Impact of Parental Leave Reform on Fertility in Finland

Master's Degree Programme in Inequalities, Interventions and New Welfare State
Department of Social Research
Faculty of Social Sciences
Master's thesis

Author:

Sumia Akter

Supervisor(s):

Dr Simon Chapman

Dr Sanni Kotimäki

Dr Satu Helske

Dr Mirkka Danielsbacka

26.04.2023

Turku

Master's thesis

Subject: Master's Thesis
Author(s): Sumia Akter
Title: Impact of Parental Leave Reform on Fertility in Finland
Supervisor(s): Dr Simon Chapman; Dr Sanni Kotimäki; Dr Satu Helske and Dr Mirkka Danielsbacka
Number of pages: 27 pages
Date: 26.04.2023

Abstract

This study examined the impact of the parental leave reform of 2013 and aimed at the reform had a positive effect on the timing of having another child. Finnish register data was used to determine the impact of policy reform on fertility timing among the post-reform group. Discrete-time event history method was followed by natural experimental design in a quasi-experimental setting. The pre- and post-reform groups were divided based on the birth month of the reform child where birth is a random natural event and thus, follows natural experiment. In the group division, the researcher made the assignment criterion (quasi-experimental approach) to assign them to the control and treatment groups. The total sample size was 16764, including 8315 pre-reform births and 8449 post-reform births. Time was measured in months, and individuals were followed until 60 months to record subsequent childbirth. The result of the study found a significant increase in father's total days of leave uptake in the post-reform group. However, the non-significant reform effect and no difference in birth timing in the treatment group were observed over the follow-up period. The key findings of the study could not meet the proposed hypothesis. This study measured an aspect of fertility and explored that the policy reform had no direct effect on the timing of childbirth, which will help the policymakers and researchers to understand the exception of the Finnish context.

Keywords: Father's leave, Policy reform, birth timing, reform child, subsequent child, Finland.

1. Introduction

The declining trend of fertility in Europe has been the primary focus of fertility studies during the past two decades (Vignoli, Guetto, Bazzani, Pirani & Minello, 2020; Fahlén & Oláh 2018; Hoorens et al., 2011). At that time, the relatively high and steadily increasing fertility rate in Nordic countries focused attention on these nations' family policy initiatives (Comolli, 2021). The main aim of the family policy of the Nordic welfare states is gender equality (Eerola, Lammi-Taskula, O'Brien, Hietamäki & Räikkönen, 2019), and studies suggest that father's considerable active role in childrearing, parental leave benefits in earnings, and continued labor participation are also positively associated with extended fertility (Duvander, Lappegard & Johansson, 2020). The influence of different family policies not only achieves their primary goals but also affects other aspects of life.

Since the Nordic states have generous family policy benefits, they have been experiencing a sharp decrease in birth rates from 2010 (Comolli, 2021; Vignoli et al., 2020). The concerns for fertility decline arise when low birth rates lead to a rapidly aging population and a threat to population decline at the country level (Thomas, Rowe, Williamson & Lin, 2022). In the short period, low fertility rates increase per capita income by reducing the financial burden of raising children and increasing the proportion of the working-age population (Bloom, Canning, Fink & Finlay, 2010). However, the available workers will decrease when the working-age population enters retirement. Consequently, the economic benefits of reduced youth dependency for those nations will be outweighed in the long run by the costs of supporting an aging population (Bloom et al., 2010). European policymakers are concerned about the effect of the sharp declining birth rate on the overall future population growth and the increasing aging population (Thomas et al., 2022).

Gender inequality in the home and workplace (Thomas et al., 2022) and economic uncertainty (Comolli, 2021; Vignoli et al., 2020) are one of the leading causes of fertility decline. Family policies that promote gender equality, according to demographic theory, may increase fertility rates in postindustrial society (Duvander et al., 2019). Welfare policies follow a gender-equal agenda, offer friendly leave benefits, and encourage couples in childbearing and rearing (Hart, Andersen & Drange, 2021; Baizan, Arpino & Delclòs, 2016). The family policy in Nordic countries is quite similar, including a unique parental leave scheme (Koslowski, Blum, Dobrotić, Kaufman & Moss, 2022), subsidized child care, and other forms of financial support for families (Eerola et al., 2019). Nordic welfare states have earned a reputation for offering the world's most generous paternity leaves (Moss & Deven, 2015). In the parental leave scheme, significant changes were made to fathers' involvement in childcare, while widespread acceptance of male parenting is observed in those countries (Eerola et al., 2019).

Some previous research tried to determine the effect of parental leave reform on continued childbearing, and they found mixed results. Duvander, Lappegard & Johansson (2020) conducted research on public policy and parental leave's impact on childbearing and emphasized that increasing the financial and parental support available to families will encourage more births. Duvander et al. (2019) studied parental leave policy and how it affects continued childbearing in three Nordic countries (Iceland, Norway, and Sweden). They found a positive association between the father's leave use and subsequent birth. Besides, a study on introducing the 'daddy quota' to Norwegian fathers found no significant impact on fertility (Cools, Fiva & Kirkebøen, 2015).

Earlier in Finland, home and child care were practiced by female individuals (Berg, Miettinen, Jokela & Rotkirch, 2020), and the leave policy was mainly maternity-centered (Lammi-Taskula & Salmi, 2014). Nowadays, the higher educational attainment of females and then joining to

workplace are reasons behind the late family formation and delay in having children (Berg et al., 2020). To some extent, childlessness occurs when women have to leave career opportunities due to long breaks in childbearing and rearing (Kuitto, Salonen & Helmdag, 2019; Jenni, 2007). The political agenda and family policy are trying to equalize home and workplace responsibilities so that fathers can also involve in family management and mothers can continue participating in the labor market (Eerola et al., 2019; Lammi-Taskula & Salmi, 2014). In 1978, Finland was the first country to introduce paternity leave (Eerola et al., 2019). In 2003, Finland introduced two bonus weeks for fathers to use parental leave; however, it encouraged a small proportion to effectively use their leave offers (Mussino, Tervola & Duvander, 2019).

Several parental leave reforms have been made in Finland over the previous decades to encourage equity in leave eligibility and use (Mussino, Tervola & Duvander, 2019). In 2013, Finland introduced the bonus weeks offer for fathers by establishing a father's quota or non-transferable parental leave (Saarikallio-Torp & Miettinen, 2021; Eerola et al., 2019; Mussino, Tervola & Duvander, 2019). Before the reform, father's bonus leave right was depend on mother's consent (Lammi-Taskula & Salmi, 2014). The Finnish leave scheme comprised three types of leaves- paternity, shareable parental, and care leave; with high compensation for earning loss (Eerola et al., 2019; Lammi-Taskula & Salmi, 2014). After the policy reform of 2013's, a significant increase in fathers' leave-taking is observed among fathers (Eerola et al., 2019).

The aim of the study is to find out the reform's effect on fertility timing by using Finnish register data. With the help of the data source, it is possible to study the full population through natural experimental research design. Natural experimental designs are the best-recommended approaches to identify the policy reform effect (Leatherdale, 2019; Ekberg, Eriksson & Friebel,

2013). Along with, no study in Finland has been found that explore whether post-reform families had additional birth within short birth interval in that research setup.

2. Theoretical Background

Countries with low fertility rates try to offer extensive leaves to couples (Koslowski et al., 2022) which helps them to balance work and family life in childbearing and rearing. Theoretical explanation of leave allocations and its effects are discussed in this section.

Work-life balance and financial stability: The systematic review article of Thomas et al. (2022) justified how leave affects fertility. Governments offer parents different types of leaves to spend time with the newborn and share the responsibilities equally, ensuring job security (Lalive & Zweimüller, 2009). Regardless of losing some income for a shorter period, it has been estimated that leave can reduce the overall cost of childrearing (Thomas et al., 2022).

The authors also described how different leave schemes affect the fertility decision of individuals. Maternity leave allows women to prioritize their health and their children's. Furthermore, it enables them to stay employed, avoid long-term wage penalties, and not be trapped in domestic activities for extended periods. On the other hand, paternity leave encourages men to actively participate in family and childcare, thus minimizing gender inequality in the home and workplace. Sharing care and gender-balanced leave facility leads to greater partner satisfaction, thereby increasing subsequent birth (Thomas et al., 2022).

Based on the gender equity theory, McDonald (2006) emphasized that the reason behind low fertility in some developed countries could be the different practices at home and outside. While a country practices a male breadwinner in family structure, on the other hand, gender equality model in public institutions like education and employment (McDonald, 2006). Researchers argue that the imbalance between family life and work raises career ambiguity as

well as the risk of domestic obligations (Baizan et al., 2016; Duvander et al., 2016). Eventually, this uncertainty between career and family interrupts the fertility decision of a woman and leads to a low birth rate over the last two decades (Baizan et al., 2016; Duvander et al., 2016).

3. Previous Research

In many European countries fertility level is significantly lower than the replacement level (Thomas et al., 2022). Inequality between men and women in the division of labor in the home and the workplace has been identified as a major factor in the decline in birth rates (Thomas et al., 2022). Nordic countries are known as the model states in discussions about gender equality and fathers' friendly leave policies. Swedish fathers were the first in the world to receive paid leave from 1974, and their counterparts in the other Nordic countries quickly followed suit (Cederström, 2019). Several studies try to identify different angles of such generous leave policies of Nordic states and their impact on society. Prior research studies, particularly on fathers' leave uptake and policy reform on 'father's quota,' are reviewed in this literature section.

Hart, Andersen & Drange (2022) conducted their study on a Norwegian paternity quota reform where fathers' leave was extended from 6 to 10 weeks. The study findings reveal that fathers took longer leaves, and the leave uptake also increased after the reform (Hart et al., 2022). However, they found no significant impact on fertility, union stability of partners, and the propensity of a marriage of cohabiters by the change of policy reform (Hart et al., 2022). On the other hand, Duvander, Johansson & Lappegard (2016) found increasing birth risk among low-income couples in Sweden. They also reported that different usages of the father's quota had no association with continued fertility in Norway (Duvander et al., 2016). Based on the results, authors pointed out that reforms are more likely to have a gradual, long-term impact on individuals' behavior which is less likely to affect the decision directly (Duvande et al., 2016).

The previous literature shows mixed results of father's leave uptake and its impact on fertility (Thomas et al., 2022). Specifically, the studies conducted on fathers' leave uptake also provide evidence of positive, negative, and no effects on fertility. Prior research on Iceland, Norway, and Sweden indicates a higher risk of second birth in all these three countries where the father takes leaves (Duvander et al., 2019). Interestingly, another study in Spain found a negative association between extended fathers' leave reform and continued childbearing (Farre & Gonzalez, 2019). In addition, older women aged 30 years or older had fewer subsequent children (Farre & Gonzalez, 2019). The authors explained the exceptional situation of Spain that reduced fertility after the change, maybe because of a shift in priorities from having more children to having few with better care (Farré & González, 2019). Whether Cools found no effect on fertility after 14 years of introducing paternity quota in Norway (Cools et al., 2015). They also noted that the research design of such studies is important to determine the reform's anticipatory effect (Cools et al., 2015).

Some studies focused on the total amount of leave uptake and the factors that influence the leave-taking of the father. It is also important to identify the influencing factors that hinder the achievement of the ultimate goal of the policy. Statistics show Finnish fathers used only 9 percent of their available parental leave in 2012 (Lammi-Taskula & Salmi, 2014). Eerola et al. (2019) studied Finland's unique leave reform of 2013 to analyze the motivations and obstacles of leave-taking. The study found that most fathers took some leave, and only a few (20 percent) did not take any leave after implementing the new reform (Eerola et al., 2019). Among the individual characteristics, the authors explored work-life position and being an ethnic minority member significantly related to the leave uptake of fathers. At the same time, the father's age, education level, and health were not related whether family characteristics, including parents' education level, family income, and the number of children, were associated with taking more paternity leave (Eerola et al., 2019).

Relatively few studies covered father's leave aspects in Finland, and the existing studies mainly analyzed the leave use. No study identified the anticipatory effect of how the father's quota reform affects the timing of subsequent birth. This study uses quasi-experimental approach to fill the knowledge gap and explore the policy reform's impact on fertility. Thomas et al. (2022) noted that changes in leave policies could be reliably identified in studies with quasi-experimental designs. With the most suitable research design, this study will test the following hypotheses-

H 1. Parental leave reform positively affects the probability of having another child.

H 2. The effect of the reform increases the likelihood of having another child sooner.

4. Finnish Parental Leave System and 2013's Reform

In 2013, Finland implemented a significant parental leave policy reform aimed at promoting gender equality and supporting working families (Eerola et al., 2019). The new policy extended the duration of parental leave and increased the share of leave that fathers can take.

Before the reform, in 2003, if the father took the final two weeks of parental leave, he received an additional two-week leave bonus; this was increased to four weeks in 2010. The combined period of maternity, paternity and parental leave was 44 weeks, with an additional four-week bonus if father took the last two weeks of parental leave. All the entitled leave benefits available for couples consisted of transferable parental leave (Lammi-Taskula & Salmi, 2014).

In the 2013 reform, the old paternity leave and the father's quota were combined into a nine-week paternity leave, also known as 'Use it or lose it' (Moring & Lammi-Taskula, 2021; Eerola et al., 2019), where the father can take three-week leave at the same time with the mother (Moring & Lammi-Taskula, 2021). This incentive has successfully encouraged more fathers to take leave and play a more active role in child-rearing (Eerola et al., 2019).

Three different leave packages (Eerola et al., 2019; Lammi-Taskula & Salmi, 2014) were offered to the fathers under the Finnish fathers' parental leave reform are mentioned below-

1. A total nine-week of paternity leave, "Use it or lose it," can also be taken simultaneously with the mother for three weeks, comprising post-birth leave (known as 'Simultaneous paternity leave'); The rest six weeks can be taken individually, known as 'Individual paternity leave,' until the second birthday of the child (Eerola et al., 2019).

2. A total of 26 weeks of parental leave, which is shareable and starts after maternity leave (Eerola et al., 2019, p. 2; Lammi-Taskula & Salmi, 2014); and

3. Lastly, care leave is also shareable and can be taken until the child's third birthday (Eerola et al., 2019). Childcare leave differs from parental leave as parental leave allows parents to take care of the newborn child, whereas care leave can be taken to look after the child once the period of parental leave ends.

The policy reform has had several potential benefits for families and society. First, it has promoted gender equality by encouraging more fathers to take parental leave, thereby reducing the burden on mothers and promoting an equal sharing of childcare responsibilities. Second, the longer duration of leave has allowed parents to spend more time with their children during the early years of development, which can have long-term positive effects on children's well-being and development. Finally, the policy has supported working families by giving them greater flexibility in managing their work and family responsibilities.

5. Data

Finnish register data is used in this study to determine parental leave reform's impact on timing of the probability of having subsequent children. These registers include all the basic information, for example- marriage, birth, death etc., of its citizens and foreigners living in Finland for the long or short term (Digital and Population Data Services Agency, 2023). Using the national register as a panel data source, it allows for analyzing the largest possible population.

This study focused on the parental leave reform of 2013 and its impact on time to the next additional birth(s). Based on the birth month of reform child, a pre-reform and post-reform group were designed in this study. The researcher selected the selection criteria to assign individuals to these two groups, so a quasi-experimental approach was followed in the assignment. The pre-reform group was formed when there was a birth in December 2012 or January 2013. Though the reform came into effect in January 2013, the eligibility to receive the new reform benefit was determined by the time when maternity leave started. More clearly, if a child's due date was in January 2013, the maternity leave started before the reform. So, the childbirth was recorded in the pre-reform or the control group. On the other hand, the post-reform formed based on the birth of reform children after the parental leave reform took place.

Every individual was followed until 60 months, and the subsequent births or the birth of the reform child's younger siblings were recorded in the dataset. The average interbirth interval between siblings is relatively short (below 27 months) in Finland (Berg & Rotkirch, 2014), so the follow-up period would capture a substantive part of the subsequent childbirth. The total number of observations was 523,874 months. The total sample size was 16,764 based on reform births, 8315 pre-reform, and 8449 post-reform births counted. The pre-and post-reform

measurements will help to compare subsequent children's birth timing before and after the reform.

Censoring started for individuals who were no longer cohabiting with the same partner. In other words, partners who were separated or divorced during the follow-up period were censored at the time of their separation. Parental leave could have a positive effect on the risk of separation (Avdic & Karimi, 2018; Lammi-Taskula, 2007), and a short birth interval between siblings is significantly associated with the likelihood of parental divorce in Finland (Berg et al., 2020). Naturally, separation or divorce of partners increases the gap in the probability of having subsequent children, where re-partnering longer the gap. Because it takes time to engage in a trustworthy relationship to plan for having children. To keep the study simple within the same parenting, only the same registered partners are included in this study. Also, the individuals are censored if the mother's age reaches 51 or over (the median age of menopause in Finland) (Luoto, Kaprio & Uutela, 1994). Furthermore, after reaching up to 60 months, all the individuals are censored. In total, 1528 individuals were censored at the end of the follow-up period.

6. Method and Variables

This study uses discrete-time event history analysis in a natural experimental setting to investigate the time to have subsequent children. Natural experimental design is suitable for this study as births are random events. Also, it is the best research design to capture the actual and clean effect of policy reform (Ekberg, Eriksson & Friebel, 2013). The event of interest was birth, and individuals entered the risk set when a focal child or reform child was born. The event variable was binary and coded as 0, 1. When there was a birth of a subsequent child (event), it was coded as 1; otherwise, 0.

The metric for the time was 'month,' and in the 60-month follow-up period, the first nine months were excluded. Assuming immediate conception following the birth of the reform child, it would take nine months to gestate the next child, and no births would occur in this nine-month period.

The main independent variable is policy reform, a dichotomous variable coded as 'pre = 0' and 'post = 1'. The logit regression model is applied in this study to assess the policy reform's impact on the timing of the likelihood of having subsequent children. STATA 16.1 is used for all the statistical analyses, and the significance level is set at $\alpha = 0.05$.

The basic model specification as follows:

$$\log(P(t)/1- P(t)) = \beta_0(t) + \beta_1 (\text{Treatment})_i \qquad (1)$$

In the discrete-time model, the hazard rate, denoted by P(t), is the conditional probability that a certain individual will give birth at a certain time (t). The set of constants represent by β_0 depends on time; β_1 estimates the effect of reform (treatment) on the outcome.

Figure 01: Causal path

The above figure 01 shows the causal path that presents how leave reform of 2013 affects fertility. Parental leave reform in 2013 made change in the total amount of father's leave which only was reserved for father's. In this study, the expectation is- the reform will affect the total leave uptake, particularly the fathers. Thus, the extended leave use might affect the fertility decision of couples to have another children within a short birth interval.

Some descriptive statistics were calculated (table 1), including mother's age at birth, number of children in the family, household income (household disposable income of previous year), the proportion of fathers who did not take any leave, father's days of leave uptake (excluding who did not take leave at all), and the level of parental education to check the similarity between the control and the treatment group at the time of birth of the focal child. The 'Highest level of parental education' is a categorical variable in all these descriptive variables and is categorized on ISCED scale of 3-8 (International Labor Organization, 2023). Scale 1 and 2 represent the level of primary and lower secondary education (ILO, 2023). Primary and lower secondary education is compulsory for all residents in Finland (Finnish National Agency for Education, 2023), so the first two levels were excluded from this study.

According to ILO (2023) classification, ISCED scale 3 refers to upper secondary education, 4 = post-secondary non-tertiary education, 5 = short-cycle tertiary education, 6 = Bachelor's or equivalent level, 7 = Master's or equivalent level, 8 = Doctoral or equivalent level. In descriptive statistics, the educational level was categorized into 'lower educated,' 'higher educated,' and 'other.' Among the lower educated group, educational attainment of the non-tertiary levels was included (scale 3 & 4); among the higher educated groups, the tertiary education levels were merged (scale 5-8). Whereas there were some other couples who studied abroad (outside Finland), included in the category of 'other.'

Two models were fitted to analyze the estimated hypotheses for the study, as with event history analysis both hypotheses can be tested (table 2). Model 1 included the main estimation of the time to birth, and model 2 estimated the main effect by adding some control variables. In addition, figure 2 shows the interaction effect, where reform interacting with the months since last birth, and the quadratic time interaction with reform. The likelihood test was also estimated

to compare the main and interaction effects. However, further statistical analysis with interaction did not fit the data better according to the likelihood ratio test.

7. Results

Descriptive Statistics:

Table 1 presents the descriptive statistics of the number of additional children, number of reform children and some other family characteristics along with father's leave uptake. In the pre-reform group, the additional number of childbirths was 3,485 (42%) where the total number of sample birth of reform child was 8,315. On the other hand, in the post-reform group, the additional number of births in the following period was 3,486 (41%) and the total reform birth was 8,449.

To check the similarity of the two groups, some relevant variables were calculated at the time of the birth of the reform child. Mothers' mean age of childbirth was found to be around 30 years in the study, and the average number of children was about 2 in both groups. The average household income (yearly) was 48,593 euros in the pre-reform group, whereas the average household income in the post-reform group was 50,187 euros. Additionally, most of the parents' educational attainment was higher in both groups. Higher educated parents in the pre-reform group were 56 percent; in the post-reform group, the percentage was 58.

Moreover, the father's leave uptake was calculated at the time of the reform child's birth. About 25 percent of fathers in the pre-reform group did not take any leaves at all, whereas the percentage is lower for the post-reform group (24%). After excluding the observations who did not take any leaves, the median days of father's leave uptake was also lower among the fathers of the control group (16 days) than the treatment group (20 days). So, it can be said that the reform had an effect on the overall leave uptake of father in the treatment group as expected.

Table: 1 Descriptive Statistics

Variables	Reform Group			
	Pre		Post	
	Observations	(%)	Observations	(%)
1. Number of subsequent births	3,485	42.0	3,486	41.0
2. Number of reform child births	8,315	49.0	8,449	51.0
3. Mean age of mother (At childbirth) _in years	30.48		30.69	
4. Average number of children	1.98		1.98	
5. Yearly household Income (Average)_in euro	48,593		50,187	
6. Highest level of parental education (%)				
Lower educated (3 &4)	39.0		38.0	
Higher educated (5-8)	56.0		58.0	
Others	5.0		4.0	
7. Father taking no leaves (%)	25.0		24.0	
8. Father leave uptake (Median) _in days	16		20	

N:B: Only variable no. 1 was calculated at the time of the subsequent child's birth; the rest of the variables (no. 2-8) was calculated at the time of the birth of the focal child.

Parental Leave Reform Effect on Fertility:

Table 2 shows the logit regression result to determine the reform effect on the likelihood of having additional children. The estimate of model 1 presents the odds ratios and found that there was no significant reform effect on the probability of having additional children. The non-significant effect size of reform and birth was close to 1 (OR = 0.97, p = 0.172), suggesting no effect. In model 2, the control variables were added to the model so that the both pre and post groups remained similar in the analysis. After including the control variables, the model was also statistically insignificant (OR = 0.98, p = 0.418).

Table 2: Modelling logistic regression on the parental leave reform effect and timing of subsequent childbirth

Birth	**Model 1**	**Model 2**
	Odds Ratio (SE)	**Odds Ratio (SE)**
Time Variable	1.195 (.007)	1.190 (.007)
Time Variable#Time Variable	0.997 (.000)	0.997 (.000)
Reform_(Post)	0.968 (.023)	0.980 (.024)
Number of children		1.303 (.009)
Mother's age at birth		0.913 (.003)
Level of education		1.085 (.008)
Household income		0.999 (5.51e-07)
Baseline Odds	0.001 (.000)	0.007 (.000)
p	<0.05	<0.05

***p<0.001; Reference category = pre-reform*

In addition, an interaction between the time variable (timing of birth) and reform was followed to check for further statistical significance (Figure 2). The interaction effect was not significant; and the timing of birth or birth spacing also did not vary between the reform groups. The two groups' birth interval to have additional children were similar over the study period. So, this study's main and interaction effects could not meet the predicted hypotheses. The non-significant result and the similar timing of birth in both groups suggested that there is no reform effect on the timing of having another child.

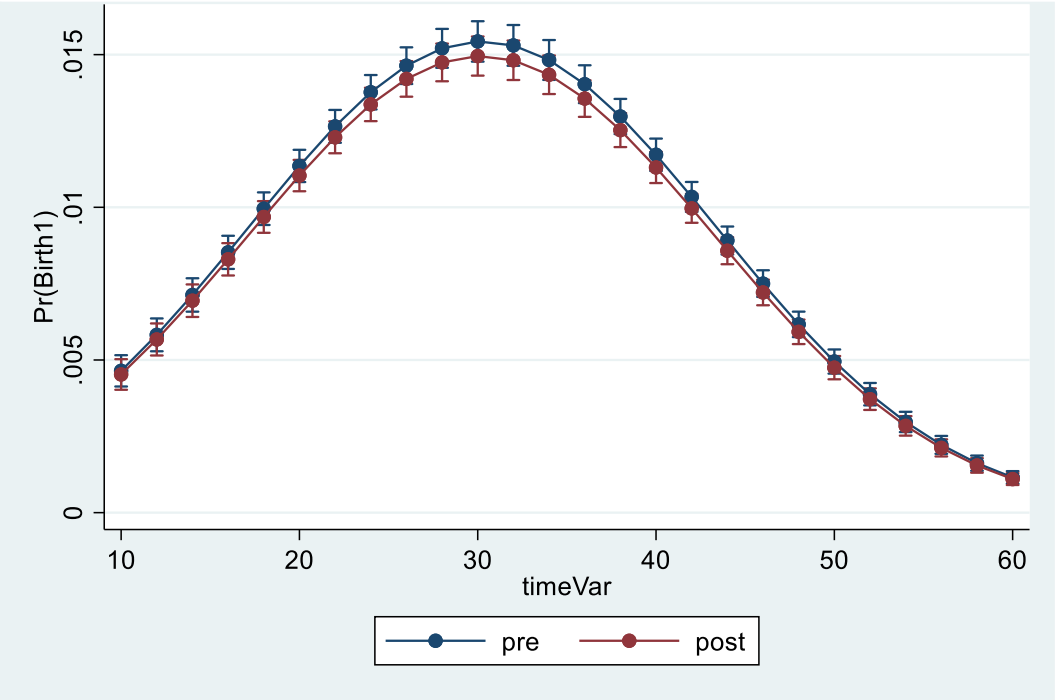

Figure 02: Interaction between birth timing and reform groups on the probability of subsequent birth (with 95% CIs)

8. Discussion and Conclusion

This study follows natural experimental design to capture the actual policy reform impact on extended fertility. Natural experiment is one of the best research designs to determine reform's effect on the outcome variable (Leatherdale, 2019; Ekberg, Eriksson & Friebel, 2013). The study finding shows that the policy reform has an expected impact on father's total days of leave uptake. The higher amount of leave days uptake of fathers in the treatment group and the few numbers who are not taking any leave indicates the reform's practical effect. Previous evidence also supports the findings that father's leave uptake significantly increases after introducing the 'father's quota' in Finland (Eerola et al., 2019). However, this estimation does not support the proposed hypothesis of this study.

The main result finds a non-significant effect of the policy reform and no difference between the pre-and post-reform groups in the timing of the birth of the focal child's younger sibling(s). The study's key finding is unable to meet the predicted hypotheses that the reform has a positive effect on having additional children and the birth spacing between childbirth is small in the treatment group (Hypothesis 01 and 02). Though the study demonstrates no reform effect on fertility, it does not mean the reform had no effect on other aspects of the life course.

Sometimes, the policy reform effect is not straightforward to measure the immediate impact on individual life and fertility decisions. A prior study in Norway also found no reform effect on fertility in their study (Cools et al., 2015). Whereas a positive effect is found in Iceland, Norway, and Sweden by Duvander and her colleagues (2019). Though this study follows the best suitable natural experimental research design to explore the practical effect of the reform, it is not always obvious to conclude with a significant result. The non-significant result in this study allows future researchers to reinvestigate the exception of the Finnish society, which differs from the findings of Duvander et al. (2019) in other Nordic states.

Here, the theoretical argument of gender equality in the home, the employment sector, and the decision to have subsequent children (Thomas et al., 2022) might be helpful in explaining the study findings. Finland is moving forward to a more gender-balanced society from the traditional male-dominating society (Lammi-Taskula & Salmi, 2014). The new political agenda and leave reforms are imposing to make the situation more equal at home and workplace (Eerola et al., 2019; Lammi-Taskula & Salmi, 2014). In this study, fathers of the post-reform group took longer leave days, and it can be emphasized that they are gradually motivated and involved in family and child care. On the other hand, no reform's effect on the likelihood of having additional children could be that the study only focused on fertility timing. There may be other effects of the reform that were not investigated here.

The parental leave reform was not aimed at increasing childbirth in a short birth spacing; it has been hypothesized that better parental leave benefits would increase fertility, and also such an effect was found in other Nordic countries. However, the study found no effect of the reform on the whole population, which might differ in sub-population-group, such as among the different educational levels of parents and household income levels, which are yet to be explored.

In addition, this study is not beyond some limitations; first of all, the study tries to capture the immediate effect of the reform. Sometimes the effect of policy changes is indirect and takes longer time to affect people's fertility decisions finally. Due to the lack of updated data on the register, this study limits its sample until 2018. Even though the study could capture a substantive sample size because Finland's interbirth birth spacing is shorter (Berg & Rotkirch, 2014). Second, instead of the due date of the birth of the focal child, the birth month is used to distinguish the control and treatment groups. It is possible for premature births to fall into the wrong group. However, the number of premature births in Finland has been very low and

relatively stable in recent decades (Nordic perinatal statistics, 2020), so this shortcoming will not considerably influence the result of the study. Furthermore, the control and treatment groups are shown to be identical to compare in the time of reform child's birth, although they can only vary on the father's total leave uptake. Further, these groups can vary by anything, such as family characteristics, father's leave use, etc.

In conclusion, it can be emphasized that an important difference was found in the father's leave uptake, where the fathers of the post-reform group took longer leaves. This research also clearly illustrates no effect of the 2013's reform in increasing fertility or having additional children in a short birth spacing in the post-reform group. Since both groups follow a very similar trend in the follow-up periods in the birth timing of the subsequent children. In the future, to better understand the study findings and to explore the impact of the other types of reform on fertility, the most recent 2022 reform's effect can be studied. The current reform changes the whole parental leave scheme, and it remains to be seen if the fertility results come out the same. In Finland, this study is the only evidence found on this ground; undoubtedly, the research findings are noteworthy to policymakers and other researchers to understand the true effect of the leave reform on fertility in Finnish society.

References

Avdic, D., & Karimi, A. (2018). Modern Family? Paternity Leave and Marital Stability. American Economic Journal. Applied Economics, 10(4), 283–307. https://doi.org/10.1257/app.20160426

Baizan, P., Arpino, B., & Delclòs, C. E. (2016). The Effect of Gender Policies on Fertility: The Moderating Role of Education and Normative Context. *European Journal of Population*, *32*(1), 1–30. https://doi.org/10.1007/s10680-015-9356-y

Berg, V., Miettinen, A., Jokela, M., & Rotkirch, A. (2020). Shorter birth intervals between siblings are associated with increased risk of parental divorce. *PloS One*, *15*(1), e0228237–e0228237. https://doi.org/10.1371/journal.pone.0228237

Berg, V., & Rotkirch, A. (2014). Faster Transition to the Second Child in late 20th Century Finland: A Study of Birth Intervals. *Finnish Yearbook of Population Research, 49,* 73–86. https://doi.org/10.23979/fypr.48424

Bloom, D. E., Canning, D., Fink, G., & Finlay, J. E. (2010). The Cost of Low Fertility in Europe. *European Journal of Population, 26*(2), 141–158. https://doi.org/10.1007/s10680-009-9182-1

Cederström, C. (2019). *State of Nordic Fathers*. https://doi.org/10.6027/NO2019-044

Comolli, C. L., Neyer, G., Andersson, G., Dommermuth, L., Fallesen, P., Jalovaara, M., … Lappegård, T. (2021). Beyond the Economic Gaze: Childbearing During and After Recessions in the Nordic Countries. *European Journal of Population, 37*(2), 473–520. https://doi.org/10.1007/s10680-020-09570-0

Cools, S., Fiva, J. H., & Kirkebøen, L. J. (2015). Causal effects of paternity leave on children and parents. *The Scandinavian Journal of Economics, 117*(3), 801–828. https://doi.org/10.1111/sjoe.12113

Digital and Population Data Services Agency. (2023). Population Information System. Retrieved March 15, 2023 from https://dvv.fi/en/population-information-system

Duvander, A-Z., Johansson, M. & Lappegard, T. (2016). Family Policy Reform Impact on Continued Fertility in the Nordic Countries. *Stockholm University Linnaeus Center on Social Policy and Family Dynamics in Europe, Stockholm* (Working Paper 2016: 2).

Duvander, A.-Z., Lappegård, T., Andersen, S. N., Garðarsdóttir, Ó., Neyer, G., & Viklund, I. (2019). Parental leave policies and continued childbearing in Iceland, Norway, and Sweden. *Demographic Research, 40*(51), 1501–1528. https://doi.org/10.4054/DemRes.2019.40.51

Duvander, A.-Z., Lappegard, T., & Johansson, M. (2020). Impact of a Reform Towards Shared Parental Leave on Continued Fertility in Norway and Sweden. *Population Research and Policy Review, 39*(6), 1205–1229. https://doi.org/10.1007/s11113-020-09574-y

Eerola, P., Lammi-Taskula, J., O'Brien, M., Hietamäki, J., & Räikkönen, E. (2019). Fathers' Leave Take-Up in Finland: Motivations and Barriers in a Complex Nordic Leave Scheme. *SAGE Open, 9*(4), 215824401988538–. https://doi.org/10.1177/2158244019885389

Ekberg, J., Eriksson, R., & Friebel, G. (2013). Parental leave — A policy evaluation of the Swedish "Daddy-Month" reform. *Journal of Public Economics, 97*, 131–143. https://doi.org/10.1016/j.jpubeco.2012.09.001

Farre, L., & Gonzalez, L. (2019). Does paternity leave reduce fertility? *Journal of Public Economics, 172*, 52–66. https://doi.org/10.1016/j.jpubeco.2018.12.002

Fahlén, S., & Oláh, L. S. (2018). Economic uncertainty and first-birth intentions in Europe. *Demographic Research, 39*, 795–834.

Finnish National Agency for Education. (2023). Basic education. Retrieved March 15, 2023 from https://www.oph.fi/en/education-system/basic-education

Hart, R. K., Andersen, S. N., & Drange, N. (2022). Effects of extended paternity leave on family dynamics. *Journal of Marriage and Family, 84*(3), 814–839. https://doi.org/10.1111/jomf.12818

Hoorens, S., Clift, J., Staetsky, L., Janta, B., Diepeveen, S., Jones, M. M., & Grant, J. (2011). *Low fertility in Europe: Is there still reason to worry?* RAND Corporation. http://www.jstor.org/stable/10.7249/mg1080re

International Labor Organization (ILO). (2023). International Standard Classification of Education (ISCED). Retrieved March 15, 2023 from https://ilostat.ilo.org/resources/concepts-and-definitions/classification-education/

Jenni, K. (2007). Baby and Pay: The Family Gap in Finland. *Labour Institute for Economic Research* (Working paper 2007: 236).

Koslowski, A., Blum, S., Dobrotić, I., Kaufman, G. & Moss, P. (Eds.). (2022). 18th International Review of Leave Policies and Related Research 2022. *International Network on Leave Policies and Research. Research Report.* Retrieved from https://www.leavenetwork.org/fileadmin/user_upload/k_leavenetwork/annual_reviews/2022/Koslowski_et_al_Leave_Policies_2022.pdf

Kuitto, K., Salonen, J., & Helmdag, J. (2019). Gender Inequalities in Early Career Trajectories and Parental Leaves: Evidence from a Nordic Welfare State. *Social Sciences (Basel), 8*(9), 253–. https://doi.org/10.3390/socsci8090253

Lalive, R., & Zweimüller, J. (2009). How Does Parental Leave Affect Fertility and Return to Work? Evidence from Two Natural Experiments. *The Quarterly Journal of Economics, 124*(3), 1363–1402. https://doi.org/10.1162/qjec.2009.124.3.1363

Lammi-Taskula, J. (2007). *Parental leave for fathers? : Gendered conceptions and practices in families with young children in Finland*. Helsinki: Stakes.

Lammi-Taskula, J., & Salmi, M. (2014). *Policy goals and obstacles for fathers' parental leave in Finland*. In Fatherhood in the Nordic Welfare states. Policy Press. https://doi.org/10.1332/policypress/9781447310471.003.0014

Leatherdale, S. T. (2019). Natural experiment methodology for research: a review of how different methods can support real-world research. *International Journal of Social Research Methodology, 22*(1), 19–35. https://doi.org/10.1080/13645579.2018.1488449

Luoto, R. Kaprio, J. & Uutela, A. (1994). Age at Natural Menopause and Sociodemographic Status in Finland. *American Journal of Epidemiology, 139*(1), 64-76. https://academic.oup.com/aje/article-abstract/139/1/64/211486

Mcdonald, P. (2006). Low Fertility and the State: The Efficacy of Policy. *Population and Development Review, 32*(3), 485–510. https://doi.org/10.1111/j.1728-4457.2006.00134.x

Moring, A., & Lammi-Taskula, J. (2021). Parental Leave Reforms in Finland 1977-2019 from a Diversity Perspective. *Social Inclusion, 9*(2), 338–349. https://doi.org/10.17645/si.v9i2.3796

Moss, P., & Deven, F. (2015). Leave policies in challenging times: Reviewing the decade 2004–2014. *Community, Work & Family, 18*, 137-144.

Mussino, E., Tervola, J., & Duvander, A.-Z. (2019). Decomposing the determinants of fathers' parental leave use: Evidence from migration between Finland and Sweden. Journal of European *Social Policy, 29*(2), 197–212. https://doi.org/10.1177/0958928718792129

Nordic perinatal statistics. (2020). Statistical Report 11/2022. Retrieved March 15, 2023 from https://www.julkari.fi/bitstream/handle/10024/144265/Nordic_perinatal_statistic_2020.pdf?sequence=1&isAllowed=y

Saarikallio-Torp, M., & Miettinen, A. (2021). Family leaves for fathers: Non-users as a test for parental leave reforms. *Journal of European Social Policy, 31*(2), 161–174. https://doi.org/10.1177/0958928721996650

Thomas, J., Rowe, F., Williamson, P., & Lin, E. S. (2022). The effect of leave policies on increasing fertility: a systematic review. *Humanities & Social Sciences Communications, 9*(1), 1–16. https://doi.org/10.1057/s41599-022-01270-w

Vignoli, D., Guetto, R., Bazzani, G., Pirani, E., & Minello, A. (2020). A reflection on economic uncertainty and fertility in Europe: The Narrative Framework. *Genus, 76*(1), 28–28. https://doi.org/10.1186/s41118-020-00094-3