STOCKHOLM UNIVERSITY

Dept of Sociology, Demography Unit / www.suda.su.se

What are the Effects of Reforms Promoting Fathers' Parental Leave Use?

by
Ann-Zofie Duvander
and
Mats Johansson

Stockholm Research Reports in Demography 2010:14

What are the Effects of Reforms Promoting Fathers' Parental Leave Use?[1]

Ann-Zofie Duvander, Associate Professor, Sociology Department, Stockholm University, SE-106 91 Stockholm

and

Mats Johansson, Senior Researcher, PhD, Swedish Social Insurance Inspectorate, Box 202, SE-121 24 Stockholm

Abstract: Since the introduction of parental leave in Sweden a more gender-equal division of such leave has been targeted. To this end, a number of strategies have been applied, and three major reforms have been introduced. In 1995 one month was reserved for each parent, implying that the month was forfeited if not used by the same parent. The reservation of one month was followed by another month in 2002. In 2008, a gender equality bonus was introduced, meaning that tax credits were given to parents who shared the leave equally. This study investigates and compares the effects of these reforms on the division of parental leave. The comparison is made by means of a natural experiment approach, using control and treatment groups with parents of children born just before and after the introduction of each reform. We use register data from the Swedish Social Insurance Agency in which parental leave use by all parents residing in Sweden is included. The results indicate a strong effect from the first reserved month, a more modest but clear effect from the second reserved month and, so far, no effect from the gender equality bonus.

Introduction

An overarching goal of the Swedish parental leave insurance is to enable shared care of and economic responsibility for children; in other words, a gender-equal division of parenthood. A number of reforms of the insurance have attempted to strengthen this goal by encouraging fathers' use of parental leave. Whether, or to what degree, the goal is met is hard to determine. Strong scientific evidence of whether a reform has achieved its aim is rare. It is even rarer to be able to compare the outcomes of different reforms aiming at the same goal with different methods. In this study we compare the impact of three reforms of parental leave insurance aiming at gender-equal leave use, but with different means. Our ambition is to draw conclusions regarding which policies mostly affected the leave use in a more gender-equal direction. Today fathers use on average just over one-fifth of the leave available.

Parental leave insurance is the part of Swedish family policy most closely related to goals of gender equality. Since the introduction of parental leave the goal of a more gender-equal division of the leave has been largely unquestioned and various strategies to meet the goal have been implemented. The motives behind such a goal are more gender-equality regarding the division of household work (including childcare) in the home and an improved position of women in the Swedish labor market. Lately children's right to access to both parents has been emphasized as well. In addition, gender equality regarding the use of parental leave is sometimes seen as a way to enable men and women to have the number of children they desire. Gender-equal parental leave use may thus be seen as part of policies that are associated with higher fertility (summarized for example in McDonald 2006a). It supports the same gender equity standards in institutions dealing with individuals and families, which is not the case in countries with lowest low fertility (McDonald 2000).

The leave could be used by both mothers and fathers right from the start, and a number of reforms have been launched to encourage the sharing of the leave. In 1995, one month was reserved for each parent and was forfeited if not used by the same parent. The reservation of one month was followed by another month in 2002. In 2008, a gender equality bonus was introduced, meaning that tax credits were given to parents who shared the leave equally.

There are differences in how these reforms were introduced and which group of parents they target which may lead to different expectations as to the effects of the reforms. Furthermore, it should be kept in mind that even if the reforms aim at the same goal they are part of political

compromises where other goals are also taken into account. For instance, parental leave insurance takes into account goals regarding parents' labor force participation, minimum income of families, welfare of children (interpreted in different ways) and parents' freedom of choice; these goals are sometimes in line and sometimes in conflict with the goal of gender-equal use of parental leave.

The reforms are also cumulative in that the second reserved month can only be introduced after the first and the gender equality bonus builds on two reserved months. Thus, introducing the reforms in reverse order may have other effects. All three reforms emphasize working parents' equal rights whereas non-working parents are to a large part left out, indicating the importance of labor market work for all groups in Sweden. The reforms furthermore strive for a gender-neutral responsibility for children by strengthening children's right to their fathers' time. By emphasizing both parents' value to the child the reforms may also be seen as emphasizing the value of children to the whole society.

This study investigates and compares these reforms on the division of parental leave with the intention of contributing to knowledge about the consequences of various gender-egalitarian incentives. The paper will start with a background on the Swedish parental leave system and a discussion on policy evaluation before data and methods are introduced. The outcomes of the three reforms will be analyzed and a discussion will follow on possible interpretations of the results.

Background

In 1974 Sweden introduced parental leave insurance with earnings-related benefits paid for six months after childbirth, entitling parents to share leave as they preferred. The leave can be used until the child is eight years old. The specific aim was to facilitate the combination of time at work and time spent caring for children for men and women. The question of fathers' participation in leave use was part of the debate from the beginning, and it was suggested that half the leave should be allocated to the father, a proposal that in the end was seen as too radical (Klinth 2002). Women were anticipated to use most of the leave and the length was therefore restricted to six months on the basis that longer leave would work to their disadvantage in the labor market.

The benefit was set at 90 percent of earlier earnings, but if the using parent had no previous earnings he or she received a low flat rate. The set-up works as an incentive, especially for mothers, to enter the labor market before embarking on parenthood. It also encourages the combination of work and family rather than a choice between work and family.

In the 1980s leave rights were extended by stages to twelve months, and in addition a further three months were paid at a flat rate. During the 1990s and the beginning of the 2000s the flat rate was 60 SEK (approx. 6 Euro) per day. Cutbacks in the rate of earnings-related benefits were made during the economic crisis in the 1990s from 90 to 75 percent, later raised to the current level of 80 percent. In 1995, one reserved month for each parent was introduced, which meant that one month would be forfeited if not used by the designated parent, a reform that was initiated by the Liberal Social Minister in 1994. At the same time the leave was rendered formally as individual implying that the parent who wanted to use more than half of the leave needed the consent (by signature) of the other parent. The reform applies to all parents with joint custody which is the absolute majority in Sweden, also in cases of separated or divorced parents. At the same time a flat-rate homecare allowance was introduced for children up to the age of three. The homecare allowance was abolished by the new Social Democratic government half a year later, but the reserved months, often called "daddy" month and "mummy" month, were kept.

In 2002, the leave was extended by one month to sixteen months (including flat rate leave), at the same time as another reserved month for each parent was introduced by the Social Democratic government. The main difference between the first and second reserved months is thus that in 2002 a month was added to the leave length, meaning that an increase in one parent's leave did not necessarily mean a decrease in the other parent's leave.

In 2006, the ceiling on the benefits was raised after a long period during which it lagged behind, leaving many parents with less than 80 percent income replacement. The raising of the ceiling was to some extent a reform to encourage fathers' leave use, as parents with income above the ceiling were dominated by fathers. In addition the flat rate was raised to 180 SEK (approx. 18 Euro) per day.

In 2006, Sweden elected a new Conservative-Liberal government which on July 1, 2008 introduced a gender equality bonus. Simultaneously the government also launched a

homecare allowance for children up to three years old; its adoption by municipalities was voluntary (see details of both the reforms and their consequences for the direction of Swedish family policy in Ferrarini and Duvander 2010). The gender equality bonus is a tax credit that is paid to the parents' tax account the year after the parental leave is used. In essence, for every day that the parents share the leave more equally or, in practice, for every day that the *mother* goes back to work and the *father* uses the leave, the mother will receive a tax credit of 100 SEK (approx. 10 Euro). The bonus is gender-neutral and is aimed at an equal division of the leave. It does not apply to the reserved months or the days with the low flat rate and can thus be paid for a maximum of four and a half months. All parents who have used the leave in a way that may entitle them to the gender equality bonus will receive a letter from the Swedish Social Insurance Agency encouraging them to apply for the bonus. Then parents need to prove that the parent not on leave has been at work or studying, a requirement aimed at increasing the labor force participation in Sweden. Work or study can be proved, for example, by a salary slip or proof of school enrolment. In many cases the bonus covers the loss in household income when the father rather than the mother is on leave, especially in low- and middle-income families (Duvander 2008a). This applies especially to parents with relatively small income differences in the household. The bonus, however, is paid the year after the leave is used, which is a disincentive for using it.

It is possible to summarize the reforms introduced by the Conservative-Liberal government as allowing more free choice regarding the gendered aspect of parental leave, both encouraging gender equality (by reserved months and a bonus) and allowing a traditional gendered division of leave by supporting exits from the labor market for longer periods (homecare allowance), a policy that is likely to be adopted primarily by mothers (Ferrarini and Duvander 2010). The change of government, however, made the first round of reforms in 1995 more oriented towards gender equality as the homecare allowance was abolished shortly after its introduction. The introduction of the second reserved month in combination with extending the leave period by one month by the Social Democratic government may be seen as more one-sided, but also less disputable as it did not challenge women's length of leave but only strengthened men's opportunities to use leave.

During the eight years the parental leave can be used, it is used by practically all mothers and by around nine out of ten fathers (for details see Duvander 2008b). For many parents state-legislated benefits are complemented by extra benefits from the employer on the basis of

collective agreements. The considerable flexibility of parental leave use is often exploited by parents; for example, by saving parts of leave to extend summer vacations or reduce working hours during the child's preschool years. Also, leave may be extended by accepting a lower replacement level, a strategy used especially by mothers (Eklund 2004). Most leave, however, is used during the child's first two years.

Not only do all mothers use leave, they also use most of the leave entitlement. When parental leave was introduced in 1974 men used 0.5 percent of all days. Since then men's share has increased to reach 22.3 percent in 2009. The development can be characterized as slow until the end of the 1990s, and thereafter somewhat faster (see Figure 1).

Figure 1. Women's and men's share of used parental leave benefit days 1974-2009.
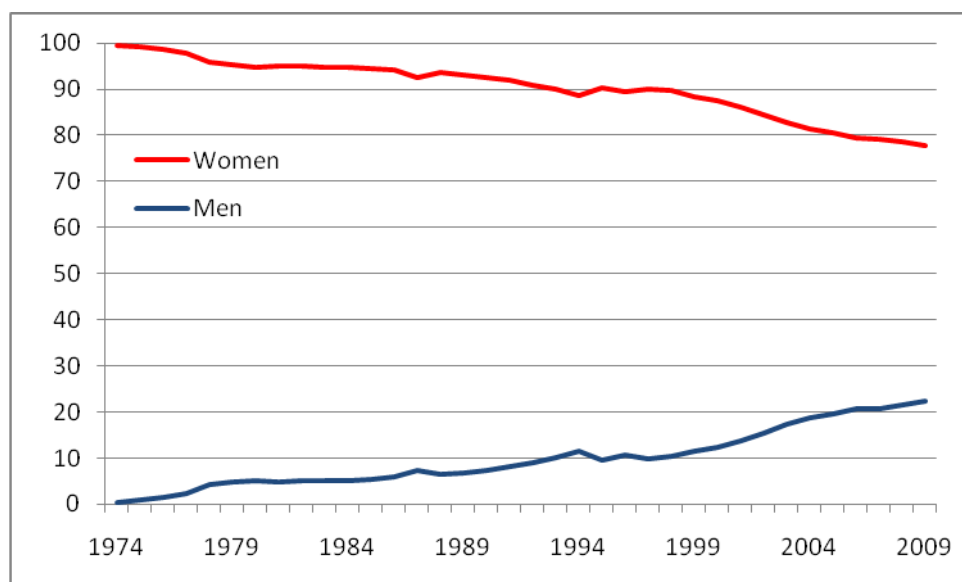
Source: Swedish Social insurance Agency

When parents are asked directly they often claim that economic considerations are most important for the division of leave (Duvander and Berggren 2003). Also, empirical studies show that both parents' income is important for the sharing of the parental leave (Sundström and Duvander 2002; Hobson et al. 2006). Additional factors are found to have an impact on the sharing of the leave, such as workplace characteristics (Bygren and Duvander 2005), not least attitudes at the workplace (Haas et al. 2002) and individual factors indicating labor market position, such as age and education (for a review see Duvander 2008b). Other factors such as birth order (Sundström and Duvander 2002; Duvander 2006) and parents' country of origin (Duvander and Eklund 2006) are also found to be influential. In qualitative studies

attitudes to gender equality seem to matter in terms of the division (Bekkengen 2002) but so far this has not been tested in any large-scale quantitative studies.

There are two earlier studies evaluating the reserved months in parental leave insurance. The effect of the first reserved month was evaluated by Ekberg et al. (2005). Eriksson (2005) reports the results of the second reserved month after the first seventeen months of possible usage. Both studies indicate an increase in fathers' use of parental leave, but more so for the first reserved month. Ekberg et al. also conclude that the long-term effects of the first reserved month, measured by fathers' take-up of benefits for care of sick children later on in the child's life, remained unaffected. There is also one study evaluating the gender equality bonus (Swedish Social Insurance Agency 2010b). In this study there is no indication that the reform had any effect on fathers' use of parental leave eighteen months after its introduction.

In this study, the effects of the three reforms are analyzed at the same point in time, 20 months after the introduction of each reform. As parents may use parental leave days until the child is eight years old, it is not yet possible to conduct a complete analysis of all three reforms. One objective of the reforms, however, is that the child will have early and close contact with both parents, which it is hoped will lead to a more equal sharing of responsibility for childcare and housework. Therefore it is important that the father uses parental leave early in the child's life. It is thus meaningful to analyze the effect of the three reforms 20 months after the introduction of each reform. Also, the intensity of use is highest, and a majority of the parental leave days are used, when the child is young (in this study 75 to 95 percent are used during the first 20 months, depending on when the sample is drawn). Ekberg et al (2005) show that fathers' use of parental leave when the child is over two years old is for shorter periods and to a large extent related to summer and seasonal holidays. Analyzing the effect of the reforms at the same point in time may thus provide insights into how reforms operate and affect parents' patterns of usage of parental leave.

What is an efficient policy?

The above-mentioned three reforms aim at changing the incentives in parental leave insurance to increase gender-equal use. This is done by somewhat different measures and the outcomes of these measures are compared in this study. To achieve a more nuanced understanding of the three reforms we have in large part relied on a free interpretation of the principles of good family support established by McDonald (2006b). These principles were set up primarily to

enhance families' welfare and more indirectly to enable a situation where having children is supported. We think these principles could also serve as the foundation for a broader discussion of a family policy promoting gender equality.

Perhaps most characteristically, all three reforms are part of *gender-neutral* insurance encouraging childcare by both parents. The reserved months can be seen as reducing days with the child if leave is not shared between parents, and the bonus as reducing economic benefits if leave is not shared. The leave can be used by all parents residing in Sweden but gives a much higher benefit based on income compensation to parents active in the labor market. Work participation can thus be seen as a requirement for efficient use of benefits. The requirement is strengthened by the bonus as it will only be paid if the parent not on leave is working (or studying) during the other parent's leave period.

Regarding *fiscal costs*, all three reforms involve larger costs for the insurance as fathers have higher earnings than mothers and therefore claim higher benefits. The anticipated returns are more abstract; for example, child well-being and gender equality. Direct cost is however very rarely brought up as an argument against the reforms, but administration costs are more likely to be targeted when the bonus is evaluated. To extend the leave further today would also include costs that are more debatable.

A common argument against reform to encourage gender equality in parental leave insurance is that it encroaches on free choice. Introduction of the reforms as part of packages including homecare allowance and extended leave means they have largely been *politically accepted* and not perceived as too radical. They may also be seen as political compromises, especially the bonus which combines the goal of gender equality with that of parents' labor force participation, which is the reason for the qualification that the parent not on leave have to be working. The compromises may however impact on the efficiency of the reforms. In addition, to add reforms to a system already in operation may limit the *simplicity* and *transparency* of the same system. Indeed, survey results tell us that sufficient knowledge of the system is lacking among parents, especially fathers (National Social Insurance Board 2003, Swedish Social Insurance Agency, 2010a). The first reserved month received a lot of media attention and is mostly well-known, whereas the second was introduced with much less publicity. The idea of the reserved months is nonetheless easy to grasp and one of the major criticisms of the

gender equality bonus is that it is difficult to disentangle. If changes in the leave system occur often, the system will lack transparency and may in the end be perceived as unreliable.

It should also be mentioned that the reforms target parents at different levels of use, the first reserved month encouraging fathers to take any leave, the second reserved month encouraging fathers to take more than one month, and the bonus encouraging fathers to take more than two months. The target group has thus changed over time in line with the development of usage of leave, but also in line with the development of the social norm of fatherhood. With reference to Bourdieu's (1996) idea of family policy as constructing family by strengthening one type of family, the reforms construct the idea of how an ideal family shares the leave over time, going from father involvement towards gender-equal sharing of parenthood (Klinth and Johansson 2010). In addition, the bonus increases *horizontal equity* (McDonald 2006b:219) between parents and other men and women, especially when we compare mothers with women without children, as it encourages mothers to go back to work earlier without challenging the Swedish norm of childcare in the home for the first year. Mothers' earlier return to work is also beneficial to their *lifetime earnings*. The relative difference between mothers and fathers is likely to decrease as well, as the fathers' earnings will be reduced during their leave. The first reserved month and the bonus are more efficient in this respect than the second month as the second reserved month was added on and did not challenge mothers' time at home.

Lately, family policy in Sweden has been generally motivated by the *importance of children*. Father involvement is generally seen as positive in terms of *child development*. A number of studies lend support to the association between early father involvement and later father engagement (Haas and Hwang 2008, Duvander and Jans 2009) but the causality and selection aspects have not been disentangled. Nevertheless the idea of children's right to their fathers is strengthened by all three reforms. Children also have a long-term economic value to society and becoming a parent can be seen as a right that should not be penalized. Reserving one month for each parent meant that fathers' capability to claim this month increased, in negotiations with both the mother and the workplace (Hobson and Fahlén 2009). To some extent claims were extended by the second "daddy" month. The gender equality bonus does not indicate increased ability to claim in the same way, as time with the child is not forfeited if the bonus is not used; an extra bonus is added that was not previously part of families' economic calculations. *Workplace possibilities* to use the parental leave benefits are provided

equally by legislation in Sweden, but the capability to claim rights at the workplace is, as mentioned, likely to be stronger for the reserved months than the bonus. Nevertheless, the bonus is likely to be claimed by highly educated fathers who already use longer leave. They often work in positions with more autonomy where they have more room for negotiating working conditions than less educated fathers in less flexible positions. The bonus may thus strengthen a group of fathers rather than all fathers.

In conclusion, although the three reforms are all gender-neutral, the bonus is a particular privilege for working parents. The incentives are based on time or economic benefits but were introduced in different contexts and have targeted different groups of users. The leave has increased in complexity over time, especially with the bonus. The long-term effects of temporary exits from the labor market or alternative childcare cost are not considered in this study but need to be kept in mind.

Data and methodology

For the empirical analysis register data from the Swedish Social Insurance Agency are used. Data are assembled from records obtained from local insurance offices and cover the entire Swedish population. They contain detailed information on the starting date of parental leave, the number of days (parts of the day if not a full day) and the amount of benefit per day. They also include parents' individual characteristics such as gender, date of birth, birth order of the child, geographical location, earnings, educational level and country of birth.

Empirically, we make use of the fact that all three reforms were introduced for children born after a specific date. The first reserved month is applicable to children born on or after January 1, 1995, the second reserved month to children born on or after January 1, 2002, and the gender equality bonus to children born on or after July 1, 2008. Thus, children born within a few days of each other are treated under different regulations, which makes all three reforms examples of natural experiments (see Rosenzweig and Wolpin 2000, Angrist and Krueger 2000).

The birth of a child may be seen as a random event, both as the time of conception cannot be completely controlled by the parents, but also as the duration of pregnancy is normally distributed with a mean of 40 weeks with a standard deviation of two weeks. The birth of a

child cannot be postponed, and triggering a birth (except for health reasons) is considered unethical and against professional standards for medical personnel (Ekberg et al., 1995).

From the register data all parents with children born from two weeks before to up to two weeks after each reform are sampled and subsets of parents of children born before (control group) and after (treatment group) each of the reforms are constructed. To control for potential seasonal variation in the use of parental leave, we use a difference-in-difference approach including parents with children born one year before the introduction of each of the reforms in the statistical analysis.

As the reforms only affect children of parents with joint custody, children whose parents do not have joint custody during the entire period of observation are excluded from the sample. Multiple births, foreign-born and adopted children are also excluded as there are special regulations for these children. As the focus in this paper is on the division of parental leave between women and men, children whose parents are of the same sex are also excluded. Finally, children who died or emigrated during the period of study are excluded from the sample. The final samples consist of 11 000 to 15 000 children for each reform studied.

The reliability of the empirical results crucially depends on two assumptions. The first is that no other change that affects treatment and control groups differently occurs at the same time as the reforms. The second assumption is that there is no endogenous sorting at the time of the reforms, that is, that some parents postpone or bring forward conception, and thus the birth of the child, as a consequence of the information that the reform will take place. If these assumptions do not hold, estimates may be biased.

Regarding the first assumption, there are other changes in the social security system introduced at the same time as the first and second reserved months as well as the gender equality bonus but they generally affect treatment and control groups equally.

There is one exception. On January 1, 1995, the replacement rate was decreased from 90 to 80 percent of previous earnings. Although this affected all parents equally, parents with children born before January 1, 1995 could keep their higher replacement rate until the end of 1996 (the entire period of study in this paper). It should be noted, however, that the reserved days

were excluded from this change and was still replaced at 90 percent of previous earnings for children born after January 1, 1995.[2]

The first reserved months may indicate incentives to have a child before the reform for some parents, both because of the regulations introduced in the parental leave scheme, but also because of the lower replacement rate. The second reserved months and the gender equality bonus indicate incentives to have a child after the introduction of the reforms as parental leave became more generous.

This brings us to the question whether the potential parents could anticipate reforms in sufficient time to plan a child according to the reform changes. Governmental propositions on the second reserved month and the gender equality bonus were proposed more than nine months before the reforms were introduced, and it was also clear that these would be adopted by Parliament. Thus, parents were able to plan for a child to be born after the introduction of these reforms.

For the first reserved month, the situation is more complicated. Although the Governmental proposition of a reserved month was presented in February 1994, it was uncertain that it would pass in Parliament until after the children born at the turn of 1994/95 were already conceived. However, it was clear that the proposed reduction in reimbursement would be introduced before the children were born at the turn of 1994/95 were conceived. Thus, potential parents had incentives to plan a child before the introduction of the reforms, but probably more so due to the lower replacement rate than the introduction of the reserved month.[3]

In order to obtain indications about endogenous sorting, we examine the number of births at the time of the reforms and compare them with the number of births at the same time the surrounding years. We also investigate whether there are any differences between the samples in observed characteristics.[4]

---

[2] Also, for children born after December 31, 2001, replacement for flat rate days was increased from 60 SEK to 120 SEK (approx. 6 and 12 Euro). As the analysis in this paper only covers earnings-related days this change is considered to be of minor importance.
[3] For a more detailed discussion, see Johansson (2010).
[4] Of course, there could be endogenous sorting that does not show up in terms of observables, but that is not possible to investigate in this study.

When comparing the number of births around the reform cutoffs with surrounding years the results are not clear cut. Figure A1 in Appendix A presents the number of children born 18-31 of December and 1-14 of January in 1991/92 - 2004/05. Although the number of children born in January is higher than the number of children born in December all years, the difference in number of born children varies over time. The difference in births between December and January is slightly smaller than usual in 1994/95,[5] and somewhat larger than usual in 2001/02.

Figure A2 in Appendix A presents the number of children born 17-30 of June and 1-14 of July in 2004-2009. The difference between number of children born in June and July each year varies between the years. The difference in number of births between June and July 2008 is slightly higher than usual, but not much. Thus, there may be tendencies of sorting in the anticipated direction for all three reforms. However, differences are marginal, and similar variations exist for some of the non-reform years.

Investigating whether there are any differences between the samples in observed characteristics (see Table A1 in Appendix A), comparisons of the control and treatment groups show that they are similar to each other.[6] On the basis of these indications, the reforms seem to be exogenous events.

In this study we analyze the immediate response to the reforms. If a reform changes behavior gradually, but nevertheless initiates a change, it may be missed if we focus on the first parents to meet the reform (see the similar argument in Ferrarini and Duvander 2010). Thus the long-term effect of the reforms may be different from the immediate response covered here.

Results

Descriptive results

In this section we present descriptive results by presenting comparisons of parental leave days in the control and treatment groups 20 months after the introduction of each of the three reforms. We restrict our analyses to the earnings-related parental leave days and exclude the three-month flat rate days as they are not relevant to any of the reforms.

---

[5] Also see Ekberg et al (2004) who also investigate the number of births at the introduction first reserved month.
[6] There are however some significant differences between control and treatment groups (see Appendix A). This comes as no surprise as we should expect that control and treatment groups differ significantly in some respects (0.05 • the number of covariates at the 5 percent level).

In Table 1 the average use of parental leave days in the control and treatment groups is presented 20 months after the introduction of each reform.[7] The first reserved month had a large impact on both fathers' and mothers' use of parental leave days. Fathers' use increased from an average of 23.4 days in the control group to 31.2 days in the treatment group. Mothers' use of parental leave instead declined, from an average of 317.5 days in the control group to 290.5 days in the treatment group. The obvious explanation is that the first reserved month restricted the maximum days any of the parents could use by 30 days.

Also, the introduction of the second reserved month shows a significant effect on fathers' use of parental leave. Twenty months after the reform the treatment group used on average 42.9 days, whereas 37.3 days were used by fathers whose children were born just before the reform. As the parental leave was extended by 30 days at the same time as the second reserved month was introduced, mothers used more days after the reform. Mothers' used days increased from 268.0 in the control group to 275.4 in the treatment group.

In contrast to the changes relating to the first and second reserved months it is not possible to find any statistically significant changes in average number of used parental leave days after the introduction of the gender equality bonus. Fathers' use of parental leave was on average about 48-49 days in both the control and treatment groups and mothers' use of parental leave days was on average about 253 days in both groups.

---

[7] We have also conducted OLS regression where the dependent variable is number of used earnings-related parental leave days, with a dummy variable included in the model controlling for being in the treatment group. The models are conducted with and without control variables. The results in these models are similar to the change in mean values, as may be seen from the table:

Difference in used earnings-related parental leave days between treatment groups and control groups

	First reserved month			Second reserved month			Gender equality bonus		
	Observed difference	Regression without control variables	Regression with control variables	Observed difference	Regression without control variables	Regression with control variables	Observed difference	Regression without control variables	Regression with control variables
Men	7.9***	7.0***	6.8***	5.6***	4.8**	5.0**	-1.0	-0.5	0.2
Women	-27.0***	-27.2***	-26.6***	7.4***	9.0***	8.5***	-0.2	-2.1	-3.1

*** Significant difference (1 percent level) between control and treatment groups.
** Significant difference (5 percent level) between control and treatment groups.

Huber/White/sandwich estimator of variance

Table 1. Parental leave use during the child's first 20 months

Mean number of days	First reserved month		Second reserved month		Gender equality bonus	
	Control group	Treatment group	Control group	Treatment group	Control group	Treatment group
Men	23.4***	31.2***	37.3***	42.9***	48.8	47.8
Women	317.5***	290.5***	268.0***	275.4***	253.3	253.1

*** Significant difference (1 percent level) between control and treatment groups.
** Significant difference (5 percent level) between control and treatment groups.

Note:
The children in the treatment and control groups are born:

	Control group	Treatment group
First reserved month	December 18 - December 31, 1994	January 1 - January 14 1995
Second reserved month	December 18 - December 31, 2001	January 1 - January 14, 2002
Gender equality bonus	June 17 - June 30, 2008	July 1 - July 14,2008

Another way to evaluate the potential impact of the reforms is to compare the proportion of users at various levels of use. Table 2 presents the proportion of fathers and mothers who used any parental leave days, the proportion who used more than 30 days and the proportion who used more than 60 parental leave days in the control and treatment groups. Remember that we only investigate use during the child's first 20 months and that the final proportions for the whole period of leave use will be higher. Since none of the reforms have had any impact on the proportion of mothers who use parental leave, the discussion in this section will restrict itself to fathers' use of parental leave days.

The proportion of fathers' using any parental leave increased sharply from 40.0 for fathers whose children were born just before the first reserved month was introduced to 68.6 percent for fathers whose children were born just after the introduction. The proportion of fathers who used more than 30 days increased from 21.0 percent to 27.8 percent, whereas the change in the group using more than 60 days is negligible.

As with the introduction of the first reserved month, the proportion of fathers using any parental leave and more than 30 parental leave days increased after the introduction of the second reserved month. The proportion using any parental leave increased from 65.2 percent to 70.1 percent and the proportion of fathers using more than 30 days of parental leave increased from 34.7 percent in the control group to 46.2 percent in the treatment group. The largest change thus takes place in the group using more than 30 days, which is exactly what

the second reserved month aimed for. Also, the proportion using more than 60 days increased from 21.1 percent to 24.3 percent.

The results 20 months after the introduction of the gender equality bonus show that the reform did not lead to any statistically significant changes in the proportions of fathers using any parental leave days, more than 30 days or more than 60 days.

It is worth noting that the proportion of fathers using parental leave decreased between just after the introduction of the first reserved month and just before the introduction of the second month. There are no changes in regulations that can explain the decrease and we therefore interpret the decrease as caused by a strong initial response to the reform that wears off somewhat with time. Similarly, the proportion of fathers using parental leave between just after the introduction of the second reserved month and just before the introduction of the equality bonus decreased. In addition, the proportion of fathers using more than 30 days and more than 60 days increased in the period after the introduction of the first reserved month and just before the second reserved month, and the proportion of fathers using more than 60 parental leave days increased in the period after the second reserved month and just before the gender equality bonus was introduced. The trend of change in fathers' leave use over time thus seem to be a polarization of fathers whereby the group of non-users increases between reforms as does the group using long leave.

Table 2. Proportion of fathers and mothers using parental leave during first 20 months

	First reserved month		Second reserved month		Gender equality bonus	
	Control group	Treatment Group	Control group	Treatment group	Control group	Treatment group
Fathers						
>0 days	40.0***	68.6***	65.2***	70.1***	69.1	68.2
>30 days	21.0***	27.8***	34.7***	46.2***	49.2	47.5
>60 days	13.0	13.4	21.1***	24.3***	31.4	31.9
Mothers						
>0 days	98.0	97.9	97.3	98.1	97.6	97.8
>30 days	97.7	97.4	96.5	97.9	97.3	97.4
>60 days	97.5	96.7	95.8	97.4	96.5	96.5

*** Significant difference (1 percent level) between control and treatment groups.
** Significant difference (5 percent level) between control and treatment groups.

Investigating the use of parental leave graphically, Figures 2a to 2f show the distribution of parental leave days for control and treatment groups for the three reforms 20 months after the introduction of each reform.[8]

For the first reserved month, the distribution of fathers' days has shifted to the right, with a peak at around 30 days (four to five weeks). Likewise, the distribution of mothers' days has shifted to the left, as the maximum number of days decreased by 30 as a result of the first reserved month.

Also, the second reserved month shifted fathers' distribution of used parental leave days to the right, with a new peak at around 60 days (seven to eight weeks). The distribution is less centered and there is more variation in use after the second reserved month was introduced. For mothers, the group using the maximum number of days increased in the treatment group.

Turning to the gender equality bonus, we see little evidence of any difference between control and treatment groups except that the peak around 60 days for fathers is less emphasized after the reform.

---

[8] Numbers are shown in Appendix B.

Figure 2a. The distribution of parental leave days for control and treatment groups, first reserved month, fathers

Figure 2b. The distribution of parental leave days for control and treatment groups, first reserved month, mothers

Figure 2c. The distribution of parental leave days for control and treatment groups, second reserved month, fathers
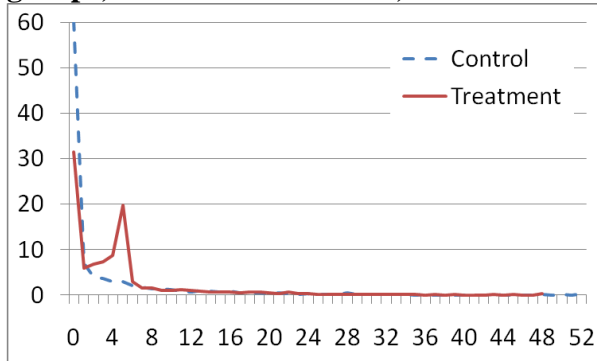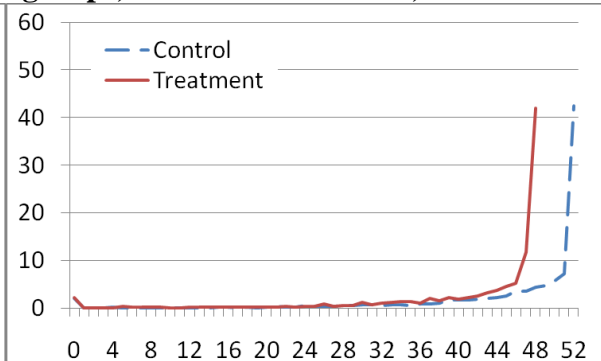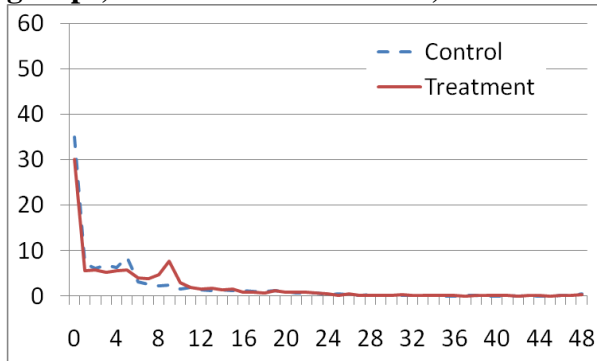

Figure 2d. The distribution of parental leave days for control and treatment groups, second reserved month, mothers
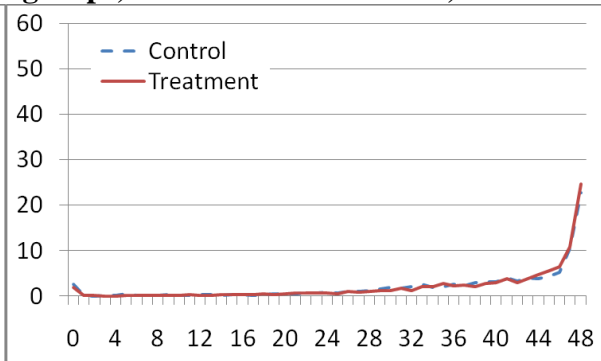

Figure 2e. The distribution of parental leave days for control and treatment groups, gender equality bonus, fathers
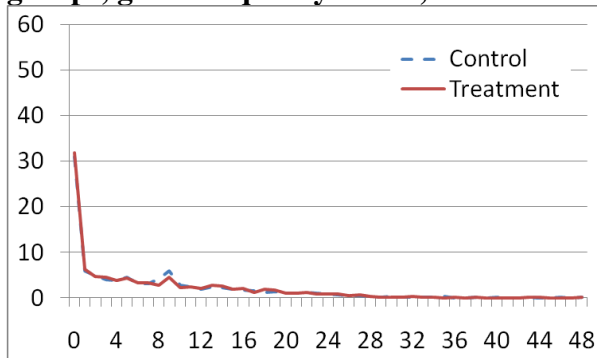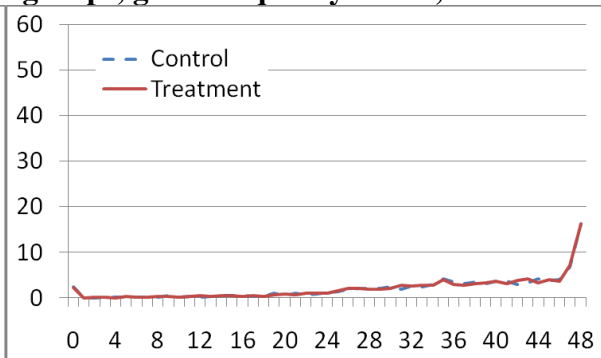

Figure 2f. The distribution of parental leave days for control and treatment groups, gender equality bonus, mothers

19

Logit models

To test the potential effect of the three reforms further we now proceed to present results from logit models, where the dependent variable express fathers' risk of using more than a certain number of parental leave days.[9] The dependent variable is categorized in sixteen different dichotomies to test whether the reforms impact at specific levels of usage.

For each reform, the independent variables and samples are identical in all models. The dependent variables are the risk that the fathers are using more than zero earnings-related parental leave days, using more than one week of earnings-related parental leave days, using more than two weeks of earnings-related parental leave days, and so on, up to the risk that the fathers are using more than thirteen weeks of earnings-related parental leave days. The models are specified as:

$$\text{Logit}(Y_{1/0} \mid X, \gamma, \delta, \lambda) = \alpha + X_i' \, \beta + \gamma \, \text{Year} + \delta \, \text{Month} + \lambda \, \text{Treatment}$$

where X_i is a vector of individual characteristics of the father and the mother, including age, country of birth, the birth order of the child, and education (see Appendix E for details). The variables "Year" and "Month" are dummy variables indicating the year and month of birth of the child, [10] where "Year" is one for children born around the introduction of each reform and zero for children born a year earlier. The variable "Month" assumes the value one for the month where each of the reforms were introduced and zero for the month before the reform. The potential impact of the reforms is measured by the variable "Treatment", an interaction variable of Year*Month, indicating that the father belongs to the treatment group. It is the estimated value of this variable for each of the models that is presented in Table 4.[11]

For sensitivity analyses, we conducted logit models with only the Treatment-dummy included, logit models with children born one week and three days around the reform cut-offs respectively, as well as separate analyses for various subgroups. In neither of the cases did the results differ significantly from the main results.

---

[9] We have also conducted the same analysis where the dependent variable in the corresponding models is the risk of using a certain number of parental leave days (that is, being in the range of 0, 0.1-1 week, 1.1-2 weeks, …, more than 13 weeks, compared with not being in that range). The results from these models are presented in Appendix C. The results tend in the same direction as the main results and strengthen the conclusions of the study.

[10] Remember that to control for potential seasonal variation in the use of parental leave, children born one year earlier than the control and treatment groups for each reform are included in the logit-models.

[11] Examples of the full model are presented in Appendix D.

Table 3 presents the results of the logit models for the "Treatment" variable, with results expressed in odds ratios. In the first column of the table the results for the first reserved month are presented. The results show that there is a clear, significant effect of the first reform. The risk of using more than zero days is 3.7 times higher in the treatment group compared with the control group and there is a statistically significant higher risk in the treatment group of using up to more than 30 days, but not more than five weeks of parental leave. The effect is to a large extent dependent on a shift from not using any or only a few days of parental leave before the reform to using approximately 30 parental leave days, that is, the reserved month.

The results for the second reserved month are presented in the second column of Table 3. The estimates show that the treatment group has higher risk of any use up to more than 60 days, but not more than nine weeks of parental leave days, thus, the two reserved months. Similarly to after the introduction of the first reserved month there is a clear shift, but instead of using approximately 30 days, the fathers use more than 30 days and up to about 60 days of parental leave.

Turning to the potential effect of the gender equality bonus we do not find any shift of the same magnitude and there is no statistically significant higher risk of more usage at any point in time when we compare the treatment group with the control group.

Table 3. Risk of least number of earnings-related parental leave days, odds ratios. Estimate of being in the treatment group compared with control group.

	First reserved month	Second reserved month	Gender equality bonus
>0 days	3.71***	1.23**	1.06
>1 week	3.69***	1.27***	1.06
>2 weeks	3.45***	1.32***	1.05
>3 weeks	3.13***	1.42***	1.01
>4 weeks	2.41***	1.48***	1.00
>30 days	1.41***	1.67***	1.00
>5 weeks	1.01	1.64***	1.01
>6 weeks	0.95	1.66***	0.99
>7 weeks	0.96	1.66***	1.00
>8 weeks	0.95	1.54***	1.05
>60 days	0.96	1.23**	1.12
>9 weeks	0.97	1.15	1.11
>10 weeks	0.94	1.03	1.16
>11 weeks	0.94	0.99	1.12
>12 weeks	0.93	0.99	1.10
>13 weeks	0.94	0.96	1.05

*** Significant difference (1 percent level) between control and treatment groups.
** Significant difference (5 percent level) between control and treatment groups.

Discussion

This study focuses on the effects of reforms to encourage an equal division of leave in parental leave insurance. Since the introduction of parental leave in Sweden various strategies have been used to reach this goal. In 1995, one month was reserved for each parent, implying that the month was forfeited if not used by the same parent. The reservation of one month was followed by another month in 2002. In 2008, a gender equality bonus was introduced, meaning that tax credits were given to parents if both used more than their reserved months.

The outcomes of these reforms are evaluated and compared. We investigate fathers' and mothers' leave use during the first 20 months after the introduction of each reform. Although it should be remembered that parental leave can be used until the child is eight years old and fathers often use a larger proportion of leave later on in the child's life, the vast majority of parental leave days are used when the child is 20 months old.

The study thus focuses on short-term effects and does not rule out effects that appear later on in the child's life. It also focuses on short-term effects in the sense that we analyze only the first parents to meet the new reform and therefore miss gradual changes in behavior initiated by the reform. Nevertheless, the results of this study do tell us something about how different reforms operate and affect parents' patterns of parental leave use.

The results show that the first reserved month clearly has most effect on both fathers' and mothers' use. Mothers' use of parental leave days decreased by 23 days whereas fathers' days increased by nine days. Also, the proportion of fathers using any leave at all increased from 43 to 74 percent. The reason that fathers' leave days do not increase as much as mothers' days decrease is probably that fathers to a greater extent take their leave later in their children's life. We find that the propensity among fathers to use around one month of leave increases sharply, whereas the propensity to use longer leave is mainly unaffected.

The second reserved month has a more moderate effect, increasing fathers' days from 42 to 48 days and mothers' days from 300 to 307 days. Remember that the leave was extended by 30 days at the same time and this extension could also be used by mothers. Here we find that the dominant pattern is that fathers' use of around two months increases, whereas other lengths of leave are less affected.

We do not find any effects on mean used days from the introduction of the gender equality bonus. The logit models also indicate that the bonus has so far not shifted the usage among fathers.

When we compare the effects of the three reforms it seems that the efficacy of the first reform, the first reserved month, is higher than the two other reforms, and that the second reserved month clearly has more impact than the gender equality bonus. It is not possible to conclude that the first month therefore is a reform that is superior to the other two, as they can be seen as stepping-stones towards the same goal. They all promote the social value of children, especially children of working parents, and they aim at gender-neutral or gender-equal parenthood. The reserved months, entitling days and not just economic benefits may have a stronger impact on the negotiations with both the other parent and the employer, which may be the reason for the more obvious influence. To have more time with your child at the expense of work is a more valid claim than earning a bonus (or losing less income).

23

Our interpretation of the absence of an effect of the gender equality bonus is that the bonus has not reached parents and that the system is complicated to understand. It is less straightforward than the reserved months, and it was also given much less attention in the media and in public debate. Thus transparency of policy is largely lacking. The lag in tax credit is also likely to work as a disincentive to usage. In addition there are other factors influencing the leave division between the mother and the father. These factors may be so strong that a bonus at the economic level of the present one is too marginal to have any influence.

All three reforms have been politically accepted by being introduced as part of packages, a possible reason why the effects of the reforms are in some cases limited. By comparing the use of leave of fathers of children born in 1995, 2002, and 2008 we see that the effects of the reforms have largely endured for the first and second reserved months and the trend of fathers using more leave has not stopped. It is too early to talk about enduring effects of the gender equality bonus but in all three cases the reforms have to be seen in the context of a general trend of increasing gender-equal division of leave. Even if the reforms, at least the two first, have had a positive impact on this trend, they are not the sole reasons for the trend.

It is also possible that a reform encouraging gender equality in parental leave may have most effect the first time it is introduced, but that it is hard to reach the same effect when it is repeated, or when even longer leave is encouraged. In addition, even if all the reforms aim at gender-neutral parenthood, the bonus does so by encouragement whereas the reserved months reduce leave days if they are not used more equally. The bonus is also complemented by the option of a homecare allowance (also gender-neutral but not so its implication and use). It seems that when the goal of gender equality has to compete with goals of free choice, only some parents seize the chance to be more gender-equal.

References

Angrist, J.D. and Krueger, A.B. (2000). "Empirical Strategies in Labor Economics," in Ashenfelter, O.C. and Card, D. (Eds) *Handbook of Labor Economics 3A*.North-Holland, Amsterdam.

Bekkengen, L. (2002). *Man får välja – om föräldraskap och föräldraledighet i arbetsliv och familieliv* [Men can choose – about parenthood and parental leave in working life and family life]. Liber, Stockholm. (Includes English summary).

Bourdieu, P. (1996). On the family as a realized category. *Theory, Culture & Society,* 13(3), 19-26.

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

Duvander, A. (2006). Föräldrarnas användning av föräldraförsäkringen [Parents' use of the parental leave policy] Chapter in *Analyserar 2006:5*. Swedish Social Insurance Agency, Stockholm.

Duvander, A. (2008a). How does gender equality bonus and home care allowance affect the economy of families with young children? Memo, Swedish Social Insurance Agency, Stockholm.

Duvander, A. (2008b). Family policy in Sweden 2008. *Social Insurance Report 2008:15*. Swedish Social Insurance Agency, Stockholm.

Duvander, A. and Berggren, S. (2003). Family Assets - Time and Money. In *Social Insurance in Sweden 2003*. National Social Insurance Board, Stockholm.

Duvander, A. and Eklund, S. (2006). Utrikesfödda och svenskfödda föräldrars föräldrapenninganvändande [Foreign born and Swedish born parents' parental leave use] Pp.33-68 in P. de los Reyes (Ed), *Om välfärdens gränser och det villkorade medborgarskapet*. SOU 2006:37. Fritzes, Stockholm.

Duvander, A and Jans, A. (2009). Consequences of fathers' parental leave use: Evidence from Sweden. *Finnish Yearbook of Population Research.* Special Issue of the 16th Nordic Demographic Symposium in Helsinki 5-7 June 2008. pp. 51-62.

Ekberg, J., Eriksson, R. and Friebel, G. (2004). Sharing responsibility? Short- and long-term effects of Sweden's „daddy month" reform. Parental Leave – A Policy Evaluation of the Swedish 'Daddy Month' Reform. *Working Paper 3/2004*, Institutet för social forskning. Stockholms universitet, Stockholm.

Ekberg, J., Eriksson, R. and Friebel, G. (2005). Parental Leave – A Policy Evaluation of the Swedish 'Daddy Month' Reform. *Discussion Paper Series, IZA, DP No 1617*. Institute for the Study of Labor (ZA), Bonn.

Eklund, S. (2004). Flexibel föräldrapenning – hur mammor och pappor använder föräldraförsäkringen och hur länge de är föräldralediga [Flexible parental leave - how mothers

and fathers use parental insurance and how long they are on parental leave. *RFV Analyserar 2004:15*. National Social Insurance Board, Stockholm.

Eriksson, R. (2005). Parental Leave in Sweden: The Effects of the Second Daddy Month. *Working Paper 9/2005*, Institutet för social forskning. Stockholms universitet, Stockholm.

Ferrarini, T. and Duvander, A. (2010). Earner-carer model at the crossroads: Reforms and outcomes of Sweden's family policy in a comparative perspective. *International Journal of Health Services* 40(3), 373-398.

Haas, L., Allard, K., Hwang, P. (2002). The impact of organizational culture on men's use of parental leave in Sweden. *Community, Work & Family* 5:319-342.

Haas, L. and Hwang, P. (2008). The impact of taking parental leave on fathers' participation in childcare and relationships with children: Lessons from Sweden. *Community, Work and Family* 11(1), 85-104.

Hobson, B., Duvander, A. and Halldén, K. (2006). Men and women's agency and capabilities to create a worklife balance in diverse and changing institutional contexts. In J. Lewis (Ed.), *Children, changing families and welfare states*. Edward Elgar, London.

Hobson, B. and Fahlén, S. (2009). Competing scenarios for European fathers: applying Sen's capabilities and agency framework to work family balance. *The ANNALS of the American Academy of Political and Social Science* 624, 214-233.

Hobson, B., Fahlén, S. and Takács, J. (2010). Tensions and aspirations, agency and capabilities to achieve a work family balance: A comparison of Sweden and Hungary. Forthcoming in *Social Politics*.

Johansson, E-A. (2010). The effect of own and spousal parental leave on earnings. *IFAU Working Paper 2010:4.* Institute for Labor Market Policy Evaluation (IFAU), Uppsala.

Klinth, R. (2002). *Göra pappa med barn. Den svenska pappapolitiken 1960-1995* [Make fathers have babies. The Swedish family policy towards fathers 1960-1995]. Boréa förlag, Umeå.

Klinth, R. and Johansson, T. (2010). *Nya svenska fäder* [New Swedish fathers]. Boréa förlag, Umeå.

McDonald, P. (2000). Low fertility and the state: The efficacy of policy. *Population and Development Review* 32(3), 485-510.

McDonald, P. (2006a). Gender equity, social institutions and the future of fertility. *Journal of Population Research*, 17(1), 1-16.

McDonald, P. (2006b). An assessment of policies that support having children from the perspective of equity, efficiency and efficacy. *Vienna Yearbook of Population Research,* 213-234.

National Social Insurance Board (2003). Mamma vet bäst. En kunskapsmätning om föräldrapenning och föräldraledighet [Mother knows best. A knowledge measurement of parental leave]. *RFV Analyserar 2003:19.*

Rosenzweig, M.A. and Wolpin, K,I. (2000). 'Natural' natural experiments in Economics, *Journal of Economic Literature* 38, 827-874.

Sundström, M. and Duvander, A. (2002). Gender division of child care and the sharing of parental leave among new parents in Sweden. *European Sociological Review,* 18, 433-447.

Swedish Social Insurance Agency (2010a). Föräldrars syn på Försäkringskassans information om föräldraförsäkringen. Resultat från en enkätundersökning hösten 2009 [Parents' views on information on parental insurance. Results from a survey in autumn 2009]. *Socialförsäkringsrapport 2010:3.*

Swedish Social Insurance Agency (2010b). Jämställdhetsbonusen - en effektutvärdering [The gender equality bonus – an evaluation]. *Socialförsäkringsrapport 2010:5.*

Appendix A.

Figure A1. Number of children born in 18-31 of December and 1-14 of January in 1991/92 - 2004/05
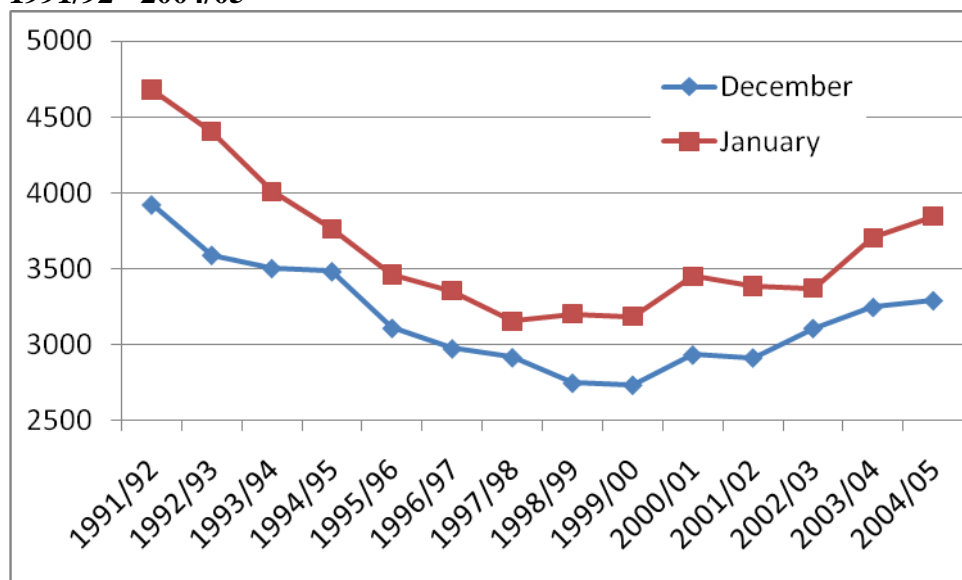
Figure A2. Number of children born in 17-30 of June and 1-14 of July in 2004-2009
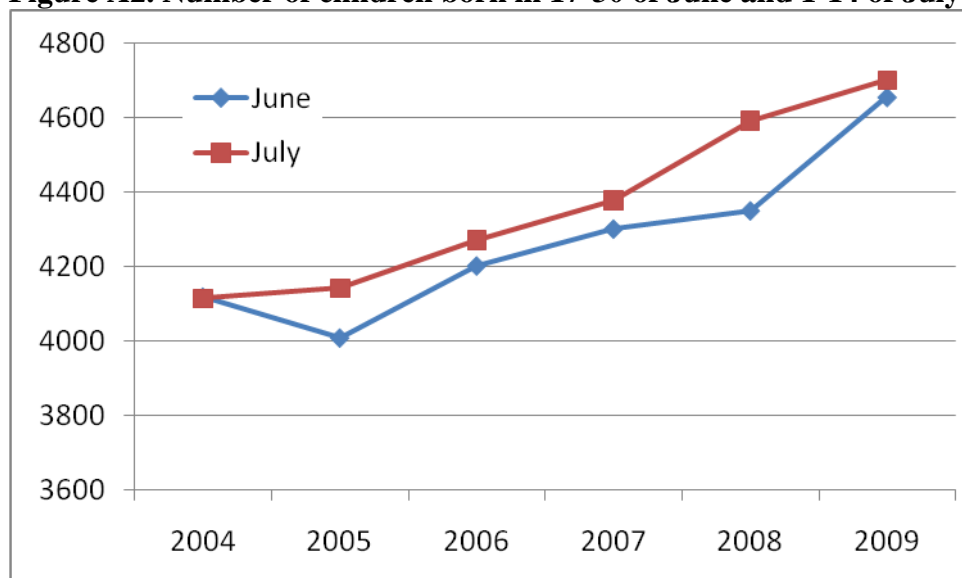
Table A1. Characteristics

	First reserved month		Second reserved month		Gender equality bonus	
	Control	Treatment	Control	Treatment	Control	Treatment
Gender						
Boy	51.6	51.8	51.1	51.4	53.2	52.3
Girl	48.4	48.2	48.9	48.6	46.8	47.7
Age						
-30 years, father	48.8	48.9	39.6	39.7	33.8	33.8
31-35 years, father	27.4	28.3	32.7	32.7	34.9	35.8
36+ years, father	23.8	22.8	27.8	27.5	31.3	30.4
-30 years, mother	66.9	67.4	55.8	56.2	51.1	52.3
31-35 years, mother	23.6	22.6	30.2	29.6	33.6	32.5
36+ years, mother	9.5	10.0	14.0	14.2	15.2	15.1
Father > 5 years older	23.2	22.1	22.2	20.8	22.4	22.7
Father and mother about same age	75.1	75.7	75.0	76.5	75.5	74.9
Mother > 5 years older	1.7	2.1	2.7	2.7	2.1	2.4
Country of birth						
Both parents born in Sweden	77.9	77.6	74.3	76.0	73.5	71.8
Both parents born abroad	11.9	11.6	13.6	12.3	13.8**	15.6**
Father born in Sweden, mother born abroad	4.3	5.1	6.1	5.9	6.0	6.4
Father born abroad, mother born in Sweden	5.9	5.7	5.9	5.8	6.7	6.2
Birth order						
First child, father	41.1	41.8	49.8	47.6	45.2	47.1
Second child, father	34.6	35.7	31.2**	33.9**	36.2	35.9
Third+ child, father	24.3	22.5	19.0	18.5	18.6	16.9
First child, mother	41.9	41.6	50.0**	46.9**	45.1	46.7
Second child, mother	35.5	36.5	31.7***	35.9***	38.3	37.2
Third+ child, mother	22.6	21.9	18.4	17.2	16.6	16.1
Earnings						
Flat rate, father	11.5	11.4	4.8	5.2	8.7	8.9
Low, father	41.5	42.6	20.5	20.2	12.0***	14.1***
Medium, father	35.8	34.5	42.9**	40.3**	60.0***	57.5***
High, father	11.3	11.4	31.8**	34.3**	19.3	19.5
Flat rate, mother	13.6	14.2	5.5	5.5	10.8	10.0
Low, mother	74.0	73.2	42.9	41.6	29.5	30.8
Medium, mother	10.2	10.8	37.9	38.1	51.0	50.3
High, mother	2.2	1.9	13.7	14.9	8.7	8.9
Fathers' share of	11.8	11.6	4.8	4.8	4.8	5.4

earnings 0-20 %						
Fathers 'share of earnings 20-40 %	4.4	4.5	6.2	5.7	5.3	5.6
Fathers' share of earnings 40-60 %	44.0	44.1	52.5	53.2	51.1	51.9
Fathers' share of earnings 60-80 %	31.1	30.3	28.6	28.6	30.1	29.2
Fathers' share of earnings 80-100 %	8.8	9.5	7.9	7.7	8.7	7.9
Sector						
Central government, father	10.9	10.7	7.9	7.4	6.2	6.7
Local government, father	13.4	13.7	9.7	9.9	10.0	9.7
Private sector, father	64.9	64.7	77.0	76.8	77.4	76.3
Unknown, father	8.6	8.2	3.7	3.7	6.2	6.8
Central government, mother	8.1	7.6	6.6	6.2	6.6	6.5
Local government, mother	38.2	37.7	33.2	33.2	31.8	33.1
Private sector, mother	39.4	40.6	50.9	52.0	49.4**	46.7**
Unknown, mother	12.2	11.4	7.7	6.4	12.0	13.2
Living location						
Cities	32.6	32.0	37.9	37.4	38.4	39.3
Larger towns	28.2	27.7	26.9	27.6	28.2	26.8
Rest of Sweden	39.2	40.3	35.2	35.0	33.3	33.9
Education						
Primary, father	18.8	18.3	12.8	11.6	11.5	12.2
Secondary, father	52.7	52.6	53.8	52.6	46.5	47.1
Tertiary, father	25.7	26.3	31.6	33.9	39.8	38.8
Unknown, father	2.5	2.2	1.4	1.5	2.1**	1.5**
Primary, mother	15.6	14.2	11.8	12.0	9.1	9.8
Secondary, mother	54.7	55.7	48.4	47.9	38.0	38.3
Tertiary, mother	27.0	26.9	36.8	37.4	50.0	48.3
Unknown, mother	2.3	2.7	2.7	2.4	2.7	3.2
Father higher education than mother	18.9	20.3	18.3	19.1	13.9	14.7
Father and mother same education	58.5	56.8	59.1	60.4	61.0	61.0
Mother higher education than father	22.6	23.0	22.5	20.6	25.1	24.3
Observations	3 306	3 496	2 580	2 909	3 763	3 931

*** Significant difference (1 percent level) between control and treatment groups.
** Significant difference (5 percent level) between control and treatment groups.

Appendix B.

Table B1. The distribution of parental leave days for control and treatment groups, fathers

	First reserved month		Second reserved month		Gender equality bonus	
	Control	Treatment	Control	Treatment	Control	Treatment
0 days	60.4	31.5	34.9	30.1	31.0	31.9
0-1 week	7.0	5.9	7.1	5.5	6.0	6.3
1-2 weeks	4.1	6.8	6.0	5.7	4.9	4.7
2-3 weeks	3.7	7.3	6.7	5.3	4.1	4.6
3-4 weeks	3.0	8.8	6.3	5.6	3.9	3.9
4-5 weeks	3.0	19.8	8.6	5.7	4.5	4.4
5-6 weeks	2.0	2.9	3.2	4.0	3.1	3.3
6-7 weeks	1.7	1.5	2.6	3.7	3.2	3.3
7-8 weeks	1.5	1.5	2.2	4.7	4.2	2.8
8-9 weeks	1.4	1.1	2.5	7.7	5.8	4.5
9-10 weeks	1.3	1.1	1.5	3.0	2.7	2.2
10-11 weeks	0.9	1.2	1.8	1.9	2.4	2.4
11-12 weeks	0.6	0.9	1.4	1.5	1.9	2.1
12-13 weeks	1.0	0.9	1.3	1.7	2.5	2.8
13+ weeks	8.6	8.7	13.8	13.9	19.8	20.8

Table B2 The distribution of parental leave days for control and treatment groups, mothers

	First reserved month		Second reserved month		Gender equality bonus	
	Control	Treatment	Control	Treatment	Control	Treatment
0-34 weeks	10.9	14.7	25.7	22.0	34.1	34.9
34-35 weeks	0.6	1.4	2.1	2.9	4.2	3.9
35-36 weeks	0.9	1.1	2.6	2.2	3.5	2.9
36-37 weeks	0.8	2.1	2.3	2.4	3.1	2.7
37-38 weeks	1.0	1.5	2.9	2.1	3.5	3.1
38-39 weeks	1.7	2.1	3.1	2.7	3.2	3.4
39-40 weeks	1.7	1.9	3.2	3.0	3.6	3.7
40-41 weeks	1.7	2.2	4.1	3.7	3.7	3.2
41-42 weeks	1.8	2.6	3.4	2.9	2.9	3.8
42-43 weeks	2.0	3.2	4.1	3.9	3.2	4.1
43-44 weeks	2.3	3.7	3.8	4.6	4.2	3.3
44-45 weeks	2.5	4.6	4.4	5.5	3.8	4.0
45-46 weeks	3.5	5.2	5.3	6.5	4.0	3.6
46-47 weeks	3.6	11.7	10.4	10.8	6.8	7.1
> 47 weeks	64.8	41.9	22.7	24.7	16.2	16.3

Appendix C.

Table C1. Risk of number of leave days after reform

Range	First reserved month	Second reserved month	Gender equality bonus
0 days	0.27***	0.81**	0.94
0-1 week	0.81	0.83	1.00
1-2 weeks	1.16	0.81	1.05
2-3 weeks	1.55**	0.73**	1.17
3-4 weeks	3.92***	0.85	1.03
4-5 weeks	8.07***	0.73**	0.97
5-6 weeks	1.43	1.03	1.13
6-7 weeks	0.85	1.18	0.95
7-8 weeks	1.18	1.91**	0.76
8-9 weeks	0.75	3.50***	0.81
9-10 weeks	1.35	2.30***	0.79
10-11 weeks	0.94	1.46	1.35
11-12 weeks	1.06	0.98	1.18
12-13 weeks	0.87	1.25	1.43
>13 weeks	0.94	0.96	1.05

*** Significant difference (1 percent level) between control and treatment groups.
** Significant difference (5 percent level) between control and treatment groups.

Appendix D.

Table D1. Logistic regression models, odds ratios, dependent variable fathers using parental leave

	First reserved month	Second reserved month	Gender Equality bonus
Gender of child			
Boy	1.05	0.98	0.98
Girl (ref.)	1	1	1
Age			
Age -30 years, father	0.96	0.94	1.01
Age 31-35 years, father (ref.)	1	1	1
Age 36+ years, father	0.97	0.98	0.90
Age -30 years, mother	1.16***	1.04	0.93
Age 31-35 years, mother (ref.)	1	1	1
Age 36+ years, mother	0.92	0.97	1.01
Father > 5 years older	0.85***	0.90	0.94
Father and mother about same age (ref.)	1	1	1
Mother > 5 years older	0.91	1.28	1.03
Country of birth			
Both parents born in Sweden (ref.)	1	1	1
Both parents born abroad	0.49***	0.47***	0.35***
Father born in Sweden, mother born abroad	0.97	0.93	0.75***
Father born abroad, mother born in Sweden	0.73***	0.64***	0.63***
Birth order (father)			
First	1.33***	1.61***	1.49***
Second (ref.)	1	1	1
Third or higher	0.83***	0.97	0.85***
Earnings[x]			
Flat rate, father	0.62***	0.35***	0.57***
Low, father	0.65***	0.49***	0.58***
Medium, father (ref.)	1	1	1
High, father	0.60***	0.88	0.72***
Flat rate, mother	0.49***	0.88	1.15
Low, mother	0.78***	0.79***	0.79***
Medium, mother (ref.)	1	1	1
High, mother	1.03	1.08	1.34**
Fathers' share of earnings 0-20 %	0.28***	0.30***	0.34***
Fathers 'share of earnings 20-40 %	0.46***	0.66***	0.59***
Fathers' share of earnings 40-60 % (ref.)	1	1	1

Fathers' share of earnings 60-80 %	1.11**	0.83***	0.78***
Fathers' share of earnings 80-100 %	1.44***	0.80**	0.82**
Sector			
Central government, father	0.97	0.99	1.09
Local government, father	0.99	1.05	1.08
Private sector, father (ref.)	1	1	1
Unknown sector, father	0.51***	0.48***	0.48***
Central government, mother	1.21**	1.42***	1.32***
Local government, mother	1.06	1.09	1.11**
Private sector, mother (ref.)	1	1	1
Unknown sector, mother	0.82***	0.84**	0.76***
Living location			
Cities	0.84***	0.91	0.96
Larger towns (ref.)	1	1	1
Rest of Sweden	0.91**	0.97	0.96
Education			
Primary, father	0.77**	1.11	0.74***
Secondary, father (ref.)	1	1	1
Tertiary, father	1.40***	0.84	1.37***
Unknown, father	0.49***	0.85	0.65**
Primary, mother	0.89	0.63***	1.12
Secondary, mother (ref.)	1	1	1
Tertiary, mother	1.27**	1.76***	1.33**
Unknown, mother	1.64***	0.70	1.46**
Father higher education than mother	0.92	1.25	0.90
Father and mother same education (ref.)	1	1	1
Mother higher education than father	1.16	0.76	1.21
Treatment			
Born year before reform (ref.)	1	1	1
Born around reform	1.67***	1.41***	1.18**
Month	1.10	1.03	0.94
Month before (ref.)	1	1	1
Treatment group	3.71***	1.23**	1.06
Control group (ref.)	1	1	1
Log likelihood (starting model)	- 9 352	- 7 126	- 9 339
Log likelihood (final model)	- 8 081	- 6 367	- 8 253
Pseudo R^2	0.1523	0.1065	0.1163
Number of observations	13 776	11 127	15 179

*** Significant difference (1 percent level) between control and treatment groups.

** Significant difference (5 percent level) between control and treatment groups.

Huber/White/sandwich estimator of variance

Appendix E.

Table E1. Variables in logit-regressions

Variable	Explanation
Boy	Child is a boy
Girl	Child is a girl
Age -30 years, father	Father up to 30 years old at birth of child
Age 31-35 years, father	Father 31-35 years old at birth of child
Age 36+ years, father	Father 36 years or older at birth of child
Age -30 years, mother	Mother up to 30 years old at birth of child
Age 31-35 years, mother	Mother 31-35 years old at birth of child
Age 36+ years, mother	Mother 36 years or older at birth of child
Father > 5 years older	Father more than five years older than mother
Father and mother about same age	Father and mother within five years
Mother > 5 years older	Mother more than five years older than father
Both parents born in Sweden	Both parents born in Sweden
Both parents born abroad	Both parents born abroad
Father born in Sw, mother born abroad	Father born in Sweden, mother born abroad
Father born abroad, mother born in Sw	Father born abroad, mother born in Sweden
First	First birth order, father
Second	Second birth order, father
Third or higher	Third or higher birth order, father
Flat rate, father[x]	Father have earnings below the flat rate compensation at the time of each reform (60 SEK per day at the time of the introduction of the first and second reserved month, and 180 SEK per day for the gender equality bonus)
Low, father[x]	Fathers have earnings over the flat rate compensation and up to 5 price base amount
Medium, father[x]	Fathers earnings are over 5 price base amount but below the highest compensation rate at the time of each reform (7.5 price base amount at the time of the introduction of the first and second reserved month, and 10 price base amount for the gender equality bonus)
High, father[x]	Fathers' earnings are above the ceiling of the parental leave benefits
Flat rate, mother[x]	Mothers have earnings below the flat rate compensation at the time of each reform (60 SEK per day at the time of the introduction of the first and second reserved month, and 180 SEK per day for the gender equality bonus)
Low, mother[x]	Mothers have earnings over the flat rate compensation and up to 5 price base amount.
Medium, mother[x]	Mothers earnings are over 5 price base amount but below the highest compensation rate at the time of each reform (7.5 price base amount at the time of the introduction of the first and second reserved month, and 10 price base amount for the gender equality bonus).
High, mother	Mothers' earnings are above the ceiling of the parental leave benefits
Fathers' share of earnings 0-20 %	Fathers' earnings are 0-20 % of tot. parental earnings
Fathers 'share of earnings 20-40 %	Fathers' earnings are 20-40 % of total parental earnings
Fathers' share of earnings 40-60 %	Fathers' earnings are 40-60 % of total parental earnings
Fathers' share of earnings 60-80 %	Fathers' earnings are 60-80 % of total parental earnings
Fathers' share of earnings 80-100 %	Fathers' earnings are 80-100 % of total parental earnings
Central government, father	Father employed in governmental sector

Local government, father	Father empl. in municipal authorities or county councils
Private sector, father	Father works in private sector
Unknown sector, father	Father is not working
Central government, mother	Mother employed in governmental sector
Local government, mother	Mother empl. in municipal authorities or county councils
Private sector, mother	Mother works in private sector
Unknown sector, mother	Mother is not working
Cities[i]	Municipalities with a population of over 200,000 inhabitants and Municipalities where more than 50 percent of the nocturnal population commute to work in another area The commonest commuting destination is one of the metropolitan municipalities
Larger towns[i]	Municipalities with 50,000-200,000 inhabitants and more than 70 percent of urban area
Rest of Sweden[i]	Municipalities in which more than 40 percent of the nocturnal population commute to work in another municipality and Municipalities with fewer than 7 inhabitants per km^2 and fewer than 20,000 inhabitants and Municipalities where more than 40 percent of the nocturnal population between 16 and 64 are employed in manufacturing and industry (SNI92) and Municipalities that do not belong to any of the previous categories and have a population of more than 25,000 and Municipalities that do not belong to any of the previous categories and have a population of 12,500-25,000 and Municipalities that do not belong to any of the previous categories and have a population of less than 12,500
Primary, father	Father has primary education
Secondary, father	Father has secondary education
Tertiary, father	Father has tertiary education
Unknown, father	Father's education unknown
Primary, mother	Mother has primary education
Secondary, mother	Mother has secondary education
Tertiary, mother	Mother has tertiary education
Unknown, mother	Mother's education unknown
Father higher education than mother	Father's educational level higher than mother's ed. level
Father and mother same education	Father and mother have the same educational level
Mother higher education than father	Mother's educational level higher than father's ed. level
Treatment group	Child is born up to two weeks after reform
Control group	Child is born up to two weeks before reform

[x] Parents are divided into four groups according to their annual earnings. Earnings are expressed in price base amounts the year before each reform (1994 for the first reserved month, 2001 for the second reserved month and 2007 for the gender equality bonus. The price base amount follows the price trend in the country each year and is set by the government. The amount is used for calculating different kinds of benefits. The amount of benefit changes automatically when the price base amount is changed.
The price base amount was 35 200 SEK (approx. 3 520 Euro) in 1994, 36 900 SEK (approx. 3 690 Euro) in 2001 and 40 300 SEK (approx. 4 030 Euro) in 2007.

[i] The regional breakdown is based on Swedish Association of Local Authorities and Regions (Sveriges kommuner och landsting, SKL) division. For a detailed description, see SKL:s homepage (2010-09-18):
http://www.skl.se/web/Kommungruppsindelning_1.aspx.