Childcare cash-benefits and fertility timing in Norway

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Paper prepared for the Annual Meeting of the Population Association of America, New Orleans, 17-19 April 2008

In 1998 a new cash-benefit for parents with young children was introduced in Norway. Its purpose was to provide a cash payment to parents who either preferred to care for their children at home or to compensate those who were not offered external childcare provision. It has been argued that the new policy encouraged women to stay at home with their children, possibly reducing labour supply. The policy was consequently considered gender biased, creating reduced incentives for women to participate in the labour market and therefore encouraging a more traditional division of labour of husbands and wives. Given this background of the policy, we undertake an analysis in two parts. We ask first the question "who takes the cash-benefit?" Second, by applying simple matching techniques, we ask the question "Do couples taking the benefit behave differently in terms of their fertility timing?" Using information from Norwegian registers we find that more traditional households (in a broad sense) are more likely to take the cash-benefit. Those taking the benefit accelerate childbearing significantly, though the reasons why they do so varies by socio-economic groups.

1 Introduction

Provision of childcare is considered a key instrument for reconciling family life and work in western societies. The argument is simple: with a generous and flexible childcare system, women are better able to combine a successful working career with their family aspirations, simply because childcare duties can be outsourced to formal childcare facilities. Thus, generous and flexible childcare arrangements are a prerequisite for ensuring higher female labour force participation. Whereas the literature has established that childcare is indeed instrumental in women's participation in the labour force, e.g. (Gustafsson & Stafford, 1992; Kreyenfeld & Hank, 2000; Kornstad & Thoresen, 2006, 2007; Del Boca & Vuri, 2006), less is known about possible links to women's fertility decisions (for a review of the literature see Gauthier, 2007; Neyer, 2003). At the macro-level, several studies have shown that the correlation between female labour force participation and fertility have turned from negative to positive in industrialized countries, e.g. (Esping-Andersen, 2002; Rindfuss, Guzzo & Morgan, 2004; Billari & Kohler, 2004), and it has been argued that countries facilitating social policies that make female employment and childrearing more compatible, both experience higher female labour market participation and higher fertility (e.g. Daly, 2000; Esping-Andersson, 2002; Stier, Lewin-Epstein, & Braun, 2001). Intuitively childcare provision should matter for at least two reasons. One is the financial aspect, which stipulates that subsidized childcare will infer a positive income effect, reducing the overall cost of bearing children. The other concerns the timing decision of childbearing. For women aiming at a life-long working career the timing of both the onset of childbearing and subsequent spacing is important, and is certainly made easier with a fully flexible system of childcare provision.

In this paper we consider Norwegian women's fertility timing during a time where the system of childcare experienced a quite specific change. The change was as follows: prior to 1998 families with young children were offered generously subsidized childcare, the great majority provided by the state. The purpose of the childcare cash-benefit reform was to provide cash payment to parents who either preferred to care for their children at home or to compensate those who were not offered external childcare provision. This means that families using formal childcare are supported by subsidized services, while the others are compensated through a cash transfer, which in turn can be used to pay informal childcare or to finance own care. It has been argued that the new policy encouraged women to stay at home with their children, possibly reducing female labour supply. The policy was consequently considered

gender biased, creating reduced incentives for women to participate in the labour market and therefore encouraging a more traditional division in the families. Generally, policies are often distinguished either as a way to ease the work-family conflict (i.e. policies implemented to make work easier when having children) or as a direct support for childbearing (e.g. child support). In Norway, family policies have never been directed specifically at encouraging childbearing, and this was not the aim of the cash-benefit reform either. In a sense the policy exhibits both work-family reconciliation and direct support to childbearing. Clearly those with a preference for caring of their own children at home will consider the policy as a direct subsidy for childbearing. But the fact that some choose to care for their children at home (possibly as a direct result of the cash-benefit) also frees capacity in external child care, making it easier for those choosing to work to find available external childcare. As such the policy might have a positive effect on the work-family reconciliation. We consider here how women have responded to the new policy, both in terms of who actually takes the new benefit, but also its possible links to fertility timing.

The analysis is conducted in two stages. First, we use information about mother's actual take-up of the new cash-benefit. As a result we are able to analyse who takes the benefit in the first place (as opposed to using formal state provided childcare). Second, conditional on taking the benefit, we analyse whether those mothers doing so behave differently in terms of fertility timing. We concentrate on second and third births, since the cash-benefit is conditional on having at least one child. In other words, following on from the first birth, we compare differences in timing of second and third births of those opting for the cash-benefit against those sending their young children to state provided kindergartens (and who are therefore not eligible for the cash-benefit). The key question is whether those opting for the cash-benefit are quicker in terms of the timing of the second and third child. Using information from Norwegian registers we have rich information on parents' background. There is detailed information about mothers and fathers' education (years spent in education and field of study), income history, and importantly, information about commune level coverage of external childcare. The analysis is performed separately by second and third births, and by mothers' educational attainment and income level.

2. The childcare cash-benefit

The cash-benefit was introduced by a conservative coalition government and was generally opposed by the opposition on the left. After considerable political debate the cash-

benefit was put in place in 1998. The aim of the reform was threefold: (i) to give families more flexibility with respect to own childcare, (ii) to provide a cash-benefit to parents who preferred to care for their children at home, and (iii) to compensate those who were not offered external childcare provision. With the new system introduced in 1998-1999 subsidized childcare was maintained, but families with children aged 12-36 months were given the alternative option of receiving a tax-free cash transfer that depends on utilization of state provided childcare, see Table 1. Care exceeding 32 hours per week at day-care centres makes the family non-eligible to the cash-benefit. The combination of part-tine kindergarten and reduced cash-benefit is used by about 18 per cent of the children parents are receiving the cash-benefit for. The maximum transfer is approximately EURO 450 per month, which is roughly equivalent to the state subsidy per child given to day-care centres.

[Table 1 in around here]

Many parents have received the cash-benefit after the reform was introduced, e.g. 72 percent in 2003. Later this proportion has declined, possibly driven by increased day-care supply. At the end of 2002 the coverage rate at day-care centres among 1-2 year olds were 41 per cent, which rose to 62 per cent at the end of 2006. Table 2 shows the distribution of childcare modes in Norway of the year 2002. Here the second column gives the percentages for *all* parents with children aged between 1 and 2 years. The third column shows the distribution for childcare mode for those receiving the cash-benefit for at least one month during the year.

[Table 2 in around here]

Naturally, caring for their own children is more common in this group whereas the number of parents sending their children to kindergarten are considerably lower (i.e. only 14 percent). It is important to bear in mind that *not* taking state-subsidized childcare is the only eligibility constraint. For instance, parents may work full time and still receive the benefit, in which case - presumably - the cash-benefit is spent on informal childcare such as au pair or babysitters. Alternatively, the parent may keep the benefit and reduce their labour supply, possibly leaving the labour force, and care for the child themselves.

3. Theoretical framework

An important aim of the policy was to give families more flexibility with respect to own childcare until the child is three years of age. By compensating families with young children who did not use formal childcare the policy is rather adaptable with respect to parent's labour work decisions. Whether the childcare cash-benefit reform leads to a change in female labour supply depends on her preferences over work and childcare alternatives. One may distinguish between preferences for parental care, informal care and formal care. Parents with preferences for parental care are likely to differ in their family orientation, possibly adopting a more traditional male breadwinner model of family life. Whereas the cash-benefit was supposed to be gender-neutral, all evidence suggests that it was not. Mothers are the main receivers of the cash-benefit (96 percent) and earlier evaluations of the cash-benefit reform show that there have been some adjustments in childcare and labour supply, mainly by the mother. Several studies have reported a negative effect of the benefit on mothers' labour supply since the reform was introduced (Håkonsen, Kornstad, Løyland, & Thoresen, 2001; Knudsen, 2001; Rønsen, 2001, 2005; Schøne, 2004).

If the parents have preferences for formal childcare the issue of capacity constraints of external childcare facilities is undoubtedly an important driver behind their take-up of the cash-benefit. For these mothers it is likely that the cash-benefit is used to pay informal childcare rather than to finance own care. Parents with preferences for informal childcare over formal childcare are not a large group (around 10 per cent of parents of children aged 1-2 used informal childcare, i.e. au pair, child minders) and surveys have shown that the majority of those using informal childcare would have chosen formal childcare if available (Pettersen, 2003).

There is of course a financial side to the policy that may influence parent's preferences for work and childcare alternatives. The expenses for formal day-care (i.e. day-care centers) are shared between the state, the municipality and the parents. In 1998 the average price was around 440 EURO. After introducing the cash-benefit the cost for a full-time place at a day-care center does not only include the fee parents pay, but also the additional cost of loosing out on the cash transfer (Kornstad & Thoresen, 2007). For mothers that would have stayed at home in any case, obviously the cash-benefit provides an increase in disposable income, but in the sense the policy has an income effect for working mothers, the size of the effects depends on her income level. The income effect will be stronger for mothers with low

earnings, since for them the cash-benefit will be perceived as relatively large (at least compared to mothers with higher earnings). These effects can be explained in light of mother's perceived opportunity cost of children, which consists of two parts. One is the mother's direct wage loss during labour force withdrawal. The other is her loss of human capital investment and returns to these investments. Earnings matter of course as this will determine the perceived reduction in the cost of children following the cash-benefit. Since it is a fixed amount per child, mothers with low earnings (and therefore lower opportunity costs) may find the cash-benefit more attractive. They are consequently more likely to withdraw from the labour market and care for their children at home. For mothers with high earnings we expect the opposite pattern since the cash-benefit is considered small in relative terms.

There are good reasons to believe that those taking the cash-benefit might behave differently in terms of childbearing. It is natural to assume that those accepting the benefit also have a stronger preference for caring for their children on their own. These mothers also differ in their family orientation, and in so far there is a positive correlation between family orientation and overall fertility we should observe, all else equal, cash-benefit recipients proceeding quicker to have the next child. In other words, mothers with preferences for parental care would reduce the spacing between births. The argument behind this comes from the economic benefit of the cash-benefit. The cash-benefit provides an increase in disposable income and assuming children are a normal good it will reduce the cost of children and thereby increase fertility. Importantly, if the mother has her second child within two years, the cash-benefit could operate as an alternative income source continuously available for four years. For mothers with preferences for formal childcare we should not necessarily expect any dramatic change in terms of child spacing. As previously mentioned, the take-up of the cash-benefit is voluntary and the only requirement for eligibility is that the child does not attend formal childcare. This means that take-up of the benefit is not necessarily equivalent with mothers staying at home. Some cash-benefit recipients might have preferred kindergarten if available, but instead 'forced' to take the benefit whilst awaiting an available space. Mothers without external childcare temporarily but with strong work preferences will most likely use the benefit to cover informal childcare while still working.

There are other relevant scenarios to be outlined as well – possibly contradictory in terms of effects. First, working mothers are entitled to at least one year of paid parental leave. The requirement for gaining eligibility is that the woman works more than half time (i.e. 50 percent) for six out of the last 10 months. For working mothers one could on one hand expect increased spacing between births simply because it is important for them to return to the

labour market before having the next child, thereby maintaining their foothold in the labour market. Moreover, returning to the labour market will secure their right to keep their current job position. In addition to the year of paid leave parents are entitled to another year of unpaid leave. After this leave period they can apply for additional leave, but without the right to return to their original job position. Contrary to this line of thought one could also imagine scenarios where the economic benefits of the cash-benefit reduced child spacing also for working mothers. That is, some mothers might take advantage of the cash-benefit to have *two* children within an extended break from the labour force.

As for educational attainment and its role on child spacing (with or without the child cash-benefit), it is critically important to bear in mind that mothers with high education significantly postpones the *onset* of childbearing – simply because they spend longer time in education. This is of course the case in most developed countries. There will consequently be important recuperation effects, which are manifested through quicker progression to second births among those with high education. With the cash-benefit one would expect that the extra income associated with it will be more attractive for those with low education (just as we described above regarding income and earnings). As a result, we would expect them to be much more likely to take the cash-benefit. In contrast, those with higher education the cash-benefit will be perceived as less important or less attractive, for the same reasons as discussed above, and they will consequently be less likely to take the benefit. What additional effect on child spacing should we then expect for those taking the cash-benefit? Since the benefit is more substantial – relatively speaking – for those with low education, we should observe a larger effect among these mothers. The effect should be smaller for those with higher education.

This line of arguments suggests that conditional on receiving the cash-benefit, mothers with different education will behave differently with respect to further childbearing. It is worthwhile however considering other possible responses among those women with high education taking the cash-benefit. First, we expect them to be much less likely to take the cash-benefit than those with low education. Whereas it is easy to see why low education mothers would take the benefit (and consequently predict the effect of the cash-benefit) it is more difficult to make the answer for those with high education. Since these mothers belong to a group of women that we assume are least likely to receive the cash-benefit in the first place, it is possible that their use of the benefit is driven by different motives that may give contradictory results. For instance, in contrast to those mothers who return to the labour market quickly both because they want to keep a foothold in the labour market and to obtain

eligibility for renewed maternity leave, some highly educated mothers may nevertheless have a strong preference for parental care. Consequently, they will take the cash-benefit since it is available to them. As a result they may not be equally quick in returning to the labour market as those who have a strong preference for formal child care – all else equal. Instead, they might be quicker to have the second child. This would imply that because of their preference for parental care, they make a comprise with regard to their labour market career. One may think that the attractiveness of taking a longer break from the labour market for this reason is related to the husband's income level. That is, the higher the income of the husband, the easier it will be for a woman with high education – with preference for parental care – to take a longer break from the labour market. Of course, as discussed previously, an equally likely scenario is that some highly educated women may take the cash-benefit because they cannot find available formal child care. If the mother as a result has to care for their children herself, which would be against her preference, then the childbearing event may in fact be considered as a stressful event, in which case she might delay having the next child. If this is the dominating effect, then we should expect the effect of cash-benefit receipt to delay further childbearing. The alternative is of course that the woman spend the cash-benefit to cover informal child-care. In this case one should not necessarily expect any change in child spacing, neither for mothers with high income or high educational attainment.

4 Data

The data are derived from Norwegian population registers and cover the period 1998-2005. The dataset comprise demographic information on all co-residing couples with one or two common children who ever lived in Norway during this period. The dataset only include couples where their first common child is also the first child of the mother. The demographic data is merged with information on registered earned income stemming from Norwegian tax registers. Information on educational attainment is added from Norwegian education registers and information on parental leave and the cash-benefit uptake are made available from Norwegian Labour and Welfare Organisation (NAV).

In order to follow the couples both during the cash-benefit period and until the child is 5 years old we restricted our dataset to couples with children born in 1998, 1999 and 2000, which thereby comprise 56,670 one-child couples and 50,508 two-child couples. We estimate models for second and third births separately, since we know that fertility patterns differ by parity. The large majority of all one-child parents in Norway proceed to have a second child,

while around half of two-child parents have a third child. As previously mentioned, take-up of the cash-benefit is voluntary, and eligibility depends on whether the parents have access to kindergarten for their child(ren). Moreover, the maximum time period parents can receive the cash-benefit is 24 months (i.e. when the child is aged between 12 and 36 months). They can however, take the cash-benefit for a shorter time period. If for instance formal childcare (i.e. kindergartens) was not immediately available the parents may opt for the cash-benefit in the meantime. Thus take-up of the benefit is not a simple dichotomy, as is clear from Table 3 which shows the distribution. Only 12 percent of couples choose to *never* take the cash-benefit, whereas around half of all couples take the full cash-benefit, and a large proportion take the benefit in a period ranging from 13 to 23 months[1]. For the propensity score estimation (to be explained in the next section), however, we divide couples into two groups: 1) those taking the cash-benefit and 2) those couples who do not. We choose a cut point of 12 months, implying that those couples taking the cash-benefit for 13 months or more are defined as taking the cash-benefit, those with 12 months or less are defined as not taking the benefit. The cut-off at 12 months is admittedly somewhat arbitrary. We tried alternative specifications where the cut-off point deviated from the 12 month threshold. We also tried a simple linear regression where the dependent variable is the number of months couples took the cash benefit. The specifications produce similar results and the linear regression produces qualitatively very similar results.

[Table 3 in around here]

Our demographic variables include *age of mother* at first/second birth in three-year age groups from 19-21 to 40-42 years and *age difference between parents*. *Country of origin* are categorized into a) Norway, b) Nordic countries, c) Western Europe otherwise, except Turkey, d) Eastern Europe, e) North America, Oceania, e) Asia, Africa, South and Central America, Turkey. We also control for *calendar year* of first/second birth, 1998, 1999 and 2000. *Marital status* is divided between married and cohabiting couples. *Earned income* is calculated at the price level of 1999, and calculated as the average earned income three years prior to birth. This variable, that is presented for both mother and father, is categorized into very low level of earnings (EURO 0-12,500), low earnings (EURO 12,500-21,875), medium earnings (EURO 21,875-31,250), high earnings (EURO 21,875-40,625), and top earnings (more than EURO 40,625). In order to capture the gender balance in breadwinning we included a variable of the proportion of mothers earned income on fathers earned income,

using the average earned income three years prior to birth. The variable is categorized into mother's income -25%, 26-50%, 51-75%, 75-100% of father's income, and mother's income more than father's income. We include *educational attainment* of father and mother year before first/second birth, and categorized into primary, secondary, and university, 1st and 2nd stage, education. *Father's use of parental leave* is categorized into a) not entitled to leave benefits, b) entitled to leave benefits, but no leave days, c) fathers quota of one month[2], and d) more leave days than father's quota. *Children 1-2 year in kindergarten* in municipalities are categorized into a) less than 25%, b) 26-35%, c) 36-45%, d) 46-55%, and e) 56% or more.

5 Method

Our aim of this analysis is two fold. On one hand we are interested in analysing who takes the cash-benefit. For this purpose we estimate a simple logistic regression, using a dichotomous definition of cash-benefit take-up. On the other hand, we are also interested in assessing if those taking the benefit differ in their timing of childbearing. For this part we implement a simple Propensity Score Matching procedure, where the Propensity Score (i.e. the propensity of taking the cash-benefit) is derived from the first stage. From this we perform a matching procedure to compare fertility outcomes of those taking the cash-benefit compared to those who do not. The available background variables are extremely rich. For instance, individuals' educational attainment is given by a six digit variable which not only describes the length of education, but also a very detailed description of their educational field. For instance, there are several categories of nurses depending on their type of specialisation and advanced training. Similarly for teachers, several categories are available depending on their subject of specialisation and level of further training. This is a benefit for the propensity score matching, since the resulting matches of couples are very similar in background characteristics. We use consequently the full set of background characteristics for the matching approach. Whereas such a detailed set of background variables might be problematic when using a household survey, this is not a problem in our case. The large sample ensures that all possible cells have sufficient number of observations.

However, in our presentation of the determinants of who takes the cash-benefit, i.e. the first stage of our analysis, we do not include the whole range of covariates. Instead, we present results from a logit regression with a reduced set of variables, bearing in mind that for the propensity score estimation implemented in the second stage make use of all variables.

Propensity score matching is a widely used approach for program evaluation (see, among others, Blundell *et al.* 2005; Lechner, 2002; Dehejia and Wahba, 1999). In contrast to parametric regression, such as the linear regression model or logistic regression, the approach does not impose any functional form in the relationship between explanatory variables and the outcome of interest. The approach involves pairing individuals or couples that are similar in background characteristics, but who differ in the treatment – here being whether they received the cash-benefit or not. The difference between the matched individuals in terms of timing of second and third births can then be attributed to the treatment. More specifically, we assume that each individual *i* has two potential outcomes, Y_{1i} in the case a woman (or couple) choose to receive the cash-benefit (the treatment) and Y_{0i} in the case she does not (the controls). Y_{0i} is often referred to as the 'counterfactual'. The "causal" impact is given by the comparison between Y_{1i} and Y_{0i}. Let D_i be the treatment variable taking the value 1 if individual *i* receives the treatment (i.e. takes the cash-benefit) and 0 otherwise (does not receive the cash-benefit). The *average treatment effect on treated* (ATET) is expressed as:

$$\text{ATET} = \text{E}(Y_{1i} - Y_{0i}|D_i = 1) = \text{E}(Y_{1i}|D_i = 1) - \text{E}(Y_{0i}|D_i = 1) \quad (1)$$

A naïve estimator of ATET would be to consider the difference between treated and control groups:

$$\text{ATET} = \text{E}(Y_{1i}|D_i = 1) - \text{E}(Y_{0i}|D_i = 0) \quad (2)$$

This assumes however, that there is *no* selection bias, which means that the group of treated is randomly selected from the total population so that in all other relevant respects apart from receiving the treatment the two groups may be regarded as comparable. As will be clear (Table 3) this is not the case here. Identification of ATET requires that we impose *mean* independence (Smith and Todd 2005), i.e. $\text{E}(Y_{0i}|X_i, D_i=0) = \text{E}(Y_{0i}|X_i, D_i=1)$. Thus the ATET can be written as:

$$\text{ATET} = \text{E}_{X|D=1}\{\text{E}(Y_{1i}|X_i, D_i=1) - \text{E}_{X|D=1}\{\text{E}(Y_{0i}|X_i, D_i=0)\}. \quad (3)$$

Matching is based on the *propensity score* (Rosenbaum and Rubin 1983), which is the conditional probability of receiving the treatment given the values of *X:* $p(X_i) = \Pr(D_i = 1|X_i)$. ATET can then be written as:

$$\text{ATET} = E_{p(X_i)}\{[E(Y_{1i} \mid D_i = 1, p(X_i)) - E(Y_{0i} \mid D_i = 0, p(X_i))]\} \quad (4)$$

Several matching procedures can be used to estimate (4) (see, for example Becker and Ichino, 2002; and Smith and Todd, 2005), but all of them can be seen as generated by the following formula:

$$\hat{ATET} = \frac{1}{n_1} \sum_{i \in \{D_i = 1\}} \left[Y_{1i} - \sum_{j \in \{D_j = 0\}} w_{ij} \cdot Y_{0j} \right] \quad (5)$$

where the weight w_{ij} is defined according to the matching method used and n_1 is the number of treated individuals. We implement a *nearest neighbour* matching consisting of pairing every treated unit with the closest control unit in terms of their propensity score (see Smith and Todd, 2005 and Caliendo and Kopeinig, 2005).

Observed variables, suspected to confound the effect of cash-benefit on future fertility outcomes, are included in the estimation of the propensity score. They include: year, age, income history prior the event and education with detailed information about the field of study.

The typical interpretation of PSM estimation is that the difference between the treatment group and the controls reflect the causal effect from receiving the treatment, here being take-up of the cash-benefit. Such an interpretation is somewhat questionable in our application however. The problem lies in the fact that selection may in addition to all observed background variables, also depend on further characteristics that are unobserved to us. That is, couples of the same observed characteristics may still be different in *planned* behaviour (unobserved to us) in terms of their childbearing timing. For instance, a couple might have planned to shorten the timing between the first and second child independently of the availability of the cash-benefit (and independently of any observed variables). However, since the cash-benefit is available they might take it simply because it is available to them. In the parametric regression framework, not controlling for such unobserved preferences gives an omitted variable bias in so far it is correlated with any of the other explanatory variables[3]. In terms of the counter factual approach, in which the PSM is based upon, presence of unobservables implies an irregular assignment mechanism. The implication is the same, since not all bias is controlled for. The magnitude of the bias is of course difficult to assess since such preferences would be unobserved. However, it is important to bear in mind that in so far such preferences are captured by *observed* variables, such as income and education, the bias

will be controlled for in the PSM approach. The rich set of background variables available is of course an advantage.

On a related point, given the fact that fertility timing could be driven by unobserved preferences of child spacing independent of all observed variables, means that our analysis design does not answer the more general question about whether the *introduction* of the policy itself changed overall fertility levels. It is also worth mentioning that our analysis includes couples only. Clearly, it is possible that from the time of the first birth, some of them might go onto to separate during the observed five year window. We do not make explicit control for this and acknowledge that separating couples may behave differently from those who do not. As such our estimates will reflect the average of those remaining together and those who split during the period.

6 Who takes the cash-benefit?

Table 4 presents the results from a logit model of cash-benefit take up[4]. It is a simplified specification of the propensity score used for the matching stage. The estimates in Table 4 are expressed in terms of relative risks for the various categories of our variables. A risk value greater than one indicates that the propensity to receive cash-benefit is higher than for parents of the reference category of the same variable; a risk value lower than one indicates a reduced risk of receiving cash-benefit when the effects of the other covariates of the model are held constant.

The great majority of these estimates make reasonably good sense and they reflect relatively strong heterogeneity in who takes the cash-benefit. First point to note from these results is that the age of the mother matters. Both mothers of young age and older ages have a higher likelihood of taking the cash-benefit, whereas there is not much difference between mothers in the age range 25 to 36. These differences fade however once we consider benefit take up for couples with *two* children. Take-up also depends on the age difference in the couple. For instance, couples where the father is more than five years older than the mother, possibly reflecting a more traditional division of labour in the household, have a much higher likelihood for benefit take up. This is the case for both one-child couples and two-child couples, though the effect is weaker in magnitude for the latter. There is also a significant difference between married and cohabiting couples – the former having a much higher likelihood to take the cash-benefit.

There are also important differences by country of origin. Couples where the mothers are from the Nordic countries and Western Europe are less likely to take the cash-benefit than if the mothers are from Norway, whereas mothers from Eastern Europe are particularly likely to take the cash-benefit. When considering Fathers' country of origin, it is particularly those from Asia, Africa, South and Central America and Turkey that are likely to take the benefit.

The next set of estimates capture the effect of education and earned income of both partners in the couple. Mothers' earned income clearly matters, and the higher the income the lower is the likelihood of taking the benefit. In contrast, the effect of the father's income is much weaker, and if anything the effect is positive. Only for the top income group do we see a smaller likelihood. The impact of the father's earned income on take-up of the cash benefit resembles an inverted U-shape. This might at a first glance appear unexpected, but is most likely a reflection of the fact that the economic incentives for the family to receive the cash-benefit decreases when the father belongs to the top income group, simply because the cash-benefit is a flat rate benefit. It is also the case that when the mother's income is lower than that of the father, the likelihood of taking the benefit is higher. However, there is no strong gradient indicating that the magnitude of the difference does not matter much.

The effect of mother's education is particularly strong, and couples where mothers have higher education are considerably less likely to take the benefit compared to those where mothers only have primary education (the reference group). This is of course not an unexpected result: mothers with high education are much more likely to use formal childcare for their children, most likely because a longer career break have stronger adverse consequences compared to those with lower education and possibly a flatter income profile over the life course. Interestingly the same pattern is evident for father's education. The results are an indication of assortative mating in education. Couples' education is positively correlated, and both partners are negatively inclined to the cash-benefit the higher the education.

Couples where fathers take more leave days than the fathers' available quota has the lowest uptake of cash-benefit. It is a clear indication that couples with a high degree of gender equality in terms of time spent on child rearing, are less likely to take the cash-benefit. The effect of fathers not being entitled to parental leave, which depends on mothers labour market participation prior to birth, is opposite among one-child couples and two-child couples. There are different reasons behind why some mothers have not been in the labour market and earned their rights for paid parental leave. One reason might be that the couple is pursuing a traditional division of labour in the family, while another is that the mother have not yet

entered the labour market because she still is in education or have just finished. One-child couples will capture both of 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. Consequently, among the two child couples, the effect is more likely to come from the fact that they pursue a more traditional family role set, and therefore more likely to take the cash-benefit.

The last variable is a measure of coverage of childcare by municipality. The variable is constructed on the basis of the number of children attending formal childcare (i.e. kindergartens) and the number of children in the municipality for the relevant age group. It is consequently not an exact measure of capacity constraints, as this would have to be based on the actual number of places available at kindergartens in the area where the couple lives (i.e. the supply) and held together with the demand for kindergarten places. In our case, a low value for the coverage might not only reflect a low number of places available, but also be a result of region specific practices of childcare. It might for example be that mothers in some municipalities have on average a higher preference for parental care. Our calculated value for coverage may as a result be lower, but in this case this low value is a result of low demand rather than being driven by low supply of kindergartens.

It is also important to note that this is a variable measured at a single point in time. It is therefore impossible to identify the effect of lack of formal childcare facilities on one hand, and other municipality specific effects. In any case, our expectation is that this variable is negatively correlated with take-up of the cash-benefit. In other words, the higher the proportion of children attending formal childcare, the lower is the cash-benefit take-up. This assertion is clearly confirmed by the estimates. In fact, they show a very clear gradient: the lower the proportion of children in formal childcare, the higher the benefit take-up – a pattern that is also evident for two-child couples.

[Table 4 in around here]

7 Cash-benefit take-up and fertility timing

As already mentioned, the propensity score matching is based on a large number of variables that includes extremely detailed control for education (both mother and fathers') and detailed control for their income. Very few units are off common support, meaning that

almost all of the treated units are matched with comparable control units. In the next set of results we consider the effect of taking the cash-benefit on having another child. The outcome variables are defined by a set of four dummies, indicating the time of the next birth since the previous one. Essentially the outcome becomes similar to a discrete time hazard regression. The first dummy variable takes the value one if the mother had the second birth between 12 and 23 months, zero otherwise. Conditional on not having experienced a birth in the previous time period, the second dummy variable takes the value one if the birth takes place between 24 and 35 months. Likewise, conditional on not having experienced a birth in any of the previous time periods, the third birth dummy variable takes the value one if the birth happens in the time period 36 to 47 months. The fourth dummy is constructed in a similar way, and indicates if the birth takes place in the period between 48 and 59 months. Outcome variables for third births are defined in the same way with the same time intervals for third births, but relative to the second birth.

Table 5 shows the results from the propensity score matching estimates. There are three lines of estimates for each time period. The first refers to the conditional probability of experiencing a birth for those who did not receive the cash-benefit. For one-child couples without matching this figure is 0.089 and 0.069 with matching. The second line refers to the *additional* effect for those taking the cash-benefit. In other words, this is the difference between those receiving the cash-benefit and those who did not. A positive estimate here suggests that those taking the cash-benefit have a higher likelihood of having a child in the given period compared to those not taking the benefit. The third line gives the t-statistic.

The estimation shows that the hazard of having the second birth is increasing in the two first time intervals (12 to 23 months and 24 to 31 months), for then to peak in the third interval and then decline in the fourth interval (i.e. the time period ranging from 48 to 60 months). The pattern is of course fairly standard; once the first birth takes place, couples are rather quick in having the second child. The pattern for the timing of third birth is less pronounced: the hazard rate is generally lower and there is no clear peak in the shape of the hazard function. What is clear, however, is that those receiving the cash-benefit are quicker in having the second child and - though to a smaller extent - quicker to have the third child. As we have mentioned previously, we cannot necessarily claim that this is a direct result of the cash-benefit, but it clear that those who on average have a higher preference for parental care reflected by the take-up of the cash benefit, are also quicker in their progression to having the next child. The estimation also shows that matching is important, though for some time intervals the difference between simple tabulations (of treated and untreated) and matched

estimates do not matter much. The strongest effect from the matching is found in the interval 24 to 35 months for the One-child couples. Without matching, the additional effect of receiving the cash-benefit is 0.001, whereas after matching it is 0.07. The difference is also of interest in the following time period (i.e. from 36 to 47 months). Here the simple tabulation suggest that those receiving the treatment (i.e. the cash-benefit) are in fact slower in having the next child, whereas the matching reveals that there is no difference between the two groups. A similar but weaker pattern is evident for the last time period. There are also some difference between unmatched and matched estimation for the progression to third births (i.e. Two-child couples), but differences are weaker.

Education undoubtedly plays an important role in couples' decision for the timing of second and third births. We also know from the first stage results that those with higher education are considerably *less* likely to take the cash benefit compared to those with lower education. In Table 6 we present estimates for the progression to the next birth separately for four educational groups. The classification is made as follows: 1) mothers completing primary school only, 2) secondary education (high school), 3) university, 1st stage, and 4) university, 2nd stage.

There are several interesting aspects of these estimates. First, looking across the time periods we see that the rate of having the next child varies strongly with education independent on receiving the cash-benefit or not. For those with the lowest level of education there is in fact not much difference across time periods. This is in strong contrast with those having University education, where the estimated rates are indicating a clear peak at the second and third time periods. The pronounced shape of the hazard rate for those with high education is of course a reflection of a recuperation effect. Since those with higher education delay the onset of childbearing, they also end up being quicker having the second birth. The effect is stronger the longer time they spend in education.

As for the cash-benefit take up, we find further differences in birth timing across educational groups. In the first time period, the additional effect for cash-benefit takers is 0.117 for those with the lowest education and 0.161 for those with the highest education. Given that the associated effects for the control groups (i.e. those not taking the cash-benefit) are 0.047 and 0.119, it is clear that these differences are substantial. Though the hazard rates are higher among highly educated mothers it is important to point out that the *relative* differences between cash-benefit receivers and those not taking the cash-benefit are higher among mothers with low education. As outlined in section 3, we expect mothers with low education to be more likely to take the cash-benefit since the extra income association with

the benefit would be more attractive for this group. As is clear from the estimates taking the cash-benefit is associated with a reduction in child spacing for this group. Whereas the hazard rates are higher for those with high education, a reflection of substantial recuperation effects, there is also here difference between cash-benefit takers and those not taking the cash-benefit. As discussed in section 3, the take-up of the cash-benefit indicates a stronger preference for parental care (assuming capacity constraints are not the key driving factor). In so far preferences for parental care are correlated with childbearing, it is not unexpected that those taking the cash-benefit are also quicker in having the next child. Highly educated women with a preference for parental care are in some sense those who have lost out most: not only did they postpone the onset of childbearing due to investment in education they have also foregone labour market experience due to their preference for parental care (as reflected by the cash-benefit take-up). The recuperation effect for these women is consequently even stronger. Given their preference for parental care, but still high opportunity cost of childbearing, they might have stronger incentives to space children within shorter intervals. The fact that the effects of the cash-benefit take-up are stronger with education in the first time interval, but not in the second, gives some support to this argument. Looking at the additional effects of the cash-benefit take-up for the second interval (12 to 23 months), we see that the estimate is 0.094 for those with the lowest education, but declines to 0.014 for those with the highest education. This must be compared to the effect for the control group, which is as high as 0.448. In other words, the estimate of 0.014 for those with the highest education is rather small. In other words, among highly educated women who take the cash-benefit, the effect is only substantial in the first time interval. Once we enter the third interval, highly educated women who took the cash benefit, are in fact slower in having the next child compared to the control group. Although the effect is not large, it indicates that they are no more likely to return to the labour market, delaying slightly having the next child.

Moving onto Table 7 where we have divided mothers by different income groups (and again performed estimation separately), we see again that the effect of the cash-benefit is particularly large in the first time period. In other words, those taking the cash-benefit have a higher likelihood of having the second birth in the first time period. One interesting feature of these estimates, however, is that there is not much of a differential effect of the different income groups. Thus, the positive effect of taking the cash-benefit is similar in magnitude independent of which income group to which the woman belong. This result is somewhat puzzling, but is possibly a reflection of the fact that income is not always a good reflection of educational level. In other words, each income group might be relatively heterogeneous with

respect to education, which seems to be the main driving force behind the timing pattern of childbearing.

[Table 5 in around here]
[Table 6 in around here]
[Table 7 in around here]

8 Concluding remarks

The analysis informs us about the characteristics of couples who are inclined to substitute formal child care with parental care if appropriate cash-benefit policies are available. Second, given such a policy, the analysis gives further insight into the likely outcomes in terms of child spacing behaviour. As we have seen there are significant differences both in terms of who tends to take the benefit and its consequence on birth timing. In general, couples where the mother has low educational attainment and lower earnings are the ones most likely to take the cash-benefit. It is thereby clear that the policy represents important income effects for those with low income and education. The second part of the analysis considered whether those taking the cash-benefit had a higher rate having the next child. Our estimates show that take-up of the cash-benefit is positively associated with fertility timing, especially for having a second child in the first periods when couples receive the benefit (e.g. within two years after first birth). There are also significant effects for the third births, though the magnitude is naturally smaller. This is partly due to the fact that the rate of having the third birth is in any case lower (more couples have two children than three), but is also because the time of event is more heterogeneous. Our findings suggest quite clearly that those who take the cash-benefit are quicker in progressing onto subsequent childbearing. Of course, we do not measure total (or completed) fertility here, so we cannot infer that the cash-benefit leads to higher overall fertility. However, from the literature we know that timing is closely correlated with completed fertility. There is therefore every possibility that take-up of the cash-benefit policy is associated with higher fertility levels.

It is clear that the cash-benefit is a policy used first and foremost of mothers with low education and most adapted into their preferences for work and childcare. For this group there are not much differences across the time periods concerning fertility timing, but for those with short spacing there is a strong effect of the cash-benefit and very few mothers choose to have a next child in a short interval without taking the cash-benefit. Mothers with higher education

are more likely to delay the onset of childbearing and then much quicker in having the second birth. Whereas those with higher education are considerably less likely to take the cash-benefit in the first place, we see that those that do are also quicker in having the second birth. Those with higher earnings are also less likely to take the cash-benefit, but conditional on having done so, there is not much difference in timing of second and third births. In other words, education seems to be the prime driver behind the timing decisions. The fact that there is considerable heterogeneity with respect to education *within* each income groups, explains why income is a less important factor in driving timing decisions.

The pattern is not equally apparent for having a third birth as it is for second birth. As mentioned previously, the majority of one-child couples proceed to having another child, while around half of the two-child couples proceed to having a third child. This means that the question concerning second births is mainly about choosing the appropriate spacing, while timing is much less of an issue for third births.

An important insight of the analysis is that policies designed to improve child care choices for parents - are indeed popular. Even in settings where the coverage of external childcare facilities is rather good (at least in an European comparative perspective), many parents still prefer parental care if given the opportunity and the appropriate financial incentives. As our analysis shows, there is huge heterogeneity in terms of who chooses to do so.

Acknowledgements

This research was supported by the Research Council of Norway, grant number 17105/V20, and Centre for Advanced Studies. We are most grateful for the support and advice provided by Øystein Kravdal, Nico Keilman and Marit Rønsen.

References

Becker S. and Ichino A. (2002) Estimation of average treatment effects based on propensity scores. *The STATA Journal*.

Billari, F. C., & Kohler, H. P. (2004). Patterns of low and lowestlow fertility in Europe. *Population Studies, 58*, 161-176.

Blundell, R, Dearden, L. and Sianesi, B. (2005) Evaluating the effect of education on earnings: Models, methods and results from the National Child Development Survey. *Journal of the Royal Statistical Society, Series A*, 168, 3, 473 512.

Caliendo M. Kopeinig S. (2005) Some Practical Guidance for the Implementation of Propensity Score Matching, IZA Discussion Paper n. 1588, Bonn, Germany.

Daly, M. (2000). A fine balance: Women's labour market participation in International comparison. In F. W. Scharpf & V. A. Schmidt (Eds.), *Welfare and work in open economy, Vol.2: Diverse responses to common challenges*. Oxford: University Press.

Dehejia R, Wahba, S. (1999) Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs. *Journal of the American Statistical Association*, 94 (448): 1053-1062.

Del Bocca, D. and Vuri, D. (2006) The mismactch between employment and childcare in Italy: The impact of Rationing, Working Paper, ChilDn.08.

Esping-Andersen, G. (2002). *Why we need a New Welfare state*. Oxford: University Press.

Gauthier, A. H. (2007) The impact of family policies on fertility in industrialized countries: a review of the literature, *Population Research and Policy Review*, 26:323-346.

Gustafsson, S. and Stafford, F. (1992) Chilcare subsidies and labour supply in Sweden, *The Journal of Human Resources*, 1:205-230.

Håkonsen, L., Kornstad, T., Løyland, K., & Thoresen, T. O. (2001). *Kontantstøtten - effekter på arbeidstilbud og inntektsfordeling (Cash-benefit - effects on labour supply and income distribution)* (5): Statistics Norway.

Knudsen, C. (2001). Kontantstøtten og mødres yrkesaktivitet i Finland og Norge. Likheter og ulikheter (The cash-benefit and mothers employment in Finland and Norway). *Søkelys på arbeidsmarkedet, 18*, 121-127.

Kreyenfeld, M. and Hank, K. (2000) Does availability of childcare influence the emplyment of mothers? Findings from western Germany, *Population Research and Policy Review*, 19:317-337.

Kornstad, T. and Thoresen, T.O. (2006) Effects of family policy reforms in Norway: Results from a joint labour supply and childcare choice micro simulation analysis, *Fiscal Studies*, 27(3):339-361.

Kornstad, T. and Thoresen, T.O. (2007) A discrete choice model for labour supply and childcare, *Journal of Population Economics*, 20:781-803.

Lechner M. (2002) Some practical issues in the evaluation of heterogeneous labour market programmes by matching methods. *Journal of the Royal Statistical Society Series A* 165(1) 59 82.

Leuven, E. and Sianesi, B. (2003) PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing. University of Amsterdam and Institute for Fiscal Studies, London.

Neyer, G. (2003). Family policies and low fertility in Western Europe: Working paper. Max Planck Institute for Demographic Research, 2003-021.

Pettersen, S.V. (2003) Barnefamiliers tilsynsordninger, yrkesdeltakelse og bruk av kontantstøtte våren 2002 (Childcare mode, labour market particiaption and use of cash-benefit) (9): Statistics Norway

Rindfuss, R. R., Guzzo, K. B., & Morgan, K. J. (2003). The changing institutional context of low fertility. *Population Research and Policy Review, 22*, 411-438.

Rosenbaum P.T. and Rubin, D.B. (1983) The Central Role of the Propensity Score in Observational Studies for Causal Effects. *Biometrika*, 70(1), 41 55.

Rønsen, M. (2001). *Market work, child care and the division of household labour - Adaptations of Norwegian mothers before and after the cash-for-care reform* (3): Statistics Norway.

Rønsen, M. (2005). *Kontantstøttens langsiktige effekter på mødres og fedres arebidstilbud* (Long term effects of use of the cash-benefit on mother and fathers labour supply) (23): Statistics Norway.

Schøne, P. (2004). Labour supply effects of a cash-for-care subsidy. *Journal of Population Economics, 17*(4), 703-727.

Smith J.A., Todd P. (2005), Does Matching Overcome Lalonde's Critique of Nonexperimental Estimators? *Journal of Econometrics,* 125(1-2), 305-353.

Stier, H., Lewin-Epstein, N., & Braun, M. (2001). Welfare regimes, family-supportive policies and women's employment along the life-course. *American Journal of sociology, 106*(6), 1731-1760.

Table 1: The rate system for the childcare cash-benefit.

	Weekly hours of care of day-care centres					
	0	1-8	9-16	17-24	25-32	32+
Yearly	4,500	3,600	2,700	1,800	900	0
rate	(100%)	(80%)	(60%)	(40%)	(20%)	(0%)

Yearly rates in EURO in 2000

Table 2: Distribution of childcare mode, numbers in percentages for the year 2002.

Childcare mode	Children aged 1-2 year, all	Children aged 1-2 year, cash-benefit
Parents	44	56
Other relatives	4	5
Au pair, Babysitter	12	16
Kindergarten	33	14
Combinations or other solutions	7	10

Source: Pettersen (2003)

Table 3: Use of cash-benefit for children born 1998-2000. Percent

	One-child couples			Two-child couples		
	1998	1999	2000	1998	1999	2000
None	12	12	11	12	12	12
1-6 months	10	10	10	9	9	10
7-12 months	10	10	10	8	9	9
13-23 months	21	21	24	19	20	22
24 months	47	47	45	52	50	47

Table 4: Use of cash-benefit — Logistic regression

	One-child couples		Two-child couples	
Year of birth				
1998	1		1	
1999	1.01ns		0.96ns	
2000	0.95*		0.83**	
Mothers age at birth				
19-21	1.20**		1.04ns	
22-24	1.13**		1.06ns	
25-27	1		1	
28-30	0.89**		0.92*	
31-33	0.92*		0.79**	
34-36	0.97ns		0.80**	
37-39	1.12ns		0.86*	
40-42	1.09ns		0.83*	
Age difference in couple				
Mother 5+ year older	0.99ns		1.11ns	
Mother 1-4 year older	1.05ns		1.04ns	
Less than one year difference	1		1	
Father 1-4 year older	1.05ns		1.09*	
Father 5+ year older	1.25**		1.19**	
Marital status				
Married	1.28**		1.11**	
Cohabitants	1		1	
Country of origin	Mother	Father	Mother	Father
Norway	1	1	1	1
Nordic countries	0.78**	0.72**	0.79**	0.72**
Western Europe otherwise	0.80**	0.85**	0.96ns	0.82*
Eastern Europe	1.30**	0.92ns	1.16ns	0.90ns
North America, Oceania	1.02ns	0.82*	0.84ns	0.91ns
Asia, Africa, South and Central America + Turkey	1.39**	1.24**	1.39**	1.31**
Earned income	Mother	Father	Mother	Father
Very low	1	1	1	1
Low	1.13**	1.22**	1.05ns	1.35**
Medium	0.88**	1.24**	0.63**	1.50**
High	0.64**	1.13*	0.41**	1.41**
Top	0.50**	0.88*	0.30**	1.10ns
Income difference in couple				
Mother's income -25% of father's income	1		1	
Mother' income 26-50% of fathers income	0.86**		0.91*	
Mother's income 51-75% of fathers income	0.84**		0.80**	
Mother's income 76-100% of fathers income	0.85**		0.71**	
Mother's income more than fathers income	0.84*'		0.86*	
Education	Mother	Father	Mother	Father
Primary	1	1	1	1
Secondary	0.79**	0.90**	0.80**	0.90**
University, 1st stage	0.52**	0.61**	0.57**	0.65**
University, 2nd stage	0.29**	0.46**	0.33**	0.52**
Father's use of parental leave				
Not entitled to leave benefits	0.86**		1.29**	
Entitled to leave benefits, but no leave days	1.02ns		1.04ns	
Father's quota of one month	1		1	
More leave days than fathers quota	0.68**		0.69**	
Children 1-2 year in kindergarten in municipalities				
less than 25%	1		1	
26-35%	0.82**		0.75**	
36-45%	0.59**		0.54**	
46-55%	0.45**		0.43**	
56% or more	0.33**		0.34**	
Number of observations	56,670		50,508	

Note: ** significant at 0.001 level, * significant at 0.05 level, n.s =not significant

Table 5: Estimates of Propensity Score Estimation

		One-child couples		Two-child couples	
		Unmatched	Matched	Unmatched	Matched
T1 (12-23 months)	Control group	0.089	0.069	0.024	0.025
	Treatment group	0.117	0.136	0.046	0.045
	t-statistics		(34.42)		(17.39)
T2 (24-35 months)	Control group	0.333	0.263	0.072	0.061
	Treatment group	0.001	0.070	0.015	0.026
	t-statistics		(10.77)		(6.52)
T3 (36-47 months)	Control group	0.336	0.280	0.075	0.072
	Treatment group	-0.041	0.014	0.007	0.010
	t-statistics		(1.81)		(2.55)
T4 (48-59 months)	Control group	0.219	0.193	0.061	0.061
	Treatment group	-0.010	0.015	0.004	0.004
	t-statistics		(1.89)		(1.04)

For each time period the first line gives the estimated rate of childbearing for those not taking the cash-benefit (control group), second line gives the additional effect for those taking the benefit (treatment group); t-statistics are given on the third line (in parenthesis)

Table 6: Propensity score estimation by mother's educational attainment

One-child couples

		Primary	Secondary	University, 1st stage	University, 2nd stage
T1 (12-23 months)	Control group	0.047	0.060	0.088	0.119
	Treatment group	0.117	0.128	0.158	0.161
	t-statistics	(12.97)	(22.89)	(25.17)	(9.53)
T2 (24-35 months)	Control group	0.132	0.239	0.375	0.448
	Treatment group	0.094	0.072	0.056	0.014
	t-statistics	(6.52)	(7.49)	(5.69)	(0.57)
T3 (36-47 months)	Control group	0.140	0.271	0.387	0.416
	Treatment group	0.050	0.018	0.001	-0.033
	t-statistics	(3.23)	(1.63)	(0.16)	(-0.99)
T4 (48-59 months)	Control group	0.114	0.198	0.251	0.076
	Treatment group	0.021	0.016	0.026	0.012
	t-statistics	(1.44)	(1.37)	(1.78)	(0.30)

Two-child couples

		Primary	Secondary	University, 1st stage	University, 2nd stage
T1 (12-23 months)	Control group	0.031	0.020	0.025	0.033
	Treatment group	0.029	0.043	0.056	0.059
	t-statistics	(4.35)	(11.93)	(14.23)	(5.37)
T2 (24-35 months)	Control group	0.047	0.044	0.086	0.114
	Treatment group	0.021	0.031	0.026	0.038
	t-statistics	(2.34)	(6.40)	(4.43)	(2.29)
T3 (36-47 months)	Control group	0.044	0.063	0.100	0.106
	Treatment group	0.018	0.004	0.013	0.034
	t-statistics	(1.98)	(0.87)	(2.05)	(2.02)
T4 (48-59 months)	Control group	0.035	0.053	0.087	0.068
	Treatment group	0.015	0.003	-0.000	0.011
	t-statistics	(1.80)	(0.71)	(-0.06)	(0.74)

For each time period, the first line gives the estimated rate of childbearing for those not taking the cash-benefit (control group), second line gives the additional effect for those taking the benefit (treatment group); t-statistics are given on the third line (in parenthesis). Includes estimates for matched individuals only.

Table 7: Propensity score estimation by mother's income

One-child couples

		Very low	Low	Medium	High
T1 (12-23 months)	Control group	0.059	0.067	0.072	0.106
	Treatment group	0.133	0.139	0.134	0.136
	t-statistics	(19.38)	(17.08)	(20.24)	(13.28)
T2 (24-35 months)	Control group	0.202	0.267	0.324	0.332
	Treatment group	0.088	0.076	0.036	0.042
	t-statistics	(7.55)	(5.62)	(3.26)	(2.78)
T3 (36-47 months)	Control group	0.228	0.284	0.321	0.333
	Treatment group	0.023	0.031	0.005	-0.032
	t-statistics	(1.69)	(1.90)	(0.42)	(-1.71)
T4 (48-59 months)	Control group	0.174	0.191	0.222	0.187
	Treatment group	0.011	0.038	0.007	-0.001
	t-statistics	(0.79)	(2.21)	(0.50)	(-0.09)

Two-child couples

		Very low	Low	Medium	High
T1 (12-23 months)	Control group	0.035	0.024	0.019	0.015
	Treatment group	0.043	0.038	0.050	0.057
	t-statistics	(6.33)	(8.17)	(13.92)	(8.99)
T2 (24-35 months)	Control group	0.079	0.053	0.050	0.076
	Treatment group	0.024	0.026	0.033	0.005
	t-statistics	(2.37)	(3.91)	(6.27)	(0.62)
T3 (36-47 months)	Control group	0.076	0.073	0.071	0.057
	Treatment group	0.014	0.008	0.008	0.018
	t-statistics	(1.23)	(1.05)	(1.49)	(2.07)
T4 (48-59 months)	Control group	0.067	0.058	0.050	0.044
	Treatment group	0.007	0.003	0.017	-0.000
	t-statistics	(0.61)	(0.47)	(3.17)	(-0.02)

For each time period, the first line gives the estimated rate of childbearing for those not taking the cash-benefit (control group), second line gives the additional effect for those taking the benefit (treatment group); t-statistics are given on the third line (in parenthesis). Includes estimates for matched individuals only.

Notes

[1] It is also possible to have part time kindergarten for their children and then receive a lower amount of cash-benefit. This combination is used for about 17 percent of the children receiving the cash-benefit.
[2] One month of the total length of the parental leave period of approximately one year is reserved to the father and cannot be transferred to the mother.
[3] This is of course a classic example of endogeneity. The standard approach to deal with the endogeneity issue is to implement an Instrumental Variable (IV) approach. However, this requires that we have access to a valid and relevant instrument in the sense that a variable exist that is correlated with the treatment variables but uncorrelated with the error term (assuming a parametric modelling scheme). However, in our setting there are no clear candidates.
[4] We have also estimated a simple linear regression (not shown here) using the full distribution of the number of months couples take the cash-benefit. The estimates are qualitatively similar.