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Abstract: Nordic family policies aim to promote a gender equal division of childcare and economic responsibility. In this study we ask how the use of parental leave is related to subsequent childbearing in the Nordic countries. The major arguments for why fathers' participation in parental leave use would increase fertility are that it would ease women's work burden at home and thus improve the compatibility of childrearing and female employment, and that it may also stimulate fathers' interest in children. Using data covering the total population in Iceland, Norway and Sweden, we consider cross-national variations in the relationship between fathers' parental leave use and continued childbearing. Our results show that the risk of second births is higher when the father uses parental leave after the first birth, while the risk of a third birth is lower in this group in Norway and Sweden. We conclude that the two-child norm is closely connected to the norm of fathers being engaged in child rearing, but it is not fully gender equal in the Nordic countries.

Introduction

Many scholars have attempted to explain the relationship between gender equality and fertility trends at the macro level (see for example McDonald 2000; Neyer 2003; Goldscheider et al. 2015; Anderson and Kohler 2015, Esping-Andersen and Billari 2015). These theories typically point to the Nordic countries as forerunners in promoting gender equality; and in implementing social institutions that facilitate the work-family balance for women and for men. One such institution is parental leave, and the association between parental leave policies which aim at gender equality and work-care balance on the one hand and relatively high fertility levels on the other has been noted in research and used to argue for certain politics (McDonald 2000; Neyer 2003; Oláh 2003; Oláh and Bernhardt 2008; Ferrarini and Duvander 2010). Special attention has been given to policies aiming at a gender equal division of both childcare and labor market work, often termed the earner-carer-model. The Nordic countries stand out, both because of their policies towards women and men in the labor market, and because of their focus on fathers' participation in childcare. The Nordic countries were the first countries in the world to introduce a father's quotas of paid parental leave with the specific aim to encourage fathers' early involvement in childrearing, and they have done so with great success (Cools, Fiva and Kirkeboen 2015; Duvander and Johansson 2012; Duvander and Lammi-Taskula 2011; Arnalds, Eydal and Gíslason 2011). The Nordic countries have approximately 20 years of experience with the father's quota, and the fathers' share of leave use is substantial by international standards. This is generally taken as a sign that greater gender equality in employment and care leads to higher fertility (McDonald 2000; Neyer 2003; Goldscheider et al. 2015). But which patterns lie behind the macro-level associations between gender equality and higher fertility in the Nordic countries? How does the association play out at the individual level? Is it really the most gender equal couples who have more children in these countries? The aim of this study is to examine the association between individual fathers' use of parental leave as an indicator of gender equal behavior on the one hand and continued childbearing on the other in three Nordic countries: Iceland, Sweden and Norway. These are the three Nordic countries that have had a father's quota for a substantial period of time. Both Denmark and Finland have been less consistent in reserving time in the parental leave for fathers. We distinguish between fathers who take no leave, those who take only up to the statutory quota, and those who take more than the quota. By scrutinizing the micro level association between the various degrees of gender equal behavior and childbearing in three countries with similar but not identical policies, we bring forth new

insights on what the introduction of such a gender equal family policy may imply for childbearing behavior and fertility development.

The major argument of why a more gender equal parental leave use would increase fertility is that a more equal division in the household would ease women's work burden at home and thus enhance the compatibility of childrearing and female employment, thereby making it easier to realize childbearing plans (Duvander and Andersson 2006; Neyer, Lappegård and Vignoli 2013). Parental leave taken by the father can facilitate a faster return to work for the mother. In addition, shared parental leave indicates a shared responsibility for childcare during the child's first year(s) and signals the father's commitment to share the care of children also later in the child's life (Duvander and Andersson 2006). The father may also become more interested in having more children after becoming more involved in childcare. We argue that the importance of each explanation of the association may be different in different contexts, for different birth orders, and for different uses of father's leave.

Focusing on three Nordic countries, we will consider whether there are cross-national variations in the relationship between parental leave use and continued fertility. The three Nordic countries are similar in many respects, including labor market conditions, women's role in society (including labor force participation), culture, history and – most importantly – family policy arrangements (Eydal and Gíslason 2011). The parental leave systems are broadly based on the same principles, but there are notable differences in the organization of the programs. Furthermore, the father's quota was introduced and expanded at different times and with different lengths or proportions of the total leave. The meaning and consequences of a father's use of parental leave may thus vary. Even though policies have a clear gender-equality motivation in all three countries, national differences make it reasonable to expect differences in outcomes. For instance, Sweden is the prime example of a dual earner-carer model where the goal of gender-equal parenthood has guided family policy development since the 1970s (Ferrarini and Duvander 2010). Norway offers support both to the dual earner-carer model, through for example parental leave with a father's quota, and to a one-earner model, through for example an extensive home care allowance. This is sometimes called "gender-equality light" (Rønsen and Skrede 2006). Iceland is particularly interesting in a Nordic comparative context, as it lagged behind in the development of parental-leave policies until the turn of the century and has thereafter had the most radical transition towards a gender-equal parental leave policy. The radical shift in Iceland led to a sudden and dramatic increase in fathers' leave use. The opposite is the slow and gradual adaption of fathers' leave use in Sweden, starting already in the 1970s. Norway's more ambivalent policy has given

room to a larger variation in use. This raises the question of whether these differences lead to different associations between father's use of parental leave and subsequent childbearing.

By distinguishing between no-users, quota-users, and more-than quota users, our study will provide new insight into whether and how the use of policies that explicitly aim at changing the gender roles in the family is related to continued childbearing in countries with different policy contexts and policy uptakes. We will follow the development of this association for approximately 15 years in the three countries. Using administrative register data including information of the whole population allows us to perform a detailed analysis, distinguish between sub-groups of parents sharing the parental leave to various degrees, and investigate the association for different parities.

We will start by an overview of the field of studies on the connection between fertility and gender equality before we explain the details of the parental-leave systems in Iceland, Norway and Sweden. We elaborate on expectations before we present our data and results. We conclude with a discussion of our findings.

Background

Our point of departure is two profound societal changes that have swept across Western countries: new gender practices and shifts in family dynamics. Gender practices in market work and unpaid work have changed over the past decades, and in most Western countries there has been a move from a traditionally strict male-breadwinner model towards various degrees of dual-earner models where both men and women participate in the labor market. However, changes in employment have been more profound than changes in domestic responsibilities. This uneven development has been labeled the "stalled revolution", that is, women increasingly share the market work with men, but men have not to the same extent increased their share of domestic work accordingly (Hochschild 1989; England 2010). This situation is also still found in the Nordic countries, even if men share more domestic responsibilities than in most other countries (Hook 2006). The question of much concern today is whether we are on our way to the last phase in the gender revolution, where men share the domestic work on equal terms (Goldscheider et al 2015).

The "stalled revolution" is also assumed to have consequences regarding fertility. According to McDonald (2000; 2013), low fertility in certain countries today can be explained by the incoherence between the relatively high level of gender equality in individual-oriented institutions (i.e. the educational system and the labor market) and the low level of gender equality in the family and family-oriented institutions. Most demographers and most gender

and welfare-state researchers share this view. They also point to the crucial role which family policies may play in promoting or hampering progress towards greater gender equality in employment and care responsibilities and in shaping fertility patterns (Chesnais 1996; Neyer 2003; Kalwijn 2010; Thévenon and Gauthier 2011; Daly 2000; Esping-Andersen 2002; Stier et al. 2001). Cross-country comparisons often confirm an association between gender-egalitarian oriented family policies and higher fertility at the macro-level (op. cit.). But studies on how the use of such policies is connected to continued childbearing on the individual level are scarce. Although the few studies which exist find that mothers' childbearing intensities may be higher if the father takes some parental leave than if he takes none, the results on the link between a gender-egalitarian sharing of parental-leave and subsequent childbearing are not uniform. They vary by country, parity, duration of father's leave, period and strength of association. This raises further questions of whether and to what extent the association between father's leave-taking and subsequent childbearing is shaped by the amount of sharing (policy-conforming vs. egalitarian), the configuration of the policies, the timing of the introduction and the context of the policies, and their uses with the first or a subsequent child (Oláh 2003; Duvander and Andersson 2006; Duvander et al. 2010; Lappegård 2010; Neyer, Lappegård, and Vignoli 2013). To contribute to answering these questions, we chose three countries with different timings of the introduction of parental leave and the father's quota, different constellations of leave policies, and different overall uptake of leave. This will allow us to provide better explanations for the linkages between father's parental leave, a more or less gender equal division of care work and subsequent childbearing.

The three countries

We compare three countries with similar policy aims but not identical policy constellations to isolate the effect of various details in the policy set-up. We believe that the association between fathers' care-taking and continued childbearing has to be studied in contexts where fathers participate in childcare at a level that can be seen as more than a marginal phenomenon. In Iceland, Norway and Sweden, fathers use substantial parts of the leave and have done so for quite some time. A father's quota was first introduced in Norway in 1993, in Sweden in 1995, and in Iceland in 2001. When the reform was implemented it was 4 weeks in Norway and Sweden and 12 weeks in Iceland. Today, Icelandic fathers use 32 percent of the leave, Norwegian fathers use 15 percent, and Swedish fathers use 24 percent. As the total leave is of different lengths (9 months in Iceland, approximately 12 months in Norway and 16 months in Sweden), the various leave percentages also imply various leave lengths. In all

three countries the leave is job-protected and in all countries the quota was introduced with the aim to promote gender equality (Duvander and Lammi-Taskula 2011; Eydal and Gíslason 2011).

Sweden was first to introduce parental leave where mothers and fathers had equal rights to use it in 1974. The total leave length was then 6 months and although the parental-leave benefit was income-related, it was not seen as very plausible that many fathers would use the leave (Cedstrand 2011). Indeed, less than one percent of all leave was used by fathers at the beginning, but the number has increased slowly until today, when fathers use on average 100 days of leave (Swedish Social Insurance Agency 2011). The total leave length was also extended over time, and in 1990 it was 15 months, whereof the income of 12 months were replaced at 90 percent of previous earnings, and 3 months at a low flat rate. The income-related compensation has since then been approximately 80 percent of previous earnings with a ceiling affecting mainly fathers. The introduction of the first and second months reserved for fathers have had a major effect on fathers' leave use (Duvander and Johansson 2012), but even before the first mandatory month was introduced in 1995, about half of all fathers used the parental leave. With the first reform this increased to about 9 out of 10 fathers. The second month introduced in 2002 was also parallel to an extension of the total leave to 16 months. Today the statutory leave is completely individual: A parent has to sign over days for the other parent to be able use more than half of the leave (which is most often done from fathers to mothers). Another characteristic of the Swedish system is its flexibility. Paid and unpaid leave can be mixed, it can for part of a day and paid leave can be used during the whole preschool period of the child (until the child is 12 years old). This flexibility results in great variation in total leave lengths, and also in mothers' and fathers' leave lengths (Duvander and Viklund 2014). Even though most leave is used during the first 2 years, some parents, especially fathers, use a fair share of their days during the child's later preschool years.

Norway gave fathers right to paternity leave in 1977 and to parental leave in 1978 (Duvander and Lammi-Taskula 2011). The Norwegian leave length was originally 18 weeks but has been extended over time and the flexibility in possibilities of use has increased somewhat, although not by far to the level of the Swedish system. Since the 1990s the leave has been around one year, with the total number of weeks depending on the preferred level of wage compensation (80 or 100 percent). The major difference compared to the Swedish system is that leave eligibility is dependent on pre-birth employment, and that those ineligible for leave receive a lump sum at birth. This is true today for around a fifth of all mothers (Duvander, Lappegard and Andersson 2010), and fathers' possibility to use leave has been dependent on the mother

working. Since 2002, the father's quota is dependent on mother's work, but the father may use the shared leave even if the mother is not working. The Norwegian father's quota was introduced in 1993, and while very few fathers used any leave at the time of introduction, this percentage increased quickly from 4 percent just before the reform to 39 percent just after the reform (Cools et al., 2015). However, very few used more than the quota. Even if the Norwegian set-up is a less strict individual-leave scheme than the Swedish, the quota has been more radically expanded in steps from 2005 and onwards: In 2005 to 5 weeks, in 2006 to 6 weeks, in 2009 to 10 weeks, in 2011 to 12 weeks and in 2013 to 14 weeks. However, after the 2013 election, it was reduced to 10 weeks, which seems to have reduced the leave length of fathers in Norway already (Norwegian Labour and Welfare Administration 2015).

Iceland is the latecomer in the Nordic paid parental leave setting, and up until the late 1990s, the scheme offered a maternity leave and nothing more. The radical policy that reserved 3 months to each parent and 3 months to share was introduced in steps between 2001 and 2003, making Iceland the leading country in terms of gender equality regulations. Moreover, the policy response was rather immediate, and virtually all fathers use part of the leave and most use the full three months (Arnalds et al. 2011). The wage compensation was 80 percent at the time of introduction, but it was reduced significantly in 2010 as a consequence of the economic crisis. This seems to have reduced fathers' leave use (Eydal and Gíslason 2014). Extending the leave has been considered, but the economic crisis has slowed down investments in family policy (Eydal et al. 2015). The total leave length of 9 months is not sufficient to cover the period up to a preschool start, especially as it is not unusual for fathers to use leave at the same time as mothers (Arnalds et al.2011), and other informal solutions are often sought for this childcare gap.

In all three countries the father's quota have led to changed expectations on fathers; they are now much more expected to be involved, and one may talk about norms for fathers to use the quota (Duvander and Johansson 2012).

Expectations

Several explanations have been suggested to explain the relationship between a father's uptake of parental leave and subsequent childbearing. Some assume that fathers who take parental leave, do so because they are more child-oriented than other fathers, and therefore end up with more children. Similarly, mothers who share the parental leave may be the most work-oriented and may see one child as sufficient. Others believe that the parental leave use itself actually influences the propensity to have another child. The influence can obviously be

both positive, if the father and/or the mother were satisfied with the division of parental leave, or negative, if they were not (Neyer, Lappegård, and Vignoli 2013). These assumptions point to selectivity issues. Very few studies have been able to disentangle selection from causality effects. However, the presence of selection does not mean that there are no causal effects of policy and of the use of parental leave. By comparing fathers from USA, Quebec, and the rest of Canada with different legislations regarding parental leave, Rehel (2014) could make important conclusions about the importance of the policy context. She found that in the context where there is reserved time for fathers (Quebec), more fathers who were not especially interested in sharing the early childcare, actually use parental leave. This leave use, in turn, had consequences for their continued parenting. The policy thus makes fathers who otherwise would not use leave, take leave, with potential consequences in a range of areas. In the Nordic countries today, most fathers use leave and this may not necessarily mean that they have reflected much on their parenting beforehand. However, the use may influence their continued orientation towards the family.

By comparing countries with fairly similar policies and similar economic, social and cultural conditions, we are better able to distinguish the impact of family policy on demographic behavior in the presence of other factors. First of all, our general expectation is that fathers' use of leave will increase the propensity of continued childbearing, but we need to make distinctions between: 1) the birth order of the child, 2) the level of fathers' use, 3) changes in associations over time and 4) the country context. We expect a stronger association on the second child than the third, as there is a strong two child preference and even norm in the Nordic countries; to have two children is expected and to have more is to make a family oriented choice (Andersson et al., 2009). The group of parents who have a third child is likely to consist of two groups of parents with different orientations as regards gender equality, namely, parents where the father is committed and where tasks are shared equally, and parents with more traditional family and gender orientations. Moreover, taking parental leave with the second child may turn out to imply more work and responsibility than taking parental leave with the first child, and this may influence further childbearing decisions. We therefore think that differences in second child propensities indicate the most immediate response to father's engagement in childrearing, where a father's leave use may induce a faster progression to a second child.

Previous research suggests that greater gender equality in family related work leads to higher fertility. At the micro-level this would mean that families in which the father takes more parental leave, have a higher propensity for another child. The existence of a statutory father's

quota allows us to quantify fertility increases and decreases more precisely. We assume that fathers who use the quota follow the policy-stipulated norm of behavior: Fathers are expected to take the reserved quota, and these fathers do so. Fathers who take more than the quota may be more child-prone and/or they may be more committed to share family responsibilities equally with their partner. Since a truly equal sharing of family responsibility is still not commonly established even in the Nordic countries, we may see fathers who take more than the leave as forerunners in gender equality. We expect that to follow the norm and to go beyond the norm may have different consequences for subsequent childbearing. We expect that fathers who use the quota and thus behave norm-conforming to have higher second-birth risks than fathers who take more than the quota (but both to have higher second-birth risks than fathers who take no parental leave). Regarding third-birth risk the associations may go both ways. It may be that the third birth risk is higher for more-than-quota fathers, because they are more committed to larger families, while “only quota” users stop with fulfilling the two child norm. The third birth risk may also be lower, because this may be couples where the mother is more work-committed. Of course to take care of two children implies more work than to have one child.

We also expect the association between fathers' leave-taking and continued childbearing to change over time. The effect just at the beginning of the policy implementation can however be in both directions. It can be that fathers using the leave in the beginning have lower propensity of continued childbearing because gender equality was not yet established in people's minds and in practice; the fathers who used the leave may have met major resistance, not least from employers. This pressure may have induced lower fertility. Conversely the effect may be that fathers using leave may have greater risks of continued childbearing if gender equality is well established in the minds of people, but could not be converted into practiced because of lack of policies. These general expectations may play out differently in the three countries.

We expect that the more radical shift in policy in Iceland will lead to a more radical change than with the gradual interventions in Norway and Sweden; we therefore expect a stronger association with childbearing when the father’s quota was introduced in Iceland. We expect this effect on both the second and third child propensity, especially as fertility is high in Iceland (the two child norm is rather a three child norm), and we expect use up to the quota to be most strongly correlated with childbearing. The association is also likely to be positive and strongest at the beginning of the time when the policy is in effect. As we have mentioned, Iceland introduced parental leave (and father’s quota) much later than the other Nordic

countries, while the rest of Icelandic society scored high on gender equality, for example regarding female labor force participation, even at earlier times The demand for gender-equal parental leave policies was great, perhaps indicated by the fact that a conservative government introduced the policy in 2001. For Norway, with a more ambivalent family policy over a long period, we expect differences in childbearing depending on fathers' leave use to be relatively strong but weaken when fathers' leave use becomes common. Few fathers used the leave before the quota was introduced, even though, unlike their Icelandic counterparts, they could do so. Even after the quota was introduced the use has not been as dramatically shifted as in Iceland. The association is expected to be strongest for second births because of a strong two-child norm, and we expect use up to the quota to be most important. As in Iceland, few fathers use more leave and these fathers will probably have to tackle obstacles at work and negative comments in general.

In Sweden, however, fathers have used leave for the longest period of time, and the potential impact of the quota is less clear. Here, fathers often use longer leave than the statutory quota, but while in the two other countries parental leave must be taken in continual blocks, the Swedish system allows the father to spread out parental leave over time and to use it very flexibly. We therefore expect to see more similar levels of use in Sweden between fathers who use up to the statutory quota and those who use more than the quota. We expect a clear distinction between using and non-using fathers, but the norm of fathers' childcare involvement is so strong that a fair group of the non-users are probably engaged in childcare without the necessity to use parental leave benefit (for example self-employed men, shift workers, students, and unemployed men, who can spend a lot of time at home). The prominent two-child norm makes us expect this association to be strong for the propensity of a second child, while the decision about a third child may be guided by other factors, including more traditional familialism. As fathers have used leave for a long period of time in Sweden, and as about half of all fathers used leave even before the quota was introduced, we expect the association to be stable over the period we study.

Data and method

We use data from the national population registers, which cover the whole population. Each individual is identified by a unique identification number. This allows us to link data from different administrative registers, and we have constructed data sets that contain childbearing histories and longitudinal individual information on civil status and education. We also have information on each parent's country of birth. Most importantly, we have information on

parents' parental leave use. The data cover a period of 15 years; 2001-2009 for Iceland, 1994-2007 for Norway and 1995-2009 for Sweden, that is, we cover most of the period when the father's quotas have been in place in these countries.

In order to examine the association between fathers' use of parental leave and continued childbearing we make use of parents' exposure times to childbearing. We model continued childbearing with event history analysis, and estimate the relationship between the father's leave use for the parent's first or second child as the case may be, and the propensity of having a next-order child. We measure parental leave use for 18 months from birth, and exclude cases with births within this time. This amounts to excluding 5 to 7 percent of couples with one child in all the countries, and fewer among the couples with two children. Fathers' leave use is categorized into three categories: 1) no use, 2) use up to the statutory quota, 3) use more than the quota, where the length of leave in the last two categories depends on country and time period. We follow parents that had their first or second common child, excluding multiple births, births abroad and adoptions, and we censor a record if parents split up, emigrate, or if a parent or the child dies. We follow couples for 10 years or to the end of the analyzed period. The estimated risks reflect both the timing and the quantum of the event we study, which is a second or a third child. Second and third births are estimated in separate analyses. We control for several background variables: ages of the parents, time period, civil status, education categorized according to the ISCEE standard, and both parents' country of birth. Age of the youngest child is the exposure time, starting when the child turns 18 months old. Given the high rate of cohabitation without marriage in all three countries, we select parents who are either married or cohabiting at the time of birth or in the year after to account for possible lags in the civil registration system (Thomson and Eriksson 2013). We censor for separation during the exposure time.

Results

As we have noted the three countries vary both in policy context and in fathers' use of parental leave. As can be seen in Table 1, a major share of the Icelandic fathers have used parental leave when we observe them 18 months after the birth of their child, and almost a fifth have used more than the statutory quota. In Norway, by contrast, just over half have used some leave over this period, and less than a fifth have used more than the quota. Sweden has the largest spread in use. In this country about a third have used no leave during the first 18 months, just over a third have used up to the statutory quota, and just less than a third have used more than the quota. It thus seems that fathers' parental leave use is more concentrated

at the quota in Iceland and Norway than in Sweden. It should be mentioned that these are not final numbers on fathers' use; some fathers – especially in Sweden – start using leave later than the child's first 18 months.

Moving on to the socio-demographic characteristics of our country samples, we find that in all countries it is common to marry between the first and the second child, and that more parents marry in Norway than in the other two countries. The categorization of educational level indicates that Icelandic parents more often have the higher or the lower level of education as compared to Norwegian and Swedish parents. The share of parents born abroad is largest in Sweden and smallest in Iceland. The mean age at having a first and a second birth does not differ substantially between the countries.

In Table 2 we present the results of our analysis as relative risks of a second birth. We are primarily interested in the connection with fathers' leave use. In all countries, we find that couples in which the father goes on parental leave after the first child, have a higher risk of having a second child than couples in which the father takes no leave. But there are some country differences in the level of intensity with respect to the length of father's leave and the propensity to have a second child. For Iceland we see that with increasing fathers' leave use the second birth risk increases, and when fathers use more than the quota, the propensity of a second child unexpectedly is even higher than if fathers use only up to the quota. For Norway the pattern is a reversed u-shape. Couples where the father uses up to the quota, have the highest risk of a second child. When the father uses more than the quota, the risk is somewhat lower, but not at the level of couples where the father uses no leave. For Sweden it seems to make a difference whether the father uses leave or not, but we find no difference between couples where the father uses more or less than the quota.

In all countries, especially Norway, married couples have a higher risk of second births, everything else equal. The second birth risk also increases with both mothers' and fathers' educational level, and couples where both mother and father are native-born have a higher second birth risk. The risk of a second birth is also higher among older parents, especially depending on mother's age. The second birth risks have increased in the 1990s in Norway and Sweden and also in the 2000s in Iceland and Norway.

In Table 3 we present the risk of a third birth. Unlike for second birth, we do not find a higher propensity to have a third child for couples in which the father takes parental leave. Quite on the contrary: While in Iceland, the relationship between the father's leave use and third birth risk is not statistically significant, in Norway and Sweden, the risk of a third birth is *lower* when the father has used any parental leave, and in both countries it is lowest in cases where

the father has used up to the quota but not more. This finding for Norway and Sweden is in line with some earlier studies (Lappegard 2010, Duvander, Ferrarini, Johansson 2015), but not with all (Duvander, Lappegard and Andersson 2010). The study by Duvander et al (2010) used a proxy of parental leave where the benefit was related to other income during the year of use, that is, parental leave benefit was given as a share of all income. As there is a ceiling to the benefit, this may have distorted the results somewhat. Furthermore, the earlier study followed parental leave use for 2 years, including a larger share of both Swedish and Norwegian fathers' use, but also excluding more births within this time period. In the earlier study as many as 86 percent of exposures by Swedish, and 70 percent of exposures by Norwegian first-time fathers were of leave-users, compared to 70 percent of the Swedish and 54 percent of the Norwegian exposures in this study. The earlier study had the benefit of controlling for mothers' use and earnings, and the selection criteria were somewhat different. For example, as the data on parental leave were annual, only couples with births in January were selected so the investigators were able to follow the leave use for exactly 2 years. Also immigrant parents were excluded. Part of the difference may also be caused by a change in the association over time, because the time period for the present study is much the longer. There are thus several differences that can explain the difference in results. This indicates that the association between fathers' leave use and third birth intensities is sensitive to measurement issues, and it should be further investigated.

The associations between the control variables and third birth risks are to the largest part similar to the associations with second birth risks. Everything else equal there is a higher risk for third birth among married couples, and in general higher education leads to higher intensities of third births. For Sweden the educational gradient for both mothers' and fathers' education is u-shaped where a low and a high education indicates somewhat higher third birth risk than a medium education. In Iceland having two foreign-born parents indicates a lower third birth risk, while the opposite is true in Norway and Sweden. Especially in Iceland, older mothers have higher third birth risk, but this is also the case in Norway and in Sweden. Third birth risks decline when the father's age rises. The third birth risk is higher in the last period of the 2000s in Iceland and Norway but seems to be declining since the 1990s in Sweden.

Fathers' use of paid parental leave has increased over time in all three countries, and to understand the potentially changing association over time, we have run interactions between period and fathers' leave use. Table 4 presents the interactions for second birth risk. It is obvious that for Iceland the positive association is strong right after the introduction of the parental leave policy, while it is much weaker for the following five year period. For Norway

we find a reversed u-shaped pattern for all periods, where couples with fathers using up to the quota have the highest second birth risks in all periods. As we have mentioned, the quota has been extended in steps between 2005 and 2014, which influences the last period in this study (2005 to 2009). At this time the quota users seem to have an elevated propensity of a second child. For Sweden we find that the risk of a second birth is higher in all periods for couples where the father has used some leave, and especially so in the final period.

In Table 5 we present the results of the same interaction between time period and fathers' leave use for the risk of a third birth. For Iceland we find a lower risk of a third birth in both the measured periods. For Norway the pattern is slightly u-shaped in all periods but especially in the 1990s, fathers using up to the quota have lower risks of a third birth. For Sweden the pattern is also u-shaped for all periods and more strongly so than for Norway; it is thus the couples where the fathers use up to the quota that have the lowest third birth risks for the whole 15 year period. The propensity is almost at the same level for fathers using more than the quota, as for non-users. This indicates that a heterogeneous group of parents continue to a third child, as is perhaps also seen in the u-shaped association with educational level of mother and father (Table 3).

Discussion

This study takes as its starting point the widely held theoretical assumption that in post-industrial societies, high fertility levels are associated with gender equality in the family. The Nordic countries, with their social institutions encouraging gender equality, are often taken as the example of this association. However, while much research deals with this relationship at the macro-level, there are very few studies which scrutinize it at the micro level. And there are hardly any studies which investigate this association and distinguish between gender equality behavior which conforms to the policy setting and gender-egalitarian behavior which goes beyond the policy-ascribed norm. We analyze the association between fathers' leave use and continued childbearing in three Nordic countries, and differentiate between fathers who use no parental leave, those who use only up to the quota, that is the part reserved exclusively for fathers, and those who take more parental leave, which is part of the leave the mother and father can share. Comparing the relationship between the extent of father's leave and subsequent childbearing in three similar countries enables us to draw conclusions on the importance of various policy arrangements and gender equality behavior. By analyzing policies in their institutional contexts that are generally similar we can better uncover whether different (or similar) policy constellations have different (or similar) consequences for

childbearing. The same applies to gender-egalitarian behavior. Findings from such comparative studies supply sound evidence for policymakers and improve the knowledge base for population-related and gender-egalitarian oriented policy formulation (e.g. Neyer and Andersson 2008).

Our main theoretical prediction that fathers who use parental leave, have higher propensities of continued childbearing, depends on parity. Starting with the transition to the second child, it is clear that in the cases where the father uses parental leave, the propensity of a second child is higher in all three countries. This holds regardless of whether the father uses only up to the statutory quota or whether the father uses more than the quota. For Iceland and Norway, we expected that fathers who use only up to the quota, have the highest propensity to have a second child, mainly because we expected these couples to conform more with the prevailing gender- and two-child norms in the Nordic countries compared to couples with more egalitarian care behavior. However, we find that in Iceland fathers who use more than the quota have an even higher propensity to have a second child than fathers who use only up to the quota. In Norway couples where fathers used up to the quota (but not more) had the highest risks. Since a large share of fathers do not go on parental leave in this country, it is likely that fathers who use more than the quota meet obstacles at work. It could also be that mothers in these families are more work-oriented and do not necessarily want to have another child (not at all or at least not relatively quickly after the first child). For Sweden, where the flexibility of parental leave eases the reconciliation with employment and sharing with the mother, and where fathers have commonly used parental leave for a long time, we expected no pronounced differences between the childbearing intensity of fathers who use only up to the quota and those who use more than the quota. This expectation was confirmed by our data, as the distinction was rather between fathers who used parental leave and those who did not.

We also examined the assumption that parental-leave policies aiming at father's engagement in childrearing exert the strongest effect on childbearing in the period shortly after their introduction, while the association wears off with time. This is comparable with an exogenous shock that wears off or gets integrated. We find such a development in Iceland, where the positive association was strong when the policy was still novel but disappeared thereafter. We also see a partially similar although much less pronounced development in Norway, with elevated second-birth risks during the period of the initial introduction of the father's quota and during the period of the extension of the father's quota. We find no strong differences

over time in Sweden, something which we expected because in Sweden, leave use was already normative and accepted when the father's quota was introduced.

For the propensity of a third birth we expected a weaker association in all countries, and that was also what we found. There is no clear association between the father's leave use and the risk of a third birth in Iceland, but quite unexpectedly in both Norway and Sweden fathers who use the leave seem to have a lower risk of a third birth – especially when fathers use leave up to the statutory quota. It is thus those who follow the normative use that have the lowest risk of a third child, and perhaps this can be interpreted as a sign of norm-conforming behavior, both with respect to the father's uptake of leave and the number of children. Using the quota is what is expected of fathers and is supported by the policy, just as having two children is the expected norm for couples in Norway and Sweden. Moreover, going on parental leave with two children implies more work and responsibility than with one child. To get a third child may then require father's engagement on a more substantial level in order for the woman to be able to combine work and family. The use of the quota *only* may not be a sufficient commitment of the father to engage in childrearing to generate a third child. The less pronounced association between fathers who use more than the quota and lower risk of a third child can be interpreted in several ways: These fathers show commitment to share childrearing more equally; they make the mothers' engagement in the labor market easier and allow her more free time. It could also be that these fathers are more family oriented in general and more often like to have children; it could further be that they have jobs which allow them to engage more in childrearing than fathers with other jobs, making it easier for them to take longer leaves as well as having more children.

It is important to highlight that families in which the father uses leave only up to the statutory quota, come less close to the concept of gender equality, as the mother still takes the lion's share of leave. Taking the quota will not change a gender-based division of domestic work, but it will create a new point of reference for negotiations in the private sphere. For all countries, this now seems to be associated with a faster pace towards a second child. In Iceland, the diffusion process of sharing childcare may have come furthest in a very short time, perhaps in line with Esping-Andersen and Billari's proposition of more rapid changes in less-stratified societies (2015). However, one also needs to consider that parental leave in Iceland is brief and that couples cannot afford that the father does not take his share (that otherwise would be forfeited). In the same way, one may argue that the very flexible and long leave in Sweden has facilitated that couples can afford fathers to take a more extensive share of leave.

We conclude that the diffusion of gender equality takes time, and that even if gender equality has penetrated all levels of society as a social norm, it still may not lead to a uniform association between the sharing of parental leave and continued childbearing. As our findings indicate, there seems to be a convergence between the norm of fathers taking parental leave and the norm of having two children. In the Nordic countries it is now taken for granted that fathers take parental leave and couples have two children. Having a third child is more of an open question, and thus the association between fathers' use of leave and continued childbearing beyond the second child is more likely to be the outcome of a process of gender negotiation within the couple, of the couples social, gender-egalitarian work and family orientation, and/or its economic capacity.

The still open question is whether fathers' leave use indicates a process towards a complete gender revolution and whether this will lead to higher fertility in these countries, as theories suggest. Our results indicate that in all the three countries, most fathers use leave, but stop at the quota and at two children; but more gender equality does not necessarily make the Nordic families have more than two children.

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Table 1 Characteristics of study populations of one- and two-child couples in Iceland, Norway and Sweden, exposures of risk to a second and third birth, distributions of months for each variable (percentages).

	Iceland		Norway		Sweden	
	One-child couples	Two-child couples	One-child couples	Two-child couples	One-child couples	Two-child couples
Fathers use of parental leave						
No use	7.28	7.16	46.13	43.74	30.11	35.59
Up to quota	72.19	76.36	35.64	37.68	37.18	37.53
More than quota	20.03	16.48	18.23	18.59	32.71	26.88
Union status at birth						
Cohabiting	55.47	33.90	45.41	27.76	61.42	48.61
Married	44.53	66.10	54.59	72.24	38.58	51.39
Time period at birth						
1994-1997[1]			31.84	34.85	21.60	4.60
1998-2000			21.63	24.18	19.96	26.31
2001-2004	56.95	62.52	25.68	26.63	26.89	37.63
2005-2009[2]	43.05	37.48	20.85	14.35	31.55	31.46
Mothers education						
Low	12.44	13.90	5.85	5.48	8.63	5.08
Medium	24.74	23.10	52.23	53.73	52.98	54.08
High	55.24	55.12	36.71	38.68	33.83	40.32
	7.58	7.89	5.22	2.11	4.56	0.52
Fathers education						
Low	15.11	15.07	7.85	7.39	10.75	7.83
Medium	32.12	32.07	59.37	59.20	60.84	62.50
High	38.85	41.03	29.51	31.90	24.96	29.22
	12.92	11.84	3.27	1.51	3.45	0.44
Immigrant background						
None born abroad	85.84	90.83	80.43	84.95	73.09	82.87
Father born abroad	2.49	2.06	5.06	4.32	6.50	5.22

Mother born abroad	7.32	4.80	7.87	5.47	8.17	5.02
Both born abroad	4.35	2.31	6.64	5.27	12.23	6.89
Mothers age (mean)	27.3	30.7	28.5	30.70	28.8	30.9
Fathers age (mean)	30.0	33.2	31.8	33.5	31.3	33.1
Number of observations	212.689	371.387	1.403.207	3.151.932	11.938.958	15.227.927

[1] 1995 for Sweden
[2] 2007 for Norway

Table 2 Risk of second birth of one-child couples. Iceland, Norway and Sweden. Odds ratios.

	Iceland		Norway		Sweden	
	Estimate	c.i	Estimate	c.i.	Estimate	c.i.
Fathers use of parental leave						
No use	1		1		1	
Up to quota	1.20*	1.08-1.34	1.16**	1.14-1.19	1.05**	1.04-1.06
More than quota	1.30**	1.15-1.46	1.09**	1.06-1.12	1.05**	1.04-1.06
Union status at birth						
Cohabiting	1		1		1	
Married	1.19**	1.13-1.26	1.36**	1.33-1.38	1.13**	1.12-1.14
Time period at birth						
1994-1997[1]			1		1	
1998-2000			1.01	0.98-1.04	1.05**	1.04-1.06
2001-2004	1		1.06**	1.03-1.09	1.12**	1.11-1.13
2005-2009[2]	1.21**	1.14-1.27	1.15**	1.12-1.18	1.08**	1.06-1.09
Mothers education						
Low	1.07	0.97-1.06	0.84**	0.79-0.88	0.85**	0.83-0.86
Medium	1		1		1	
High	1.10*	1.03-1.18	1.35**	1.32-1.38	1.27**	1.26-1.28
Fathers education						
Low	0.97	0.89-1.06	0.92**	0.88-0.96	0.91**	0.90-0.93
Medium	1		1		1	
High	1.11*		1.20**	1.17-1.22	1.20**	1.19-1.21
Immigrant background		1.05-1.18				
None born abroad	1		1		1	
Father born abroad	1.00	0.85-1.19	1.00	0.95-1.05	0.91**	0.90-0.92
Mother born abroad	0.80**	0.71-0.90	0.84**	0.80-0.88	0.74**	0.73-0.75
Both born abroad	0.64**	0.54-0.75	0.92**	0.87-0.97	0.74**	0.73-0.75
Mothers age	1.37**	1.28-1.47	1.21**	1.18-1.25	1.30**	1.29-1.31
Mothers age sq	0.99**	0.99-1.00	1.00**	1.00-1.00	0.99**	0.99-0.99
Fathers age	1.04	1.00-1.09	1.08**	1.06-1.10	1.07**	1.07-1.08
Fathers age sq	1.00	1.00-1.00	1.00**	1.00-1.00	1.00**	1.00-1.00

Log likelihood	-26166.033		-176057.87		-1496317.6	
Number of observations	212,689		1,403,207		11,938,958	

**0.001 *0.05
[1] 1995 for Sweden
[2] 2007 for Norway

Table 3 Risk of third birth of two-child couples. Iceland, Norway and Sweden. Odds ratios.

	Iceland		Norway		Sweden	
	Estimate	c.i.	Estimate	c.i.	Estimate	c.i.
Fathers use of parental leave						
No use	1		1		1	
Up to quota	0.89	0.78-1.02	0.93**	0.90-0.96	0.86**	0.84-0.87
More than quota	1.01	0.87-1.17	0.96**	0.92-1.00	0.95**	0.93-0.97
Union status at birth						
Cohabiting	1		1		1	
Married	1.13**	1.05-1.21	1.20**	1.16-1.25	1.28**	1.25-1.30
Time period at birth						
1994-1997[1]			1		1	
1998-2000			0.95*	0.91-1.00	0.91**	0.87-0.95
2001-2004	1		1.00	0.96-1.04	0.99	0.95-1.03
2005-2009[2]	1.23**	1.15-1.33	1.07*	1.02-1.11	0.95*	0.92-0.99
Mothers education						
Low	1.02	0.91-1.15	1.02	0.95-1.09	1.10**	1.06-1.13
Medium	1		1		1	
High	1.18**	1.08-1.28	1.54**	1.48-1.59	1.51**	1.48-1.54
Fathers education						
Low	0.94	0.84-1.05	1.02	0.95-1.08	1.06**	1.03-1.09
Medium	1		1		1	
High	1.12*	1.03-1.21	1.31**	1.26-1.35	1.45**	1.42-1.48
Immigrant background						
None born abroad	1		1		1	
Father born abroad	1.12	0.88-1.43	1.12*	1.04-1.20	1.15**	1.11-1.19
Mother born abroad	0.84	0.69-1.02	1.00	0.92-1.06	0.98	0.95-1.02
Both born abroad	0.47**	0.34-0.65	1.22**	1.14-1.31	1.26**	1.22-1.30
Mothers age	1.36**	1.22-1.52	1.05*	1.00-1.10	1.03*	1.00-1.06
Mothers age sq	0.99**	1.00-1.00	1.00*	1.00-1.00	1.00**	1.00-1.00
Fathers age	0.97	0.90-1.03	0.95**	0.92-0.98	0.93**	0.91-0.94
Fathers age sq	1.00	1.00-1.00	1.00	1.00-1.00	1.00**	1.00-1.00

Log likelihood	-19,169.286		-104,172.73		-370,726.61	
Number of observations	371,387		3,151,932		15,227,927	

**0.001 *0.05
[1] 1995 for Sweden
[2] 2007 for Norway

Table 4 Risk of second birth of one-child couples. Iceland. Norway and Sweden. Interactions between father's use of parental leave and time period. Odds ratios.

	Iceland				Norway				Sweden			
	1994-1997	1998-2000	2001-2004	2005-2009	1994-1997	1998-2000	2001-2004	2005-2009	1994-1997	1998-2000	2001-2004	2005-2009
No use			1	1	1	1	1	1	1	1	1	1
Up to quota			1.44	0.97	1.18	1.10	1.15	1.23	1.06	1.02	1.06	1.07
More than quota			1.46	1.11	1.10	1.04	1.06	1.13	1.03	1.02	1.05	1.10

Controlled for: union status at birth, mother's/father's age, education and immigrant background, and number of children. See Table A1 in appendix for details.

Table 5 Risk of third birth of two-child couples. Iceland. Norway and Sweden. Interactions between father's use of parental leave and time period. Odds ratios.

	Iceland				Norway				Sweden			
	1994-1997	1998-2000	2001-2004	2005-2009	1994-1997	1998-2000	2001-2004	2005-2009	1994-1997	1998-2000	2001-2004	2005-2009
No use			1	1	1	1	1	1	1	1	1	1
Up to quota			0.88	0.92	0.91	0.88	0.94	0.98	0.86	0.85	0.87	0.86
More than quota			0.98	1.04	0.95	0.92	0.94	1.03	0.94	0.95	0.96	0.95

Controlled for: union status at birth, mother's/father's age, education and immigrant background, and number of children. See Table A2 in appendix for details.

Appendix

Table A1 Risk of second birth of one-child couples. Iceland. Norway and Sweden. Odds ratio. Including interaction between father's use of parental leave and time period.

	Iceland		Norway		Sweden	
	Estimate	c.i.	Estimate	c.i.	Estimate	c.i.
Fathers use of parental leave* time period at birth						
No use*1994-1997			1		1	
Up to quota*1994-1997			1.18**	1.13-1.23	1.06**	1.04-1.08
More than quota*1994-1997			1.10*	1.05-1.16	1.03*	1.00-1.05
No use*1998-2000			1.05*	1.00-1.09	1.07**	1.05-1.09
Up to quota*1998-2000			1.15**	1.10-1.20	1.09**	1.07-1.11
More than quota*1998-2000			1.09*	1.03-1.16	1.09**	1.07-1.11
No use*2001-2004	1		1.08**	1.03-1.12	1.11**	1.09-1.13
Up to quota*2001-2004	1.44**	1.24-1.67	1.24**	1.19-1.29	1.18**	1.16-1.20
More than quota*2001-2004	1.46**	1.24-1.72	1.15**	1.09-1.21	1.17**	1.15-1.20
No use*2005-2009	1.70**	1.39-2.10	1.12**	1.08-1.17	1.05**	1.03-1.07
Up to quota*2005-2009	1.65**	1.41-1.92	1.38**	1.32-1.44	1.12**	1.10-1.14
More than quota*2005-2009	1.89**	1.60-2.33	1.27**	1.21-1.33	1.15**	1.13-1.17
Log likelihood	26.158.64		-1.706.051.9		-1.496.290.2	
Number of observations	371.387		3.151.932		11.938.958	

**0.001 *0.05

[1] 1995 for Sweden

[2] 2007 for Norway

Table A2 Risk of third birth of two-child couples. Iceland. Norway and Sweden. Odds ratio. Including interaction between father's use of parental leave and time period.

	Iceland		Norway		Sweden	
	Estimate	c.i.	Estimate	c.i.	Estimate	c.i.
Fathers use of parental leave* time period at birth						
No use*1994-1997			1		1	
Up to quota*1994-1997			0.91*	0.86-0.97	0.86**	0.79-0.93
More than quota*1994-1997			0.95	0.88-0.99	0.94	0.85-1.03
No use*1998-2000			0.96	0.91-1.02	0.91*	0.86-0.97
Up to quota*1998-2000			0.84**	0.82-0.93	0.77**	0.73-0.82
More than quota*1998-2000			0.88*	0.81-0.97	0.86**	0.80-0.91
No use*2001-2004	1		1.00	0.94-1.05	0.98	0.93-1.04
Up to quota*2001-2004	0.88	0.74-1.05	0.94*	0.88-0.99	0.85**	0.80-0.90
More than quota*2001-2004	0.98	0.81-1.20	0.94	0.87-1.01	0.94	0.89-1.00
No use*2005-2009	1.19	0.92-1.54	1.02	0.96-1.08	0.95	0.90-1.01
Up to quota*2005-2009	1.09	0.91-1.30	1.00	0.98-1.07	0.82**	0.77-0.87
More than quota*2005-2009	1.24	1.01-1.51	1.05	0.98-1.14	0.90**	0.85-0.96
Log likelihood	-19169.216		-104.170.01		-370726.23	
Number of observations	371.387		3.151.932		15.227.927	

**0.001 *0.05
[1] 1995 for Sweden
[2] 2007 for Norway