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and Well-Being**

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ABSTRACT

Earmarked Paternity Leave and Well-Being

Earmarked paternity leave has been introduced in an attempt to increase fathers' involvement in child rearing and to achieve gender equality in the labor market and at home. So far well-being effects of such policies are unexplored. This paper takes a first step in that direction by studying the impact of earmarked paternity leave quota on life satisfaction, job satisfaction, and work-life balance using several policy changes in Europe over the period 1993-2007. We find that earmarked paternity leave increases life satisfaction by 0.18 on a 10 point scale which is equivalent to a 10.8 percentage point increase even decades later. Both fathers and mothers benefit, though the increase in life satisfaction for mothers is nearly 30% higher than that of fathers. Perhaps surprisingly, the impact on job satisfaction and work-life balance is close to zero. Hence even when the impact of paternity leave quota on the labor market are small, the increases in life satisfaction may still justify the existence of such policies.

JEL Classification: J12, J13, J16, J18, I31, I38

Keywords: family leave policies, paternity leave, quota, well-being, life satisfaction

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1. Introduction

Family leave policies are by now ubiquitous in most higher income countries. These policies – offering (partially) paid and unpaid leave to families after the arrival of children – aim to provide families with a good start in terms of health, division of caring tasks, relational stability, and continuity of mothers' employment. However, these policies have also resulted in mothers taking up most of the leave, which is considered an important reason for why for instance the gender wage gap has persisted.

In order to counter these side effects, earmarked paternity leave has been offered for a while in a handful of countries. In addition, in 2019 the Council of the European Union adopted the Directive on Work–Life Balance for Parents and Carers: the directive includes an individual right to four months of parental leave, of which two months are non-transferable between the parents and paid. Earmarked paternity leave means that part of the parental leave – varying from a couple of days to multiple months – is exclusively reserved for fathers and cannot be transferred to the mother. The evidence on the effectiveness of earmarked leave policies has been mixed. The uptake of leave by fathers can reduce the motherhood penalty by enabling mothers to return to the labor market, see e.g. Norman et al. (2014) and Fagan and Norman (2016). Paternity leave quota can also lead to a more equal division of home production tasks, see e.g. Hook (2006), Kotsadam and Fiseraar (2011, 2013), Almqvist and Duvander (2014), Bünning (2015), Tamm (2018), and Patnaik (2019). Farre and Gonzalez (2019) find a decrease in fertility as a consequence of the introduction of a paternity leave quatum. Finally Avdic and Karimi (2018) find an increase in parental separations following the introduction of a paternity leave quatum in Sweden, while Olafsson and Steingrimsdottir (2020) find a decrease in parental separations following the introduction of a quota in Iceland. The well-being impact of paternity leave quota are unclear and so far unexplored.

This paper contributes to the existing literature by studying the effect of earmarked paternity leave policies on parental well-being. We use data from the European Social Survey (ESS) waves' of 2006 and 2018, which contain information on the year of birth of respondents' children as well as data from

parents on life satisfaction, job satisfaction, and work-life balance. We combine this with data on earmarked paternity leave policies in Europe. We estimate – using a difference-in-difference analysis – the effect of earmarked paternity leave policies on well-being. We compare parents who have their first child before the introduction of a paternity leave quota policy, with parents who have their first child after the policy introduction, and (as an additional control group) with parents in countries without a paternity leave quota. Using an extensive set of control variables, including country and wave fixed effects, we therefore compare well-being of parents with children of the same age who experienced a paternity leave quota with parents with a child of the same age in a country where there is no paternity leave quota, or not a quota yet.

Earmarked paternity leave can in theory affect life satisfaction in several ways. Since paternity leave policies lead to a long lasting change in the division of tasks they may directly affect overall life satisfaction. For instance because of better bonding between fathers and their children, or through satisfaction from the activities that parents do, such as work or leisure. Also paternity leave can affect the number of children, which may affect parents' well-being directly. Finally, there is a positive impact of paternity leave on the development of children, which is expected to increase parents' life satisfaction.

Besides general life satisfaction one may expect a change in job satisfaction and the work-life balance of parents. Paternity leave quota are introduced with the intention to increase mothers' participation in the labor market and increase fathers' share of work in the household, which may also come at the expense of fathers time spent in the labor market. The increase in opportunities for mothers to work in the labor market may increase work-life balance and satisfaction with their job. For fathers the effects are more ambiguous. On the one hand the increase in family focus may improve work-life balance for fathers. On the other hand, the additional amount of home production may increase fathers' demands in the household and therefore puts more pressure on their work time in the labor market.

We find that paternity leave quota increase wellbeing. Life satisfaction is increased by 0.18 points, which is equivalent to a 10.8 percentage point increase in life satisfaction. The impact on job satisfaction and work-life balance is much smaller, and insignificant. This suggests that an important part of the increase in life satisfaction caused by paternity leave quota cannot be attributed to changes in satisfaction in the work domain. Interestingly, the increase in life satisfaction is much stronger for mothers than for fathers.

Our paper contributes to a rapidly increasing body of literature that studies the impact of parental leave policies on outcomes in the work and family domain. Among these are studies on fertility (Farre and Gonzalez 2019), parental separations (Avdic and Karimi 2018 and Olafsson and Steingrimsdottir 2020), the division of home production (Kotsadam and Fiseraar 2011 and 2013, Almqvist and Duvander 2014, and Tamm 2018), parental work hours (Tamm 2018 and Valentova 2019), household specialization in work and care tasks (Bünning 2015 and Patnaik 2019), the development of children (see e.g. Huerta et al. 2013 and Cools et al. 2015), and their well-being (see e.g. Nepomnyaschy and Waldfogel 2007 and Haas and Hwang 2009). We add to this literature the effects on well-being.

Focusing on well-being in addition to objective outcomes provides additional insights. For example, in case of the division of home production tasks, the subjective well-being with the division of tasks may be at least as important as the actual division of tasks, in terms of the ability to divide tasks more equal in the future. In addition, Frijters et al. (2021) discuss the role of well-being in policy making, and provide a framework for how well-being could be used in governments' decision making. Our findings may inspire policy makers to introduce more (generous) paternity leave quota.

We proceed as follows. The next section discusses the details of the parental leave quota that are used in this paper. Section 3 discusses the methodology and the data, section 4 the results, and the final section provides a discussion and the conclusions.

2. Paternity Leave Quota

The Nordic welfare states have been categorized as the most generous of Europe. Particularly their parental leave model stands out due to the strong emphasis on creating conducive conditions for mothers to combine family and work (Esping-Anderson et al. 2002). For instance the child penalty is lower in these countries (Smith et al. 2003), and the probability that mothers return to work after parental leave is (well over 90% and) higher than in other countries (Pylkkänen and Smith 2004). Ray et al. (2009) have conducted an extensive review of the national parental leave policies of 21 high-income countries, focusing on “the level of support provided to parents” and the “degree to which leave policies promote an egalitarian distribution between mothers and fathers of the time devoted to child care”. They find that the Nordic countries stand out as the countries with the highest generosity and most gender equal policies. Specifically, they stand out due to the generosity of the paid leave, universal coverage combined with modest eligibility restrictions, financing structures that pool risk among many employers, scheduling flexibility, and paid parental leave quotas (Ray et al., 2008). While many countries have introduced one or two weeks of paternity leave in connection with the birth of a child (several also offer paid leave), few countries provide fathers with longer earmarked leave after the two first weeks following child birth. So far only Germany is the exception, see Windwehr et al. (2021).

Table 1, summarizes the paternity leave quotas in Europe,. The Nordic countries and Germany have introduced paternity leave quota at some point in time before 2018 - which is where our survey data ends - and other European countries have not (yet).

Table 1: Paternity leave quota: policy details and wage replacement rates

Policy reform	Policy announced	Policy started	Control and treatment group	Quota specifics
Norway 1993	Dec 1992	April 1993	Treatment = parents of first born children born in 1993 or after	Four of the 42 weeks of paid leave reserved for the child's father. Level of compensation is 100% if leave taken less or up to 27 weeks; 80% if more is taken (up to 37 weeks) up to a ceiling of USD 65,297 per year. (Cools et al. 2015).
Sweden 1995	May 1994	Jan 1995	Treatment = parents of first born children born in 1995 or after	Fathers received 10 days of paid leave that they can use during the first 60 days after the birth of the child. This benefit is proportional to income, but capped. The ten days can be used at the same time as the mother is on parental leave. For a maximum of 360 days per household, parents received paid leave with a wage replacement rate of 80% . Out of these days, one month is exclusively reserved for each parent. Parents without earnings receive the minimum benefit of 60 SEK/day. (Ekberg et al. 2013)
Denmark 1997	Dec 1997	April 1998 ²	Treatment = parents of first born children born in 1998 or after	The mother is entitled to 14 weeks of non-transferable maternity leave after child-birth. The father has two non-transferable leave weeks which should be held within the first 14 weeks of childbirth. Following the first 14 weeks after childbirth, the couple has the right to 10 weeks transferable benefits. During the weeks of leave, mothers and fathers receive either their salary or parental leave benefits, depending on the employment contract (Duredahl et al. 2019). In the public sector, parents who made use of parental leave received full compensation (100%). However, the majority of those employed in the private sector workforce were covered by collective agreements, in which case the employer would top up the state benefit up to full previous earnings (i.e. also practically 100% wage replacement rate) (Nielsen 2009).
Iceland 2001	April 28, 2000	Jan 2001	Treatment = parents of first born children	Parental leave was extended from six months to nine. A sharing was introduced between the parents so that three months were tied to the father (and non-transferable), three to the mother and three

² The law was proposed December 3, 1997, passed December 19, 1997 and were effectuated from April 1, 1998 with retroactive effect for parents of children born from (including) October 15, 1997.

			born in 2001 or after	months were for the parents to divide at will. Those active in the labor market were paid 80% of their average total salary during the leave. Those outside of the labor market, or working less than 25%, had the right to a birth grant in the same way as parents on maternity/paternity leave (Eydal and Gíslason 2008).
Finland 2003	Dec 2002	Jan 2003	Treatment = parents of first born children born in 2003 or after	If the father takes the last two weeks of the transferable parental leave, he gets two extra weeks of paternity leave as a bonus (Eerola 2019), compensated at a rate of about 70% of previous income (Saarikallio-Torp and Miettinen 2021).
Germany 2007	Dec 2006	Jan 2007	Treatment = parents of first born children born in 2007 or after	Through the policy reform, parents became eligible to receive 67% of their former net income for 14 months after the birth of their children. Additionally, a paternity quota was introduced: two months of the leave was reserved for each partner. If they are not used, the couple loses them (Geisler 2012).

3. Data and Methodology

We analyze the causal effect of parental leave quota on parental well-being several years later. For this we basically employ a difference-in-difference model. We compare parents with children born in the same year, some in countries with and others without paternity leave quota in place (yet). In addition we control for parental demographics, country fixed effects, survey wave fixed effects, and in some specifications the number of quota days.

We use data from the European Social Survey (ESS) containing information about parents and their children (including the year of birth) as well as a series of questions regarding well-being of the parents. Our wellbeing focus is twofold. We are on the one hand interested in overall well-being. For that we use a question on overall life satisfaction. The survey question reads: *“How satisfied are you with life as a whole?”* and is measured on a 10-point-scale, with 1 being very unsatisfied, and 10 very satisfied. In addition we are especially interested in the work domain. The reason is that the leave quota are supposed to boost female participation and performance in the labor market, which may come at the detriment of fathers’ labor participation and performance. We therefore measure the impact on job satisfaction and work-life balance. This is measured from the responses to the questions *“How satisfied*

are you with your job?” and “How satisfied are you with how you balance between time on your job and time on other aspects?”, both measured on the same 10-point-scale.

Since our key variables of interest – well-being and the year of birth of children - are only included in the ESS module titled “the timing of life”, which was only included in the 2006 (ESS3) and 2018 (ESS9) waves we use only these two waves in our analysis. Since the data are cross sectional we have data on well-being of all parents only once, either in 2006 or 2018.

There are two challenges with using the year of birth of children in our analyses. First, some women who are expected to give birth just before the policy change may try to postpone giving birth by one or two days in order to be eligible for the additional leave. Second, and more concerning, parents may decide to not have children until there is an extended leave option for fathers. In this case, women may try and get pregnant directly after the announcement of the policy. If that is the case, the parents that receive a child when there is a paternity leave quota in place differs. This can be problematic, especially if these parents differ in their wellbeing later on, for differences other the policy implementation itself.

In order to study whether the sample of parents that have a child within three year before and after the policy differ, we examine the number of parents that have a child the year before and after the policy introduction, and study these parents’ demographic characteristics in Table 2. We find no meaningful differences between these groups.⁴ We also find no difference in number of births in the year before and after the policy.

3.1 Descriptive Statistics:

Table 2 reports the descriptive statistics of our full sample of parents as well as for the treatment and control group separately.⁵ In table 2 the second column shows the descriptive statistics of parents with

⁴ We also compare one year before and one year after a policy, and find no significant differences. However, in this small time window the number of observations is too limited to conclude something meaningful.

⁵ For descriptive statistics by specific age-group, see Appendix

a first child born before a parental leave quota was introduced. The third column shows the descriptive statistics of parents with a first child born after the introduction of a parental leave quota. The final column shows the descriptive statistics of the full sample, which also includes countries where there is no parental leave quota (until at least 2018).

Parents on average had their first child at the age of 29. It is reassuring to see that the age at which parents have their first child does not differ between the group who has received their first child up to 3 years before the introduction of the quota and the group who has received their first child up to 3 years after the introduction. This suggests it's unlikely that (a significant fraction of) adults wait with getting children until a paternity leave quota is in place. There are virtually no differences in any of the other variables between these two groups. Neither in education level, household income or migration status. This is an indication that there is no selection on (observable) characteristics. The only notable difference in characteristics between the control and treatment group is the total number of children, with the control group having slightly more children. However, the difference is small and in line with the control group being slightly older. Finally, there are some minor differences in well-being outcomes.

The final column includes all parents in our sample, and includes parents from countries where there is no paternity leave quota before 2018. We see some differences between parents in countries with and without paternity leave quota. Most notably, parents in countries without paternity leave quota are older and on average lower educated. .

Table 2: Descriptive Statistics

Variable	Combined	+/- 3 years from cut-off			Full sample
		Control	Treatment	Difference	
Current age of respondent⁷	42.327 (8.862)	42.960 (9.244)	41.601 (8.351)	-1.360***	49.214 (18.711)
Age when respondent had first child	28.660 (5.413)	28.502 (5.436)	28.839 (5.386)	-0.336	25.984 (5.2467)
Male	0.502 (0.500)	0.513 (0.500)	0.489 (0.500)	-0.024	0.4604 (0.4984)
Number of children	2.093 (0.877)	2.133 (0.906)	2.047 (0.842)	-0.086*	2.164 (1.138)
Immigrant	0.1198 (0.325)	0.111 (0.315)	0.129 (0.336)	0.018	0.089 (0.2845)
Level of education (respondent)⁸	3.834 (3.231)	3.777 (3.154)	3.901 (3.319)	-0.123	3.343 (3.358)
Level of education (partner)⁷	5.051 (3.541)	4.968 (3.592)	5.131 (3.496)	-0.163	4.211 (3.170)
In paid work of any kind	0.851 (0.356)	0.836 (0.371)	0.869 (0.338)	0.033	0.5357 (0.499)
Household net income⁹	8.358 (1.911)	8.349 (1.923)	8.370 (1.899)	-0.020	6.060 (2.765)
Life-satisfaction	7.965 (1.674)	7.913 (1.711)	8.024 (1.631)	0.111	6.942 (2.292)
Job-satisfaction	7.498 (1.859)	7.542 (1.901)	7.444 (1.808)	-0.097	7.251 (2.120)
Work-life balance	6.323 (2.234)	6.291 (2.254)	6.363 (2.212)	0.072	6.381 (2.293)

Notes: The full sample includes 101,772 respondent; 89,757 in the control group and 12,015 in the treatment group. 1,277 respondents had a child (in a country with a fathers quota) +/- 3 years from the policy cut-off; 682 in the control group and 595 in the treatment group. +/- 1 year of quota; 206 in the treatment group and 216 in the control group. Standard deviations in parentheses.

⁷ Calculated by subtracting year of birth from year of the interview

⁸ International Standard Classification of Education (ISCED): 1 = less than lower secondary, 7 = higher tertiary education.

⁹ household's total income, after tax and compulsory deductions, from all sources. In income deciles.

3.2 Empirical Strategy

In order to analyse the effects of paternity leave quota on well-being several years after the policy introduction, we estimate a difference-in-difference model comparing parents who had their first child in a country with a paternity leave quota at some points in time with parents who have their first child in a country without such quota.¹⁴ We determine paternity leave eligibility using the year of birth of children and country of residence.¹⁵ We then compare the well-being of parents with children of the same age. In addition we control for country fixed effects (that capture country specific effects of wellbeing), survey wave fixed effects (that capture time differences in well-being) and parental and household characteristics. Specifically we estimate:

$$\text{Well-being}_i = \alpha + \beta \text{treatment}_i + \delta \text{child-year-of-birth}_i + \theta \text{country}_i + \gamma \text{Wave-dummy}_i + \lambda \text{parental-controls}_i + \varepsilon_i.$$

Well-being is estimated linearly on a 10 point scale. The treatment variable is a dummy equal to one if a parent gets a child when there is a paternity leave quota in place. Hence β is our coefficient of interest and gives the effect of the presence of a paternity leave quota on well-being. δ measures the effect of the year of birth of the child, θ measures the country fixed effects, and γ the time fixed effect of participating in the survey. The vector of parental control variables include the respondents' age, age when having their first child, marital status, education level, employment, migration background, and the number of days of the (increase in) paternity leave quota at birth. In addition we control for household income, number of children, spousal education level, and the respondent's country of residence.

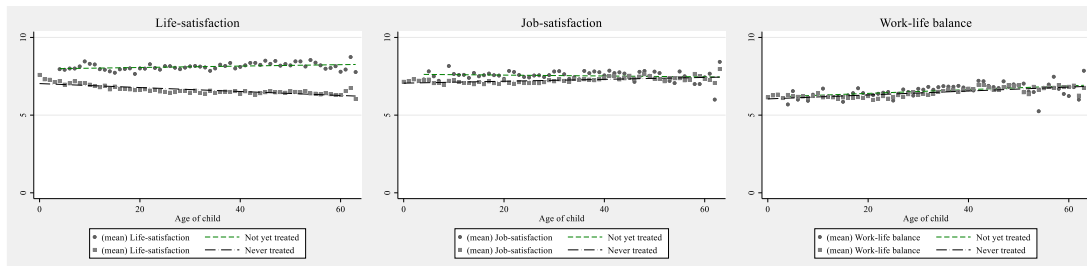
In order for our method to be valid we need the well-being trends for parents with children of the same age in countries with and without paternity leave quota to be the same. We therefore compare for the group of countries with a paternity leave quota at some point in time, the parents that have

¹⁴ We focus on the year of birth of the first child because we lack data on the year of birth of later children.

¹⁵ We exclude households who migrated, since for these households we do not know whether they resided in their current country at the moment their child was born.

their first child before a paternity leave quota was introduced, with parents of countries that do not have a paternity leave quota, Figure 1 shows these trends.

Figure 1: Well-being trends



The well-being trends are similar between the two groups, confirming that a parallel trend is plausible.

We see that life satisfaction trends are constant over the age of children with life satisfaction being higher for those parents in countries that have a paternity leave quota in place at some point in time. For both job satisfaction and work-life balance we see an upward trend. This means that parents with older children are slightly more satisfied in the work domain.

Secondly, there should be no other policies that affect our ‘treatment’ and ‘control’ group differently. This could be the case if policies are based on the birth year of children that is country specific and in line with the year the earmarked paternity leave was introduced. By our knowledge there were indeed no other reforms that affect the parents of children born around the year of the introduction of the quota differently.

Finally, there should be no anticipation effects of the policy change. We checked for selection based on parental observable characteristics, and see no evidence of any anticipation (see also descriptive statistics Table 2). Also note that the policies were all announced only briefly before implementation, therefore the room for manipulation is very limited to begin with.

4. Results

We estimate equation 1 for the full sample of parents. Table 3's Column 1 shows that being eligible for the paternity leave quota increases life-satisfaction. Parents report a score of 0.17 higher on a 10 point scale. This is equivalent to an increase of 10 percentage points of life satisfaction. This effect is strongly significant as well as robust for the specification. In the second row we add population and design weights to the estimation of equation 1, and in the third row we add the number of days of the paternity leave quota. The effect of the quota on life satisfaction moves from 0.17 to 0.18.

The second and third column show the impact on job satisfaction and work-life balance respectively. Paternity leave quota neither have an effect on job satisfaction nor on work-life balance. This implies that the increase in life satisfaction does not seem to come from changes in the satisfaction within the work environment, but rather from changes in the home environment, such as a more balanced division of the home production and caring tasks. This finding may not be that surprising given the limited impact that paternity leave quota have on mothers' labor supply. For example, Ekberg et al. (2013) find no effect on wages and labor supply following a paternity leave policy in Sweden, and similarly Tamm (2018) who study a paternity leave policy in Germany find no impact on labor supply in the long run.

One other reason for the found difference in the impact of life satisfaction and job satisfaction (and work-life balance) can be the selection of the sample. In order to answer the job satisfaction and work-life balance questions, one needs to be employed. Since over 40% of the respondents that answered the life-satisfaction question do not answer the work satisfaction questions, we run the same regression from equation 1 on life satisfaction and work-life balance with the same sample as for job satisfaction, see Appendix table A2. We find that the results are very similar. Being eligible for a paternity leave quota improves life satisfaction with 0.15 – 0.16 points. Again there is no significant impact on job satisfaction or work-life balance.

As another robustness check we add in Table A3 a placebo to the regression. In the placebo we assume the policy was implemented 2 years earlier than the actual implementation. We find that in all 3 regressions (with life-satisfaction, work-satisfaction, and work-life balance) the placebo coefficient is insignificant. Also the coefficient of the variable of interest remains almost identical to the main result.

Table 3: The effect on Well-being

	Life-satisfaction	Job-satisfaction	Work-life balance
DiD, controls & country FE	0.1735*** (0.0488)	0.0993 (0.0631)	0.0331 (0.0620)
R²	0.2781	0.0473	0.0432
Add population and design weights^b	0.1728*** (0.0423)	0.0435 (0.0701)	-0.0032 (0.0756)
R²	0.2756	0.0319	0.0402
DiD, controls, country FE & nr_days_quota^c	0.1822*** (0.0568)	0.0552 (0.0760)	0.0039 (0.0748)
R²	0.2781	0.0474	0.0432
Observations	65,255	28,247	32,905

Notes: the coefficients are from different regression. Robust standard errors are shown in parentheses. The dependent variables are the life-satisfaction, job-satisfaction and work-life balance scores.

a. Control variables are: age of the respondent, age of the child, marital status, household net income, educational attainment of the respondent and educational attainment of the respondent's partner, number of children and a dummy indicator for if the respondent is an immigrant.

b. The population size weights correct for the fact that most countries taking part in the ESS have different population sizes but similar sample sizes, while the design weights correct for the fact that in some countries respondents have different probabilities to be part of the sample due to the sampling design used. We also include the individual controls and country FE.

c. We add a control for number of days of the (increase in) paternity leave quota.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Next we study gender differences in the impact of paternity leave quota in Table 4. We estimate equation 1, but now interact the treatment with gender of the respondent. The results show that mothers' life satisfaction is affected much stronger than fathers' life satisfaction. Mothers' life satisfaction increases by roughly 30% more than the increase for fathers. We do not see any differences in the impact on job satisfaction and work-life balance. These results imply that while having earmarked paternity leave improves life satisfaction for both fathers and mothers, the positive impact on mothers is much larger.

Table 4: Heterogenous effects by gender

		Life-satisfaction	Job-satisfaction	Work-life balance
DiD, controls & country FE	Treatment	0.2005***	0.0630	0.0373
		(0.0517)	(0.0697)	(0.0696)
	Male	0.0756	0.0649	0.0327
		(0.0986)	(0.1999)	(0.1997)
	Treat*Male	-0.0542*	0.0618	0.0207
		(0.0338)	(0.0504)	(0.0503)
	R^2	0.2781	0.0474	0.0557
Add population and design weights ^b	Treatment	0.1892***	0.0515	-0.0030
		(0.0376)	(0.0642)	(0.0410)
	Male	0.0543	0.1042	-0.0486
		(0.1019)	(0.3009)	(0.2126)
	Treat*Male	-.0588***	0.0636	0.0184
		(0.0250)	(0.0482)	(0.0506)
	R^2	0.2757	0.0319	0.0521
Observations		65,255	28,247	32,905

Notes: the coefficients are from different regression. Robust standard errors are shown in parentheses. The dependent variables are the life-satisfaction, job-satisfaction and work-life balance scores.

a. Control variables are: age of the respondent, age of the child, marital status, household net income, educational attainment of the respondent and educational attainment of the respondent's partner, number of children and a dummy indicator for if the respondent is an immigrant.

b. The population size weights correct for the fact that most countries taking part in the ESS have different population sizes but similar sample sizes, while the design weights correct for the fact that in some countries respondents have different probabilities to be part of the sample due to the sampling design used. We also include the individual controls and country FE.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

5. Discussion and Conclusions

We studied how the introduction of parental leave quota affect parents' well-being. We compare policies in the Nordic countries and Germany, and find that on average life-satisfaction increases by 0.18 (on a 10 point scale) which is equivalent to a 10.8 percentage point increase of the mean score. This increase in general life satisfaction does not come from increased satisfaction with the job. While we cannot shed light on the mechanisms behind this result, there are a few potential explanations.

First, fathers taking more leave in the early years of a child's life can improve the development and well-being of children. Since parents care about the well-being of their children, this positively impacts life satisfaction of parents. In addition, the better bond between father and child – as a consequence of the increased time fathers' spent with their children due to the leave taking - may improve fathers' life satisfaction. Second, parental leave taken by fathers may lead to a more equal division of caring tasks in the long run, for instance because of habit formation. This can affect particularly mothers, who usually take a larger share of the home production and caring tasks. Our finding that the increased life satisfaction is stronger for mothers is in line with this reasoning.

This paper holds an important policy implication. Much of the research on the effects of paternity leave quota is ambiguous about the answer to the question whether paternity leave should be more extensive. This paper shows a positive long run impact on life satisfaction, and thereby provides an additional reason to extend paternity leave options.

Future research can build on this paper in several ways. First, (administrative) data containing the exact date of birth – instead of year of birth that we have – would further alleviate the concerns of manipulation of families to become eligible for the policy. Second, we study the impact of paternity leave in the Nordic countries and in Germany. Since these countries have already the most generous family leave policies in the world it would be interesting to see to what extent our findings generalize to countries that have less generous leave policies. Third, exogenous variation in the generosity of the paternity leave quota – e.g. from local experimentation – would alleviate the concern that the policy timing and details are set endogenously.

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Appendix

Table 1: Balance-table: By age-group

	<u>+/- 3 years from policy</u>		<u>20 – 30 years</u>		<u>30 – 40 years</u>		<u>40 – 50 years</u>		<u>50 – 60 years</u>	
	Treated: Mean (SD)	Control: Mean (SD)	Treated: Mean (SD)	Control: Mean (SD)	Treated: Mean (SD)	Control: Mean (SD)	Treated: Mean (SD)	Control: Mean (SD)	Treated: Mean (SD)	Control: Mean (SD)
Respondent's age²¹	41.601 (8.351)	42.960 (9.244)	25.051 (3.147)	25.146 (3.204)	34.712 (3.148)	35.256 (3.168)	44.668 (3.169)	45.103 (3.172)	54.429 (3.151)	55.053 (3.153)
Obs.	591	678	3,092	11,188	2,838	14,143	2,249	16,619	1,463	17,721
Male	0.489 (0.500)	0.513 (0.500)	0.527 (0.499)	0.465 (0.499)	0.536 (0.499)	0.454 (0.498)	0.555 (0.497)	0.454 (0.498)	0.560 (0.497)	0.456 (0.498)
Obs.	595	682	3,092	11,188	2,838	14,143	2,249	16,619	1,463	17,721
In paid work of any kind	0.869 (0.338)	0.836 (0.371)	0.666 (0.472)	0.659 (0.474)	0.832 (0.374)	0.807 (0.395)	0.844 (0.363)	0.817 (0.387)	0.781 (0.414)	0.701 (0.458)
Obs.	595	682	3,092	11,188	2,838	14,143	2,249	16,619	1,463	17,721
Nr. of children	2.047 (0.842)	2.133 (0.906)	1.417 (1.081)	1.456 (0.875)	1.841 (0.906)	1.873 (0.997)	2.052 (0.794)	2.100 (1.005)	1.871 (0.789)	2.185 (1.059)
Obs.	595	682	429	2,732	1,450	9,608	986	13,508	272	15,095
Immigrant	0.129 (0.336)	0.111 (0.315)	0.107 (0.309)	0.080 (0.272)	0.135 (0.342)	0.116 (0.321)	0.113 (0.317)	0.102 (0.303)	0.101 (0.301)	0.089 (0.284)
Obs.	595	682	3,089	11,178	2,835	14,129	2,249	16,611	1,462	17,710
Level of education (respondent)²²	3.901 (3.320)	3.777 (3.154)	3.710 (3.514)	3.506 (2.856)	4.327 (3.463)	3.709 (4.327)	4.683 (4.092)	3.491 (2.831)	4.400 (4.485)	3.372 (2.930)
Obs.	593	678	3,078	11,167	2,827	14,121	2,242	16,594	1,453	17,692
Level of education (partner)²²	5.131 (3.496)	4.968 (3.592)	4.646 (2.485)	4.363 (2.663)	5.082 (3.220)	4.627 (3.131)	4.967 (2.603)	4.401 (3.002)	5.071 (5.588)	4.181 (3.017)
Obs.	260	252	689	1,751	1,299	4,459	1,280	5,573	798	6,357
Life-satisfaction	8.024 (1.631)	7.913 (1.711)	7.854 (1.582)	7.433 (1.806)	7.953 (1.584)	7.389 (1.880)	7.726 (1.641)	7.239 (1.954)	7.555 (1.796)	7.071 (2.058)
Obs.	595	678	3,088	11,123	2,834	14,068	2,243	16,514	1,459	17,604
Job-satisfaction	7.444 (1.808)	7.542 (1.901)	7.304 (2.061)	7.088 (2.204)	7.321 (1.979)	7.153 (2.157)	7.313 (2.019)	7.216 (2.108)	7.406 (2.075)	7.261 (2.111)
Obs.	369	454	1,874	6,534	1,911	9,293	1,491	10,869	951	9,973
Work-life balance	6.363 (2.213)	6.291 (2.254)	6.346 (2.333)	6.267 (2.323)	6.231 (2.278)	6.188 (2.339)	6.290 (2.309)	6.248 (2.289)	6.484 (2.257)	6.395 (2.249)
Obs.	369	454	1,872	6,506	1,916	9,253	1,492	10,833	953	9,930

²¹ Calculated by subtracting year of birth from year of the interview

²² International Standard Classification of Education (ISCED): 1 = less than lower secondary, 7 = higher tertiary education.

Table A2: Robustness-test: Life-satisfaction and work-life balance with the same sample as for job satisfaction.

	Life-satisfaction	Job-satisfaction	Work-life balance
DiD, controls & country FE	0.1563*** (0.0539)	0.0993 (0.0631)	0.0499 (0.0635)
R²	0.2613	0.0473	0.0445
Add population and design weights^b	0.1463*** (0.0476)	0.0435 (0.0701)	0.0122 (0.0769)
R²	0.2598	0.0319	0.0414
DiD, controls, country FE & nr_days_quota^c	0.1551*** (0.0650)	0.0552 (0.0760)	0.0168 (0.0764)
R²	0.2613	0.0474	0.0445
Observations	28,110	28,110	28,110

Notes: the coefficients are from different regression. Robust standard errors are shown in parentheses. The dependent variables are the life-satisfaction, job-satisfaction and work-life balance scores.

a. Control variables are: age of the respondent, age of the child, marital status, household net income, educational attainment of the respondent and educational attainment of the respondent's partner, number of children and a dummy indicator for if the respondent is an immigrant.

b. The population size weights correct for the fact that most countries taking part in the ESS have different population sizes but similar sample sizes, while the design weights correct for the fact that in some countries respondents have different probabilities to be part of the sample due to the sampling design used. We also include the individual controls and country FE.

c. We add a control for number of days of the (increase in) paternity leave quota.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A3: Effect on Well-being (full sample, including placebo and treatment)

		Life-satisfaction	Job-satisfaction	Work-life balance
DiD, controls & country FE	Treatment	0.1698***	0.0867	0.0327
		(0.0496)	(0.0644)	(0.0631)
	Placebo	0.0278	0.0929	0.0036
		(0.0652)	(0.0929)	(0.0905)
R²		0.2781	0.0474	0.0432
Add population and design weights^b	Treatment	0.1558***	0.0761	0.0263
		(0.0371)	(0.0586)	(0.0634)
	Placebo	0.0307	0.0944	0.0065
		(0.0423)	(0.0883)	(0.0926)
R²		0.2756	0.0319	0.0402
DiD, controls, country FE & nr_days_quota^c	Treatment	0.1790***	0.0461	0.0039
		(0.0572)	(0.0767)	(0.0754)
	Placebo	0.0289	0.0868	-0.0001
		(0.0652)	(0.0932)	(0.0906)
R²		0.2781	0.0474	0.0432
Observations		65,255	28,247	32,905

Notes: the coefficients are from different regression. Robust standard errors are shown in parentheses. The dependent variables are the life-satisfaction, job-satisfaction and work-life balance scores.

a. Control variables are: age of the respondent, age of the child, marital status, household net income, educational attainment of the respondent and educational attainment of the respondent's partner, number of children and a dummy indicator for if the respondent is an immigrant.

b. The population size weights correct for the fact that most countries taking part in the ESS have different population sizes but similar sample sizes, while the design weights correct for the fact that in some countries respondents have different probabilities to be part of the sample due to the sampling design used. We also include the individual controls and country FE.

c. We add a control for number of days of the (increase in) paternity leave quota.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.