Do collective agreements influence male parental leave take up in Sweden?

First draft with lots of missing parts, do not quote!
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Ann-Zofie Duvander
Department of Sociology
Stockholm University

Karin Halldén
Swedish Institute for Social Research
Stockholm University

Alison Koslowski
School of Social and Political Science
University of Edinburgh

Gabriella Lindquist Sjögren
Swedish Institute for Social Research
Stockholm University

Abstract

One of the major reasons for a gendered division of parental leave is the economic compensation during leave. Swedish parental leave benefit provides 77.6 % of earlier earnings, but collective agreements between employer and unions have over time developed to cover the income loss during leave. We focus on the importance of such agreements for fathers' parental leave take-up. The main division of agreements is between the 1) state, 2) municipality and county and 3) private sector. The difference in agreements for different segments of the labor market is likely to influence parental leave use, especially for parents with income over the ceiling and who would otherwise lose a lot of income while on leave. We compare how parental leave is used in the beginning of the 2000s and a decade later, when agreements are more generous. Our focus will be on men in different sectors and with different income levels, thus differently affected by the change in the agreements. Preliminary findings indicate differences in leave take-up between fathers' in different sectors, and it seems that income level is also important. Especially in the private sector a polarization can be seen, where fathers with high income increase their leave use over time while low income fathers fall behind. The study will deepen our understanding of how and whether the level of economic compensation during leave matters for take-up, even in an already generous statutory system.

Introduction

The Swedish parental leave system is considered to be amongst the most gender equal of all systems, but fathers still take much less leave than do mothers. This paper aims to investigate the limited take up of leave by Swedish fathers by exploring variation in economic compensation between different groups of fathers.

In comparative parental leave policy research, leave is often considered as being 'well paid' and thus providing sufficient economic compensation if the benefit received is above the 66 per cent wage replacement level. However, some argue that if fathers are to see taking leave as a viable financial option for their family, leave should be paid much closer to the 100 per cent wage replacement level (Javornik & Kurowska, 2017). In addition, if a relatively high wage replacement rate is subject to a ceiling, this ceiling will bring down the wage replacement rate for higher income fathers quite considerably, which may lead to the perception by these fathers that taking much leave may lead to financial constraints (e.g., as regards mortgage or rent payments).

In Sweden, the replacement rate is 77.6 per cent, subjected to a ceiling. However, collective agreements have developed over time to allow for a top up, in many cases up to 90 per cent of wages, without a ceiling. This paper examines whether this extra payment, from 77.6 per cent to around 90 per cent has affected take up for different categories of fathers. By focusing on those fathers who have benefitted most from more recent changes, by using information on variation in collective agreements across sectors over time (that is to say those above the ceiling, those in the private sector, and those in the municipality sector below the ceiling), we try to explore what difference the extra amount, to an already relatively high level, might have.

This paper considers a time period during which, on average, Swedish working fathers are continuing to increase their leave uptake over time (Ma et al, 2019; Swedish Social Insurance Agency 2019). This might be supported by the leave being paid closer to wage replacement level – or there may be other explanations. In terms of our theoretical framing, we expect that the level of economic compensation is important, but that it does not constitute the whole story. Workplace culture and characteristics are likely to play a role, as well as other cultural factors, including social class dynamics. It may also be a time lag between a policy change and cultural attitudes to leave taking by fathers. In addition, the availability of a certain level of economic compensation and more gender equal attitudes towards parenting are likely to mutually reinforce one another. Hence, the latter may well to some extent have an impact on the former.

Many statutory systems, if not all, are 'topped up', by occupational benefits paid for by employers, but it is extremely difficult to know about these top ups, as often these benefits are considered to be commercially sensitive and not publicly available information. This paper draws on hitherto unavailable archive data providing a rare insight into such top ups. In Sweden, the top ups are negotiated collective agreements. It has been argued that reliance on an extra statutory leave system may explain at least part of the gap between fathers' entitlement to and uptake of statutory leave, as such benefits are not routinely available to all parents. There is a positive correlation between income and leave use, which mirrors the positive correlation between income and access to top ups in countries such as the UK (Koslowski & Kadar-Satat, 2019). However, the situation with the

collective agreements in Sweden presents the opportunity to explore the effect of top ups when they are in theory accessible across the population.

As the division of parental leave is known to be a major watershed for the continued even division of labor and income development in couples (Almqvist & Duvander, 2014), it is of interest to study what measures are efficient in attaining such sharing, and so to better understand why fathers do not use more leave than they do. The employees may not be aware that they can claim such extra payments (LO, 2017) which would imply no visible effect. Also, a lack of differentiating effects by agreements may also signal information problems.

Another argument for studying the variation in collective agreements and their effect on parental leave uptake is that even in a generous and overall national system as the Swedish one there may be important variations. This is a case of leave policy design that is likely to influence use and thus the broader implication is about how and whether a certain level of earnings-related benefits matter for use, and if so what sort of level and for whom.

We will start with a brief introduction of the Swedish parental leave system and labor market structures to situate the collective agreements and their importance.

Background to the Swedish parental leave system

Since 2001 the Swedish statutory parental leave gives parents earnings-related benefits of 77.6 per cent of the income they have before using the leave, prior to this the amount was slightly higher at 80 per cent. However, a significant proportion of fathers would not receive this amount of wage replacement due to the constraint of a ceiling.

Mothers and fathers are entitled to eight months of paid parental leave each when they have a child, or a combined total of 16 months (480 days). The length of the leave entitlement has been extended in several steps since 1974, when parents were granted a combined total of six months of leave. For children born before 2014, these parental benefit days can be used at any time until the child reaches age eight (see www.forsakringskassan.se). Parents who had a low or no income prior to having a child receive a low flat rate for the whole leave period. In 1995, one month of leave was reserved for each parent. This reform, which was aimed at increasing the uptake of leave by fathers, is often referred to as the “daddy month” (or the “mummy month”). A second month was reserved for each parent in 2002, and a third month was reserved for each parent in 2016. Since these months were reserved, the share of leave taken by fathers has increased substantially (Duvander & Johansson, 2012). Today, nine out of ten fathers use some parental leave, and fathers use an average of slightly more than one-quarter of all of the parental benefit days taken in a year (Forsakringskassan.se).

In addition to this, most of the labor market is covered by collective agreements that stipulates extra payments during parental leave which are paid for by the employers. Such agreements and their change over time are the focus here.

Collective agreements are forged between the unions and the employers' organizations, but they cover all employees in work places that are connected to an agreement, not just the union members. Around 90 per cent of the labor market is covered by such agreements today. The main categories of agreements (reflecting the main divisions in the labor market) is between the sectors of state, municipality and county (hereafter referred to as municipal) and the private sector. The state sector employs about 5 per cent of all employees in Sweden and about as many women as men (Swedish Social Insurance Agency, 2011). It consists of government authorities, which includes universities and for example National Social Insurance Agency which administers the social insurance. Municipality and county employs almost a quarter of all those employed but is heavily gendered in that 4/5 of all these employed persons are women. Health sector, preschool and school are included here. The rest of the labor market consists of the private sector where approximately 40 per cent of the employees are women, albeit gender distribution is very skewed by occupational sector (Halldén, 2014).

On top of statutory leave benefits, in the 2000s, collective agreements stipulating extra payment during parental leave developed to be more generous in the municipal and private sector. These sectors then caught up with the state sector that was already at the present level of generosity in 2000 and extra benefits have not changed much since. Both the state and the municipal sectors have agreements that cover all employees. However, the private sector is organized by industry and divided by white- and blue-collar workers. The sector of steel and metalwork have for example different agreements for blue-collar workers and white-collar workers. There was an increased generosity in terms of the length of the extra benefits both in the municipal sector and in most private sector agreements in the 2000s. The agreements in the private sector was as late as 2000 in many cases still only covering women but in 2010 these were generally extended to men as well.

Make note that the term "generosity" may be ill suited as the agreements are results of negotiations and a generous top-up will most likely lead to a less generous wage development in the industry. [We will here write a bit more about the development of collective agreements over time and what is behind the development]

The enhanced payment is generally comprised of two parts; the first one implies extra payment of 10% on income in addition to the payment from the national social insurance, while the second part covers the income loss over the ceiling, with 90% of the income in most cases. In practice this means for many agreements that compensation will be 90% of full wage, also over the ceiling. There are variations in the terms and conditions of these agreements, in particular in the number of months for which they are available. The speed of the expansion of agreements with extra payment has varied by sector and industry, where typical male manual jobs have been the last to be covered. The variations in the collective agreements for different segments of the labor market is likely to influence parental leave use, especially for parents with income over the ceiling and who would otherwise lose a lot of income while on parental leave.

There are almost 700 collective agreements in the Swedish labor market. However, there are neither any annual mapping of these agreements nor any information on payments in registers. We use a mapping of the major collective agreements between 2000 and 2017 provided by Sjögren Lindquist (2018). One problem of effectiveness of these agreements

is that they are not always known, in many cases both employer and employee are unaware of their existence. This is an issue since payments only come after requests in some cases. Nevertheless, among high income earners, who would lose a lot by being on parental leave without extra payments, the awareness of these agreements are likely to be higher. The aim of this paper is to examine whether collective agreements matter, for all fathers or for only some groups. The results will help us discuss the effectiveness of employers' strategies for gender equality and the pros and cons of diversified benefits or rights for different parts of the labor market.

Agreements, summary
Parental leave insurance: 77,6% for all.
State: 10% of income under ceiling + 90% over ceiling in both 2000 and 2010 during one year.
Municipality: 10% of income under ceiling for 1-3 months in 2000 but stepwise increase from 2008 to 150 days. 90% above ceiling for almost a year (270 days) in 2000 and 2010.
Private: 10% of income under ceiling in 2000 for 1-3 months, but increasing to today's 4-6 months. In 2000 blue-collar workers got only 10% above ceiling but white-collar employees got 90%, increased to 90% for blue-collar workers across time. Some agreements only gave benefit to women in 2000s but have expanded this to all employees in 2010, and some only paid after back in work for 3 months.

Theoretical underpinnings and expectations

A key aspect of policy design that strongly determines uptake by fathers (more than mothers) is the wage replacement level of statutory payments (Duvander et al, 2019; Haas & Rostgaard, 2011; Ray, Gornick & Schmitt, 2010). There is a perception by fathers in particular, that leave is not financially viable for them, unless it is well paid, whilst cultural practices support mothers' 'need' for leave, regardless of benefit level (Koslowski & Kadar-Satat, 2019). Bringing the benefit level closer to the level of usual earnings for both partners supports the household and undermines leanings towards a breadwinner model.

However, a persistent gender pay gap (men earning more than women on average), high levels of occupational sex segregation (men working in sectors and industry with higher wages on average), and male partners being older than their female partners on average (thus with more seniority and so higher wages on average), all contribute to enduring gendered perceptions for whom leave taking is 'reasonable'. Iceland provides an example of how enduring these gendered perceptions are, with leave taking by fathers declining following the 2009 economic crisis, in particular those (higher earners) most hit by the implementation of a ceiling on the flat rate payment (Júlíusdóttir, Rafnsdóttir and Einarsdóttir, 2018). Another example of enduring gendered behavior is that when the quota is reduced (Norway) or even abolished (Denmark), fathers' use of parental leave immediately is reduced (Borchorst, 2005, Fougner, 2012; Schou, 2019).

If more fathers perceive leave as a financially viable proposition, and take leave for this reason alone, it may set in motion a virtuous circle. To the extent that fathers may be influenced by the leave use of other fathers in the workplace (Bygren & Duvander, 2006), with workplace cultural norms shifting, as more fathers take leave (Dahl, Loken &

Mogstad, 2014). Arguably, the extra-benefit is more than just a 'top-up'; it is rather a conversion factor for take up by fathers (Koslowski & Kadar-Satat, 2019).

Discussions of leave policies tend to focus on statutory provision, in no small part due to a data gap: It is very difficult to know the range of extra benefits available as such information may be considered to be commercially sensitive and would require a census of employers. In the same way that every country manages to have distinct statutory parental leave systems (Blum et al, 2018), there is likely to be much variation within a country across employers, sectors, and industry, and mapping this information is extremely challenging for researchers. It is also extremely challenging for both parents and employers to have full knowledge about entitlements. This is likely to matter more for some sectors and workplaces than others.

The difference between the statutory and extra-statutory benefit level is extremely stark in countries such as UK or Australia, so the effect of the extra benefits might be expected to have a strong effect for those eligible fathers, though if the group of eligible fathers remains relatively small across a population, a tipping point towards less gendered parenting practice may not occur. As such, Sweden provides a particularly interesting case as the extra benefits are now widespread across the population.

Factors at the workplace are often mentioned as reasons to not go on leave, or to reduce leave length (Tremblay & Harvey, 2019) and extra payments from the employer may be considered as a signal from the employer to the employee that leave is encouraged (Koslowski & Kadar-Satat, 2019).

Hypotheses

Our main hypothesis is that improvements in collective agreements rendering extra payment during parental leave will affect male parental leave use over time. Such extra payment will affect groups of fathers differently. Extra payments have increased differently by sector and income groups over the period of investigation, 2000 to 2010, which leads to below hypotheses.

H1. Men's use of parental leave will increase more in private sector, compared to state and municipality. The reason being that agreements in the private sector have improved the most.

H2. Men's use of parental leave will increase more in the municipal sector, compared to state sector, as extra payments have increased more in the former sector.

H3. Men's use of parental leave will increase most for men with high income (i.e., above ceiling) compared to those with lower income, as extra payments have the most substantial influence at high income levels.

H4. Men's use of parental leave in the municipal sector with incomes in the mid category (i.e., above the floor but below the ceiling) will increase more compared to those above the ceiling and below the floor and more than middle-income earners in other sectors. The reason being that the extra payments are expanding most for the middle-income group in the municipal sector.

H5. Men's use of parental leave will increase more for men with high income (i.e., above ceiling) in the private sector compared to men in the private sector with incomes below the ceiling and also more than high income earning men in other sectors. The reason being that their extra payments have increased the most for private sector employed above the ceiling.

[make note that in H4 and H5 there are two groups of comparison and we may fine-tune this to a more clear idea and operationalisation]

Analytical strategy and data

Data used in this study come from the Swedish national population register which is connected to the administrative registers of parental leave use and the labor market registration of employment in various sectors as well as income. Parents are connected to their children and over time we know the leave use, education, earnings and sector of the individual parents.

To study the potential effects of collective agreements on parental leave use we compare parents who have a child in December of 1999/January of 2000 with those that have children in December of 2009/January of 2010[1].As we have access to annual register data we are restricted to births around the New Year as to follow the parental leave use for the same lenth of time.

There are different ways to consider father's increase in leave uptake. One is simply to consider the proportion of fathers who take leave. Another is to consider the number of days taken. In this paper, we consider both but with the emphasize on the latter. The reason for this focus is that leave use among fathers is so common in Sweden and can be considered strongly normative. It has become a question of when and how long the leave is to be rather than whether it should be used.

We use linear probability models to estimate the probability of using any leave at all the first two years of the child's life and OLS regressions to estimate the number of days used during the first two years among fathers that used any leave. To capture the change over time for various subgroups of fathers we use interactions between year and sector or year and income category. This will indicate change over time and constitute the main focus of the study. [We will continue with three-way interactions that can be presented at the time of the conference]

The sample consists of children with two registered parents and the child has to be the first born for both of the parents. Individuals having a second child within the two following years (2000-2001 and 2010-2011) are excluded as to not confuse leave use for a first and second child. In the analyses individuals with different collective agreements are compared. Hence, only those in employment at t_{-1}, i.e., the year prior to the birth (1999 and 2009) are included[2]. The independent variables and controls are measured at t_{-1} (if not stated otherwise). Individuals with missing information on any of the variables the

[1] We include children born in December 1999 and 2009 to boost the number of cases.
[2] Self-employed and sailors are excluded.

relevant years are excluded. It should be noted that we in this study do not consider the parental leave use of the other parent or her characteristics.

Dependent variable

Any parental leave uptake (>0) is a dummy variable indicating if the parent used any paternal leave in 2000 and/or 2001 for those with children born in December 1999/January 2000 and in 2010 and 2011 for those with children born in December 2009/January 2010.

Parental leave uptake days is a continuous variable indicating the net number of days of parental leave in 2000 and 2001 for those with children born in December 1999/January 2000 and in 2010 and 2011 for those with children born in December 2009/January 2010. Non-users of parental leave are excluded from this analyses[3].

Make note that we are basing our analysis on the registered parental leave benefit days and that it is in Sweden also possible to use unpaid leave. A common pattern is to mix paid and unpaid days but we have no possibility to capture such behavior in this study (Duvander and Viklund, 2014).

Main independent variables

Income

The income indicator consists of three dummy variables:

Income below the floor (low income) takes the value 1 for incomes up to the floor at 21600 SEK for those with children born in December 1999/January 2000 and 64800 SEK for those with children born in December 2009/January 2010.

Income above the ceiling (high income) takes the value 1 for incomes above 273000 SEK for those with children born in December 1999/January 2000 and 428000 SEK for those with children born in December 2009/January 2010.

Income between the floor and the ceiling (middle income category) takes the values 1 for incomes between the floor and the ceiling (see descriptions above).

Sector

Three dummy variables constitute the sector measure: *private sector, state sector* (including state own firms and organizations and other public departments) and *municipality sector* (including the county sector).

Year2010 is a dummy variable taking the value 1 if the firstborn child is born in December 2009/January 2010 and 0 if the firstborn child is born in December 1999/January 2000.

Control variables

Education

The educational measure consists of three dummy variables: *high education* (tertiary), *college education* and *basic or no education* (nine years or less) which also includes those where it is indicated that information about education is lacking[4]. Those with no information are coded as missing.

[3] Individuals with missing information on parental leave uptake 2000/2001 respectively 2010/2011 (either one of the two years or both years) are excluded.

[4] Coded/indicated with a star (*) in the data.

Labor market attachment is a dummy variable taking the value 1 if the individual had an income above two price base amounts in both t_{-3} and t_{-2}. For those with children born in December 1999/January 2000 this implies an income above 72600 SEK in 1997 and 72800 SEK in 1998 and above 80600 SEK in 2007 and 82000 SEK in 2008 for those with children born in December 2009/January 2010[5].

Two price base amounts has been used earlier as a threshold for participating on the labour market to a somewhat substantive degree. As we are interested in parents' influence of collective agreements we only want to include parents that are active on the labour market and thus are exposed to the agreements' effect.

Resident partner is a dummy variable that takes the value 1 if the individual is registered at the same address as the other parent, otherwise zero, thus indicating co-residence of parents. Note however that the registration of living together may be lagging in some cases, especially as we are investigating first births which in some cases is the time a couple move together.

Parental age is continuous variable.

Swedish citizenship is a dummy variable that takes the value 1 if the individual has a Swedish citizenship. We use tis variable to indicate acquaintance with the parental leave system and knowledge about collective agreements, as such knowledge is likely to increase with time and integration in the country.

Results

We start with presenting our sample in table 1. We find that among men the share using parental leave during the first two years has increased between 2000 and 2010 and also the number of days have increased substantively. While the numbers employed in different sectors is fairly stable over this time, there is a shift towards higher education and a larger share have a solid labor market attachment two years before having a child. The income grouping indicates that there are fewer fathers earning above the ceiling in 2010, but this is caused by the raised ceiling in the benefit in 2006. There are also less fathers with an income below the floor. Also, more parents seem to be co-residents and these first-time fathers are somewhat older in 2010 compared to 2000. It is as common to be a Swedish citizen at both time points. [we will in later version present the descriptives by sector to make sure no major changes happen between 2000 and 2010 that may influence the results]

[5] Individuals with missing information on income 1997/1998 respectively 2007/2008 (either one of the two years or both years) are excluded.

Table 1. Descriptive statistics for men.

	2000		2010		Difference	
	mean	sd	mean	sd	b	t
Any parental leave	0.76	0.43	0.84	0.37	0.08***	(9.39)
Parental leave days	55.26	59.13	93.96	68.05	38.70***	(26.44)
Municipality sector	0.11	0.32	0.10	0.30	-0.01*	(-2.14)
State sector	0.08	0.28	0.09	0.28	0.00	(0.30)
Private sector	0.80	0.40	0.81	0.39	0.01	(1.47)
Low income	0.08	0.27	0.05	0.22	-0.03***	(-5.35)
Middle income	0.69	0.46	0.78	0.42	0.09***	(10.03)
High income	0.23	0.42	0.17	0.38	-0.06***	(-7.72)
High education	0.32	0.47	0.42	0.49	0.10***	(9.85)
College education	0.53	0.50	0.48	0.50	-0.05***	(-4.78)
Basic or no education	0.14	0.35	0.10	0.29	-0.05***	(-7.16)
Labor market att.	0.71	0.46	0.84	0.37	0.13***	(14.79)
Parental co-residence	0.79	0.41	0.83	0.37	0.05***	(5.83)
Parental age	29.81	5.50	31.04	5.54	1.24***	(10.84)
Swedish citizen	0.95	0.22	0.94	0.23	-0.01	(-1.87)
Number of obs.	4272		5196			

t statistics in parentheses: * p<0.05, **p<0.01, ***p<0.001

As to get a more clear picture of how fathers' parental leave has developed between 2000 and 2010 we present a number of figures with the trend in using any parental leave and average number of days used. We present this trend by sector in figure 1 and 2, and for those with income above the ceiling by sector in figure 3 and 4. We find that the share of users increase in all sectors and also the number of parental leave days. It is a clear trend of a slower increase in the private sector. When looking at only fathers with income over the ceiling we see that the trend for using the leave is increasing but that the randomness is very clear as caused by the size of the sample. Furthermore among the fathers with high income the number of days are increasing in all sectors, but most so in the state sector.

Figure 1. Share of all fathers using parental leave over time and by sector.

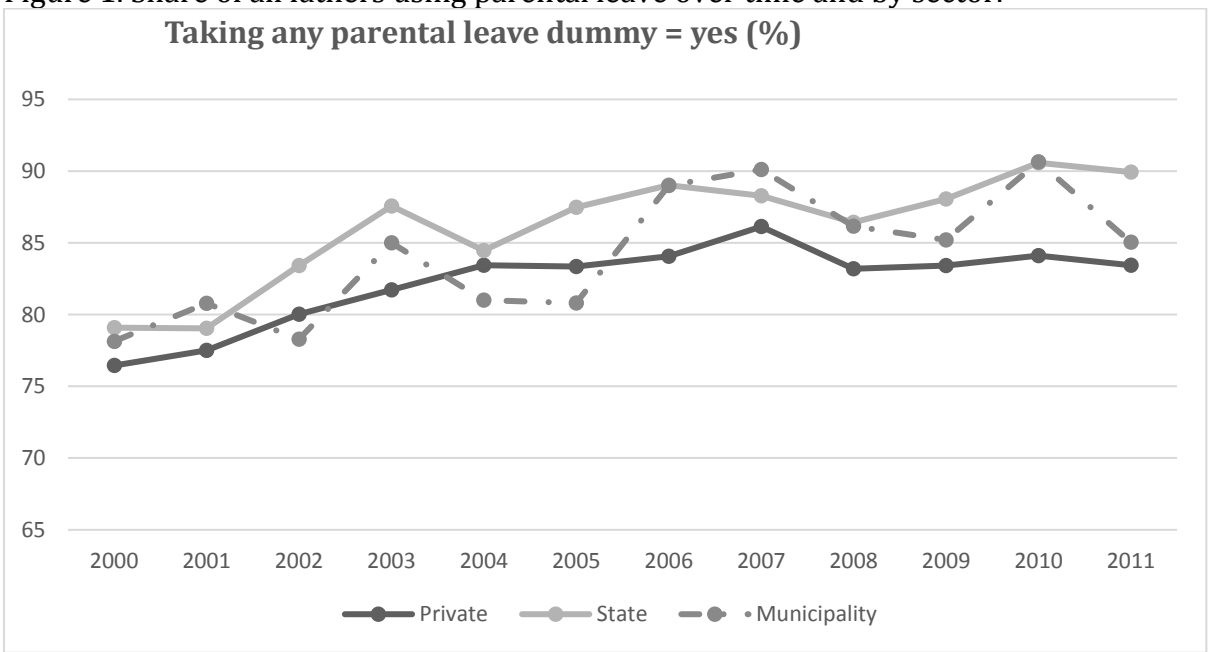


Figure 2. Average number of parental leave days over time by sector.

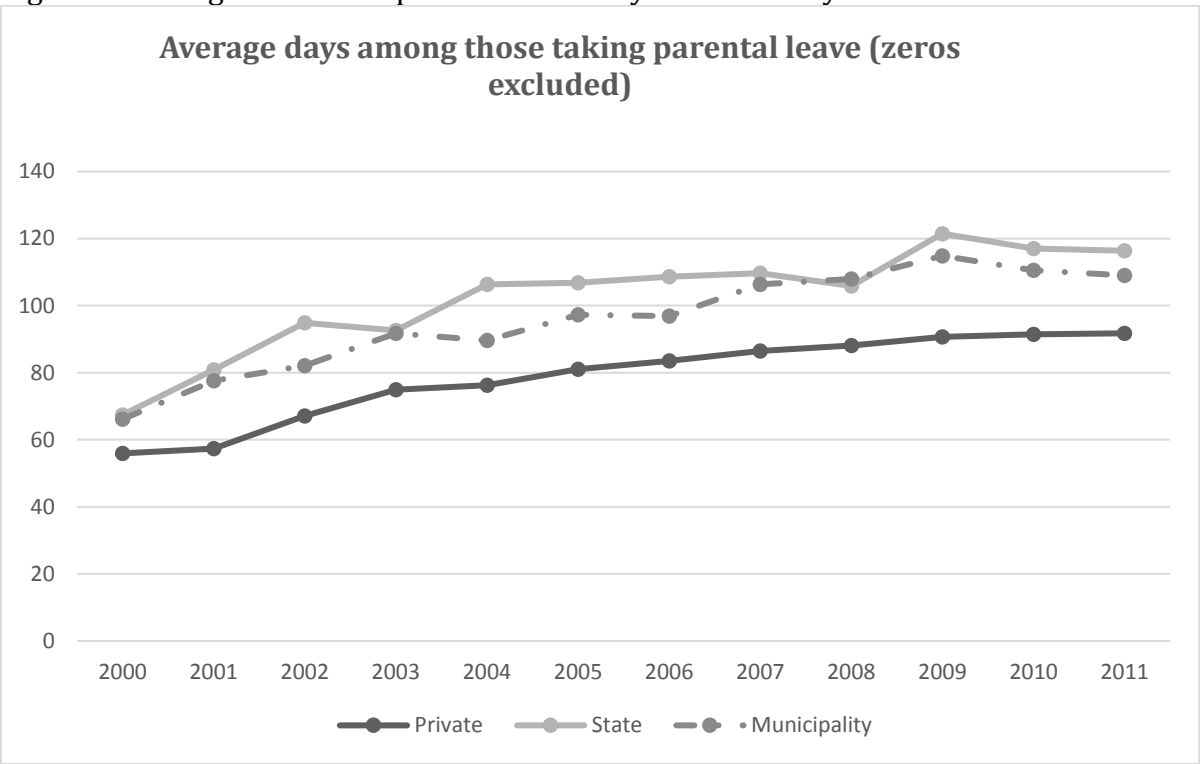


Figure 3. Only high income (above ceiling).

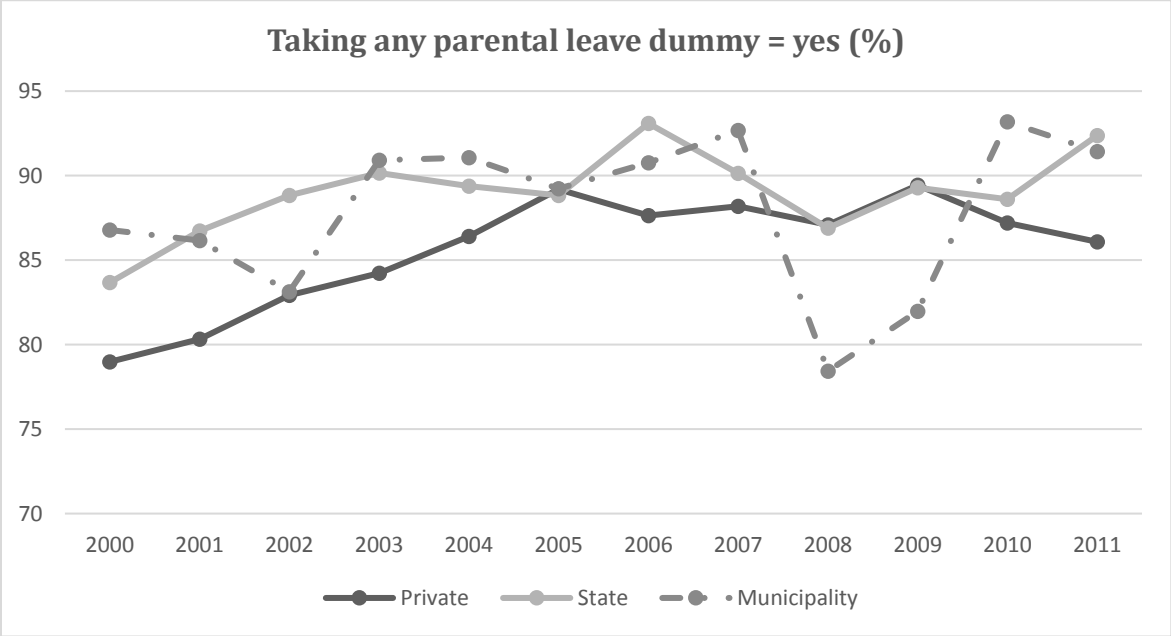
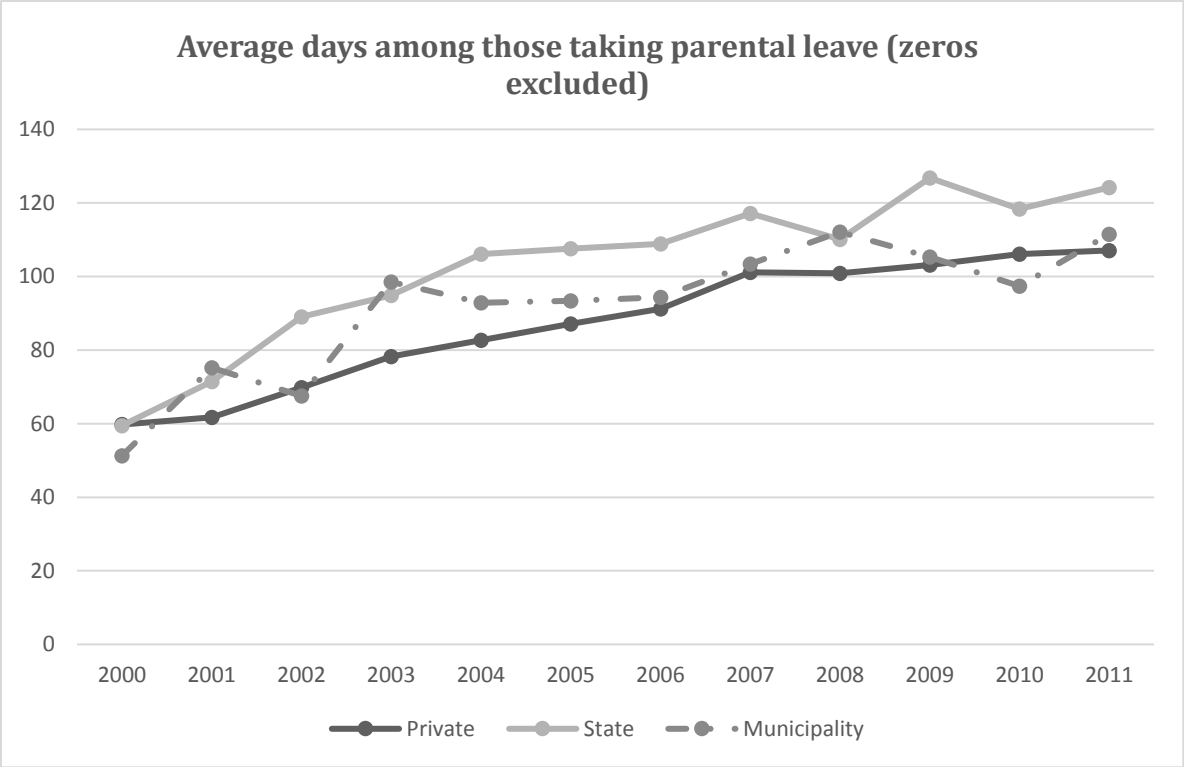


Figure 4. Only high income (above ceiling).



In figure 5 and 6 we present the trend of use and number of days for men in the private sector that have an income just below the ceiling and compare it with fathers that have an income above the ceiling. The reason is to see whether over time there is a trend in different use that is affected by the ceiling. As mentioned, the ceiling was raised in 2006 and thus lead to fewer fathers having an income above the ceiling. Figure 5 indicates that there was an increase in share of users below the ceiling some years before the increase above the ceiling but that after 2006 the share users is comparable and at a stable level just below and above the ceiling. However, the number of days used is higher above the ceiling and it also seem to increase faster over time, in particular for the year 2006.

Figure 5. Only private sector comparing above and just below the ceiling.
Just below ceiling =33% of the highest incomes within the income category between the floor and the ceiling.

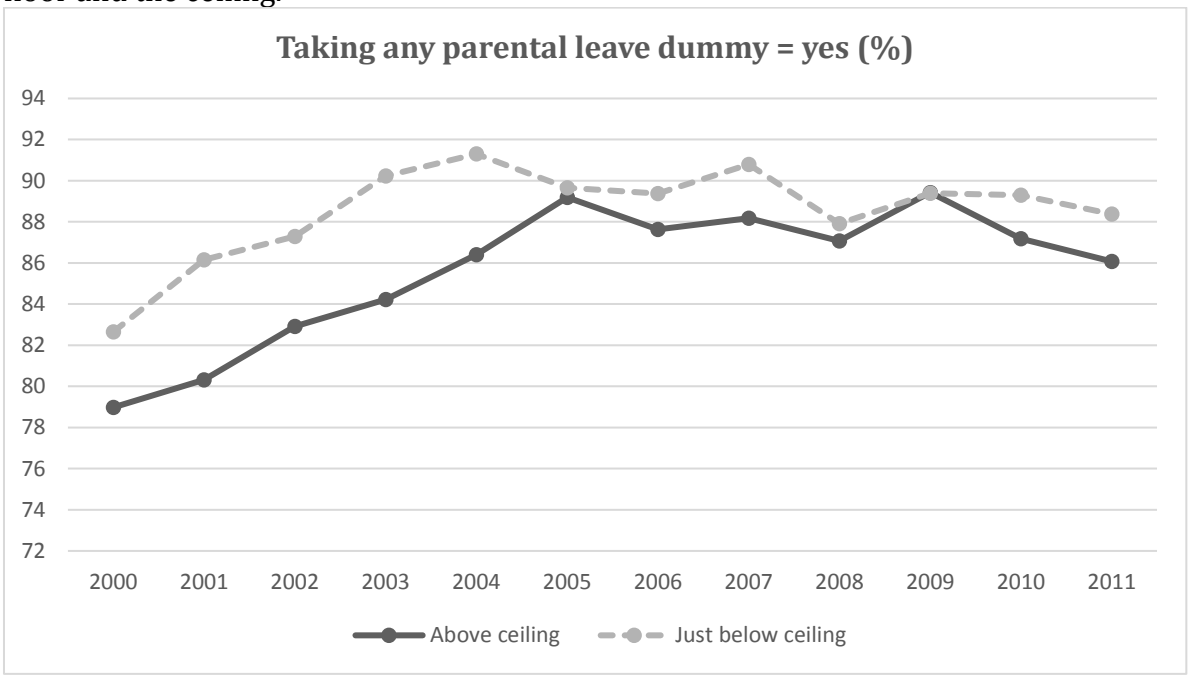
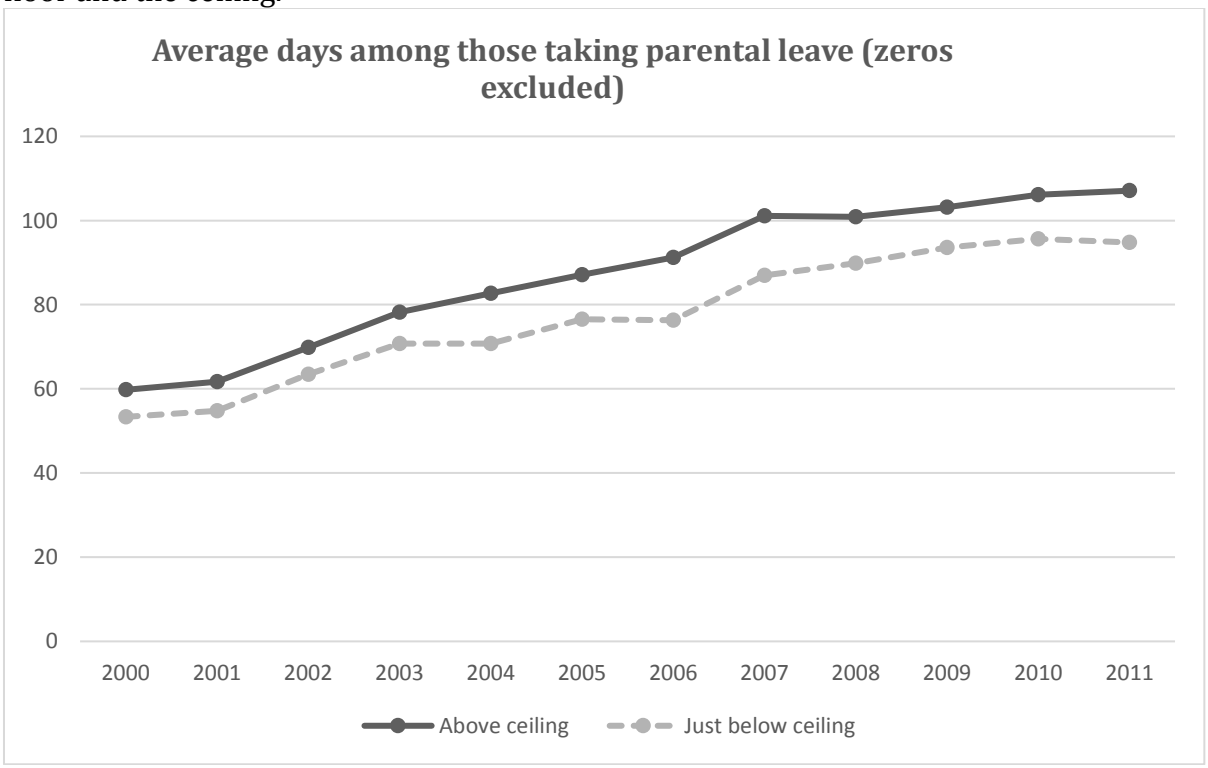


Figure 6. Only private sector comparing above and just below the ceiling.
Just below ceiling =33% of the highest incomes within the income category between the floor and the ceiling.



We continue with a baseline regression to become orientated in the basic associations of leave use for men the last decades in Sweden. In table 2 the first column shows the

probability to use any leave among fathers. The probability to use leave is higher for men in the state and municipal sector compared to the private sector and has increased in general between 2000 and 2010. Higher educational level indicates a higher probability of using any leave and it is the fathers in the middle-income category, i.e., not below the floor or above the ceiling as regards benefits that uses leave most often. Also, labor market attachment before becoming a parent increases the probability of using leave for fathers. Among the demographic characteristics we see that co-residence and Swedish citizenship increases probability of using leave while older fathers are slightly less likely to do so.

In the second column we focus only on the fathers that use any leave. We find that both men employed in the state sector and the municipal sector use over a week more leave days than men in the private sector. Number of leave days have increased over a month during the 10 years of study and it is especially the highly educated fathers that have improved their leave length. Middle income earners use more leave than both men above the ceiling and below the floor (the latter significant only on the 10% level). However, fathers that have worked at least two years with decent income before becoming parents take slightly less days of leave than others, while older fathers use somewhat more days.

In sum, the determinants of leave that we use in this study shows patterns similar to earlier studies on Sweden (See for example Sundström and Duvander, 2002).

Table 2. Baseline regression.
Coefficients pertain to two separate full regression models where M1 applies Linear Probability Models (LPM) and M2 uses OLS.

	M1 Any leave	M2 Leave days
State sector	0.0377**	9.228***
	(0.0128)	(2.675)
Municipality sector	0.0410***	7.534**
	(0.0122)	(2.398)
(Private sector ref.)		
Year 2010	0.0521***	35.47***
	(0.00844)	(1.508)
(Year 2000 ref.)		
High education	0.0463***	24.73***
	(0.00925)	(1.765)
Basic education	-0.0582***	2.229
	(0.0151)	(2.611)
(College education ref.)		
Low income	-0.202***	-7.847+
	(0.0225)	(4.153)
High income	-0.0237*	-4.041*
	(0.0109)	(1.946)
(Middle income category ref.)		
Labor market attachment	0.0909***	-4.653*
	(0.0122)	(2.290)
Parental co-residence	0.0815***	-1.918
	(0.0115)	(2.190)
Parental age	-0.00182*	0.769***
	(0.000850)	(0.160)
Swedish citizen	0.142***	1.298
	(0.0218)	(4.779)
_cons	0.557***	27.14***
	(0.0351)	(6.875)
Number of obs.	9468	7595

Robust standard errors in parentheses.
* p<0.05, ** p<0.01, *** p<0.001, + p>0.1
Note: M1: dependent variable is taking any parental leave or not (binary).
M2: dependent variable is number of days of parental leave (continuous) among those that take any parental leave.

We now continue with our hypotheses of changes in parental leave use among employees that differ in terms of sector of employment and income across the decade of 2000 when

many collective agreements (further) developed in Sweden as regards parental leave benefits. Our analytical strategy is to use the basic regressions in table 2 and then add interaction terms between the year indicator and the specific factor we are interested in (i.e., sector and income). We only show the interaction terms in this section (due to space limitations)[6]. [we will in relevant cases continue with 3 way interactions which will be ready in time for the conference. We are also considering other ways of empirical strategy that will be ready long before summer 2020].

First, we are interested in changes across sectors that could be attributed to expanded collective agreements as regards parental leave. The agreements have been expanding most in the private and the municipal sector between 2000 and 2010, while the agreements generally were in place already in 2000 for state sector employees. For fathers in these sectors we were thus expecting an increase in the probability of using leave as well as in the number of days. Table 3 presents the interaction terms that indicate the change over time for different sectors. We find no higher or lower probability to use leave in any of the sectors across time for fathers. However, quite unexpectedly (with regard to the collective agreements) fathers in the state sector increased their number of days more over time than fathers in the other sectors. In addition, fathers in the private sector had a slower increase in their uptake of leave days over time, quite the opposite of what more generous collective agreements in private sector would lead us to expect.

Table 3. H1. Men's use of parental leave will increase more in private sector, compared to state and municipality. The reason being that agreements in the private sector have improved the most.

Coefficients extracted from six separate full regression models (c.f., Baseline table for controls): M1 (LPM) and M2 (OLS).

	M1 Any leave	M2 Leave days
Municipality sector x Year 2010	0.0273	6.997
	(0.0234)	(4.533)
(All other sectors ref.)		
State sector x Year 2010	0.0241	10.54*
	(0.0255)	(5.172)
(All other sectors ref.)		
Private sector x Year 2010	-0.0289	-9.770**
	(0.0185)	(3.602)
(All other sectors ref.)		
Number of obs.	9468	7595

Robust standard errors in parentheses.
* p<0.05, ** p<0.01, *** p<0.001, + p>0.1
Note: M1: dependent variable is taking any parental leave or not (binary).
M2: dependent variable is number of days of parental leave (continuous) among those that take any parental leave.

[6] The full models are available upon request.

We also anticipated that fathers in the municipal sector have increased their leave use more than fathers employed by the state. In table 4 we compare these categories of men but find no differences across time in their increased use of parental leave or the length of the leave.

Table 4. H2. Men's use of parental leave will increase more in the municipal sector, compared to state sector, as extra payments have increased more in the former sector.

Coefficients extracted from two separate full regression models (c.f., Baseline table for controls): M1 (LPM) and M2 (OLS).

	M1 Any leave	M2 Leave days
Municipality sector x Year 2010 (State sector ref.)	0.0025 (0.0324)	-3.368 (6.535)
Number of obs.	9468	7595

Robust standard errors in parentheses.
* p<0.05, ** p<0.01, *** p<0.001, + p>0.1
Note: M1: dependent variable is taking any parental leave or not (binary).
M2: dependent variable is number of days of parental leave (continuous) among those that take any parental leave.
Private sector and its interaction with year 2010 is also included in the models.

Our third expectation was that fathers with income above the ceiling would be more affected by expansion of the collective agreements compared to others. Thus, we expected high income fathers to use leave more often and for longer time compared to other fathers. In table 5 we find that the probability of using leave is not changing more across time for high income fathers compared to others, but that the fathers that used any leave indeed increased their leave days more than other groups between 2000 and 2010. Hence, fathers in the high-income category increased their leave use with 11 days more leave.

Table 5. H3. Men's use of parental leave will increase most for men with high income (i.e., above ceiling) compared to those with lower income, as extra payments have the most substantial influence at high income levels.

Coefficients extracted from two separate full regression models (c.f., Baseline table for controls): M1 (LPM) and M2 (OLS).

	M1 Any leave	M2 Leave days
Year 2010 x High income	0.0161 (0.0194)	11.44*** (3.382)
(All other income categories ref.)		
Number of obs.	9468	7595

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001, + p>0.1
Note: M1: dependent variable is taking any parental leave or not (binary).
M2: dependent variable is number of days of parental leave (continuous) among those that take any parental leave.

We were then expecting that in the municipal sector the parents most affected by the increased leave payments through collective agreements were the ones with income in the middle category as the extra payment of 10% was applied for longer period of time, while extra payments for incomes above the ceiling was not as universally introduced. When in table 6 comparing parents in the municipal sector in the middle-income category to those that have incomes below the floor and above the ceiling we find no differences in the change of leave use or length over time.

In table 7 we instead compare parents in the middle-income group in the municipality sector to their counterparts in the state and private sector. There is a slightly higher increase in the use and length of parental leave among fathers in the municipality compared to the private sector (significant at the 10% level). There is though no difference between fathers in the middle-income category in the municipality and state sector.

Table 6. H4a. Men's use of parental leave in the municipal sector with incomes in the mid category (i.e., above the floor but below the ceiling) will increase more compared to those above the ceiling and below the floor. Only municipality sector in the model.
Coefficients extracted from two separate full regression models (c.f., Baseline table for controls): M1 (LPM) and M2 (OLS).

	M1 Any leave	M2 Leave days
Middle income	-0.00867	-6.090
Year 2010	(0.0627)	(12.46)
(All other income categories ref.)		
Number of obs.	1006	855

Robust standard errors in parentheses.
* p<0.05, ** p<0.01, *** p<0.001, + p>0.1
Note: M1: dependent variable is taking any parental leave or not (binary).
M2: dependent variable is number of days of parental leave (continuous) among those that take any parental leave.

Table 7. H4b. Men's use of parental leave in the municipal sector with incomes in the mid category (i.e., above the floor but below the ceiling) will increase more than middle-income earners in other sectors. Only individuals in the middle-income category in the model.
Coefficients extracted from four separate full regression models (c.f., Baseline table for controls): M1 (LPM) and M2 (OLS).

	M1 Any leave	M2 Leave days
Municipality sector x	0.0481+	8.475+
Year 2010	(0.0260)	(5.025)
(Private sector ref.)		
Municipality sector x	0.0227	-0.181
Year 2010	(0.0367)	(7.572)
(State sector ref.)		
Number of obs.	6983	5719

Robust standard errors in parentheses.
* p<0.05, ** p<0.01, *** p<0.001, + p>0.1
Note: M1: dependent variable is taking any parental leave or not (binary).
M2: dependent variable is number of days of parental leave (continuous) among those that take any parental leave.
State sector and private sector respectively and their interactions with year 2010 are also included in the models.

Lastly the increase in extra payment above the ceiling seems to be most generally introduced in the private sector and we were thus expecting these parents to change their use most across time. In table 8 we compare parents in the private sector with incomes above the ceiling to the ones earning less in the same sector. We find no increased probability for high income fathers to use leave between 2000 and 2010, but they increased the number of days used more than other private sector fathers.

Table 8. H5a. Men's use of parental leave will increase more for men with high income (i.e., above ceiling) in the private sector compared to men in the private sector with incomes below the ceiling. Only private sector included in the model.
Coefficients extracted from two separate full regression models (c.f., Baseline table for controls): M1 (LPM) and M2 (OLS).

	M1 Any leave	M2 Leave days
High income x Year 2010	0.0316 (0.0217)	10.34** (3.699)
(All other income categories ref.)		
Number of obs.	7653	6046

Robust standard errors in parentheses.
* p<0.05, ** p<0.01, *** p<0.001, + p>0.1
Note: M1: dependent variable is taking any parental leave or not (binary).
M2: dependent variable is number of days of parental leave (continuous) among those that take any parental leave.

It might be even more accurate to compare high earning parents that differ in terms of sector of employment and such a comparison is displayed in table 9. Fathers in the high earning group in the private sector have not increased their leave use or the length of their leave differently compared to fathers working in the state and municipal sectors.

Table 9. H5b. Men's use of parental leave will increase more for men with high income (i.e., above ceiling) in the private sector compared to high income men in other sectors. Only individuals in the high income category.
Coefficients extracted from four separate full regression models (c.f., Baseline table for controls): M1 (LPM) and M2 (OLS).

	M1 Any leave	M2 Leave days
Private x Ýear 2010 (State sector ref.)	0.0329 (0.0539)	-16.43 (10.17)
Private x Ýear 2010 (Municipality sector ref.)	0.00761 (0.0614)	-8.934 (12.22)
Number of obs.	1889	1565

Robust standard errors in parentheses.
* p<0.05, ** p<0.01, *** p<0.001, + p>0.1
Note: M1: dependent variable is taking any parental leave or not (binary).
M2: dependent variable is number of days of parental leave (continuous) among those that take any parental leave.
Municipality sector and state sector respectively and their interactions with year 2010 are also included in the models.

Discussion

Preliminary conclusion is that it seems that income is more important than sector here. There are clear differences between sectors but not so much change in these differences over time.
Within the private sector, high income is important, and positive for men's use of leave. State fathers are however increasing most.

In sum we have so far found less effect than we expected. Possible reasons:
-The extra payments are still unknown for many and therefore not part of any leave decisions or even picked up. Major information issue with clear policy implication in such case.
-There may also be other factors that are more important, such as work tasks, work place norms and culture. However such factors may also change over time but it is likely that a more generous collective agreement will take time to be able to affect the leave use through such intermediary factors. Perhaps this is what we see in the state sector where fathers are increasing leave the most and where the collective agreements became generous in the 1990s. Perhaps it takes until the 2000s for this fact to change usage thought work place norms etc? Such an interpretation would imply a lagg in effect from implementation of agreements.

We find some support for the argument that an amount closer to wage replacement is positively associated male leave taking. The ones above the ceiling, and thus who benefit the most from the collective agreements, are increasing their leave taking the most.

Within the private sector, it is the high income who have increased their days the most, you see more polarization. This may reflect more variation in working conditions within as well as across employers, and the importance of workplace characteristics for leave uptake, in addition to financial compensation.

To do

- Analyse the ceiling change to a higher lever more closely. Compare this over 10 pbb also in 2000. The ceiling was increased from 7,5 pbb to 10 in 2006 and it is a better comparison to look at these top-earners also in 2000.
- Make descriptives table 1 by sector and by the income groups.
- Robustness checks with other cuts of data and also try other analytical strategy.

References

Almqvist, A.-L., & Duvander, A.-Z. (2014). Changes in gender equality? Swedish fathers' parental leave, division of childcare and housework. *Journal of Family Studies*, 20, 19-27.

Blum, S., Koslowski, A., Macht, A. and Moss, P. (2018) International Review of Leave Policies and Research 2018. Available at: http://www.leavenetwork.org/lp_and_r_reports/Blum et al 2018

Borchorst, A. (2005) The public-private split rearticulated: abolishment of the Danish daddy leave. Pp. 101-120 in A. Ellingsaeer and A. Leira (eds) Politicising Parenthood in Scandinavia. The Policy Press.

Bygren, M., & Duvander, A.-Z. (2006). Parents' workplace situation and fathers' parental leave Use. *Journal of Marriage and Family*, *68*, 363–372

Chung, H. (2018). Dualization and the access to occupational family-friendly working-time arrangements across Europe. *Social Policy and Administration* [Online] **52**:491-507

Dahl, G., Løken, K., & Mogstad, M. (2014). Peer effects in program participation. *American Economic Review*, *104*, 2049–2074.

Duvander, Ann-Zofie, and Mats Johansson. (2012).‟What are the effects of reforms promoting fathers' parental leave use?" *Journal of European Social Policy* 22 (3):319-330

Duvander, A., and Viklund, A. 2014."Kvinnors och mäns föräldraledighet" pp 23-61 in Katarina Boye and Magnus Nermo (Eds). SOU 2014:28 Lönsamt arbete – familjeansvarets fördelning och konsekvenser.

Duvander, Ann-Zofie, Eydal, Guðný Björk, Brandth, Berit , Gíslason, Ingólfur V., Lammi-Taskula, Johanna and Rostgaard, Tine. (2019), *Gender equality: parental leave design, men's participation and evaluating effects*, pp 187-204 in Moss, Peter, Duvander Ann-Zofie, Koslowski, Alison (Eds.) Parental Leave and beyond: recent development, current issues, and future directions. Policy Press.

Halldén, K. (2014). Könssegregering efter yrke på den svenska arbetsmarknaden år 2000–2010 [Occupational sex segregation in the Swedish labour market 2000-2010].' In A. Kunze & K. Thorburn (eds.), *Yrke, karriär och lön– kvinnors och mäns olika villkor på den svenska arbetsmarknaden* [*Occupation, career and wages – differences between women and men in the Swedish labour market*], Forskningsantologi till Delegationen för jämställdhet i arbetslivet [Report to the Swedish Government on Gender Equality in Working Life], SOU 2014:81, Stockholm: Fritzes.

Haas, L., & Rostgaard, T. (2011). Fathers' rights to paid parental leave in the Nordic countries: Consequences for the gendered division of leave. *Community, Work & Family*, *14*, 177–195

Javornik, J., & Kurowska, A. (2017). Work and care opportunities under different parental leave systems: Gender and class inequalities in Northern Europe. *Social Policy and Administration*, *51*(4), 617–637.

Júlíusdóttir, O., Rafnsdóttir, G. and Einarsdóttir, Þ. (2018) Top managers and the gendered interplay of organizations and family life: the case of Iceland, *Gender in Management*, 33 (8): 602-22

Koslowski, A. and Kadar-Satat, G. (2019), "Fathers at Work: Explaining the gaps between entitlement to leave and uptake", *Community, Work & Family*. 22(2):129–145.

LO (2017). Extrapengar vid föräldraledighet – en utvärdering av föräldrapenningtillägget 2017. Välfärd nr 17.
http://www.lo.se/home/lo/res.nsf/vRes/lo_fakta_1366027478784_fpt_ht2017_pdf/$File/FPT_ht2017.pdf

Ma, Li, Andersson, Gunnar, Duvander, Ann-Zofie and Evertsson, Marie. 2019. Fathers' uptake of parental leave: forerunners and laggards in Sweden 1993-2010. *Journal of Social Policy* forthcoming DOI:10.1017/S0047279419000230

Ray, R., Gornick, J., & Schmitt, J. (2010). Who cares? Assessing generosity and gender equality in parental leave policy designs in 21 countries. *Journal of European Social Policy*, *20*, 196–216

Sjögren Lindquist, G. (2018). *Utvecklingen av kollektivavtalade ersättningar sedan 2000-talets början*. Rapport 2018:14. Inspektionen för Socialförsäkringen (ISF).

Sundström, Marianne, and Ann-Zofie Duvander. (2002). "Gender division of childcare and the sharing of parental leave among new parents in Sweden" *European Sociological Research*, 2002, vol 18, no 4 pp.433-447.

Swedish Social Insurance Agency (2011) Report 2011:11. *Socialförsäkrings taket och föräldralön– ekonomi vid föräldra ledighet*.

Swedish Social Insurance Agency (2019) Social Insurance in Figures. Available at www.forsakringskassan.se

Tremblay, D.-G. and Harvey, V. (2019), 'The workplace: Challenges for fathers and their use of leave', Chapter 13 in P. Moss, Duvander, A-Z. and Koslowski, A. (eds). *Parental Leave and Beyond, Policy Press: Bristol*