

*Trude Lappegård*

**Family Policies and Fertility:  
Parents' Parental Leave Use,  
Childcare Availability, the  
Introduction of Childcare Cash  
Benefit and Continued  
Childbearing in Norway**

**Abstract:**

We address the relationship between family policies and fertility in Norway, including three somewhat different policies: parental leave, formal childcare, and the childcare cash benefit. Norwegian family policy has been considered dualistic, giving priority to both dual-earner support and general family support. Our data are administrative register data covering the period 1995–2002. The analysis shows that policies that promote father involvement in childcare and gender equality are positively associated with timing of second births, while policies giving more general family support are positively associated with timing of third births. The so-called "double-tracked" family policy seems to apply to different couples in a positive matter. An important insight of this paper is that both policies designed to improve reconciliation of work and family, and policies designed to improve childcare choices for parents, are indeed popular; however, in terms of fertility outcomes, there is wide heterogeneity in how they respond to the policies.

**Keywords:** fertility, family policy, parental leave, formal childcare, the childcare cash benefit

**JEL classification:** J13, J18

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## Introduction

The macro-level correlation between female employment and fertility has evidently turned from negative to positive in industrialized countries during the last decades (e.g., Esping-Andersen 2002; Rindfuss et al. 2003; Billari and Kohler 2004). The role of women's employment in fertility has been paid considerable attention (e.g., Becker 1981, 1991; Oppenheimer 1994), and low fertility in industrialized countries is generally linked to women's increasing educational attainment and labour force participation. The switch, where societies with the highest level of female employment now also have the highest level of fertility, has brought considerable attention to the role of institutional support of fertility behaviour. The literature has established that institutional influence such as childcare is indeed instrumental in women's participation in the labour force (e.g., Gustafsson and Stafford 1992; Kreyenfeld and Hank 2000; Esping-Andersen 2002; Kornstad and Thoresen 2006, 2007; Del Boca 2006). However, less is known about possible links to women's fertility decisions (e.g., Neyer 2003; Sleebos 2003; Gauthier 2007). The general consensus from reviews of the literature is that there is no accurate conclusion about how policies may influence fertility. One reason for this may be found in the measurement of family policies. Some analyses measure the aggregate value of welfare benefits; others are restricted to specific policies (Gauthier 2007). Another reason is that social policies that might influence fertility often have other goals than fertility per se. Reproductive decisions may be influenced indirectly through policies that change the environment in which decisions by couples about children are made (Sleeboos 2003). A third reason is the possibility of polarization of families, where different families respond differently to different policies (Gauthier 2007).

The aim of this article is to investigate the relationship between family policies and fertility behaviour in Norway, including three somewhat different policies: the parental leave programme, formal childcare, and childcare cash benefit. We analyse whether couples' individual use of parental leave, availability of formal childcare in the parents' municipality, and the introduction of the childcare cash benefit are related to continued childbearing among one-child and two-child couples. We can thereby investigate how couples respond to the extensive policy package offered to parents of young children in Norway in terms of their fertility decisions. We are also able to see whether one policy is more influential than another in couples' decision-making when including all three policies in the analysis. The three policies included represent both work-related benefits and general family benefits. We can assume that the first type of policy instrument is crucial for working mothers, while the latter is more important for homemakers or low-income groups. To get better insight into whether different families respond differently to different policies, we separate our analysis by mother's educational level. We are able to investigate whether polarization exists in how work-related policies and general cash benefits influence couples' fertility decisions. Using individual

register data, including policy information, covering a period of approximately ten years (1995–2004), we can make detailed analysis of the relationship between the extensive family policy package and continued childbearing in Norway.

## **Family policies in Norway**

The Nordic welfare states pioneered the transformation of parenthood into political issues, offering extensive policy packages to parents of young children. Such policies have, however, not primarily been motivated by pro-natalist objectives but rather by gender equality ideologies and concern for the general well being of children and their families (Rønsen 2004a). The Nordic countries are distinctive from other industrialized countries with relatively high female employment, also among mothers of young children, and with relatively high fertility among low-fertility countries (Ellingsæter and Leira 2006). Public policies shape the context in which individual reproductive decisions take place (Sleebos 2003). There has been a long tradition in distinguishing countries according to their welfare system, and over the years, numerous typologies have been developed, describing and exploring national differences in gender equality and family policies (Lewis 1992; Orloff 1993; Sainsbury 1994; Korpi 2000). To understand the Norwegian context of family support, we use Walter Korpi's typology of welfare states. He distinguishes between general family support, dual-earner support, and market-oriented support (Korpi 2000). General family support has been referred to as policy instruments directed at nuclear families that might encourage the reproduction of a relatively traditional division of domestic labour, particularly if they are aimed directly at women (Crompton 2004). The policies included here are presumed to be gender-neutral, but are most likely used by the mother rather than the father. General family support includes cash child allowance and childcare cash benefit. Contrary to general family support, dual-earner support is more likely to encourage women's continuous employment and enable parents, men as well as women, to combine parenthood with paid work, thereby attempting to redistribute caring work within the family (Crompton 2004). Dual-earner support includes parental leave and public day care for young children (Korpi 2000). Market-oriented state policies are characterized by the relative absence of either general family or dual-earner support (Crompton 2004). The Nordic countries are often characterized as belonging to one welfare state model, where all countries have policies supporting a dual-earner family model (Korpi 2000; Esping-Andersen 2002). They are also often described as leaders regarding the process towards gender equality. Nordic family policies and gender equality have been closely intertwined and welfare state interventions in gender and family arrangements have been widely accepted (Nordic Council of Ministers 1995; Ellingsæter and Leira 2006). Norway, however, represents a more dualistic family policy than other countries (Ellingsæter and Leira 2006). Using Korpi's typology of welfare states,

Norway has been ranked high on policies that give both dual-earner support and policies that give more general family support (Korpi 2000).

The three policies included in this article represent both dual-earner policy instruments and general family policy instruments. First, the Norwegian parental leave programme entitles working parents to paid leave for 54 weeks with 80 per cent wage compensation, or 44 weeks with 100 per cent compensation in connection with childbirth.<sup>1</sup> Eligibility for leave requires employment during six of the last 10 months prior to birth, and mothers not entitled to parental leave benefits receive a one-time, tax-free cash payment at birth that in 2007 was \$6,700 or €4,700. Around 20 per cent of mothers belong to this group. The parental leave benefits are financed through general taxes with no direct costs to employers. The governmental intention behind the parental leave programme has been to make the combination of female employment and family life more feasible. First, the programme secures mothers' rights in the labour market, i.e., gives mothers the right to return to the same position after both the paid leave period and a possible additional unpaid leave period of one year. The policy also reduces the direct costs of forgone income during an absence from work in connection with childbirth. In 1993, Norway was the first country to introduce an earmarked part of the leave for the father, which is lost if not used by the father. The governmental intention behind "father's leave" was to contribute to a real change in the gendering of caring responsibilities and restructuring of the gendered division of unpaid work. Until 2005, "father's leave" was four weeks.<sup>2</sup> The father's eligibility for "father's leave" depends on the mother's work status and her eligibility for leave benefits, which means that working fathers with a partner not eligible for leave benefits will not have access to "father's leave".

Secondly, the Nordic countries have more extensive public day care facilities than most other European countries (Rønsen and Sundström 2002), but the demand in Norway is still larger than the supply for available places. Day care centres in Norway may be owned and run as either public or private enterprises, but both forms of ownership receive government subsidies as long as the local government approves the centre. The expenses for a publicly approved day care place are shared between the state, the municipalities, and the parents. The owners, i.e., the municipality or the private enterprise, set the parental fee, which covers only a fraction of running costs. Generally, the fees increase with family income and decrease with the number of siblings. In 1998, average parental payment in large cities and suburbs was about \$704 or €440 per month in private centres and slightly less in public centres. After much focus on the relatively high parental price, the state has gradually

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<sup>1</sup> The parental leave programme was introduced in 1978 and gave working parents the right to 18 weeks of paid leave in connection with child-births. Since the introduction of the programme, the entitlement period has been increased stepwise. From 1993, the programme has remained more or less the same.

<sup>2</sup> In 2005, "father's leave" was extended to five weeks and in 2006 to six weeks.

increased its subsidy to day care centres. A new regulation on maximum fees came into force in 2004, reducing the parental payment gradually to \$448 or €280 per month for an ordinary fulltime place from January 2006. The government's motivation for public transfer to day care centres is to facilitate parent's employment, but is also intended to provide the child with a maturing, stimulating, and safe preschool period.

The childcare cash benefit was introduced in 1998 and provides a tax-free cash transfer to couples with children aged between 12 and 36 months.<sup>3</sup> The benefit is generally available as long as state-subsidized day care facilities are not used, and care exceeding 32 hours per week at day care centres makes the family ineligible for the cash benefit. The government's main purpose of the scheme was to (i) give families more flexibility with respect to their own childcare, (ii) provide a cash benefit to parents who preferred to care for their children at home, and (iii) to compensate those who were not offered an external childcare provision. The cash benefit was introduced after considerable political debate. Those in favour argued that the reform would give families "real freedom of choice" regarding the form of care they wanted for their children, while critics argued that the reform created reduced incentives for women to participate in the labour market and therefore encouraged a more traditionally gender-differentiated family (Ellingsæter and Leira 2006).

## **Family policies and fertility hypothesis**

The three policy instruments included in the analysis represent opposite views of mothers and fathers as bread-winners and caregivers, one that implies a strengthening of the traditional gender-differentiated family and another that aims at challenging and changing it (Leira 2002). Based on preferences for motherhood, fatherhood and work–family adjustments, we believe that families respond differently to the policy instruments in terms of their fertility decisions.

The Norwegian parental leave programme is directly connected to mothers' relation to the labour market, which means that there is an important distinction between those entitled and those not entitled to leave. Generally, we assume that couples in which the woman is not connected to the labour market are pursuing a more traditional division of labour in the family. There are good reasons to believe that mothers not entitled to parental leave have a stronger preference for a male-bread-winner/female-carer family. These mothers also differ in their family orientation, and in so far as there is a positive correlation between family orientation and overall fertility, we could assume that mothers not entitled to parental leave have a higher fertility than others. For working women, paid parental

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<sup>3</sup> The reform was introduced for families with one-year-old children in August 1998 and for one- and two-year-old children in January 1999.

leave makes the combination of female employment and family life more feasible. This is because it provides both incentives for women to become established in the labour market before considering childbearing, and allows women to keep a foothold in the labour market while taking care of a newborn child, which means that they can continue with labour market work after leave. A previous analysis of the relationship between parental leave extensions and fertility in Norway and Finland suggests a positive policy impact, as maternity leave extensions are estimated to raise birth rates, although mainly higher parity births and mainly in Finland (Rønsen 2004b). Further, it has been argued that the dual-earner/dual-carer family challenges the gender typing of parental practices and presumes a more egalitarian partnership between mothers and fathers (Leira 2002). One part of the parental leave is earmarked for the father and is used by four out of five fathers. This "father's leave" encourages fathers to be more involved in childcare and is associated with gender equality in the couple. Critics have argued that the equal opportunities content of the parental leave regulations is rather dubious, as the majority of leave-takers appear to be women (Bruning and Plantenga 1999). Nevertheless, there are good reasons to believe that gender equality in the family sphere (at different levels) may give the father a chance to participate in childrearing, which may both increase interest in children and ease women's burden of having the main responsibility in the family sphere (Duvander et al. 2008). Several analyses suggest positive statistical associations between fathers' parental leave use and continued childbearing in Sweden and Norway (Olah 2003; Duvander and Andersson 2006; Duvander et al. 2008), and we should also observe a positive association between father's use of parental leave and continued childbearing.

Generally, we assume that work-related benefits reduce the incompatibility between mothers' employment and family life. The opportunity costs of having a child consist basically of two types—the mother's direct wage loss during labour force withdrawals and her loss of human capital investment and returns on these investments. It has been argued that increasing the supply of higher subsidized day care has made it easier for women to stay in touch with the labour market when they become mothers (Rønsen and Sundström 2002). Available day care can thereby be seen as a way of reducing the opportunity costs of childbearing and childrearing, hence availability of high-quality subsidized day care can be positively associated with continued childbearing. However, as previous empirical findings show mixed results, the direction of the relationship between availability for formal childcare and continued childbearing is rather dubious. A recent Swedish study does not find that local variations in day care characteristics (the proportion of children enrolled in day care, the child-to-staff ratio, and the prices of day care) contribute to a better explanation of patterns in continued childbearing in Sweden (Andersson, Duvander, and Hank 2004). These findings were linked to the fact that there are generally small local variations in an overall high coverage, allowing parents to

make fertility decisions independent of regional variations (Andersson et al. 2004). Also, a study in Western Germany found no effect of the availability of public childcare on childbearing, which was linked to an overall low coverage of available public childcare in Western Germany (Hank and Kreyenfeld 2003). Positive effects of the availability of public childcare on childbearing have been found in Italy (Del Boca 2002) and on first-birth timing in Norway (Rindfuss et al. 2007). For higher parities, only a weak effect of the proportion of children in public day care is shown on third births in Norway (Kravdal 1996).

As previously mentioned, the childcare cash benefit is a cash transfer to parents whose child is not attending formal childcare at ages 12–36 months. This means that parents can use the benefit to either pay alternative childcare or as income compensation for those staying at home with their child. Thus, the cash benefit reduces the cost of alternative childcare (if there is a lack of formal childcare) when mothers return to work after childbirth, and it reduces the costs of parental childcare. Assuming children are a normal good, in both scenarios the childcare cash benefit will reduce the cost for children and thereby increase fertility. However, if parents have preferences for formal childcare, a lack of available places in day care might in any case create a stressful situation, which might delay or reduce childbearing. However, a recent analysis suggests that couples receiving the cash benefit progress more quickly onto subsequent childbearing (Aassve and Lappegård 2008). Although the analyses do not imply any causal relationship, cash-benefit users might be a selected group of parents with generally higher preferences for children.

## **Data**

The individual data for the analysis have been derived from the Norwegian population register. The data set comprises demographic information on all co-residing couples (cohabitants and married) that had their first or second common child during the period 1995 to 2002. The study population covers all couples where the parents are Norwegian born and where the couple's first common child is also the first child of the mother, or where the couple's second common child is also the second child of the mother. This gives a data set of 159,430 one-child couples and of 116,589 two-child couples.

Observations are censored where parents separate. The end of the study period is 2004. The demographic data are merged with information on registered earned income from the Norwegian tax register, and information on educational attainment is added from the Norwegian educational register. Information on parental leave use was made available from the Norwegian Labour and Welfare Organisation (NAV). Data on childcare coverage by municipality are derived from StatBank Norway operated by Statistics Norway.



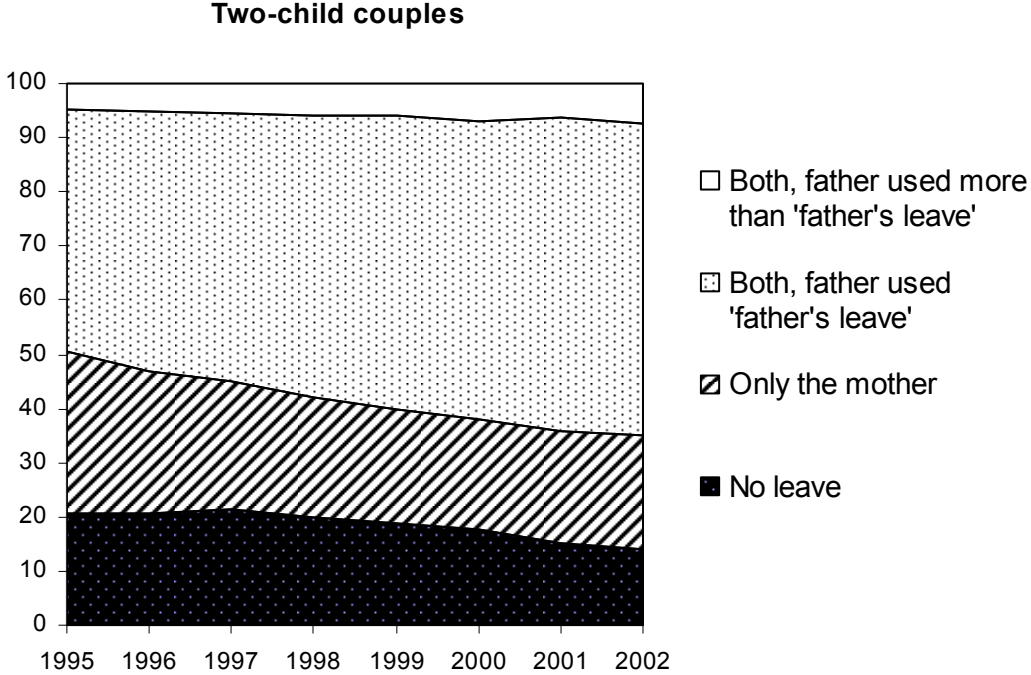
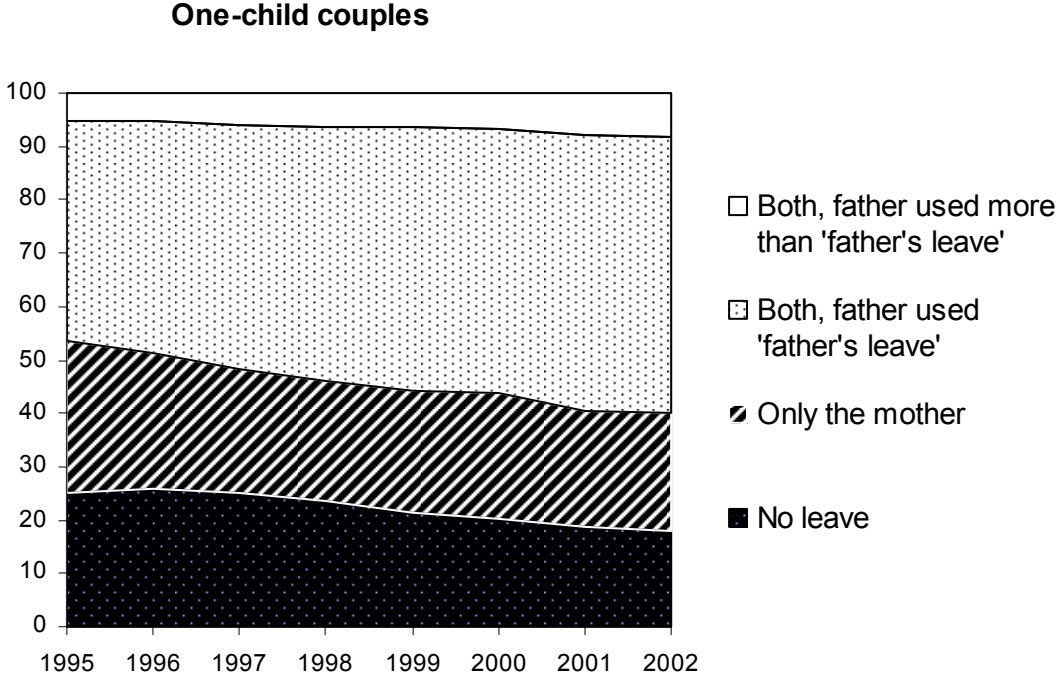
## Variable measurement

The three family policies included in the analysis are measured in different ways. Parents' use of parental leave is constructed as couples use and share parental leave during the first or second child's first year. We have divided the couples into four groups, depending on mothers' and fathers' use: (i) no leave, which means couples in which mothers are not eligible to leave benefit and thereby nor is the father (as explained above); (ii) only the mother, which means couples in which both are entitled to leave benefits, but only the mother uses the parental leave while the father does not use any leave days (which means that the four weeks of "father's leave" is thereby "lost", i.e., not transferable to the mother); (iii) both, the father used "father's leave", which means couples in which the mother uses all the common leave and the father uses the "father's leave"; (iv) both, the father used more than the "father's leave", which means couples in which both the mother and father use leave days and they also share some of the common leave. Figure 1 presents the distribution of couples' use of parental leave over time and shows an increase in the numbers of fathers taking parental leave.

Availability of formal childcare is constructed on the number of children attending kindergarten in the municipalities where couples live in the year their previous child was born. Availability of formal childcare is defined as the actual percentage of children who attend kindergarten for the relevant age group by year. Since there is generally more demand than supply for formal childcare in municipalities, our variable can be seen as both a measure of availability and of coverage. Coverage statistics in the municipalities have been used to divide parents into four groups depending on distribution of the first, second, and third quartiles. This means that the first group of parents lives in municipalities with the worst formal childcare coverage and the last group in municipalities with the best coverage. We have used coverage for children aged 1–2 years in day care. There is generally higher childcare coverage for the oldest age group (3–5 years) than the youngest age group (1–2 years). As a result of generous parental leave benefits for approximately one year, there is practically no supply of formal childcare for children under the age of one. Availability of childcare is important for women to return to work after childbirth. We have included coverage for the youngest age group in our model, as we believe that lack of formal and stable childcare can create a stressful situation for the mother's return to work after child-birth, which might lead to delayed or even avoidance of further childbearing. The median childcare coverage for 1–2 year olds is 40 per cent in 2002, an increase by almost 10 per cent during the period studied here (see Figure 2). It is important to underline that this is not an exact measure of capacity constraints and parents living in different areas might have different preferences concerning use of formal childcare. It has been argued that to understand the relationship between children's day care and women's fertility decisions, the three basic dimensions of cost, quality, and availability should be analyzed jointly (Andersson et al. 2004). We use availability of

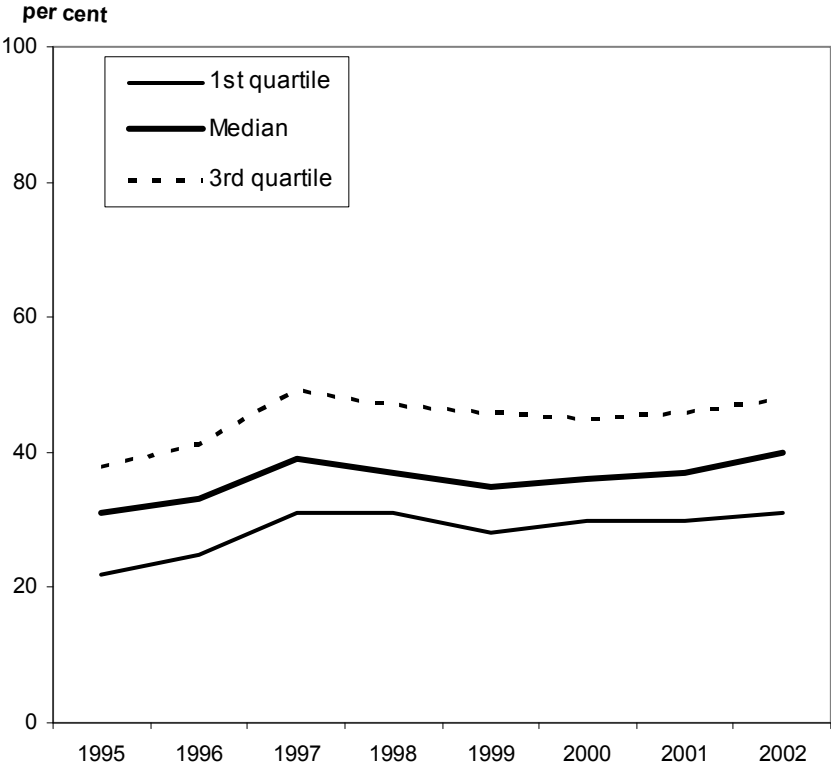
childcare, but we do not have measures for the other three dimensions (for a discussion of why this can be considered less problematic for Norway in the period studied, see Rindfuss et al. (2007)).

**Figure 1. Distribution over time of parents' parental leave use**



The introduction of the childcare cash benefit is measured as a time trend variable for children born before and after the introduction of the policy in 1998. We have divided the periods as follows: (i) the period before the reform, which means that the parents in the analysis have not had access to the policy, (ii) the introduction period, which means the parents are the first group to possibly receive the cash benefit, and (iii) the period after the reform, which means the parents have children born some time after the policy was introduced (children born 2000–2002). We use the time trend variable rather than actual use of the benefit to avoid endogeneity.

**Figure 2. Distribution (%) of parents by children in day care centres, 1–2 years in municipalities**



## Methods

The analysis is based on a discrete-time hazard model. In discrete time, the hazard is the conditional probability that an event (in our case, the birth of the second or third child) will occur at a particular time to a particular individual, given that the individual has not experienced the event before. We assume that the hazard rate varies with a couple's use of parental leave, availability of formal childcare, and time period before and after the introduction of the childcare cash benefit and, in addition, with the current age of the mother and educational attainment. When including availability of formal childcare in the municipalities in such models, it has been argued that a fixed-effects model is

the preferred model for the Norwegian setting since it is able to control for local factors that affect fertility and the supply of childcare (Rindfuss et al. 2007). It has become very common in multilevel analysis to add a time-invariant random term to the intercept. However, previous experience using large data samples from register data (including experimenting with different programme packages) shows that models with a random term are very hard to estimate (Kravdal 2008). The models for this analysis were of two types: one fixed-effects model with municipality dummies, and one naïve model without municipality dummies. When using register data, municipality dummies are to be included in the model to pick up time-invariant unobserved factors at that level. The municipality variables referred to the situation in the (observed interval) in the municipality in which the person lived (at the beginning of that interval) (Rindfuss et al. 2007). Using a logit transformation, the specification of the model can be expressed as:

$$(1) \quad \log\left(\frac{P_{ijt}}{1-P_{ijt}}\right) = \mu_t + \beta x_{ijt} + \gamma z_{ij} + \alpha_{ij},$$

where  $P_{it}$  is the conditional probability that a birth occurs at time  $t$  (here measured in person months) for couple  $i$  from municipality  $j$  and  $1-P_{ijt}$  is the probability that no birth occurs in time  $t$ ,  $Z_{it}$  is a vector of variables that describes the individuals but does not vary over time (e.g., use of parental leave), and  $X_{ijt}$  is a vector of variables that varies over time for each individual (e.g., educational attainment),  $\mu_t$  is an intercept that is allowed to vary with time, and  $\beta$  and  $\gamma$  are vectors of coefficients. The  $\alpha_{ij}$  represents an unobserved, fixed, municipality-level variable that affects the timing of birth, see e.g., (Allison 2005). We follow the couples from when the first or second child reaches the age of one and until the women give birth to their second or third child (or end-of-study). The starting point is chosen because we have included couples' use of parental leave in the model, which takes place during the child's first year. This means that births that take place during this year are excluded from the analysis (this only applies to a very small subpopulation of women).

## Results

We start by reporting the estimated results of couples' use of parental leave for the overall sample. They are shown in Tables 1A, B and 2A, B (A: naïve model; B: fixed-effects model). The results show opposite effects for second- and third-birth rates. For one-child couples, there is a positive association between couples sharing parental leave and second-birth rates, and a negative association between no parental leave use and second-birth rates, compared with the reference category of couples where only

the mother uses parental leave. On the other hand, for two-child couples, there is a positive association between no use of parental leave and third-birth rates, and a negative association between couples sharing parental leave and third-birth rates compared with the reference category of couples where only the mother uses parental leave. This might be linked to different reasons behind why some mothers have not been in the labour market and earned their rights for parental benefits, and therefore belong to the group of no use of parental leave. One reason is that couples are pursuing a traditional division of labour in the family, and another is that the mothers have not yet entered the labour market (and thereby have not worked up rights for parental benefits) because they are still in, or just finished, education. It is likely that one-child couples will capture both these groups and thereby contain a more diverse group than two-child couples. Enrolment in education as a reason for not having entered the labour market, and thereby not gained eligibility for paid parental leave, is less prevalent among two-child couples, and consequently, the effect is more likely to come from the fact that couples pursue a more traditional family role set. That there is a positive association between fathers' use of parental leave and second birth can be seen as an outcome of two possible scenarios: one in which fathers' involvement in childcare makes it more feasible for mothers to combine work and children; and another in which men who use parental leave are more child-oriented than others and thereby more interested in having a second child. That there is a positive association between all use of parental leave and second birth compared with no use of leave shows that working mothers proceed more quickly to the second child than mothers not in the labour market. There is a strong two-child norm in Norway and most women who become mothers proceed to having a second child, which means that the question concerning second births is mainly about choosing the appropriate spacing. Timing is much less of an issue of third births, in which case it is not only a question of timing, but also about whether to have the child.

Education is an important factor in fertility, and since those with higher education delay the onset of childbearing, they also end up having the next child more quickly. This is also shown by the result in our models. As discussed above, different couples might respond differently to different policies and possible correlations between the policies and continued childbearing could vary based on how they have responded to the policy. For better insight into such possible mechanisms, we ran the models separately by mother's educational level.

For the estimates showing the correlation between couples' use of parental leave and continued childbearing, there are some interesting results. First, the general pattern of a positive association between couples' sharing parental leave and second birth rates is more or less consistent in all educational groups (the only exception is among couples where the mother has primary education, where there are no significant effects of fathers taking more leave than the "father's leave" compared

with the reference category). This means that fathers' involvement in childcare is positively related to the timing of second births in couples with working mothers, independently of mothers' educational attainment. Second, the general picture among two-child couples, in which there is a positive association between no use of parental leave and third-birth rates, is not consistent with mothers' educational attainment. The pattern is only consistent among couples in which the mother has a primary or secondary education, while there are no significant differences (and if any, the association is negative) between couples with no use of parental leave and couples that use parental leave, among couples in which the mother has a university education. Also, the pattern of a negative association between couples' share of parental leave and third-birth rates holds, but the association is not statistically significant except among couples in which the mother has a university education at the 2<sup>nd</sup> stage level (Master's degree level), where there is a significant negative association between fathers taking more leave than the "father's leave" and third-birth rates. As already mentioned, timing is less of an issue for third births and the variation that we see by mothers' educational attainment may reflect heterogeneous preferences for work and childbearing in different groups.

We now proceed to the estimated results of the correlation between availability of childcare in municipalities and continued childbearing. Since there might be local factors that both affect fertility and the supply of childcare in the municipalities, we have included a fixed-effects model in our analysis. For the other policies, parental leave use, and the introduction of the childcare cash benefit, there are no significant differences between the estimated results in the naïve model and the fixed-effects model, which is the case for the correlation between availability of formal childcare and continued childbearing. In the naïve model, the results show a negative association between availability of formal childcare and both second and third births. These effects do, however, disappear in the fixed-effects model and there is no statistical association between availability of formal childcare and continued childbearing, neither for the overall sample nor for different educational groups. These results are in line with recent findings from Sweden concluding that variations in formal childcare availability do not give a better explanation of the pattern of continued childbearing (Andersson et al. 2004).

Before concluding, some issues should be addressed. First, our analysis includes the period 1995–2002, which is a period with a strong focus on public day care facilities and with an expansive growth in day care supply. Even though there is not full coverage, there is relatively high coverage, which gives mothers the opportunity to return to work after childbirth and make new fertility decisions. We have chosen to use the coverage of childcare for 1–2 year olds instead of a more general coverage for all young children (aged 1–5), as we believe that the availability of childcare for the youngest children is important for the return to work. However, there might be different

preferences for when to return to work after childbirth and after the paid parental leave period that might be reflected in the lack of significant differences in our analysis. For instance, the complete level of coverage could be more important for couples' fertility decisions than the coverage for the youngest children, as an expression of the general "climate" of family friendliness in the municipalities. To exclude this interpretation, we ran the models using the coverage for children aged 1–5 years instead of the coverage for children aged 1–2 years, without getting any different results than reported. Secondly, since we have included three different policies in the analysis, there is a possibility that the other two policies—the parental leave use and the introduction of the childcare cash benefit—are more important than the availability of formal childcare, and when controlling for these policies, possible effects of availability of formal childcare disappear. To exclude this possibility, we ran the models without the variables of parents' parental leave use and the time trend variable of the introduction of the childcare cash benefit. The results from these analyses are consistent with findings when including all three policies in the models.

Availability of formal childcare and the introduction of the childcare cash benefit are closely intertwined, as parents who either choose not to use day care or are not offered a place will receive the cash benefit. The estimated results for the overall sample show different results for second- and third-birth rates, where the effects are strongest for the third birth. There is a positive association between the introduction of the cash benefit and second births in the period when the reform was introduced. In the period after the introduction of the policy, the association has reversed and is slightly negative. The association between the introduction of the cash benefit and third birth is positive and increases over the period. Further, the estimated results from the models that we ran separately by mothers' educational level show very similar results for second births, but for third births, there is a generally stronger association between the introduction of the childcare cash benefit and third-birth rates among those with higher education than among those with lower educational levels. From previous analysis, we have seen that the cash benefit policy is first and foremost used by mothers with low education and most adapted to their preferences for work and childcare, but the effect of using the cash benefit on fertility timing is most pronounced among those with the highest level of education (Aassve and Lappegård 2008).

It might be possible that interaction exists between the availability of childcare and the introduction of the childcare cash benefit, which means that possible associations between availability of formal childcare and continued childbearing could be different before and after the introduction of the cash benefit policy. To exclude this possibility, we ran the models with an interaction variable for availability of formal childcare and the introduction of the childcare cash benefit. The results from these analyses showed few significant correlations between the two policies, with the exception of a

slightly positive correlation between the availability of formal childcare and the period around the introduction of the cash benefit among couples in which the mothers have higher education.

**Table 1. Relative risk of second birth for selected family policy measures and mother's educational attainment: (A) Naïve and (B) Fixed-effects models**

(A) Naïve model	All	Mother's Educational Attainment			
		Primary	Secondary	University, 1 <sup>st</sup> stage	University, 2 <sup>nd</sup> stage
<b>Couple's use of Parental Leave</b>					
No use	0.86**	0.91**	0.85**	0.84**	0.87**
Only the mother	1	1	1	1	1
Both, father used "father's leave"	1.17**	1.20**	1.17**	1.15**	1.12**
Both, father used more than "father's leave"	1.16**	1.13*	1.12**	1.18**	1.14**
<b>Availability of childcare</b>					
0	1	1	1	1	1
25	0.93**	0.95*	0.93**	0.94**	0.94ns
50	0.92**	0.93*	0.92**	0.92**	0.94ns
75	0.87**	0.88**	0.86**	0.86**	0.90**
<b>Childcare cash benefit</b>					
Period before the reform	1	1	1	1	1
Period introducing the reform	1.07**	1.05*	1.04**	1.09**	1.09*
Period after the reform	0.97*	0.95ns	0.95**	0.99	0.99ns
<b>Mother's Education</b>					
Primary	0.82**				
Secondary	1				
University, 1 <sup>st</sup> stage	1.25**				
University, 2 <sup>nd</sup> stage	1.34**				
<b>Father's Education</b>					
Primary	0.86**	0.89*	0.84**	0.87**	0.78**
Secondary	1	1	1	1	1
University, 1 <sup>st</sup> stage	1.15**	1.17**	1.15**	1.14**	1.14**
University, 2 <sup>nd</sup> stage	1.27**	1.51**	1.27**	1.25**	1.26**



**Table 1 (cont.)**

(B) Fixed-effects model	All	Mother's Educational Attainment			
		Primary	Secondary	University, 1 <sup>st</sup> stage	University, 2 <sup>nd</sup> stage
Couple's use of Parental Leave					
No use	0.86**	0.90**	0.85**	0.84**	0.88*
Only the mother	1	1	1	1	1
Both, father used "father's leave"	1.16**	1.19**	1.17**	1.15**	1.11*
Both, father used more than "father's leave"	1.17**	1.12ns	1.12**	1.18**	1.16**
Availability of childcare					
0	1	1	1	1	1
25	0.99ns	0.96ns	0.96ns	1.04ns	1.03ns
50	1.00ns	0.97ns	1.00ns	1.03ns	0.99ns
75	0.99ns	0.86*	0.94ns	1.04ns	1.06ns
Childcare cash benefit					
Period before the reform	1	1	1	1	1
Period introducing the reform	1.06**	1.04*	1.04*	1.08**	1.08*
Period after the reform	0.97**	0.94*	0.94**	0.98ns	0.98ns
Mother's Education					
Primary	0.83**				
Secondary	1				
University, 1 <sup>st</sup> stage	1.26**				
University, 2 <sup>nd</sup> stage	1.37**				
Father's Education					
Primary	0.87**	0.90**	0.85**	0.88**	0.80*
Secondary	1	1	1	1	1
University, 1 <sup>st</sup> stage	1.17**	1.19**	1.18**	1.17**	1.16**
University, 2 <sup>nd</sup> stage	1.31**	1.53**	1.31**	1.30**	1.30**

\*\* p <= .001; \* p <= .05; ns = not significant

NOTE: All models are controlled for mother's age.

**Table 2. Relative risk of third birth for selected family policy measures and mother's educational attainment: (A) Naïve and (B) Fixed-effects models**

(A) Naïve model	All	Mother's Educational Attainment			
		Primary	Secondary	University, 1 <sup>st</sup> stage	University, 2 <sup>nd</sup> stage
<b>Couple's use of Parental Leave</b>					
No use	1.12**	1.27**	1.17**	1.00ns	0.90ns
only the mother	1	1	1	1	1
both, father used "father's leave"	0.98ns	0.98ns	0.97ns	0.97ns	0.95ns
both, father used more than "father's leave"	0.93*	0.95ns	0.98ns	0.94ns	0.83*
<b>Availability of childcare</b>					
0	1	1	1	1	1
25	0.92**	0.93ns	0.91**	0.93**	0.90s
50	0.90**	0.93ns	0.89**	0.90**	0.87*
75	0.86**	0.86**	0.85**	0.87**	0.85*
<b>Childcare cash benefit</b>					
Naïve model					
Period before the reform	1	1	1	1	1
Period introducing the reform	1.09**	1.03ns	1.08**	1.12**	1.20**
Period after the reform	1.23**	1.21**	1.13**	1.30**	1.34**
<b>Mother's Education</b>					
Primary	0.87**				
Secondary	1				
University, 1 <sup>st</sup> stage	1.54**				
University, 2 <sup>nd</sup> stage	1.84**				
<b>Father's Education</b>					
Primary	0.90**	0.97ns	0.85**	0.92*	1.03ns
Secondary	1	1	1	1	1
University, 1 <sup>st</sup> stage	1.24**	1.29**	1.24**	1.22**	1.17*
University, 2 <sup>nd</sup> stage	1.47**	1.47**	1.62**	1.49**	1.32**

**Table 2 (cont.)**

(B) Fixed-effects model	All	Mother's Educational Attainment			
		Primary	Secondary	University , 1 <sup>st</sup> stage	University , 2 <sup>nd</sup> stage
Couple's use of Parental Leave					
No use	1.10**	1.25**	1.15**	0.98ns	0.91ns
Only the mother	1	1	1	1	1
Both, father used "father's leave"	0.97*	0.98ns	0.97ns	0.96ns	0.95ns
Both, father used more than "father's leave"	0.95*	0.94ns	0.97ns	0.95ns	0.84*
Availability of childcare					
0	1	1	1	1	1
25	1.02ns	1.06ns	1.04ns	0.98ns	0.99ns
50	1.01ns	1.00ns	0.94ns	1.02ns	1.02ns
75	1.04ns	0.93ns	1.03ns	1.03ns	1.09ns
Childcare cash benefit					
Period before the reform	1	1	1	1	1
Period introducing the reform	1.09**	1.02ns	1.08**	1.11**	1.21**
Period after the reform	1.21**	1.18**	1.12**	1.27**	1.36**
Mother's Education					
Primary	0.89**				
Secondary	1				
University, 1 <sup>st</sup> stage	1.54**				
University, 2 <sup>nd</sup> stage	1.87**				
Father's Education					
Primary	0.92**	1.01ns	0.86**	0.93*	0.99ns
Secondary	1	1	1	1	1
University, 1 <sup>st</sup> stage	1.28**	1.30**	1.28**	1.27**	1.25**
University, 2 <sup>nd</sup> stage	1.59**	1.62**	1.74**	1.61**	1.43**

\*\* p <= .001; \* p <= .05; ns = not significant

NOTE: All models are controlled for mother's age.

## **Discussion and conclusion**

In recent years, many empirical studies have focused on explaining the relationship between specific family policies and fertility outcomes. In our study, to get an overall insight into the relationship between family policy and fertility, we used three somewhat different policies that are part of a generous social package offered to parents of young children in Norway. Our analysis covers a period with strong political focus on the issue of reconciliation of work and family life, and during the last decade, the governmental budget for family policies has increased by more than 30 per cent. Norwegian family policy has been described as "double-tracked", combining dual-earner support with traditional breadwinner elements (Ellingsæter and Leira 2006). For instance, the implementation of "father's leave" in the parental leave system was a political action with a clear intention of influencing the gender balance in the family, while the introduction of the childcare cash benefit was meant to give families "real freedom of choice" regarding childcare in the family. It has been argued that unequal responses of fathers and mothers to the parental leave programme and the childcare cash benefit scheme are an indication that mothers and fathers pursue different combinations of work and parenthood, and invest differently in their families (Leira 2002). The implication of "father's leave" can be considered a success in the sense that the majority of fathers entitled to the leave make use of this, but there have only been minor changes in the share of common leave, i.e., mothers still take the lion's share of the leave. While "father's leave" was clearly gendered, the childcare cash benefit was supposed to be gender-neutral, but evidence suggests that it is not, since 98 per cent of the users are mothers.

In our study, the analyses show that couples have responded differently to different policies in their fertility outcomes. Generally, there seem to be somewhat different mechanisms going on among one-child couples and two-child couples. The policy that promotes father involvement in childcare and gender equality is positively linked to the timing of second births, while the policy that has been considered gender-biased is positively linked to the timing of third births. Couples in which at least the mother uses the parental leave proceed more quickly to second birth than couples in which neither parent uses any leave, and the more leave taken by the father, the more quickly they have another child. These findings are in line with other studies from Norway and Sweden that suggest that increased paternal involvement in child rearing is positively related to the timing of second child (Duvander and Andersson 2006, Duvander et al. 2008). It is, however, important to underline that no causality can be concluded, which means that we cannot claim that these results reflect a causal impact of gender-equal behaviour on couple fertility. Fathers' use of parental leave is also still far from level indicating through gender equality. Also, different couples respond differently to different policies, e.g., fathers' parental leave use is more pronounced among couples with higher education than others,

but the positive association between fathers' use of parental leave and timing of second birth is consistent across the various educational groups. More egalitarian partnerships between mothers and fathers ease mothers' burden of work at home, and thus enhance the degree of compatibility between family work and employment. In dual-earner/dual-carer families, such compatibility seems to make it easier to have a second child more quickly. However, we do see opposite findings for third births, where parental leave use is not positively associated with third-birth rates. Since the majority of one-child couples have another child (around 80 per cent), the issue of second child is mainly about choosing the appropriate spacing, while third birth, to a greater extent, also concerns the issue of whether or not to have another child. The childcare cash benefit has a stronger positive association between the introduction of the policy and third births than with second births. Also, no use of parental leave, indicating a male bread-winner/female carer family, is positively associated with third births compared with dual-earner/dual-carer families.

Provision of childcare is considered a key instrument for reconciliation of family life and work in western countries. In this study, we do not find any significant associations between availability of formal childcare and further childbearing. The fact that there were no variations in couples' responses to variations in day care coverage in the municipalities in relation to their fertility decisions does not mean that the policy is not necessary to ensure the compatibility of work and family. In a Swedish study, Andersson et al. (2004) point out two arguments on this matter that are relevant also in the Norwegian context. First, small variations in an overall high coverage make fertility decisions independent of local differences, and second, the overall generous social family package easily cushions minor deficits in a municipality's childcare infrastructure (Andersson et al. 2004).

An important insight of this study is that both policies are designed to improve reconciliation of work and family, and policies designed to improve childcare choices for parents are indeed popular. This means that the so-called "double-tracked" family policy seems to apply to different couples in a positive matter. In terms of fertility outcomes, there is wide heterogeneity in terms of how couples respond to the policies.

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