

Income Loss and Leave Taking: Increased Financial Benefits and Fathers' Parental Leave Use in Sweden

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Abstract

A major reason for the gendered division of parental leave use is the financial compensation during leave. Swedish national parental leave benefit provides 77.6 percent of earlier earnings up to an income ceiling, but collective agreements cover part of the income loss above the ceiling during leave. We focus on the importance of such collective agreements by examining fathers' parental leave take-up across the 2000s, as agreements were expanded during this period in time. We combine register data for the period 2001 to 2011 with the Longitudinal Integrated Database for Health Insurance and Labour Market Studies (LISA) being the key data source. The main division of agreements is between the state, the municipality and county, and the private sector. Results indicate that fathers with income above the income ceiling increase their use over the time period. Especially in the private sector a polarisation can be seen, where high income fathers increase their leave use, while fathers with lower income fall behind. As we do not find stronger increase in fathers' leave use in sectors where agreements expanded across time there is no evident support of a direct effect of the top-ups.

Keywords: collective agreements; fathers; parental leave; Sweden; top-ups

Introduction

The Swedish parental leave system is considered amongst the most generous in the world, but it is not offering full wage replacement. Collective agreements have developed to cover income loss that is not replaced by the national parental benefit system. These agreements cover most employees, albeit with differently generous top-ups. Predominantly, fathers in the private sector are affected by the recent expansion of collective agreements in Sweden, who, as in other countries, still take much less leave than mothers. This paper aims to investigate the

association between income loss and parental leave take up of Swedish fathers by exploring variation in financial compensation between different groups of employees.

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 percent wage replacement level (Koslowski et al., 2021). However, some argue that for fathers to perceive taking leave as a viable financial option for their family, leave should be paid much closer to a 100 percent replacement rate (Javornik and Kurowska, 2017). Also, if a relatively high wage replacement rate is subject to an income ceiling, this ceiling will bring down the wage replacement rate for higher income fathers quite considerably. This may lead to financial constraints while being on parental leave.

In Sweden, the wage replacement rate of parental benefit is 77.6 percent, subject to an income ceiling. In 2017, the share of men with income above the ceiling was 29 percent (SSIA, 2020). However, collective agreements have developed allowing for top-ups, in many cases up to 90 percent of wages, without a ceiling. The major development of such agreements happened in the first decade of the 2000s. This paper examines whether these top-ups have affected fathers’ parental leave take up. By focusing on those fathers who have benefitted the most from more recent changes to collective agreements, and by using information on variation in collective agreements across sectors over time, we explore what difference the extra amount in benefit, in addition to an already relatively high level, might have on leave use.

We consider a time period when working fathers in Sweden were increasing their leave uptake (SSIA, 2019). During the first decade of the 2000s fathers increased their share of all leave used from 13 percent (in 2000) to 24 percent (in 2011). We expect that the level of financial compensation was an important factor for the development, but did not constitute the whole story. Both fathers’ and mothers’ workplace culture and characteristics are likely to impact, as well as other cultural factors, including social class dynamics. The 2000s was characterized by an expansion of rights within the parental leave system that includes all parents in the country, but also in rights for those parents covered by collective agreements, such as top-ups, and a general strengthening of the goal of gender equality (Nygård and Duvander, 2021).

In Sweden, many statutory systems are ‘topped up’ by occupational benefits paid for by employers. However, the knowledge about these top-ups is scarce, as they are often 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 of parental leave benefits based on negotiated collective agreements. It has been argued that reliance on top-ups 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 and Kadar-Satat, 2019). However, the presence of collective agreement top-ups in Sweden presents the opportunity to explore the effect of top-ups when they are in theory accessible across the population of most employed fathers.

As the division of parental leave is a major watershed for the continued division of labour among couples (Karimi et al., 2012), it is interesting to study what measures are efficient in attaining such sharing to better understand why fathers do not use more leave than they do. We focus on fathers' leave use as practically all mothers use parental leave. While almost all mothers use the leave in the beginning of the child's life, the share of fathers using any leave in the first two years is currently 82 percent (Swedish Social Insurance Inspectorate, 2021). Fathers' leave is less inevitable and likely still more negotiable both between the parents and within workplaces. It also seems that mothers and fathers are likely to have a different threshold for income loss when it comes to leave taking. Mothers' leave is not shortened as a direct consequence of fathers' increased leave, both because of large flexibility in when leave can be used and as leave is often extended with unpaid leave (Karimi et al., 2012; Duvander and Viklund, 2020). Official statistics show that fathers' average number of used days during the child's first two years increased from 35 to 61 days for children born in 2000 to 2011 (and to 74 for children born in 2018) and at the same time mothers' average days decreased from 316 to 282 days (and to 261 for children born in 2018) (SSIA, see forsakringskassan.se).

Another argument for studying the variation in collective agreements and their effect on parental leave uptake is that even within a generous and universal national system, such as the Swedish one, there may be important internal variation. 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 income loss and/or earnings-related benefits matter for use, and if so what sort of level and for whom.

Background to the Swedish parental leave system and its relation to labour market

The Swedish parental leave has a long history as it in 1974 replaced the earlier maternity leave with the explicit goal to facilitate the combination of family and work for all parents. Since its introduction, the leave has been equally available to both mothers and fathers but fathers' share of uptake has increased (slowly) from less than one percent almost five decades ago, to one third of all leave today (Swedish Social Insurance Inspectorate, 2018). The focus that parental leave should enable mothers to work soon shifted to encourage fathers' leave use,

as mothers' labour force participation increased in the 1970s and 1980s, with various campaigns and frequently vivid parliamentary and public debate (Klinth, 2002; Cedstrand, 2011). A major change in leave patterns took place when one month was reserved for each parent in 1995, often referred to as a "daddy month". This month was later extended to two months (2002) and three months (2016). Following these changes fathers' leave use has increased substantially, albeit mostly after the first reform (Duvander and Johansson, 2012; SSIA, 2019). While the introduction of the first leave was heavily debated and somewhat controversial, reserved months have become accepted and the second and third months were hardly opposed (Cedstrand, 2011; Duvander and Johansson, 2012). Today the discourse on gender equality through shared parental leave is regarded as an important and hardly contested goal of family policy (Nygård and Duvander, 2021).

In addition to the importance of reserved months, it has been demonstrated that fathers' leave use is related to the benefit level and the length of leave available (Moss et al., 2019).

Since 2001, the Swedish statutory parental leave has given parents earnings-related benefits of 77.6 percent of the pre-leave income. Reflecting general welfare retrenchment, prior to this date the amount was slightly higher at 80 percent and before the 1990s' economic crisis the benefit had been at 90 percent. However, a significant proportion of fathers would not receive this amount of wage replacement due to the constraint of an income ceiling. The ceiling is similar in all national social insurance and is based in price base amounts, a construction that changes yearly with the consumer price index but not the income development. The ceiling was until 2005 set at 7.5 price base amounts, which is the same ceiling as for sick leave. With the aim of increasing gender equal use (as more fathers have income above the ceiling) in 2006, the ceiling was raised to 10 price base amounts. When the ceiling was 7.5 price base amounts in 2000, about 30 percent of all men aged 20-64 had an income above the ceiling (approximately an annual income of 27,500 Euro), which is actually the same as the share of men with income over the ceiling in 2020, with a ceiling of 10 price base amounts (approximately an annual income of 48,300 Euro) (SSIA, 2020).¹

Since 2002, mothers and fathers are individually entitled to eight months of paid parental leave each when they have a child, or a combined total of 16 months (480 days). All except the reserved months can be transferred to the other parent. 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. From the 1990s and up to 2001 the leave was 15 months (transferable). For children born before 2014 (the investigated period), these parental benefit days can be used at any time until the child reaches eight years old (Duvander and Löfgren, 2020).

In addition to the available statutory benefits, most of the labour market is covered by collective agreements that stipulate extra payments during parental leave. These top-ups 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' organisations, but they cover all employees in workplaces that are connected to an agreement, not only union members. Around 90 percent of the Swedish labour market was covered by such agreements in 2020. The main categories of agreements (reflecting the main divisions in the labour market) are the sectors: state; municipality and county (hereafter referred to as municipal); and the private sector where agreements are somewhat different for white- and blue-collar workers. The state sector employs about 5 percent of all employees in Sweden and about as many women as men (SSIA, 2011). It consists of government authorities, which, for example, includes universities. The Municipal sector employs almost a quarter of all those employed but is heavily gendered in that four out of five workers are women. Health sector, preschool and school are included in this category. The rest of the labour market consists of the private sector where approximately 40 percent of the employees are women, albeit the gender distribution is very skewed by occupational sector (Halldén, 2014).

In the 2000s, collective agreements stipulating extra payment during parental leave developed to be more generous in the municipal and private sectors. These sectors then caught up with the state sector that was already at the present level of generosity by the turn of the century and extra benefits have not changed much since. Both the state and the municipal sectors have agreements that cover all employees. However, as the private sector is organised by industry and divided by white- and blue-collar workers, there is variation and a large number of agreements (Sjögren Lindquist, 2018). The expansion of collective agreements for most of the private sector took place during the 2000s, which is why we focus on this period in time. The agreements in the private sector arrived as late as 2000, in many cases still only covering women, but by 2010 these were generally extended to men as well.

The term "generosity" may be ill suited as the agreements result from negotiations between the social partners and a generous top-up is possibly related to a less generous wage development in the industry (Greve, 2018). Also, many male dominated sectors received top-ups during parental leave late in the period, while typically female dominated sectors received them earlier, but also had less positive wage development. The extra benefits can be seen as complementary to cover welfare retrenchment, and there has been little mentioning of consequences such as inequality, dualisation and an in-outsider division. In addition to an occupational involvement in welfare, in the case of parental leave, collective agreements have implications for the family-work balance and thus emphasise the importance of being covered by an agreement, that is, having stable

employment in an established workplace (Votinius, 2020). This can be paralleled to what in other contexts has been labelled parental-leave rich and parental-leave poor, that is a non-universal eligibility to parenting leaves within a given jurisdiction. (O'Brien, 2009; McKay et al., 2016; EIGE, 2020).

The top-up is generally composed of two parts; the first part implies extra payment of 10 percent of work income in addition to the payment from the national social insurance, while the second part covers the income loss over the ceiling, with 90 percent of the income in most cases. In practice this means for many agreements that compensation will be 90 percent 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 provided top-ups are generally less flexible in availability than the parental benefit. For example, they may only be provided for a restricted time or set number of discreet periods of parental leave (Votinius, 2020). The speed of the expansion of agreements with extra payment has varied by sector and industry, and typical male manual jobs have been the last to be covered. The variation in the collective agreements for different segments of the labour market is likely to influence parental leave use, especially for parents with income over the ceiling who would otherwise lose a lot of income while on parental leave.

One problem with regard to the effectiveness of collective agreements is that they are not always known; in many cases both employers and employees are unaware of their existence (National Social Insurance Board, 2003; LO, 2017). 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 is likely to be higher. A lack of differentiating effects by agreements may however signal information problems. 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 labour market. It will also nuance the understanding of the universalism of Swedish family policy.

In sum, we are attempting to capture the development of top-ups in parental leave payments in addition to the national parental leave benefit system. We investigate the period 2000 to 2011 because this is the period when the collective agreements were expanded within the private sector and after this period they may be seen as more or less covering the whole labour market. For the state sector the top-ups consisted of 10 percent extra below the ceiling and 90 percent above the ceiling for about a year of leave, consistently for the entire period. For the municipal sector the 90 percent top-up above the ceiling existed in 2000, but the 10 percent extra below the ceiling was extended from one month to about 5 months in steps during the period. For the private sector the situation has been

more varied but similarly to the municipal sector the 10 percent below the ceiling was extended in length over time. For large parts of the private sector the benefits above the ceiling increased between 2000 and 2011 to 90 percent for an extended number of months. The changes in collective agreements during this period have been documented by Sjögren Lindquist (2018).

Policy context and expectations

A key aspect of policy design that strongly determines uptake by fathers is the wage replacement level of statutory payments (e.g. Ray et al., 2010; Schober, 2014). There is a perception by fathers in particular, that leave is not financially viable for them, unless it covers usual income, whilst cultural practices support mothers' 'need' for leave, regardless of benefit level (Kosłowski and Kadar-Satát, 2019; Twamley and Schober, 2019).

A persistent gender pay gap, high levels of occupational sex segregation (men working in sectors and industries with higher wages on average), and male partners being older than their female partners on average (thus with more seniority and higher wages on average), all contribute to enduring gendered perceptions for whom leave taking is 'reasonable' and thus to gendered decision making mechanisms for leave taking. Iceland provides an example where leave taking by fathers declined following the 2009 economic crisis, in particular among those most hit by the implementation of a ceiling (Júlíusdóttir et al., 2018). Another example of enduring gendered behaviour is that when the "daddy months" were reduced (Norway) or even abolished (Denmark), fathers' use of parental leave immediately decreased (Borchorst, 2005; Schou, 2019). Furthermore, in Sweden for fathers to children born in the early 1990s (before the top-up became widespread) there was a clear positive association between income and leave use for incomes up to the ceiling, but not for incomes above (Sundström and Duvander, 2002).

Discussions of leave policies tend to focus on statutory provision, partly due to a lack of data: 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 (Kosłowski et al., 2021), there is likely to be much variation within a country across employers, sectors, and industries. It can be challenging for both parents and employers to have full knowledge about entitlements. Nevertheless, extra benefits from the employer during the parental leave is considered part of occupational welfare, and there are indications of increasing investments and spending in this area (Greve, 2018).

Factors at the workplace are often mentioned as reasons to not go on leave and extra payments from the employer may be considered as a signal that leave

is encouraged (Kosłowski and Kadar-Satát, 2019). In addition to the economic incentive it may provide a more normative aspect, today widespread in the Swedish labour market, as the absolute majority of both mothers and fathers use at least some of the leave available to them. The need for and development of occupational welfare in general may be driven by the gradual reductions of statutory welfare. Occupational supplements during parental leave may thus be an indication of a move away from universal policies, and towards increased inequality where insiders and outsiders are becoming more distinct (Greve, 2018). The “outsiders” are, as mentioned, a substantial group and even when there is an expansion of employment-based leave rights the group of eligible parents may actually decrease (Dobrotić and Blum, 2020). While this study concerns the fathers that have access to both statutory benefit and top-ups by the employer, it is important to keep in mind that such benefits and top-ups are not available to all fathers. Also, economic costs and benefits to take leave, including both statutory and top-ups, may matter differently for fathers at different income levels, as the economic restrictions are different and as the norms and expectations vary.

Hypotheses

Our main hypothesis is that improvements in collective agreements rendering extra parental leave payments have increased male parental leave use over time. However, the implications of such top-ups have increased differently by sector and income groups over the period of investigation, 2000 to 2011, which renders the hypotheses below:

H1. Men’s use of parental leave will increase more in the **private sector, compared to the state and municipal sectors**. The reason being that top-ups in the private sector have improved the most during the investigated period.

H2. Men’s use of parental leave will increase most for men with **high income (above the ceiling threshold) compared to those with lower income**, as top-ups have the most substantial influence on income loss at high income levels.

H3. Men’s use of parental leave will increase more for men with **high income (above the ceiling threshold) in the private sector compared to high income earning men in other sectors**. The reason being that the top-ups have increased the most for private sector employed men with income above the ceiling threshold.

H4. Men’s use of parental leave will increase more for men with **high income (above the ceiling threshold) in the private sector compared to men in the private sector with lower income**. Again, the reason being that top-ups have

increased the most for those employed in the private sector with an income above the ceiling threshold.

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, sector of employment as well as information on, for example, income and education. Parents are linked in the register to their children and over time.

To study the potential effects of collective agreements on parental leave use we compare trends in fathers' leave take up across time. Our time range starts with fathers to children born in December 1999/January 2000 and then every year ending with those having children in December 2010/January 2011. As we have access to annual register data we are restricted to births around the new year, so as to follow the parental leave use for the same length of time.

There are different ways to consider fathers' increase in leave uptake. We study the proportion of fathers who take leave, but also the number of days taken.

We use linear probability models to estimate the probability of using any leave at all during 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 who used 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 indicates change over time and constitutes the main focus of the study. We restrict the analysis to uptake of leave during the child's first two years mainly as many of the collective agreements only provide top-ups for this first period of the child's life. In addition, most leave is used during the first two years.

The sample consists of children with two registered parents, and the child has to be the first born for both parents. If the parents have a second child within the two following years, the father is not included in our sample. As we are interested in how fathers' top-ups influence their parental leave take up we focus on individuals in employment aged 20-60 years. Hence, only individuals who are employees at t_{-1} , i.e. the year prior to the birth, are included. The independent variables and controls are measured at t_{-1} (if not stated otherwise). Individuals with missing information on any of the variables in the relevant years are excluded. We do not consider the parental leave use of the mother or her characteristics: as mentioned above, the leaves of the mother and father are not directly related. As parents can also take unpaid leave it seems that when fathers' leave increases, mothers' leave does not necessarily decrease, but her share of unpaid leave instead increases (Karimi et al., 2012; Duvander and Viklund, 2020). The leave use of the father and the mother is thus not a zero-sum game

but the leave may be seen as individual entitlements that might be used in various ways. We are basing our analysis on the registered parental leave benefit days (as we have no information about unpaid leave).

Since the changes regarding the top-ups to parental leave benefit received through collective agreements only affected those with incomes above the floor of the parental leave insurance threshold, individuals with income below the floor are excluded from our sample.

Dependent variable

Any parental leave uptake (>0) is a dummy variable indicating whether the father used any paid parental leave during the two following years after child birth. For a child born in December 1999/January 2000 we monitor parental leave take up in 2000 and 2001.

Parental leave days is a continuous variable indicating the number of paid days of parental leave the two following years after child birth. Non-users of parental leave are excluded from this part of the analyses.

Main independent variables

Above/below ceiling income

We use an income measure based on yearly gross earnings (transfers or income from own business are excluded). The income indicator consists of a dummy variable which takes the value 1 for income above the income ceiling (*above ceiling income*) implying a yearly income above 273,000 SEK for those with children born in December 1999/January 2000 and 424,000 SEK for those with children born in December 2010/January 2011, respectively. This dummy takes value 0 for income between the floor and the ceiling (*below ceiling income*), for incomes at 21,600 SEK and more (up to the ceiling) for those with children born in December 1999/January 2000 and at 64,800 SEK and more (up to the ceiling) for those with children born in December 2010/January 2011. The levels changed stepwise across the time period analysed which this variable measures.

Sector

Three dummy variables constitute the sector measure: *private sector*, *state sector* and *municipal sector* (including the county sector).

Year (*Year2*) is a continuous variable ranging from 0–11 based on the year the child is born. A child born in December is counted to the next coming year (i.e. a child born in December 1999 is counted as January 2000 etc.).

Note that we are not measuring top-ups directly but rather that income above the ceiling and sector are proxies which identify those fathers exposed to top-ups in the parental leave benefit.

Control variables

The educational measure consists of three dummy variables: *high education*, *intermediate level of education* and *basic or no education*.² We use these measures to indicate position in the labour market as we do not have access to occupational data.

Labour 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} .³ This variable indicates working more or less fulltime.

Parental age is a continuous variable.

Swedish citizenship is a dummy variable indicating 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

A majority of all fathers in our sample (84 percent) used some parental leave with the average of 81 parental leave days (Supplementary Materials, Appendix Table 1). In our sample, the private sector is by far the most common sector of employment (80 percent), whereas approximately 10 percent of the fathers work in the state and the municipal sectors respectively. 46 percent of the fathers have intermediate level of education, while 29 and 25 percent have basic and high education, respectively. The category with incomes above the ceiling constitutes 28 percent. Most fathers are Swedish citizens and attached to the labour market (94 and 81 percent respectively). The average age is 32 years.

The share using parental leave during the first two years as well as the number of days have increased between 2000 and 2011. The change is particularly pronounced as regards the length of the parental leave. While the numbers employed in different sectors are fairly stable across time, there is a shift towards higher education and a larger share have a solid labour market attachment. There are fewer fathers earning above ceiling income in 2011, but this is caused by the raised ceiling in the benefit in 2006. Also, these first-time fathers are somewhat older in 2011 compared to 2000, but are equally often Swedish citizens.

As to get a clearer picture of how fathers' parental leave has developed across time, we present a number of figures with the descriptive trend in any parental leave usage and the average number of days. We present these trends by sector (Figure 1 and 2), for those above and below the income ceiling (Figure 3 and 4), as well as for those above the income ceiling in different sectors (Figure 5 and 6). We find that the share of users increases in all sectors and also the number of parental leave days increase. The change is steeper in the state sector compared to the municipal and private sectors. Above ceiling income

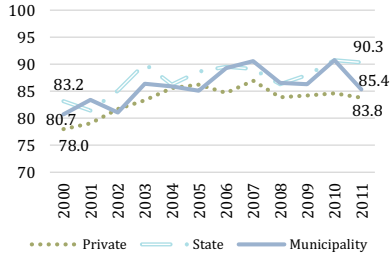


FIGURE 1. Fathers' parental leave use by sector (%)

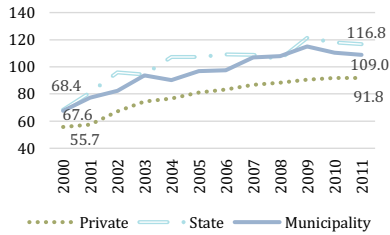


FIGURE 2. Fathers' average number of parental leave days (among users) by sector

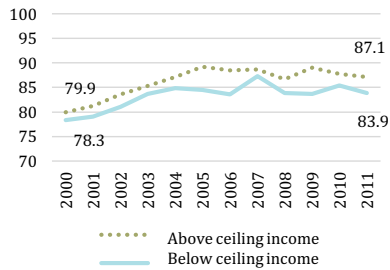


FIGURE 3. Fathers' parental leave use by above/below ceiling income (%)

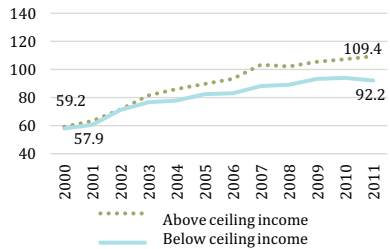


FIGURE 4. Fathers' average number of parental leave days (among users) by above/below ceiling income

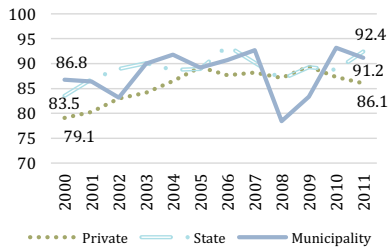


FIGURE 5. Above ceiling income fathers' parental leave use by sector (%)

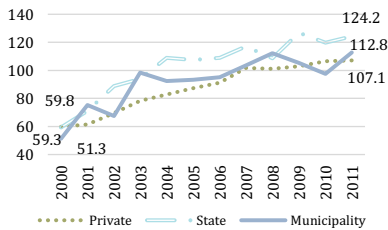


FIGURE 6. Above ceiling income fathers' average number of parental leave days (among users) by sector

earning fathers have increased their use and the length of leave more than fathers with lower income. When looking only at fathers with income above the ceiling by sector, we also see an increasing trend for using the leave (the steep decline in the municipal sector in 2008 in Figure 5 is due to a small sample size). Furthermore, among fathers with above ceiling income the number of days is increasing in all sectors, but this increase is less pronounced in the private sector.

Analysis

Our baseline regression confirms the pattern of the figures shown above, that parental leave take up has increased in general across time. Men in the state sector have a higher probability to use leave than men in the private sector (cf. Supplementary Materials, Appendix Table 2). There is no significant difference in leave taken between fathers in the municipal sector compared to the other sectors (not shown). Higher educational level indicates a higher probability of using any leave and fathers with above ceiling income use leave more often than fathers with lower income. Also, labour market attachment before becoming a parent increases the probability of using paternity leave. Among the demographic characteristics we see that Swedish citizenship increases the probability of using leave.

We find that both men employed in the state sector and the municipal sector use more days than men in the private sector; almost two weeks more among

TABLE 1. Fathers' parental leave usage by sector across time. Coefficients from Linear Probability Models (model 1) and OLS regressions (model 2).

	M1. Any use		M2. Days used	
State sector	0.0121	(0.0107)	9.592 ^{***}	(2.104)
Municipal sector	0.00567	(0.0101)	6.311 ^{***}	(1.879)
Year	0.0186 ^{***}	(0.00184)	5.796 ^{***}	(0.330)
Year ²	-0.00126 ^{***}	(0.000153)	-0.273 ^{***}	(0.0284)
Year*State sector	0.00112	(0.00152)	0.635 [*]	(0.316)
Year*Municipal sector	0.000569	(0.00146)	0.315	(0.289)
Basic education	-0.0367 ^{***}	(0.00415)	-5.471 ^{***}	(0.751)
High education	0.0470 ^{***}	(0.00384)	25.02 ^{***}	(0.788)
Above ceiling income	-0.00811 [*]	(0.00383)	-1.752 [*]	(0.723)
Labour market attachment	0.0812 ^{***}	(0.00457)	-0.972	(0.874)
Parental age	0.000247	(0.000358)	0.711 ^{***}	(0.0669)
Swedish citizen	0.145 ^{***}	(0.00846)	5.208 ^{***}	(1.580)
Constant	0.581 ^{***}	(0.0143)	26.53 ^{***}	(2.621)
Observations	52383		44110	
Adjusted R ²	0.030		0.084	

Standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

state employed and approximately eight days more among municipal employees. The average number of leave days has increased with almost 6 days per year between 2000 and 2011 and longer leave is especially common among the highly educated. Below ceiling income earners take longer leave than men with higher income. Also, older fathers and Swedish citizens take longer leave.

In sum, the determinants of leave used in this study shows patterns similar to earlier studies on Sweden (see for example Ma et al., 2020).

In our analysis, we are interested in changes across sectors that could be attributed to expanded top-ups. As top-ups expanded most in the private sector, we expect most change in fathers' leave here (H1). Table 1 presents the models with the interaction terms that indicate the change over time by sector. The variable Year*State sector indicates the yearly increase in Any use (M1) and Days used (M2) relative to the yearly increase in the private sector (reference category). Similarly, Year*Municipal Sector indicates the yearly increase in Any use (M1) and Days used (M2) relative to the private sector. We find no significant higher or lower probability to use paternity leave between sectors across time. However, fathers in the state sector increase their leave length more than fathers in the private sector. Hence, hypothesis 1 is not supported.

Our second expectation was that fathers with above ceiling income increased their use of leave more compared to other fathers (H2). In Table 2 the reference is fathers with income below the ceiling and Year*Above the ceiling indicates the yearly increase in Any use (M1) and Days used (M2) for fathers above the ceiling, relative to those below the ceiling. We show that the

TABLE 2. Fathers' parental leave usage by income across time. Coefficients from Linear Probability Models (model 1) and OLS regressions (model 2).

	M1. Any use		M2. Days used	
State sector	0.0187 ^{***}	(0.00522)	13.38 ^{***}	(1.083)
Municipal sector	0.00883	(0.00511)	8.108 ^{***}	(1.024)
Year	0.0180 ^{***}	(0.00185)	5.538 ^{***}	(0.333)
Year2	-0.00125 ^{***}	(0.000153)	-0.267 ^{***}	(0.0284)
High education	0.0465 ^{***}	(0.00385)	24.77 ^{***}	(0.790)
Basic education	-0.0371 ^{***}	(0.00415)	-5.648 ^{***}	(0.752)
Above ceiling income	-0.0208 ^{**}	(0.00711)	-7.961 ^{***}	(1.231)
Year*Above ceiling income	0.00242 [*]	(0.00108)	1.166 ^{***}	(0.194)
Labour market attachment	0.0818 ^{***}	(0.00457)	-0.726	(0.875)
Parental age	0.000235	(0.000358)	0.706 ^{***}	(0.0668)
Swedish citizen	0.145 ^{***}	(0.00846)	5.193 ^{**}	(1.581)
Constant	0.584 ^{***}	(0.0144)	27.91 ^{***}	(2.625)
Observations	52383		44110	
Adjusted R ²	0.031		0.084	

Standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

probability of using leave is indeed changing more for fathers with income above the ceiling than for fathers with lower income across time. Also, the increase in number of leave days is faster among fathers with an income above the ceiling compared to fathers with lower income. These results support hypothesis 2.

Our third hypothesis (H₃) expects that among fathers with above ceiling income the increase is larger for private sector fathers than for fathers working in other sectors. Table 3 presents models that are restricted to fathers with income above the ceiling and compare the changes by sector. Similar to Table 1, the variable Year*State sector indicates the yearly increase in Any use (M₁) and Days used (M₂) relative to the yearly increase in the private sector (reference category). Similarly, Year*Municipal Sector indicate the yearly increase in Any use (M₁) and Days used (M₂) relative to the private sector. The results show that the trends as regards leave use and the length of the leave taken do not differ between high income fathers employed in different sectors. Thus, hypothesis 3 gains no empirical support.

Finally, our fourth hypothesis (H₄) states that above ceiling income fathers within the private sector increase their use more than fathers with lower income in the same sector. In Table 4 we select only those fathers that are employed in the private sector. Similar to Table 2, the reference is fathers with income below the ceiling and Year*Above the ceiling indicates the yearly increase in Any use (M₁) and Days used (M₂) for fathers above the ceiling, relative to those below the ceiling. We find that above ceiling income earners increase their share of leave use and their number of days more than fathers with lower income. Comparable models for the state and the municipal sector (Supplementary

TABLE 3. Fathers' parental leave usage among those with above ceiling income by sector across time. Coefficients from Linear Probability Models (model 1) and OLS regressions (model 2).

	M1. Any use		M2. Days used	
State sector	0.0494**	(0.0168)	4.099	(3.066)
Municipal sector	0.0418	(0.0221)	-2.337	(3.874)
Year	0.0254***	(0.00335)	7.727***	(0.581)
Year ²	-0.00169***	(0.000283)	-0.361***	(0.0508)
Year*State sector	-0.00315	(0.00275)	0.958	(0.544)
Year*Municipal sector	-0.00433	(0.00360)	-0.110	(0.667)
Basic education	-0.00577	(0.00910)	-7.570***	(1.542)
High education	0.0479***	(0.00624)	23.88***	(1.167)
Labour market attachment	0.00676	(0.0111)	0.0371	(2.259)
Parental age	-0.00348***	(0.000675)	0.376**	(0.126)
Swedish citizen	0.0976***	(0.0180)	5.114	(3.414)
Constant	0.786***	(0.0315)	30.47***	(6.159)
Observations	14754		12716	
Adjusted R ²	0.017		0.108	

Standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE 4. Fathers' parental leave usage by ceiling income across time in the private sector. Coefficients from Linear Probability Models (model 1) and OLS regressions (model 2).

	M1. Any use		M2. Days used	
Year	0.0191***	(0.00211)	5.330***	(0.370)
Year ²	-0.00138***	(0.000174)	-0.255***	(0.0316)
Basic education	-0.0350***	(0.00448)	-5.210***	(0.809)
High education	0.0483***	(0.00461)	24.64***	(0.928)
Above ceiling income	-0.0275***	(0.00800)	-5.953***	(1.359)
Year*Above ceiling income	0.00327**	(0.00120)	1.130***	(0.213)
Labour market attachment	0.0808***	(0.00520)	-1.354	(0.983)
Parental age	0.000359	(0.000408)	0.754***	(0.0751)
Swedish citizen	0.144***	(0.00935)	4.186*	(1.725)
Constant	0.581***	(0.0162)	27.90***	(2.912)
Observations	42166		35245	
Adjusted R ²	0.028		0.070	

Standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Materials, Appendix Tables 3 and 4) show no significant diverging trends for above ceiling income earners. The exception is fathers with above ceiling income employed in the state sector. They had a more rapid increase as regards the length of leave compared to those with lower income in the same sector. This gives support to hypothesis 4, but as a similar trend was found in the state

sector, it is questionable whether the increase in top-ups during the observed period is the most likely explanation.

Sensitivity analyses

As a complement to H2 and H4 we also test the importance of the ceiling of the statutory benefit by a regression discontinuity set up (Supplementary Materials, Appendix Table 5 and 6). We compare the fathers with the 25 percent highest incomes below the ceiling, with the fathers above the ceiling both generally (H2) and for the private sector (H4). If the ceiling is important for the use of paternity leave, we would expect less increase in leave use for the fathers just below the ceiling compared to those above the ceiling. This is also the general finding as regards to using any leave (Supplementary Materials, Appendix Table 5). The results are driven by fathers in the private sector (Supplementary Materials, Appendix Table 6). We find a difference in increase in take up of leave but not in number of days used, neither for all sectors together or any sector separately.⁴

The comparison here is with all fathers above the ceiling. When we compare fathers just above the ceiling (the 25 percent with lowest incomes above the ceiling) with fathers just below the ceiling there is no effect visible. We have also tested cut offs at 10 percent below and above the ceiling with no different results. This indicates that the effect above the ceiling is driven by those with higher incomes rather than having an income just above the ceiling.

Discussion

This study aimed at investigating the potential effect of top-ups during parental leave for fathers' use of leave. In Sweden such top-ups expanded to almost universality in the labour market during the first decade of 2000, and this in a parental leave benefit system that was already comparatively generous with 77.6 percent earnings-replacement up to a ceiling. Employees in the state sector were already covered by top-ups to 90 percent of the whole income and both the municipal but especially the private sector expanded to similar levels between 2000 and 2011. Our analysis of fathers differentiated by sector and incomes above the ceiling threshold may thus be interpreted as potential effects of the top-ups.

In sum, our results show that fathers with income above the ceiling increase their leave use most, but we do not find differences by sector. When we study the sectors separately we find above ceiling income fathers, especially within the private sector, but also to some extent in the state sector, to increase their leave more than fathers that have incomes below the ceiling.

The analysis in this study may be considered somewhat crude in that we are not able to distinguish between specific changes in agreements by industry and

sector due to data restrictions. We do not find any clear variation in changed leave use by sector as expected. A likely reason is that the changing top-ups have to be analysed on a more fine-grained level of detail. From this analysis we cannot conclude any direct effect of changes in top-ups as we find increase in also the state sector where top-ups were already in place at the start of the observation period. Nevertheless, these results indicate an increasing divide in leave use between fathers with high and low incomes. The earlier pattern of the ceiling inhibiting leave use (Sundström and Duvander, 2002) has now changed and higher income fathers are using the leave increasingly. The top-ups by collective agreement factor is likely to have played a role here but we are in this study not able to conclude that fathers' leave increased as a direct consequence of the same. With more detailed data on changes in agreements connected to individual fathers' use it would be possible to scrutinize whether top-ups matter differently by sector and industry but also by work place size, gender composition and other characteristics.

In addition, information flows and behaviour changes may be gradual and slow. In this case there may also be other factors that are inhibiting fathers' leave use, such as work tasks, workplace norms and culture. However, such factors may also change but it is likely that it will take time before a more generous collective agreement affects the leave use through such intermediary factors. Maybe 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 2010s for the change to be more visible among private sector employees with incomes below the ceiling? Such an interpretation would imply a lag in effect from implementation of agreements.

This study lends support to the idea that also at relatively high replacement levels, benefits do indeed matter. Fathers are concerned about income loss and top-ups make fathers more inclined to use longer leave. Thus, the benefit level matters at the higher end. Policy makers should however be aware that this is one part of achieving gender equality but that there are many other parts of importance. We need to scrutinize what matters for different groups of fathers, what leave really entails (for example examining what do fathers do during leave) and what effects of leave of different lengths can be expected (Doucet and McKay, 2020).

The combination of occupational and state involvement in benefits seems to lead to more dualisation (Greve, 2018). The collective agreements are increasing their role and power as the statutory parental leave is weakening in universality (Votinius, 2020). Here we investigate the insiders benefitting from top-ups in addition to the national benefit. The outsiders, including non-working parents, self-employed, and parents with temporary or unstable positions in the labour market will have much lower leave benefit. As has been discussed this is a substantial group in many countries (Dobrotić and Blum, 2020).

Among the Swedish fathers using leave, only just over one percent use the flat rate parental leave benefit that is paid for non-working parents. The share of fathers not using any leave has been stable in Sweden over two decades and fathers without work are over-represented among the non-users of parental leave (Swedish Social Insurance Inspectorate, 2021). Nevertheless, it is important to remember that economic compensation is not the whole story as mothers in the same position still use the parental leave, even when at the flat rate (which is the case for over a tenth of all mothers) (SSIA, 2021).

For some parents, parenthood is still a risk to the capacity to financially support themselves. They become even more marginalised when the benefit level becomes dependent on a stable attachment and position in the labour market. Top-ups should thus be considered in the light of being able to increase fathers' leave for some groups that are already privileged. The differentiating system that is created by the combination of state and occupational welfare appears to contribute to enduring inequality in leave taking by fathers. This is the downside of not having truly universally available financial support for all fathers (and mothers) of a level which minimises income loss during leave taking.

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Competing interests

The author declare none.

Supplementary material

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Notes

- 1 Parents who had a low or no income prior to having a child receive a low flat rate for the whole leave period.
- 2 *High education* equals tertiary level implying three years or more of post-secondary education; *intermediate level of education* equals three years of secondary education or post-secondary education shorter than three years; *basic or no education* equals less than three years of secondary education.
- 3 This implies an income above 72 600 SEK in 1997 and 72 800 SEK in 1998 for those with children born in December 1999/January 2000 and above 85 600 SEK in 2009 and 84 800

SEK in 2010 for those with children born in December 2010/January 2011. The levels changed stepwise across time which this variable considers. Two price basic amounts have been used in earlier research as a threshold for participating in the labour market to a somewhat substantive degree (Duvander et al., 2015).

- 4 We also applied a rank measure of the number of days of parental leave in order to minimise the influence of outliers. The results were overall similar to what is presented above and are available on request.

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