is dramatic, the estimated tax effect increases to -72. This large response by women may be explained by that they have a higher productivity in home production, and sick leave is mechanism

though which they can increase that production. One may be concerned with that the effect is driven by women with young children, but excluding this group does not affect the estimates much. Next I examine education groups. There is a clear negative relationship between tax responsiveness and education, the lowest educated have the highest responses. This results is also consistent with the home production explanation. Individuals with low education may have a comparative advantage in home production. Another explanation is that individuals with high education tend to have jobs with more flexibility and are able to reschedule their work time to when it is most suitable. Individuals with low education may not have such options and instead use sick leave to avoid working when it is relatively costly.

The pattern in table 3 is very similar to findings of the tax responsiveness of earned income in response to the huge 1991 tax reform in Sweden as examined in Ljunge and Ragan (2005). Earned income incorporates both quantitative (hours) and qualitative (effort) margins of labor supply. The estimated responses of earned income to the tax rate is higher for women than for men, and higher for lower education groups than for those with any college. We estimate elasticities with respect to the net of marginal tax rate for the full sample of about -0.4 on the intensive margin, which is much larger than many hours worked elasticities of about -0.1. Sick leave is one observable mechanism through which this difference can be explained. Sick leave is a measure of effort not included in hours worked. To the extent survey data of hours worked measure normal hours worked rather than actual hours, sick leave may not be

measured in hours worked data and the sick leave response may be omitted. It is interesting to note that the pattern of responses of both sick leave and earned income are similar across groups.

In the next table I examine participation decisions, that is, the decision to claim any sick leave during a year or not. I use a linear probability model to avoid the computational burden of non-linear models. Estimated coefficients are marginal effects. The specifications are similar to the tobit regressions above. I find that the net of tax rate has a significant and substantial effect on program participation. In specification 8 with the permanent income spline the tax responsiveness is estimated to -0.116, corresponding to an participation elasticity of -0.2. Interesting to note is also the coefficient of -0.013 on age in 1968. It shows a substantial cohort trend with higher participation rates for younger cohorts. Two cohorts born ten years apart hence have 13 percentage point difference in participation rates solely due to their year of birth. This is consistent with younger cohorts adapting to welfare state policies, which is part of the hazardous welfare state dynamics as discussed in Lindbeck (1995).

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Table 1. Tobit 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-t)	**-10.57**	**-15.06**	**-14.90**	**-18.95**	**-18.92**	**-20.11**	**-21.09**	**-24.89**	**-24.84**
Coefficient Estimates									
log(1-t)	**-18.17**	**-25.88**	**-25.61**	**-32.56**	**-32.51**	**-34.54**	**-36.24**	**-42.76**	**-42.68**
	(.631)	(.642)	(.619)	(.631)	(.637)	(.939)	(.664)	(.672)	(.686)
Replacement cap	-26.37	-20.97	-21.85	-12.50	-11.95	-11.69	-12.77	-7.88	-8.02
	(.897)	(.988)	(.864)	(.963)	(.967)	(1.34)	(.95)	(.9)	(.901)
Age		0.41	7.06	7.02	7.20	8.80	7.74	7.62	8.25
		(.875)	(.892)	(.891)	(.892)	(1.279)	(.901)	(.9)	(.926)
Age sq.		-0.127	-0.241	-0.246	-0.250	-0.291	-0.268	-0.271	-0.288
		(.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	-1.59	-2.95	-2.96	-2.93	-3.03	-2.53	-2.37
		(.054)	(.042)	(.056)	(.058)	(.147)	(.098)	(.099)	(.061)
Months with Infant x Woman			30.9	30.8	30.9	31.3	31.0	31.0	31.0
			(.214)	(.215)	(.215)	(.304)	(.214)	(.214)	(.214)
Child 7 months-2 years			9.2	10.1	10.0	11.0	10.2	10.4	10.5
			(.59)	(.592)	(.593)	(.834)	(.593)	(.591)	(.591)
Child 3-6			1.07	1.57	1.59	1.73	1.95	2.19	2.18
			(.417)	(.419)	(.419)	(.591)	(.419)	(.419)	(.419)
Child 7-15			-1.88	-1.87	-1.89	-2.26	-1.60	-1.42	-1.44
			(.33)	(.334)	(.334)	(.471)	(.334)	(.332)	(.332)
Income lag					-0.194	-0.114	-0.179	-0.163	-0.163
					(.032)	(.032)	(.032)	(.032)	(.032)
Capital income lag					-12.21	-9.28	-11.65	-12.53	-11.81
					(1.98)	(2.68)	(2.1)	(2.01)	(2.02)
Husband's Income lag					-0.019	-0.005	0.009	-0.015	-0.020
					(.007)	(.011)	(.008)	(.008)	(.008)
Wife's Income lag					0.047	0.066	0.020	0.060	0.052
					(.0155)	(.0219)	(.0156)	(.0156)	(.0171)
Gender, Marital status			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education				Yes	Yes	Yes	Yes	Yes	Yes
BC controls						Yes	Yes	Yes	
Permanent Income							Yes		
Permanent Income Spline								Yes	Yes
Year effects									Yes
Observations	579661	579661	579661	579661	579444	287926	579444	579444	579444

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 demographicss 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 brackets. Sample: Labor force participants, 26-62 years old.

Table 2. Tobit regressions of sick leave days

Dependent Variable: Days of Sick Leave

Tax Rate Measure: Marginal income tax rate at observed days of sick leave

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Marginal Effect									
log(1-t)	**-0.74**	**-4.56**	**-5.44**	**-9.10**	**-8.89**	**-8.91**	**-9.97**	**-12.57**	**-11.81**
Coefficient Estimates									
log(1-t)	**-1.27**	**-7.84**	**-9.35**	**-15.64**	**-15.28**	**-15.31**	**-17.13**	**-21.60**	**-20.30**
	(.633)	(.668)	(.621)	(.639)	(.644)	(.672)	(.672)	(1.203)	(1.23)
Replacement cap	-20.96	-17.28	-17.45	-9.85	-9.30	-9.36	-9.24	-10.15	-9.95
	(.861)	(.96)	(.834)	(.952)	(.958)	(.958)	(.895)	(1.632)	(1.632)
Age		0.45	7.58	7.54	7.71	8.08	7.75	9.63	9.78
		(.877)	(.892)	(.893)	(.893)	(.906)	(.905)	(1.623)	(1.673)
Age sq.		-0.124	-0.250	-0.254	-0.259	-0.266	-0.260	-0.299	-0.311
		(.02)	(.021)	(.021)	(.021)	(.021)	(.021)	(.038)	(.038)
Age cu.		0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003
		(.0002)	(.0002)	(.0002)	(.0002)	(.0002)	(.0002)	(.0003)	(.0003)
Age in 1968		-2.30	-1.51	-2.77	-2.78	-2.82	-2.96	-2.57	-2.13
		(.072)	(.041)	(.051)	(.053)	(.102)	(.1)	(.166)	(.094)
Months with Infant x Woman			30.9	30.9	31.0	31.0	31.1	31.2	31.2
			(.214)	(.215)	(.215)	(.215)	(.215)	(.392)	(.392)
Child 7 months-2 years			9.0	9.9	9.7	9.7	9.6	11.3	11.3
			(.59)	(.593)	(.593)	(.593)	(.597)	(1.053)	(1.053)
Child 3-6			0.73	1.18	1.21	1.21	1.36	2.55	2.53
			(.417)	(.42)	(.42)	(.42)	(.421)	(.744)	(.744)
Child 7-15			-2.12	-2.14	-2.13	-2.13	-1.95	-1.55	-1.56
			(.33)	(.334)	(.334)	(.334)	(.335)	(.586)	(.586)
Income lag					-0.150	-0.151	-0.066	-0.066	-0.063
					(.032)	(.032)	(.034)	(.034)	(.034)
Capital income lag					-10.54	-10.38	-11.89	-11.13	-10.41
					(1.97)	(1.97)	(3.27)	(2.97)	(2.92)
Husband's Income lag					-0.029	-0.031	-0.001	-0.016	-0.031
					(.008)	(.008)	(.014)	(.014)	(.015)
Wife's Income lag					0.082	0.078	0.064	0.095	0.070
					(.0155)	(.0157)	(.0271)	(.0273)	(.0301)
Gender, Marital status			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education				Yes	Yes	Yes	Yes	Yes	Yes
BC controls						Yes	Yes	Yes	
Permanent Income							Yes		
Permanent Income Spline								Yes	Yes
Year effects									Yes
Observations	579661	579661	579661	579661	579444	579444	579444	173760	173760

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 demographicss 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 brackets. Sample: Labor force participants, 26-62 years old.

Table 3. Tobit regressions of sick leave days for sub samples

Dependent Variable: Days of Sick Leave

Tax Rate Measure: Marginal income tax rate at 0 days of sick leave

Sample:	Men	Women	College 3+ years	College <3 years	High School	<High School
Specification	(1)	(2)	(3)	(4)	(5)	(6)
Marginal Effect						
log(1-t)	**-19.29**	**-43.72**	**-7.31**	**-11.07**	**-23.68**	**-47.49**
Coefficient Estimates:						
log(1-t)	**-34.71**	**-71.50**	**-17.20**	**-19.40**	**-38.71**	**-79.19**
	(1.49)	(1.19)	(2.2)	(3.51)	(1.89)	(2.26)
Replacement cap	11.76	9.37	4.51	12.85	9.29	-7.44
	(1.71)	(3.64)	(2.15)	(4.14)	(2.39)	(4.62)
Age, Age sq., Age cu.	Yes	Yes	Yes	Yes	Yes	Yes
Age in 1968	Yes	Yes	Yes	Yes	Yes	Yes
Child Variables	Yes	Yes	Yes	Yes	Yes	Yes
Lagged Incomes	Yes	Yes	Yes	Yes	Yes	Yes
Gender, Marital status	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes				
BC controls	Yes	Yes	Yes	Yes	Yes	Yes
Permanent Income Spline	Yes	Yes	Yes	Yes	Yes	Yes
Program Participation Rate	0.556	0.611	0.425	0.571	0.612	0.600
Observations	91947	273251	19939	12568	59409	81833

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 demographicss 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 brackets. Sample: Labor force participants, 26-62 years old.

Table 4. Sick Leave Participation

Dependent Variable: Indicator of Positive Sick Leave
Tax Rate Measure: Marginal income tax rate at 0 days of sick leave
Linear probability regressions

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(1-t)	**-0.094**	**-0.102**	**-0.115**	**-0.131**	**-0.126**	**-0.119**	**-0.103**	**-0.116**
	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
Replacement cap	-0.077	-0.093	-0.086	-0.060	-0.060	-0.059	-0.072	-0.045
	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)
Age in 1968		-0.010	-0.010	-0.012	-0.011	-0.014	-0.014	-0.013
		(.0002)	(.0002)	(.0002)	(.0002)	(.0004)	(.0004)	(.0004)
Age		0.036	0.034	0.034	0.034	0.034	0.034	0.034
		(.004)	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)
Age sq.		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
		(.0001)	(.0001)	(.0001)	(.0001)	(.0001)	(.0001)	(.0001)
Age cu./1000		0.006	0.005	0.005	0.005	0.005	0.005	0.005
		(.0007)	(.0007)	(.0007)	(.0007)	(.0007)	(.0007)	(.0007)
Child Variables			Yes	Yes	Yes	Yes	Yes	Yes
Gender, Marital status			Yes	Yes	Yes	Yes	Yes	Yes
Education				Yes	Yes	Yes	Yes	Yes
Lagged Income Controls					Yes	Yes	Yes	Yes
BC controls						Yes	Yes	Yes
Permanent Income							Yes	
Permanent Income Spline								Yes
Observations	579617	579617	579617	579617	579400	579400	579400	579400

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-2 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 demographicss 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 multiplied by 1000.
Standard errors in brackets. Sample: Labor force participants, 26-62 years old.