Can a Cash Transfer to Families Change Fertility Timing?

Synøve N. Andersen, Statistics Norway

Nina Drange, Statistics Norway

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Abstract: This paper assesses the relationship between cash transfers to families and fertility timing. We make use of a cash-for-care (CFC) policy introduced in Norway in 1998/1999, which entitled all parents of one- and two-year old children to a monthly payment if their child did not use publicly subsidized child care. Although not introduced as a pro-natalist policy, this CFC benefit did indeed reduce the costs of childbearing. We use Norwegian registry data to explore whether being eligible for the CFC benefit change the likelihood of having another child before the eligible child is four years old. Our comparison group consists of mothers giving birth in the period before the benefit was introduced. Preliminary results indicate a negative and rather substantial effect on having a new birth in the four year period, which differs somewhat between different groups of mothers.

Contents

1. Introduction

Can cash transfers to families change fertility timing? Low fertility is a global concern in modern societies and there is an ongoing discussion about how to raise fertility. Family policies have become important features in this discussion and the major question is whether policies can changes young couples' fertility behavior, i.e. fertility transitions and timing of these transitions. Family policies can broadly be divided into two main groups. One line of policies is directed towards dual-earner families focusing on mother's participating in the labor market and father's participating in child care. Another line of policies are directed towards families more in general, often including a cash transfer to families. Whether different family policies actually increase fertility is contested and there is little evidence whether there is a causal relationship between cash transfers to families and fertility. In this paper we aim to approximate this issue and the goal is to investigate the influence of cash transfers to families on the timing of subsequent childbearing. We do this by using the introduction of a family policy reform in Norway as a "natural experiment», where we compare the subsequent fertility timing of mothers whose first or second child is eligible for the cash transfer (i.e. the "treatment group" born in 1998) to that of mothers whose child remains unaffected by the policy reform (i.e. the "control group" born in 1994). We are not able to use a strictly quasi-experimental approach, but hope to contribute to current knowledge by using rich registry data to assess how the introduction (and not the uptake) of a cash benefit affects subsequent childbearing decisions on a population level.

On August 1st 1998 a cash benefit policy reform was introduced in Norway; the Cash-for-Care (CFC) benefit. With an aim of improving both equality in public transfers between families and the freedom of choice regarding care practices, the CFC benefit entitled all parents of one- and two-year old children who were not enrolled in public kindergartens a monthly payment equivalent to the public subsidy of a day care slot (ap. 550 USD). Although not introduced as an explicitly pro-natalist policy, the CFC benefit did reduce the costs of childbearing. Based on economic theories of fertility (e.g. Becker, 1960, Easterlin, 1975), we might therefore expect that the CFC benefit increased fertility. Previous studies have indeed shown a correlation between CFC uptake and subsequent fertility timing (Aassve and Lappegård, 2009; 2010), but there is no evidence of how much of these changes that can be

ascribed to the policy reform itself. Thus, this paper will give new insight into the relationship between family policy directed towards families in general and fertility decisions.

2. Institutional setting

To present the reader with an empirical backdrop, we will look closer at some of the institutional setting of the CFC introduction. The first subsection of this chapter gives a quick description of fertility trends and family policy in Norway, with a particular focus on the paid parental leave scheme. Some fundamental understanding of this policy is of key important if one seeks to understand the background for work/family-related decisions in Norwegian families. A second subsection gives a quick presentation of changes in family policies which occurred at the relevant point in time, as these may have implications for the analysis at hand. The third subsection describes the CFC benefit more in detail, while the fourth summarizes available research on the CFC benefit and various relevant outcomes.

2.1. Fertility and family policy in Norway

Norway is, along with the other Nordic countries, known for high fertility levels and high female employment rates (Rønsen, 2004). Quite contrary to most other European countries, the total fertility rate (TFR) rose during late 80's and remained rather stable during the 90's. In the years considered here, the TFR was 1.87 and 1.81 in 1994 and 1998 respectively (Statistics Norway, 2014). There has furthermore been an upwards trend in the age at entry into motherhood, and an increased variation in the number of children born to each woman. Around 80 percent of all mothers with one child have another child, while there seems to be a recent, upwards trend in the proportion of two-child mothers who also have a third child (40 + percent from 1990). The proportion of childless women has increased slightly, and is about 15 percent during the early to mid 90's (Lappegård, 2000).

The Nordic welfare states are also known for a long tradition of extensive social policies directed at the family, with the statutory and universal paid parental leave program having the most important consequences for the cost of childbearing (Rønsen, 2004). Following Korpi's (2000) distinction between general family support and dual-earner support, where the first is directed towards nuclear families and the latter towards female employment, Ellingsæter and Leira (2006) argue that Norway represents a dualistic family policy wherein both types of support is present. Nonetheless, Norwegian family policies are primarily motivated by

ideologies of gender equality and the general wellbeing of children and their families rather than explicitly pro-natalist objectives (Rindfuss et al., 2010; Rønsen, 2004). This distinguishes Norway from other Nordic countries, where issues of fertility outcomes may be a part of the political debate.

The above-mentioned paid parental leave scheme lies at the very core of Norwegian family policy, and plays a fundamental role in the balance between work and family life. This did (in the period of interest) entitle all Norwegian parents who have worked at least half time (50%) for six out of the ten moths before the child is born to up to one year[1] of paid parental leave, after which a return to the same job is guaranteed for by the Norwegian labor market legislation. After this period – when the child becomes eligible for CFC – the parents are entitled to one year of *unpaid* leave with the same labor market protection as before, and additional unpaid leave with a guarantee of a return to a job in the same company. At the time discussed here, all leave the fathers wanted to take dependent on whether or not the mothers was eligible for paid leave.[2] Mothers who were not entitled to leave received a lump sum, which was considerably lower than the parental leave payments. A feature of the leave scheme which is important to keep in mind when considering the CFC, is that full eligibility required employment prior to birth. This entails that mothers who wishes full income coverage for additional children must return to work before having another child, if they don't decide to have two very narrowly spaced children[3] or accept the lump sum. These two latter options do, however, lead to a large decrease in disposable income for the family.

2.1.1. The CFC introduction: Related family reforms

In the period before the CFC introduction in 1998/99, and hence with potential influence on the fertility decisions in the groups studied in our analysis, two main work-family related policies was implemented in Norway. First, there was a large step-wise extension of the paid parental leave scheme from 18 weeks in 1986 to 42 weeks in 1993. The uptake of this new leave was rather immediate, and we might therefore expect that both the uptake and the duration of paid parental leave were similar for both the control group (1994) and the

[1] The leave can then be taken for 42 weeks with 100 percent income coverage or 52 weeks with 80 percent income coverage, with 52 weeks being the most popular option.

[2] In 2000 this was changes and fathers may take leave independent on mothers right or not, except his use of the father's quota which still depend on mothers eligibility.

[3] To have two children with less than 18 months spacing entitles the second child to a leave payment based on the leave payment of the first (i.e. 80 percent of 80 percent of income before first birth). This happens because parental leave is considered income from work.

treatment group (1998) in the analysis. Second, a father's quota for paid parental leave was introduced in 1993. This entailed that four weeks of the parental leave was reserved for the father, and as opposed to the leave extension, the uptake of the father's quota was more gradual. This means that those who had children in 1998 had a higher uptake of the father's quota than those who had children in 1994, and if this in turn affects subsequent fertility behaviour, our estimates may be biased either down- or upwards depending on the direction of this association. However, Duvander, Lappegård and Johansson (2013) found no significant causal effect of the introduction of the father's quota on continued childbearing (neither in magnitude nor timing). We do therefore not consider this a likely confounder in this analysis.

2.2. About the Cash-for-Care benefit

The Norwegian Cash-For-Care benefit ("kontantstøtten") was introduced by a minority centre-coalition government on August 1st 1998 (Ellingsæter, 2003; Håland, 2001; Rantalaiho, 2009). The proposal was first presented by the Ministry of Children and Family Affairs in the Council of State (Statsråd) on April 4th 1998, and the law on cash grants was after a thorough process sanctioned on June 26th 1998. The effective date was set to August 1st 1998 (Stortinget, 1998). From this date the law encompassed all one year old children, and it was expanded to include also two year olds from January 1st 1999. All children turning two between August 1998 and January 1999 were eligible for cash transfer to ensure that no children had a break in the eligibility.[4]

The CFC benefit provided parents of children between one and three years of age a monthly payment equivalent to the public subsidy of a day care space, given that the child did not attend publically subsidized day care. The aim of the subsidy was threefold; 1) to provide parents with more time to take care of their children, 2) to improve the freedom of choice regarding care practices within families, and 3) to ensure equality in public transfers between families irrespective of their care practices (Ellingsæter, 2003; Rantalaiho, 2009). The benefit was flexible in several respects; it could be claimed on a part time basis[5] if the child attended a publically subsidized kindergarten between 1 and 32 hours per week, and it was not a

[4] This gradual introduction has made the assessment of causal effect by means of RD designs impossible. More on this in Chapter 5.

[5] Five rates were used; 20 percent (1-8 hours), 40 percent (9-16 hours), 60 percent (17-24 hours) and 80 percent (25-32 hours).

requirement that either parent stayed at home to provide daily care for their child, as the benefit could be spend on private day care or used for other expenses if the child was cared for free of charge by friends or relatives. Children were eligible to the benefit irrespective of their parents' income, and the payments were a monthly flat rate of 3303 NOK (eq. 550 USD) paid to the parent at whom the child had its permanent residence. The payment started after the month the child turned one, and lasted up to and including the month the child turned three. Therefore, all children born from 1998 and onwards were eligible for 24 months of the cash-for-care allowance. Children born before 1996 remain unaffected by the benefit, while children born between 1996 and 1997 were be eligible for somewhere between 1 and 23 months of allowance.

The introduction of CFC benefit was accompanied by a tough political debate, and the reform was strongly opposed by the social democratic parties. The implementation happened in a political climate where the being-together of children and their parents was a key issue, and the CFC reform appeared as a possible solution to some of the challenge induced by the "time squeeze" of modern family life. It was furthermore described as a gender neutral policy, although the political opposition anticipated both the undermining of gender equality and the withdrawal of women from the labour market. The further development of public childcare was also a major concern (Ellingsæter, 2003, 2007). The CFC has remained a political issue ever since, and has been subject to numerous revisions by later governments. These are, however, implemented after the time frame considered here, and will therefore not be discussed in further detail.

2.3. Previous research on the CFC

After its introduction in 1998/1999, the CFC benefit has attracted the attention of social researchers in a range of social research disciplines. The primary attention has been directed towards the consequences for mothers, as they comprise more than 90 percent of the CFC recipients (Aassve and Lappegård, 2009). Numerous studies have reported negative effects on mothers' labor market supply (Hardoy and Schøne, 2010; Rønsen, 2000; Schøne, 2004; Drange and Rege, 2013), and Schøne (2005) finds a negative effect on mother's wages which nonetheless disappears after controlling for "age of the child" effects. Overall, the negative effects of the CFC benefit seem to be stronger among low earning and/or low-educated mothers with weak attachment to the labor market, as well as among non-western immigrants.

This coincides with the groups that have the highest uptake of the benefit (Lappegård and Assve, 2009). Due to the negative and socially skewed consequences of the CFC, the OECD (2012:39) has described the policy as an obstacle for the integration of both child and adult immigrants, and several public committees to recommend that the subsidy is liquidated (e.g. NOU 2009; 2011a; 2011b).

Although rather limited in number, previous research on the consequences for fertility timing have shown that those who take the CFC benefit accelerate childbearing significantly compared to those who do not (Aassve and Lappegård, 2009, 2010). Pattern is particularly pronounced for having the second birth within two years after the first. However, both acceptance of the benefit and subsequent fertitlity timing were strongly influenced by womens' educational attainment, and selection effects remain a prominent question. This analysis seek to compliment current knowledge by assessing population-wide consequences of the CFC *introduction* rather than its uptake.

3. Theoretical expectations

Following classical economic theory (e.g. Becker, 1960; Easterlin, 1975), children can be regarded as a normal good analogous to other goods and services providing satisfaction (i.e. utility) to the family. There are three broad categories through which the basic determinants of fertility operate and influence the proximate determinants; the demand for children, the supply of children, and the subjective and objective costs of fertility regulation (Easterlin, 1975). We will primarily focus on the demand aspect, and assume that the demand for children depends on the household income, the cost (or price) of children, and the parents' tastes and preferences for children relative to other goods and services (c.f. Becker, 1960; Easterlin, 1975). Furthermore, the cost of childbearing can be said to comprise three components; direct costs of e.g. food and clothes, loss of income from paid work while caring for the child, and loss of (or a lack of growth in) human capital investments (Björklund, 2007).

Cash transfers to families, such as the one we consider here, are primarily expected to affect fertility decisions by increasing the disposable income and hence decreasing the direct costs of childbearing (Björklund, 2007). Again following classical economic theories on fertility (e.g. Becker, 1960, 1981; Easterlin, 1975; Willis, 1973), an increase in disposable income and/or a decrease in the cost of children is – all other things being equal – expected to

increase the demand for children. This could be fulfilled by increasing the number of children being born, and we might hence expect to see positive impacts on fertility. However, an increased income may also lead to a larger investment in the human capital (i.e. the "quality") of each child rather than an increase in the quantity of children being born. This may happen if the parents expect large returns for human capital investments, or if the opportunity cost of having another child (still) exceeds the increased income following the CFC transfer (Becker, 1981). Following this logic we may expect to see a *decrease* in the number of children being born. It is interesting to note that this increased investments in children coincides with the outspoken goal of the CFC benefit, which (among other things) sought to enable parents to spend more time with their children (without, of course, postulating that one should change ones family size because of this).

Following the literature on birth timing (e.g. Cigno, 1989; Cigno and Ermisch, 1989; Heckman and Walker, 1990; Yamaguchi and Ferguson, 1995), there is reason to believe that the CFC introduction may have affected different groups of mothers differently – and that patterns of overall fertility outcomes as discussed above may conceal heterogeneous petterns of birth timing. We will therefore break down our main analysis by three theoretically interesting characteristics of the mothers, namely their educational attainments, labor market attachments and overall contribution to the household income. These are all factors that are known to affect the opportunity cost of childbearing, and furthermore, they may also affect the relative size of the CFC transfer and hence the perceived economic "relief" following from its introduction. In the following sections we will look closer at some theoretical expectations regarding the CFC's implications on fertility decisions, by looking at three rather archetypal groups of mothers.

On one side, we have mothers with low education, low relative income and no or weak labor market attachment – for whom the opportunity costs of childbearing might be considered low. Somewhat depending on the husbands income, and hence the overall economic situation of the household, the relative size of the CFC benefit might be rather substantial. The combination of low opportunity costs and high income effects may lead to a positive effect on fertility behavior for this group. Insofar as some families experience economic "boundaries" on preferred family size, the economic "relief" provided by the benefit may both speed up and increase subsequent fertility.

On the other side, and in a quite contrary position, we find mothers with high investment in human capital, strong labor market attachment and incomes that contribute substantially to the household income. These mothers have high opportunity costs in terms of lost income and/or deprivation of human capital skills, whilst the income effect of the CFC is low. We can therefore expect to see no or small changes in fertility behavior in this group.

Between these two outlying groups we find a large (and of course rather heterogeneous) group of (partially part time) employed mothers with some investment in human capital and a rather substantial income from paid work. Due to the previously discussed labor market protections accompanying the parental leave, it is possible to claim CFC and stay home with a child without completely loosing ones foothold in the labor market, although it is necessary to return about halfway through the eligible period if one wishes to keep the same job. Furthermore, the fact that paid parental leave eligibility depends upon employment before (a new) birth, means that the mother must return to work before giving birth to another child if she wants full parental leave coverage. With these two considerations in mind, we may outline two main scenarios describing how the CFC introduction may have affected fertility timing in this group of mothers.

First, the CFC might be used as an alternative source of income for up to four years if the mother has her next child within two years (and for six years if she has yet another child within four years). We see this as a plausible adaption among mothers with some (but rather low) investment in human capital, and a low contribution to the household income. In this scenario we might see a shortening in the spacing between births, and potentially also an increase in the number of children born in the short run. As a second scenario, the CFC might be used as an extension of the paid parental leave period, which then is followed by a (postponed) return to the labor market to regain full eligibility for paid parental leave as well as to maintain ones foothold in the labor market. This delay in labor market return may in turn delay the next birth, and in this scenario we hence expect to see an increase in the spacing between births and potentially also a decrease in the number of children born in the short run. We see this as a plausible adaption among mothers with relatively large human capital investments and labor market attachment, whose income matters rather substantially to the household income.

3.1. Theoretical expectations: Summary and hypotheses

To sum these theoretical expectations up, we might boil our the above argumentation down to four simplified hypotheses. These will guide the structuring of the forthcoming analysis, and be picked up again at the end of the paper.

The quantity hypothesis: The CFC introduction decreased the price of childbearing, which in turn increased the demand for children. This should increase the proportion of families having another child during the follow-up period. Due to low opportunity costs of childbearing and large income effects we expect this pattern to be most evident among 1) mothers whose contribution to the household income is in the lowest income quartile, 2) mothers with low investment in human capital (measured as having completed only primary education), and 3) mothers with no or part time employment. We expect the pattern to be the least evident among 1) mothers whose income contribution is in the highest income quartile, 2) mothers with high investment in human capital (measured as having completed tertiary education), and 3) mothers with a strong attachment to the labor market (measured as being full time employed before birth).

The quality hypothesis: The CFC introduction increased the disposable income for parents, which enabled a higher investment in the quality of each child. This could lead a decrease in the proportion of families having another child during the follow-up period. Due to high expectations of human capital investments, as well as high opportunity costs of childbearing, we might expect to se this pattern among 1) mothers whose contribution to the family income is in the third and fourth quartile, 2) mothers with secondary and tertiary education, and 3) employed mothers with part and full time employment.

The speed-up hypothesis: The CFC introduction provided an alternative income source for up to four years if the mother has her next child within two years (and for six years if she has yet another child within four years). This could lead to a shortening of the spacing between births. This pattern should be most evident among 1) mothers whose contribution to the family income is in the lowest two income quartiles, 2) mothers with primary and/or secondary education only, and 3) mothers with no or part time employment.

The postponement hypothesis: The CFC introduction created a compensation for lost income while the mother prolonged the paid parental leave period, which in turn lead to a

postponement of labor market return and hence new births. This lead to an increase in the spacing between births, which is most evident among 1) mothers whose contribution to the family income is in the second and third quartile, 2) mothers with secondary and to some extent tertiary education, and 3) employed mothers with part and to some extent full time employment.

4. Data material and sample

We base all analyses on data from Norwegian population registers, covering the time period between 1993 and 2002. The data set comprise demographic information on all parents who had their first or second child[6] in either 1994 or 1998, given that the child was born in Norway to parents with permanent residence permits. We exclude multiple births and births occurring with less than nine months spacing, as we consider these to be special cases. We then record any subsequent births occurring before the child born in 1994 or 1998 turns four (i.e. for up to 47 months), and register the spacing (in months) between these births. These demographic data on birth histories are merged with other socio-demographic information such as income, education and union status that are retrieved from other administrative registers. Our subsamples are described on key demographic variables in Table 1 below.

Table 1: Descriptive statistics, by parity and birth year of child. Percentages.

	Parity 1		**Parity 2**	
	1994	**1998**	**1994**	**1998**
BIRTH INFORMATION				
Have another child	83.81	82.07	44.65	40.71
Have another child during the f.-up	57.37	57.06	24.16	23.19
SOCIO-DEMOGRAPHIC INFORMATION				
Mother's age[a] (mean(st.d.))	26.26	27.00	29.02	29.75
	(4.62)	(4.75)	(4.30)	(4.32)
Father's age[a] (mean(st.d.))	29.38	30.15	31.92	32.56
	(5.76)	(5.86)	(5.32)	(5.39)
Union status[a]				
Single	12.43	10.16	5.56	4.82
Married	34.98	34.39	59.37	54.02
Cohabiting	52.59	55.45	35.07	41.15
Mother's educational level[b]				
Primary education	12.71	10.40	12.13	9.29
Secondary education	60.03	55.06	60.67	56.67
Tertiary education	27.26	34.55	27.21	34.04

[6] We only depend on the parity of the mother, as it is her subsequent fertility behavior we follow.

Father's educational level[b]				
Primary education	15.09	12.95	13.95	11.23
Secondary education	61.58	59.15	61.07	60.34
Tertiary education	23.34	27.90	24.97	28.43
Mother's country of birth				
Norway	90.66	88.03	90.72	89.60
Western country	3.40	4.08	3.59	3.71
Non-Western country	5.94	7.90	5.70	6.69
Father's country of birth				
Norway	90.48	88.53	90.47	89.69
Western country	3.51	4.43	3.56	4.03
Non-Western country	6.00	7.04	5.97	6.27
Family income (in relation to N.I. base rate) [b] (mean(st.d.))	9.07 (4.53)	9.70 (5.63)	9.46 (4.38)	9.91 (7.19)
Mother's contribution to family income (mean (st.d.))	42.33 (19.15)	41.76 (17.87)	38.27 (17.67)	38.47 (17.17)
Mother's labor market attachment[b]				
Student	23.35	23.34	9.66	9.52
No work	8.82	8.82	13.59	11.88
Part time	23.62	20.29	40.62	38.01
Full time	44.21	47.54	36.13	40.59
Region[b]				
Oslo and surroundings	25.83	26.83	23.12	24.07
Hedmark and Oppland	6.75	6.62	6.97	7.16
South-eastern Norway	17.09	17.39	17.21	17.37
South-Western Norway	13.86	14.08	14.81	14.97
Western Norway	16.62	16.60	17.73	17.31
Trøndelag	8.91	8.60	9.13	9.02
Northern Norway	11.34	9.87	11.03	10.09
N	**24 008**	**23 111**	**21 531**	**20 754**

[a] Measured at birth.
[b] Measured the year before birth.

Starting with the three first lines in Table 1 assessing information on births, we see that just above 80 percent of the first-time parents move on to having a second child, while about 40-45 percent of the second-time parents move on to having a third. These are patterns we know from other studies (e.g. Lappegård, 2000). Restricting the follow-up to 47 months, these numbers drop to just below 60 percent and about 25 percent respectively. There is a small tendency for the 1998-cohorts to have a slightly smaller likelihood of having another child before the first or second child turns four; a 0.31 percentage point reduction for first-time parents and a 0.97 percentage point reduction for second time parents.[7]

[7] These numbers will be assessed in more detail in section 6.1.

Moving on to the part of Table 1 assessing socio-demographic information, we see that the parents giving birth to their first or second child differ somewhat in the socio-demographic composition depending on whether the child is born in 1994 or 1998. It is therefore important to control for these characteristics in a regression model, as the apparent differences in subsequent births (and their timing) described above may be due to the relative composition of the subsamples rather than the eligibility for the CFC benefit.

Starting with first-time parents, we see that the mean age at birth is slightly higher in the 1998 cohort, for both mothers and fathers. These is an increase of about 3 percentage points in the proportion of cohabiting couples (primarily resulting from fewer being single rather than fewer being married while giving birth), and the educational level of both mothers and fathers is higher as well. There are slightly fewer Norwegian-born parents in the 1998-cohort, while the proportion of both Western and non-Western is slightly higher. The inflation adjusted joint family income is higher as well, while the mothers' relative contribution to the family income has decreased from 42.3 to 41.8 percent. We do, however, see that slightly more women work full time whilst fewer work part time. The regional distribution is rather similar between cohorts.

Moving on to second-time parents, the picture is rather similar. Age at birth, educational levels, the proportion of immigrants and the proportion of employed mothers is slightly higher in the 1998 cohort, while the proportion of students, non-employed and part time employed mothers is lower. The mother's relative contribution to the family income is slightly higher in the 1998 cohort when we look at the second-time parents, as is the proportion of mothers working full time.

Finally assessing the difference between the first and second-time parents, we see some natural differences resulting from the parents having their second child being older than those having their first. A higher proportion of these parents are married, there are fewer students, slightly more mothers have completed higher education, and the family income is slightly higher. The mother's relative contribution to the family income is nonetheless lower, something that may be related to the increase in non- and part time employed mothers.

5. Analytical strategy

The goal of this analysis is to assess the implication of a cash transfer to families on subsequent fertility behavior, and ideally, we would like to identify a *causal* effect between the two. Policy reforms often create a suitable setting for quasi-experimental analyses, where the introduction of a new policy creates a "natural-experiment" where one can compare the behavior of affected and non-affected groups. Two main econometrical specifications stood out as possible options for the question at hand; a regression-discontinuity () (RD) design which compared the fertility behavior of mothers whose child was born just before and just after the date which determined CFC eligibility, and a difference-in-differences (DD) approach comparing the change from a pre to a post period in one group of eligible and one group of ineligible mothers. However, as we will dicsuss brefly below, the qualities of the CFC benefit and its introduction rendered the underlying assumptions of these models different to fulfill.

First, to perform a RD analysis, it is a necessary requirement that the allocation into the treatment and the control group is determined by the value on a continuous variable (i.e. the date of birth), based on the logic that this value is a result of coincidence and that the groups hence become (close to) randomized. In our specific case, this means that the CFC should be introduced in such a away that children born before a given date become ineligible for transfer while those born on or after the same date remain eligible. The benefit was, however, introduced in a more gradual manner. All one year olds became eligible from August 1st 1998, meaning that all children born between August 2nd 1996 and August 1st 1997 became eligible for CFC on this date. However, *as the benefit was universal* – and this is a point worth emphasizing – all children born *after* August 1st 1997 also entered eligibility once they turned one. On January 1st 1999 the benefit was expanded to also include two year olds, i.e. those born between January 2nd 1996 and January 1st 1997, and a special arrangement entitled those who turned two in the period between August and January (i.e. those born after August 2nd 1996) to payments as well. Children born in 1995 is hence the earliest unaffected cohort (see Drange, 2013), and the allocation into the treatment and the control group is hence not determined by one single date of birth. The RD design is therefore considered inappropriate to assess the causal effect at hand.

Our other option, the DD approach, is based on the logic that one compares the change from a pre to a post period (the first D) in one group of eligible and one group of ineligible mothers (the second D). The identifying assumption of this approach is that the trend in the outcome variable would have been the same for the treatment and the control group in the absence of treatment. In this specific case, this implies that we assume that the change in the likelihood of having another child (at the first child's age *m*) from the pre to the post period would have been the same for all mothers had the CFC benefit not been introduced. Given that the CFC was universal, it was necessary to go back in time to retrieve our control groups. Unfortunately, this also introduced trends in fertility behaviour which were unable to account for by using information available in our data. We therefore achieved statistically significant DD-estimates which primarily were driven by trends in the control group, rather than a change in the treatment group – as the model implicitly assumes. Due to violations of the identifying assumptions we therefore chose to refrain also from the DD-strategy.

Given these challenges we have had to relax our causal ambitions and concentrate our analysis around eligible and ineligible mothers who give birth closer (but not too close) in time. We account for economic trends and observable differences between mothers as best as possible, but the fact that the treatment and the control group are not perfectly comparable must always be kept in mind when results are interpreted.

5.1 Treatment and control groups

To assess how the introduction of the CFC benefit changed fertility timing, we still compare the fertility behavior of mothers eligible to the benefit to the fertility behavior of mothers ineligible to the benefit. Our group or cash-for-care eligible mothers are those who gave birth to their first or second child in 1998, irrespective of whether they used the subsidy or not.[8] As previously mentioned, children born in 1998 are the first "fully treated" cohort who was eligible for 24 months of CFC allowance, and these comprise our treatment group. As the public debate regarding the benefit only picked up surrounding the introduction in August, it is not possible for parents to have self-selected themselves into the treatment group. The goal is hence that the treatment and the control groups should be as similar as possible, apart from the fact that those who have birth in 1998 "coincidently" turned out to be eligible for a cash transfer.

[8] This is hence an ITT (Intention-To-Treat) analysis.

The universal character of the CFC benefit implied challenges also in finding a suitable comparison group for this analysis, as we again had to go back in time to find it. For this purpose we decided to use mothers who gave birth to their first or second child in 1994, and the reason for this choice is twofold. First, we needed to choose a cohort which follow-up period allowed for a substantial part of new births to take place, *without* this follow-up stretching into the CFC-period. A large proportion of second births happen within four years, and using the 1994 cohort allowed us to follow families *until* the time the first/second child turns four (i.e. until 30.12.1998 for children born 31.12.1994). This entails that some subsequent children in the control group may be either partially or fully eligible for the CFC (i.e. those born in 1996/1997 and 1998 respectively), but we see this as unproblematic as the *decision* of having these children remain unaffected by the subsequent CFC introduction.[9] Second, we needed to make sure that there were no relevant policy reforms or social, political or economic "shocks" (that might affect subsequent birth timing) that took place in the birth year of our control cohort. Rather unfortunately (in this respect), the early 1990's are scattered with both economic trends and family policy reforms, with the extension of the parental leave in 1990, the introduction of the fathers quota in 1993 and a generally improved economic situation during the early 90's as the most important changes. It was therefore preferable to exclude this period in general and these years in particular from the specification of the model, and the 1994 cohort makes this possible.

5.2. Models

Based on the considerations above, the analysis is restricted to those who gave birth to their first or second child in 1994 or 1998. We split these subsamples by the parity of the child born in 1994 or 1998, and register any additional birth (and its timing in relation to the previous birth) occurring before the first or second child is four years old (i.e. 1995-1998 for the 1994 cohort and 1999-2002 for the 1998 cohort). We perform two analyses; one assessing the occurrence of new births and one assessing the timing of births. All analyses are run in linear regression models, as these provide more intuitive estimates than the logit model without compromising the validity of the results (see Angrist and Pischke, 2009; Hellevik, 2009).[10]

[9] Following the above logic on public debate and the possibility to self-select into eligibility.

[10] We have compared the estimates to the marginal effects from logit models, and they are the same.

The first analysis estimates the likelihood of having another child during the follow-up period, and takes the form

$$Y_i = \alpha + \beta treat_i + \delta X_i + \varepsilon_i$$

where Y_i is a dummy variable taking the value 1 if mother *i* gives birth to a new child before the previous child turns four years old. $treat_i$ is a dummy variable taking the value 1 if mother *i* belongs to the group of mothers giving birth in 1998 and 0 if the mother gives birth in 1994, and this is the main variable of interest. X_i is a vector of covariates and ε_i is a random error term.

The second model assesses the timing of subsequent childbearing by estimating the proportion of mothers who have had another child when their first/second child is *m* months old. This model takes the form

$$Y_{im} = \alpha + \beta treat_i + \delta X_i + \varepsilon_i$$

where Y_{im} is a dummy variable taking the value 1 if mother *i* has had a new child when the previous child is *m* months old. This is a cumulative variable, and as *m* ranges from 0 to 47, it is valued 0 from m_0-m_{m-1}, and 1 from m_m-m_{47}.[11] $treat_i$ is a dummy variable taking the value 1 if mother *i* belongs to the group of mothers giving birth in 1998 (and 0 if the mother gives birth in 1994), X_i is a vector of covariates and ε_i is a random error term.

5.2.1. Covariates

The covariates are included to control for any differences in birth occurrence and timing between our treatment and control group that can be explained by other observable factors than the CFC introduction. Most variables are measured on an annual basis, and to keep the models as exogenous as possible we primarily use the information from the year before the child was born.

The ***age at birth*** for both parents is included as a continuous variable with the polynomial ***age2***. This is included as the samples differ in the age at which they had their first or second child.

[11] Say for instance that a new child is born when the previous child is 25 months old. m_0-m_{24} is then valued 0, and m_{25}-m_{47} is valued 1.

The ***union status*** at birth is included as a dummy variable indicating whether the parents were either married or cohabiting (labelled 1) or not (labelled 0).

The highest completed ***educational level*** the year before birth for both parents are included as two dummy variables for each parent; *Secondary* indicate whether the parent has completed high school (labelled 1) or not (labelled 0), and *Tertiary* indicate whether the parent has completed higher education (labelled 1) or not (labelled 0). Those with only primary education (or less) hence become the reference group. Education is highly correlated with income, but may also be used as a proxy for both investment in human capital and attitudes towards optimization of the family/work balance where women with lower education may be considered of being more family oriented and stronger preferences for more children than other women.

The ***family income*** from paid work the year before birth is measured as a continuous variable with the polynomial ***inc2***, indicating the inflation-adjusted joint wages of both mother and father. The aim of this variable is to control for income as *spending power* and not labour market attachment per se (as the wage may serve as a proxy for). We will therefore (most likely) exchange this variable with a variable of *total* income (including social transfers, investment income etc.) in the next round of the analyses.

The mother's relative ***contribution to the family income*** is included as a continuous variable aimed at capturing the specialization within the couple, the economic autonomy of the mother, as well as the relative price of the mother's time.

Full time is a variable aimed at capturing the mother's labour market attachment the year before birth, and this is measured through a salary higher than four times the National Insurance's base rate. This variable will be exchanged for the more nuanced variable called ***Labor market attachment***, in which full time employed mothers are labelled 0, students are labelled 1, non-employed mothers are labelled 2 and part time employed mothers are labelled 3. This variable forms the basis of the subsample analysis, but we have unfortunately not been able to re-run all analysis using this variable by the time of submission.

The ***immigrant background*** of both parents is included as dummy variables labelled 1 if the parent is born abroad and 0 if it he or she is born in Norway. It would be preferable to include

a more detailed variable in country of origin, but unfortunately the number of observations is too limited for this to be possible.

A final variable will capture the ***unemployment rate*** at the municipality level in the municipality the year before birth. This variable is included to account for economic trends occurring between the two periods.

6. Preliminary results

In the following section we will present some of the preliminary results from the analysis. We start with the model assessing the likelihood of having another child during the follow-up (hereafter called the main analysis), before we move on to the models assessing the timing of these subsequent births (hereafter called the timing analysis). We will finally look at the results from the subsample analyses.

6.1. Main analysis

Table 1 presents the *treat*-parameters from the main models, both for the entire sample and by the chosen subsamples. As these parameters are derived from a linear model, the estimates show the difference in "proportion points" between those who had children in 1998 and those who had children in 1994. We will primarily address the estimated as *percentage points*, given that this is a more intuitive interpretation.

Table 2: Treat-parameters, simple and extended model. Parity one and parity two.

	Parity one		**Parity two**	
	Simple model	**Extended model**	**Simple model**	**Extended model**
All	-0.0031	-0.0371 ***	-0.0097 **	-0.0230 ***
Mother's educational level				
Primary		0.0159		-0.0088
Secondary		-0.0631 ***		-0.0304 ***
Tertiary		-0.0211 **		-0.0228 **
Mother's labor market attachmet				
Student		-0.0453 ***		-0.0274
No work		0.0133		-0.0004
Part time		-0.0533 ***		-0.0378 ***
Full time		-0.0432 ***		-0.0234 ***
Mothers income contribution				
Q1		-0.0462 ***		-0.0175
Q2		-0.0391 ***		-0.0413 ***
Q3		-0.0452 ***		-0.0314 ***
Q4		-0.0295 ***		-0.0121

*: p<0.1 **: p<0.05 ***: p<0.01

6.1.1. Parity one

Starting with those giving birth to their first child (in the parity one-column), we see that a simple model without control variables yield a non-significant estimate of -0.0031. This number reflects the difference between the proportion having a new child in the two groups that we described in table 1 (0.31 percentage points), but as we see here, the difference is statistically non-significant. As we also remember from Table 1, the 1994 and 1998 cohorts differed on a range of socio-demographic characteristics as well. Controlling for these characteristics increase the estimate (or increase the difference) to -0.0371, and this estimate is statistically significant on the <0.01-level. It is the inclusion of the variables on educational level and unemployment rates that drive the change in the estimates. This indicates that when accounting for the fact that the samples differ on these characteristics, the change should (theoretically) be lager than when ignoring these differences. Based on the descriptive figures in Table 1, the change of 3.71 percentage points equals a relative decrease of 6 percent.

Moving on to the subsamples, we see that there are some differences between groups. One should note however, that there is a consistent trend in almost all estimates (both significant and non-significant) being negative.

Starting with the subsamples based on the mother's educational level before birth, it seems that the significant change in fertility has occurred among mothers with secondary and tertiary education. The estimates are positive yet insignificant for mothers with primary education, indicating that there was no change in fertility behavior among the CFC eligible mothers. The estimates are negative and statistically significant both for mothers with secondary and mothers with tertiary education, but the estimate is roughly three times as big for the secondary education mothers than for tertiary education mothers. In this group, the change from 1994 to 1998 is 6.3 percentage points, which equals 11 percent.

Moving on to the subsamples based on the mother's labor market attachment, we see that the estimate is positive and non-significant for mothers who are outside the labor market. For mothers who are employed both part time and full time, as well as for student (whose estimate resembles that of full time employed), the estimates are negative and statistically significant at the 1 percent level. The change is largest among mothers with part time employment, but not by more than a mere one percentage point.

Finally assessing the income balance within the household, we see that the estimates are negative and statistically significant in all four quartiles. The change is nonetheless smallest in the upper quartile, and largest in the lowest. The relationship between the mother's contribution to the family income and changes in fertility behavior cannot be said to be perfectly linear, although there seem to be an income inequality gradient in the sensitivity towards the CFC introduction.

6.1.2. Parity two

Moving on to those having their second child (in the parity two-column), we see that the simple model without covariates yield an estimate of -0.0097 that is significant at the 0.5-level. This estimate is, as we saw for parity one, increased both in size and significance level when including covariates. When controlling for age at birth of both parents, their union status, educational level, income, immigrant background and the mother's full time labor market attachment, the proportion who have another child before the first child is four years old is 2.3 percentage points lower among mothers who gave birth to a CFC-eligible child than those who gave birth to a non-eligible child. Here, it is the variable on unemployment rates that drive the change in the estimate.

Moving on to the subsamples, we see that all estimates are negative. When splitting the sample by the mothers educational level, there do however not seem to be any significant change among the mothers with primary education. The estimates are again statistically significant for the two other groups, with the estimate for those with secondary education being the largest. In this group, the change after the CFC introduction is 3.04 percentage points. This equals a decline at 13 percent.

Moving on to the subsamples based on the mother's labor market attachment, there are no significant changes among students and mothers with no labor market attachment. This means that the pattern is the same among non-employed mothers irrespective of the parity of the CFC eligible child, while there is a difference depending on parity among the students. The estimate are negative and statistically significant among employed mothers who work both part and full time, but the change is – again – largest among part time employed mothers. In this group, the change is on 3.78 percentage points or 16 percent.

Finally assessing the subsamples based on the mother's contribution to the family income, we see no significant change in the lowest or the highest quartiles. The estimates for the middle two quartiles are on the other hand significant at a one percent level, indicating a change of 4.1 and 3.1 percentage points for the second and third quartile respectively. This means that the impact of the income balance between parents differ depending on the parity of the CFC eligible child.

6.1.3. Main analysis: Summary

The results from the main analysis indicate a negative impact of the CFC-introduction on continued childbearing in a four year period, which (in relative terms) is stronger for parity two than for parity one mothers. The decline seems to be strongest among mothers with secondary education and part time employments. The impact of the income equality between the parents differ somewhat depending on the parity of the eligible child; for parity one the decline is strongest among the most unequal couples and weakest among the most equal, while there is a decline in the two middle quartiles for parity two. It might therefore seem that the impact of the price of mothers' time differ depending on whether it's the first or second child that is eligible for the benefit.

6.2. Fertility timing

We now move on to the models assessing fertility timing, and to facilitate the interpretation the results are presented in Figure 1 and Figure 2 below. The estimates do (as previously) show the difference (in proportion points) between those who gave birth in 1998 and those who gave birth in 1994, and the estimate at month *m* show the difference in the proportion who have had another child when the previous child is *m* months. For instance, an estimate of 0.002 at month 19 would indicate that the proportion who has had another child when the previous child is 19 months old is 0.2 percentage points higher in the 1998 cohort than in the 1994 cohort. As the model is cumulative, the new child could have been born in any of the months preceding and including the 19^{th} month.

6.2.1. Parity one

Starting with parity one, the estimates from the simple and extended model are plotted in Figure 1 below.

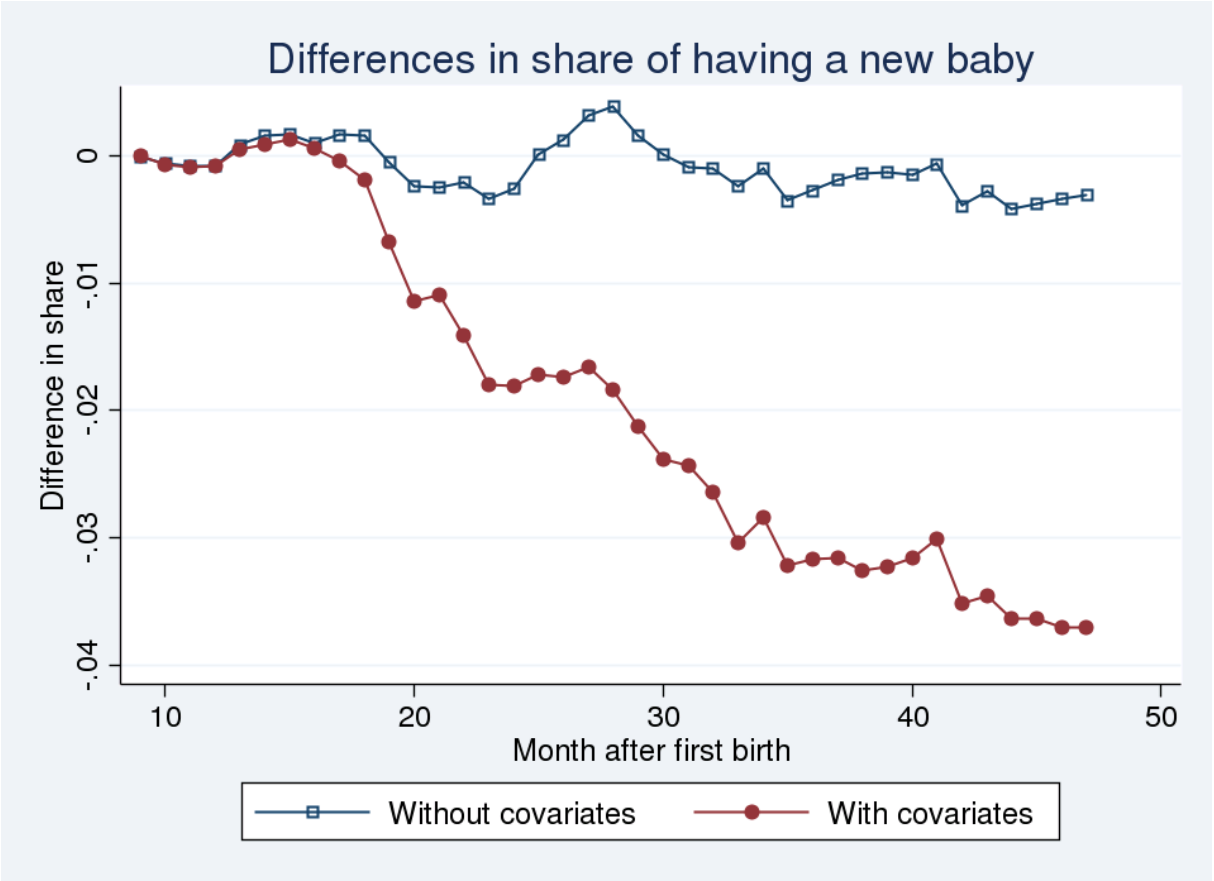

Figure 1: Model estimates for parity one, with control variables. Entire sample. Smoothed line.

Starting with the estimates from the simple model without covariates, shown in the blue line, we see that these fluctuate somewhat between just above and just below zero throughout the follow-up period. After 47 moths, the estimate is – as we have seen before – at -0.0031. However, when adding the control variables, the estimates drop at about 18 months after which a negative relationship emerges. The estimates remain rather stable between 23 and 28 months, before they drop even further and end up at -0.0371 after 47 months. It hence seems that at least some of the change in the mean estimate in Table 2 is driven by changes in births occurring when the first child is between 18 and 23 months and after 20 months

6.2.2. Parity two

Moving on to parity two, the estimates from the simple and extended model are plotted in Figure 2 below. As in Figure 1, the blue line denotes the estimates form the simple model and the red line the estimates from the extended model.

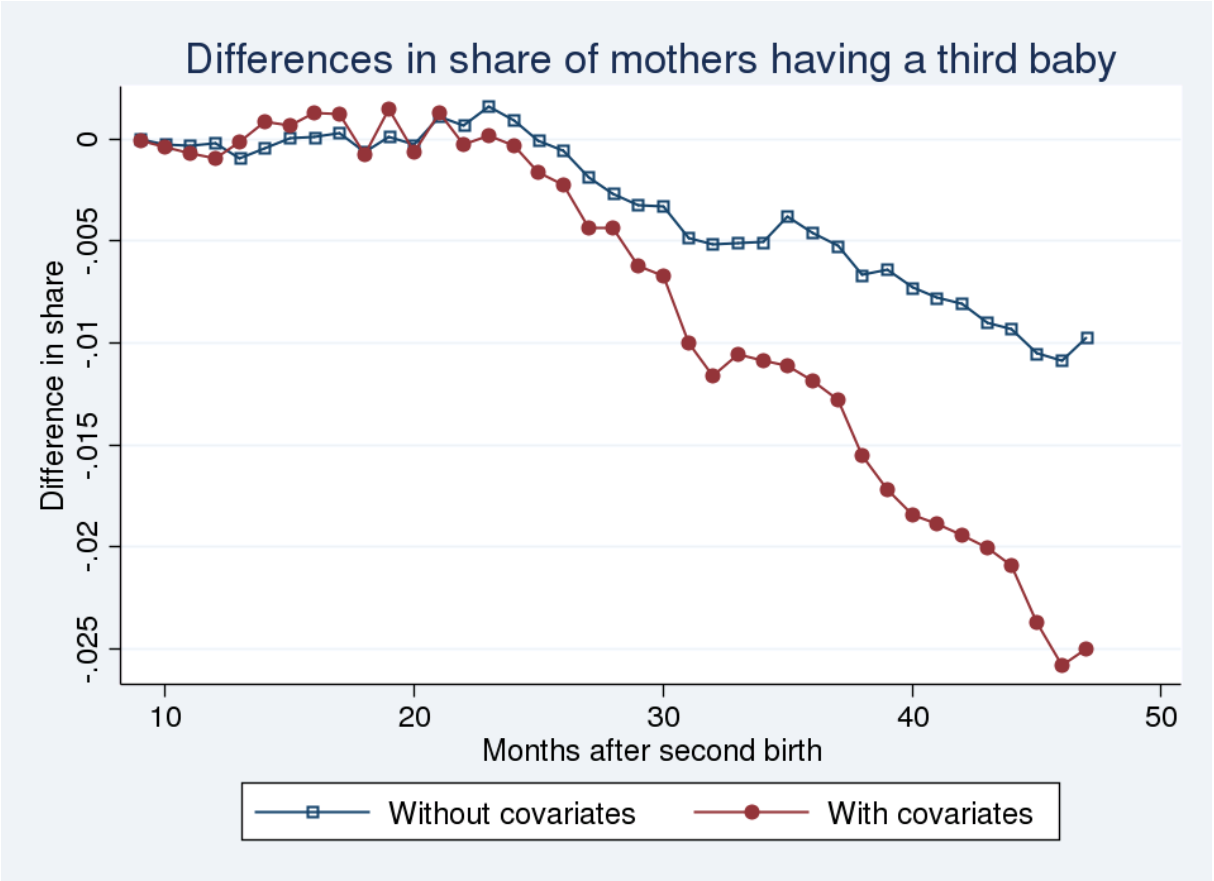

Figure 2: Model estimates for parity two, with control variables. Entire sample. Smoothed line.

Starting with the estimates from the simple model, these show that there are no noticeable differences between the 1994 and 1998 cohort up until about 23 months. If anything, there is a small, positive trend during this early period. We then see a decline which lasts until about 31 months have passed, and then drops further after 35 months and throughout the follow-up period. After 47 months have passed, the estimate is – as we have seen two times before – at -0.0097.

Moving on to the estimates from the extended model, we see a similar but more exaggerated pattern than the one we saw in the simple model. There is a small, slightly positive trend during the first 21 months, which then culminates and turns negative from 24 months and onwards. The drop is rather steep until 32 months have passed, before it stabilizes slightly and then drops to -0.023 after 47 months.

6.2.3. Fertility timing: Summary

In this section we have seen that the overall estimates we saw in the general analysis is driven by changes taking different forms at different points in time. There are small (or slightly positive) trends early in the follow-up, which change direction after 18 months for parity one parents and after 24 months for parity two parents. From these points in time the estimates drop rather consistently throughout the follow-up, indicating that there are consistently fewer in the 1998 cohort who have had another child when compared to the 1994 cohort.

6.3. Different mothers, different adaption?

In this section we will look closer at the differences in the change in fertility timing between mothers in the treatment and the control group who have similar socio-economic characteristics. We will start off by the subsamples based on educational level, move on to the subsamples based on labor market attachment and finish with the subsamples based on mothers' income contribution. We will only assess the estimates from the extended models, presenting these in plots that are similar to those we saw above. Parity one and parity two results will be presented together in this section. Please note, however, that the y-axes of these two figures don't apply the same scale, and that the size of the apparent size of the estimates cannot be directly compared.

6.3.1. Educational level

In figure 3.1 and 3.2 below, we can see the treat-estimates from the extended models

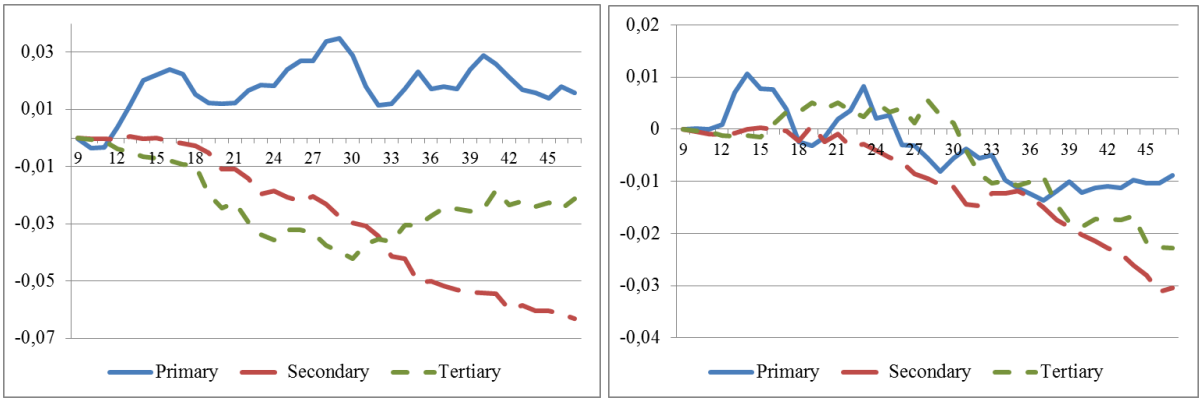

Figure 3.1 and 3.2: Treat-estimates for parity 1 and parity 2 parents, by the educational level of the mother before birth. With control variables.

Starting with Figure 3.1 showing the estimates for parity one parents, we can see clear differences in the change in fertility timing for mothers with different educational levels. The

blue, solid line shows the estimates for mothers with primary education, and although some of the estimates are non-significant, there is a positive trend from 11 months and throughout the period. This might entail that a slightly higher proportion of the eligible mothers with primary education had another child during the period, when compared to ineligible mothers giving birth to their first child in 1994. The difference seems to be most pronounced when the first child is 16, 29 and 40 months old, before it decreases somewhat towards the end of the period. This is an interesting result, as it demonstrates that the negative result in the previous analyses (and hence support for the quality and postponement hypotheses) not necessarily applies for all groups of mothers. Moving on to the red, streaked line for secondary education, we see that this lies close to zero up until about 18 months have passed, before it decreases rather steadily throughout the period. The green, more finely streaked line for tertiary education drops rather immediately, before it increases again from about 30 months and onwards. It therefore seems to be a small recuperation effect in this group, which we cannot see for mothers with secondary education.

Moving on to Figure 3.2 showing the estimates for parity two parents, the differences between the groups are not as pronounced as they are for parity one. The lines keep crossing each other in a slightly downward pattern until about 36 months have passed, before the blue line for primary education flattens out or even decrease a little. The other lines keep declining, but the line for secondary educated mother does so slightly faster than the line for tertiary educated mothers. This leads to the final estimates whose relationship resembles that for parity one, where the largest decline has happened for secondary educated mothers and the smallest decline for those with primary education.

6.3.2. Labor market attachment

Splitting the sample by the mothers labor market attachment before birth, we get the estimates displayed in Figure 4.1 and 4.2 below.

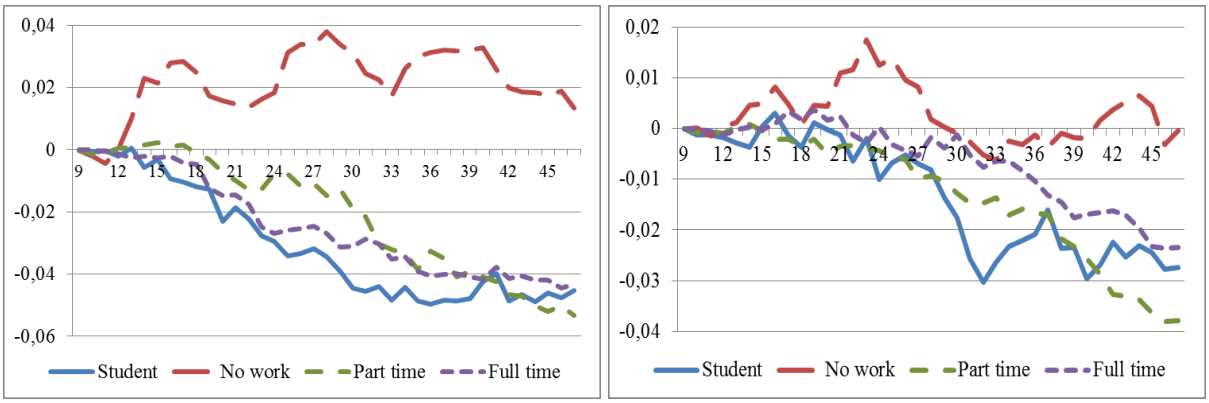

Figure 4.1 and 4.2: Treat-estimates for parity 1 and parity 2 parents, by the mother's labor market attachment before birth. With control variables.

Starting with Figure 4.1 showing the estimates for parity one parents, there seems to be two main patterns emerging. First, there is a positive, yet slightly unstable trend for mothers without any attachment to the labor market (still shown by the red, streaked line). This has three main peaks at 15, 28 and 40 months – much like the pattern we saw for mothers with primary education in Figure 3.1 above. Second, the is a rather steady downwards trend for all students, part time and full time employed mothers. The level of the green, finely streaked line for part time employed mothers is slightly higher than the two other lines until 32 months have passed, while the blue, solid lines for students remain at the bottom until 41 months. From hereon and out, the pattern seem to be the same in all three groups.

Moving on to Figure 4.2 showing the estimates for parity two parents, the pattern does again seem to be similar but less pronounced. The estimates for mothers outside the labor marked increase to a peak after 23 months, and remains close to zero from 30 months and onwards. All the other estimates are again small and mostly negative until about 18 months have passed, when we start to see a rather consistent decline among students and part time employed. The decline starts somewhat later for full time employed mothers (at about 28 months), and the level remains slightly higher than in the two other groups. At the end of the follow-up, the relationship between the groups are the same as it is for parity one parents, the main difference being a clearer distinction between the part time employed on one side and the student and full time employed on the other.

6.3.3. Mothers' relative income

The final subsample analysis will look into the income distribution within the couple, dividing this into four quartiles based on the contribution of the mother's income to the total household

income from paid work. These estimates are shown in Figures 5.1 and 5.2 below, and as before, the y-axes do not have the same scale.

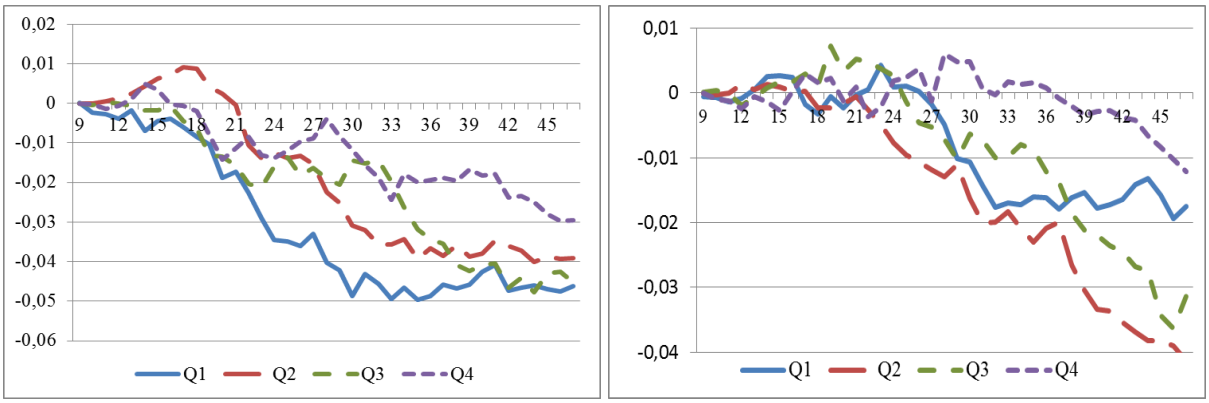

Figure 5.1 and 5.2: Treat-estimates for parity 1 and parity 2 parents, by the mother's relative contribution to the household income. With control variables.

Starting with Figure 5.1 showing the estimates for parity one parents, there is an overall, negative trend in subsequent childbearing. The largest decline can be found among mothers whose income contribution from paid work is in the lowest quartile (identified by the blue, solid line), and the distance between this and the other lines is particularly pronounced between 22 and 41 months. The estimates are slightly positive (but only significant at the 10 percent level at the best) for those in the second quartile during the first 20 months, before the trend is negative also in this group. The two upper quartiles are rather similar during the first 33 months, before there is a strong decline in new births for the third quartile and only a slight decline for the fourth. At the end of the period we can see an almost linear relationship between the mother's contribution to the family income and the decline in births following the CFC introduction, with the strongest decline among those with the lowest contribution (Q1) and the weakest decline among those with the largest contribution (Q4). This might indicate that the sensitivity towards economic transfers in terms of changing fertility behavior depends on the relative "price" of mothers' time.

Moving on Figure 5.2 showing the estimates for parity two parents, there are no clear differences between the four quartiles during the start of the period. After about 20 months we can se a clear drop among mothers in all but the highest quartile, which levels out from month 32 for mothers in the first quartile and continues throughout the period for the second and third. There seem to be a small decline in the fourth quartile at the very end of the follow-up, but these estimates are not statistically significant. The results hence indicate that for mothers

whose income plays an important role for the overall family income, no change in the risk of having a third child have taken place after the CFC introduction.

6.3.4. Subsamples: Summary

In this section we have broken down the results from the timing analysis by the mother's educational level, labor market attachment and contribution to the household income. In sum, the results show that the changes in fertility behavior following the CFC introduction do indeed differ according to these characteristics. The overall picture is still negative, except from among non-employed mothers and mothers with only primary education. In these groups we see a slightly positive trend, in which only some estimates are significant at the 1 percent level. Although somewhat uncertain, these results lend support to the quality and speed-up hypotheses, indicating that mothers with low educational level and no labor market attachment might see the CFC as an economic relief to childbearing constraints. Furthermore, the results indicate that the changes in fertility timing in different groups of mothers follow (roughly) the same pattern irrespective of parity. However, there seem to be a more delayed change for parity two parents while the changes are more immediate for parity one. Furthermore, mothers with high contributions to the household income seem to be unaffected by the CFC introduction concerning the risk of having a third child, but affected (negatively) for the risk of having a second.

7. Discussion and conclusion

It is now time to go back and review the hypotheses we stated in chapter 3.1. To reiterate their exact contents, we will address each of them in their proposed order.

The quantity hypothesis claimed that the CFC introduction decreased the price of childbearing, which in turn would increase the demand for children and hence the proportion of families having another child during the follow-up period. When looking at the general analysis and the timing analysis for the entire sample, this hypothesis does not receive any support in our data. However, it furthermore suggested that due to low opportunity costs of childbearing and large income effects of the CFC introduction, this pattern should be most evident among 1) mothers with low investment in human capital (measured as having completed only primary education), 2) mothers with no or part time employment, and 3) mothers whose contribution to the household income is in the lowest income quartile.

Looking at the subsample analysis, the hypothesis hence seems to receive some support all the same. The estimates for mothers with primary education and no labor market attachment are – quite contrary to all other groups – *positive*, and during some periods statistically significant at the 1 percent level. These results do hence suggest that some families might experience economic constraints on their preferred family size, which is relived by the CFC introduction. The quantity hypothesis does nonetheless not seem to apply for part time employed mothers, nor for families in which the mother's income contribution is low.

The quality hypothesis claimed that the CFC introduction enabled a higher investment in the quality of each child, which in turn lead to a decrease in the proportion of families having another child during the follow-up period. When looking at all the results under one, this hypothesis seem to be strongly supported by the data. All estimates are (with only a few exception) negative, most are statistically significant. The quality hypothesis also suggested that high expectations of human capital investments and high opportunity costs of childbearing would make this pattern most evident among 1) mothers whose contribution to the family income is in the third and fourth quartile, 2) mothers with secondary and tertiary education, and 3) employed mothers with part and full time employment. Looking at the subsample analyses we may indeed say that the pattern is *present* in all these groups, but the expectations are met primarily when considering educational level and labor market attachment. When considering the mother's contribution to the household income, the decline is the *least* strong for mothers in the highest income quartile. In fact, for parity two parents, these mothers seem to remain unaffected by the CFC introduction. This might be due to the fact that the specialization within the couple serves as a poorer proxy for human investment expectations and opportunity cost than the other two measures.

The speed-up hypothesis clamed that the CFC introduction provided an alternative income source if the mother had another child within two years of the previous, and that this would lead to a shortening of the spacing between births. As was the case with the quantity hypothesis, this hypothesis receives no support from the general analysis and the timing analysis for the entire sample. When splitting the sample into subsamples, the picture is again more nuances. The speed-up hypothesis stated that the pattern should be most evident among 1) mothers with primary and/or secondary education only, 2) mothers with no or part time employment, and mothers whose contribution to the family income is in the lowest two

income quartiles. The estimates for mothers with primary education and no labor market attachment are positive, and the "up-speed" is particularly evident among parity one parents when the first child is around 15, 28 and 40 months old. For parity two parents we see two small peaks at about 13 and 23 months for mothers with primary education and at 23 months for non-employed mothers. It is interesting to note that the timing of at least some of these speed-up periods occur so that the mothers become eligible for continuous CFC payments.

The postponement hypothesis claimed that the CFC introduction opened for a prolonged paid parental leave period, which would lead to a postponement of labor market return and hence new births. As was the case with the quality hypothesis, this hypothesis receives strong support by our data. The overall pattern is that of a consistent downwards trend, which seems to be particularly evident from 18-20 months for parity one parents and from around 30 months for parity two parents. The postponement hypothesis furthermore suggested that the "speed-down" pattern would be most evident among 1) mothers whose contribution to the family income is in the second and third quartile, 2) mothers with secondary and to some extent tertiary education, and 3) employed mothers with part and to some extent full time employment. Over all, and with some nuances during the follow-up, all these suggestions are supported. Irrespective of parity the decline is strongest for mothers with secondary and to some extent also tertiary education, and employed mothers (with the decline among part time employed exceeding that among full time employed). The decline is also *weakest* among mothers with high contributions to the family income. The further impact of mother's income contribution does however differ somewhat by parity; for parity one parents the decline is strongest for mothers in the lowest quartile, while it is lowest for mothers in the second quartile among parity two parents. This might indicate that the price of mother's time is evaluated differently depending on whether one considers the transition to second or to third births.

7.1. Conclusion

This analysis has addressed the implications of the introduction of a cash transfer to families on subsequent fertility timing among Norwegian families. Preliminary results indicate a negative and rather substantial effect on having another birth in the four year period, which (relatively speaking) is stronger for parity two than for parity one parents. The changes in fertility behavior do furthermore differs between different groups of mothers. The

postponement of births is primarily evident among employed mothers with secondary and tertiary education and a substantial income from paid work, while we see *speed-up* and an *increase* in the proportion having another child during the follow-up among mothers with primary education and no attachment to the labor market. These results may indicate that the CFC introduction relieved economic constraints on preferred family size for families with low income and few human capital investments, while it enabled a higher investment in (a fewer number of) children among families with (too) low income effects and (too) high opportunity costs of childbearing. On a more fundamental level, the results demonstrate how a universal family policy may have different consequences on family behavior depending on its income effect and the mothers' opportunity cost of childbearing.

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