Max-Planck-Institut für demografische Forschung
Max Planck Institute for Demographic Research
Konrad-Zuse-Strasse 1 · D-18057 Rostock · GERMANY
Tel +49 (0) 3 81 20 81 - 0; Fax +49 (0) 3 81 20 81 - 202;
http://www.demogr.mpg.de

MPIDR WORKING PAPER WP 2013-010
AUGUST 2013

Parental Benefits Improve Parental Well-being: Evidence from a 2007 Policy Change in Germany

Mikko Myrskylä (myrskyla@demogr.mpg.de)
Rachel Margolis (rachel.margolis@uwo.ca)

August 30, 2013

Parental Benefits Improve Parental Well-being: Evidence from a 2007 Policy Change in Germany

Mikko Myrskylä [1]
Rachel Margolis [2]

Abstract

Family policies aim to influence fertility and labor force participation, and support families. However, often only fertility and labor supply are considered in policy evaluations. For example, the 2007 extension of parental leave benefits in Germany is generally considered unsuccessful because changes in fertility and labor force participation were modest. However, parental well-being is also important, in itself and as a determinant of child well-being. This paper is the first to consider the effect of parental leave policies on parental well-being. We analyze the German 2007 parental benefits reform and find that the extension of benefits strongly increased parental well-being around the birth of a child. The effect is observed for first and second births and for various sub-populations. A placebo test using data from Britain where there was no policy change supports the causal interpretation. Our results cast the success of the German 2007 policy change in new light. Parental leave benefits have an important direct impact on parental well-being.

[1] Corresponding author. Max Planck Institute for Demographic Research, Konrad-Zuse-Str. 1, 18057 Rostock, Germany. Phone +49 (0)381 2081-118, Fax +49 (0)381 2081-418, Email myrskyla@demogr.mpg.de

[2] Department of Sociology, University of Western Ontario, Social Science Center #5326, London Ontario N6A 5C2, Canada. Email: rachel.margolis@uwo.ca

Long Abstract

Parental leave policies have four key goals: influence fertility behavior and labor force participation, support parents of young children, and indirectly provide support for children. Often, only the first two targets, fertility behavior and labor force participation, are considered when evaluating the success of a policy. For example, the extension of the parental leave benefits in Germany in 2007 is widely considered to be unsuccessful as the impact on fertility and return to work appear to be modest. However, parental leave policies may also affect the well-being of new parents and young children. This paper is the first to consider the effect of parental leave policies on parental well-being in the context of a developed, low-fertility country. We use the extension of parental leave benefits in Germany in 2007 as a natural experiment to analyze the impact of parental leave policies on the subjective well-being of new parents. We find that parents who had their first child after the policy change have markedly higher levels of subjective well-being than those who had their first before the change. Analysis of sub-populations by sex, education, income, age at first birth or country of origin suggest that the positive effect of the policy change on parental well-being was universal. Our interpretation of the difference as being caused by the policy change is supported by a fixed-effects analysis of the difference in happiness gain between the first and second births among those who had their first child before or after 2007, and by a placebo analysis of the change in parental well-being in Britain before and after 2007. These results suggest that extending parental leave benefits may have important positive impact on families. Given the importance of parental well-being on child outcomes, the policies may have further spillover effects which can be studied as data accumulate. These results recast the German 2007 policy change as a success.

Key words: Fertility, family policy, parental leave, Germany, subjective well-being

Introduction

Persistent low fertility is the key demographic-induced policy challenge in highly developed societies. Despite recent increases in period fertility (Bongaarts and Sobotka 2012; Goldstein et al. 2009; Myrskylä et al. 2009), fertility continues to be well below replacement level in much of the developed world. For example, in 2008, a total of 30 mostly advanced countries had period total fertility rates below 1.5 children per woman, and the average period fertility in 27 European Union countries was 1.6 (World Bank 2010). In developed East Asian countries fertility is even lower, averaging 1.2 in year 2008 for Singapore, Japan, South Korea and Hong Kong (World Bank 2010).

Policymakers in an increasing number of countries are aware of the social and economic problems created by low fertility and have started to design policies aimed to affect fertility (Demeny 2003). The European Commission identified fertility decline to below 1.5 children per woman to be among the key challenges for policymakers (European Commission 2005), and most countries with fertility below the 1.5 are currently attempting to increase the rate with specific policies (United Nations 2010). The OECD explicitly states that policies should enable people to realize their plans to have children, implying that many people have fewer than their desired number of children (OECD 2011).

Germany is the largest OECD country in which fertility has been persistently below replacement, with the period total fertility rate consistently below 1.5 children per woman since 1983 (Human Fertility Database 2012). The lack of comprehensive family policies there has been thought to be one of the reasons for such persistent low fertility. On 1st of January 2007, parental leave policy was dramatically changed with the primary aim of increasing fertility and

the secondary aim of encouraging women to return to paid work one year after a birth.[1] The main component of the policy change was replacing a means-tested transfer program (*Erziehungsgeld*), which paid a maximum of 300 Euro for up to 24 months after birth, with a parental benefit (*Elterngeld*). Under the new scheme, the parental benefit amounts to two thirds of net earnings prior to birth with lower and upper bounds of 300 to 1,800 Euro per month, thus subsidizing all new parents rather than only the poor. Most parents who had been working prior to birth receive considerably higher benefits under the new scheme. The duration of the benefits was reduced to a maximum of 14 months to encourage faster return to work. The parental leave period, which involves job protection for three years, remained unchanged.

The stated goals of the policy in discussions leading to the German 2007 policy change were to boost the fertility rate, and to encourage women to return to work sooner (Fagnani and Math 2010; Henniger, Wimbauer and Dombroski 2008; Lewis, Knijn, Martin and Ostend 2008; Spiess and Wrohlich 2008). However, the data available through 2011 suggest that fertility changed little, if at all, after the policy change (Salles, Rossier and Brachet 2010; Thyrian et al. 2010). Although labor supply of mothers may have increased since the new policy was implemented, the magnitude of the change is modest (Bergemann and Riphahn 2010; Fagnani and Math 2010; Spiess and Wrohlich 2008).

Low fertility has persisted in other settings despite policy changes aimed at increasing fertility. For example, in Russia has experimented with various baby bonus schemes, which appear to have had little effect on fertility. Reviews of the effects of policies in influencing fertility also suggest that the leverage of specific policies is moderate at best (Gauthier 2007).

[1] Labor force participation of mothers with very young children is low in Germany, especially in comparison with other Western European countries. The employment rate for mothers with children under three years of age is 48% in Germany compared, for example, to 77% in Sweden (e.g. OECD 2006).

Family policies also aim to support parents, and indirectly, young children. This is an explicit goal in Sweden, where the long-standing justification for comprehensive family policy has been to facilitate a balance between earning and caring and enable individuals and couples to achieve their personal fertility intentions rather than to affect the level of fertility (Ferrarini and Duvander 2010). In the German case, the aim of the 2007 policy change was clearly to increase the low fertility levels through making parents better off via financial support.

We argue that the subjective well-being of parents is also an important outcome for three reasons, independent of whether policy makers stated this as a target or not. First, qualitative evidence shows that parental well-being is a critical factor in influencing the decisions about future births (Newman 2008). Thus even if the policy did not have immediately strong effects on fertility, the policy may indirectly influence future parity progression if the policy influenced positively the experience of parenthood. Second, parental well-being – both mental and financial – are critically important for child outcomes, such as cognitive ability and health (Bergman et al. 2007, Yeung, Linver and Brooks-Gunn 2008). Third, parental well-being can be considered to be an important outcome as such, or as a determinant of the parents own health (Diener and Chan 2011).

This paper is the first to study how parental well-being is influenced by family policy. We use the extension of parental leave benefits in Germany in 2007 as a natural experiment in conjunction with the German Socioeconomic Panel to analyze how parental subjective well-being is influenced by the policy change by comparing how parental well-being differs among those who had children before the reform versus those who had children after the reform.

We find that parents who had their first child after the policy change have markedly higher levels of subjective well-being after the birth than those who had their first child earlier. Analysis of the mechanisms suggests that the policy change influenced parental well-being

through increased satisfaction with the household's financial resources, as would be expected since the policy mainly changed the amount of financial transfers. Our causal interpretation of the results is supported by a fixed-effects regression in which we analyze the difference in happiness gain between the first and second births among those who had their first child before 2007 and their second child after 2007, and by a placebo test using data from Britain where there was no policy change. Analyses of sub-populations by sex, education, income, and age at first birth suggest that the positive effect of the policy change on parental well-being was universal.

Our results show that extending parental leave benefits may have important positive impact on families. First, parental leave benefits directly increase parental well-being. Second, given the importance of parental well-being for child outcomes, the policies may have further positive spill-over effects which can be studied as data accumulates. These results cast the success of the German 2007 policy change in a new light.

The 2007 Parental Benefits Extension in Germany

In Germany, fertility and labor force participation of mothers have both been low in comparison with other Western European countries. The period total fertility rate has been below 1.5 since 1983 (Human Fertility Database 2012). The employment rate for mothers with children under three was 48 percent in 2005, whereas the corresponding number in Sweden was 77 percent (OECD Family database 2012). Increasing the level of fertility and labor supply of mothers became high priority in the German parliamentary campaigns in the early 2000s, when candidates proposed wage-dependent parental leave benefits similar to those in Scandinavian countries (Federal Ministry for Family Affairs 2005). In September 2006, the German parliament voted to institute a new parental benefits policy that went into effect on January 1, 2007. The reform was explicitly intended to increase fertility and the labor market participation of mothers with young

children. Additional goals of the policy included encouraging fathers to get more involved in child care, and to provide the household with sufficient income to provide care for the child without the necessity that both parents work.

Before the 2007 reform, parental leave legislation in Germany had been relatively generous in terms of duration and job protection, but not for financial benefits. Both parents were entitled to take parental leave ("Elternzeit") for a maximum period of three years after childbirth, with job-protection. During the leave, parents were entitled to benefits ("Erziehungsgeld") from the government, which were not large (300 Euro per month), but they were paid up to 24 months to the parent on leave. The financial benefit was means-tested with an income threshold below the median income of a one-earner family. Consequently, less than half of all families with newborn children were entitled to the financial benefit before 2007.

The parents benefit, "Elterngeld", was introduced in 2007 (For more information on the 2007 policy, see Henninger et al 2008; Leitner et al 2007; Kluve and Tamm 2009; Schönberg and Ludsteck 2007; Spiess and Wrohlich 2008). There were three key changes. First, the new policy provided benefits to non-poor parents. In contrast to the old scheme, the new parents' benefit is not means-tested. Rather, the amount of the benefit depends on earnings prior to having a child. The new benefit replaces 67% of net earnings prior to birth, up to 1,800 Euro per month. However, parents who were low earners or not working can also collect benefits. The minimum amount of the benefit is 300 Euro per month and the replacement rate increases gradually until it reaches 100% for parents with prior-to-birth earnings of less than 1,000 Euro per month. In sum, in contrast to the old benefit that was received by less than half of the families because of strict means-testing, almost all parents receive the new benefit for some time.

Second, the new policy shortened the benefits period to encourage new parents to go back into the labor force. The new parental benefit is paid only for a period of 12 or 14 months.

If the mother and father share the benefit, then it is paid for 14 months, but if only one parent takes the leave, then it lasts only 12 months. A third difference was in the benefits available to parents with two or more young children. After 2007, families with two children under three years or three or more children under six years get an extra bonus of ten percent.

Although the 2007 parental benefits extension in Germany changed the eligibility, level, and length of parental benefits, it did not change the length of parental leave. Parents were still able to leave their jobs for up to three years with job protection.

Effectiveness of Parental Leave Reforms

The four main goals of parental benefits policies are to influence the fertility rate, increase labor force participation of mothers, support families when children are young, and indirectly support the children through improving the family living conditions. Overall, the effects of these policies on fertility and labor force participation appear to be modest in size (Gauthier 2007; Spiess and Wrohlich 2008).

Many recent studies and reviews find that family policies and parental leave benefits have a positive, yet small, impact on fertility (Bonoli 2008; Buttner and Lutz 1990; Gauthier 2007, Hoem, Prskawetz, and Neyer 2001; Manski and Mayshar 2003; Thevenon & Luci 2011). There is little evidence that parental benefit reforms are effective at introducing changes to the quantum of fertility in the long-run. Instead, the changes appear to be concentrated to temporal effects. For example, the Australian baby bonus of $3,000 introduced in 2004 was found to increase fertility only modestly (Drago et al. 2011). More importantly, the increase seems to be due to a tempo effect - fertility was postponed in anticipation of the reform and temporarily increased after the reform. Similarly, German's 2007 parental benefits reform had a strong and very short-term impact on the timing of births. Births appear to have been delayed from

December 2006 to January 2007 (Tamm 2009) with little effect on the level of fertility. In the three years preceding the reform (2004-2006), the German period total fertility rate (TFR) was 1.34, and in the three years after the reform (2007-2009) TFR averaged only marginally higher, 1.37 (Figure 1). This small change could be due to the policy change or to period changes in increases in fertility throughout Europe in the late 2000s. These two examples are consistent with the broader literature suggesting that family policies may influence fertility, but that even for large reforms, the fertility impact is likely to be modest (Gauthier 2007).

FIGURE 1 HERE

Depending on how the policy is structured, parental leave policies do seem to influence labor force participation and return-to-work decisions. Evidence points to longer benefits reducing the incentive to return to work, hence decreasing the labor force participation of parents, in particular mothers of young children (Lalive et al. 2011, Schönberg and Ludsteck 2007; Dustmann and Schönberg 2011). For example, the 2007 parental benefits reform in Germany shortened the period of benefits and increased the probability that mothers would return to work (Spiess and Wrohlich 2008).

Despite the fact that one of the goals of family policies is to provide support to parents and families with young children, no studies have analyzed the impact of parental benefit reforms on the subjective well-being of the parents. Parental well-being is an important target for three reasons. First, qualitative evidence shows that parents' experience with the transition to parenthood is a critical factor in influencing the decisions about having another child (Newman 2008). Thus, even if a parental benefits policy did not have immediate strong effects on fertility, the policy may indirectly influence future parity progression if the policy influenced positively the experience of parenthood. Second, parental well-being is critically important for child outcomes, such as cognitive ability and health (Bergman et al. 2007, Yeung, Linver and Brooks-

Gunn 2008). Third, parental well-being can be considered to be an important outcome as such, or as a determinant of the parents own health (Diener and Chan 2011). Thus we turn to the focus of this paper, the impact of the German 2007 parental benefits reform on parents' subjective well-being.

Research Questions

We analyze whether the 2007 parental benefits reform in Germany affected parental well-being over the course of the transition to parenthood. Specifically, we study the difference in the subjective well-being response (self-reported life satisfaction) of parents to having a child before and after the policy change. Second, we examine whether the effect of the policy change on parental well-being trajectories differed by the sex, marital status, or socioeconomic status of the parent. Third, we examine to what extent the policy change's effect on parental well-being was mediated through household income and satisfaction with household resources. Last, we examine whether the effect of the policy change was isolated to the first child or whether it also affected higher parity births.

Data

Our primary data source is the German Socio-Economic Panel (SOEP). The SOEP is a nationally representative longitudinal study of households including Germans living in the Old (West) and New (East) German states, foreigners, and recent immigrants to Germany. The SOEP was started in 1984, with the New German states added in 1991. The SOEP data is well-suited for our analyses because of three reasons. First, the SOEP allow the analysis of subjective well-being before and after births among those who became a parent before and after the German 2007 parental benefits reform. The longitudinal property is important because it allows comparisons of

changes in subjective well-being over time using a fixed effects framework. Second, the SOEP is a large survey, allowing for stratified analyses that can test whether population subgroups were differently affected by the reform. Third, the data include measures of satisfaction with income and family life, the mechanisms through which the policy intended to affect the lives of new parents.

Because the focus of this analysis is how the 2007 policy change influenced the way in which the birth of a child influences parental subjective well-being, we restrict the sample to respondents who were childless in 2003 and became parents between 2003 and 2010. This data selection yields two symmetric samples of new parents- those who became parents in the four years before the policy change (2003-2006) and those who became parents in the four years after the policy change (2007-2010). Since the focus is on new parents, we exclude persons who had children before year 2003 and those who were still childless at the end of our follow-up. After this restriction we have 1,523 respondents in the sample. After additional exclusions due to missing data, our sample consists of 1,113 people who experienced their first birth between 2003 and 2010.

As a secondary data source for sensitivity analysis, we use data from Britain to conduct a placebo test. The aim here is to test whether those who became parents after 2007 are considerably happier than those who became parents earlier, in a context where there was no policy change. For the placebo test, we use the British Household Panel Survey (BHPS). The BHPS is a nationally representative study of households that started in 1991 and annually collected. We created our analytic sample with BHPS with the same sample restrictions as in the SOEP. The analytical BHPS sample consists of 1,152 people who experienced their first birth over the follow-up period 2003-2008[2].

[2] The BHPS data is available only until 2008, not until 2010 as the GSOEP.

Measures

Our key outcome is the subjective well-being of parents. In SOEP, respondents were asked annually, "How satisfied are you with your life, all things considered?" Responses range from zero (completely dissatisfied) to ten (completely satisfied). The key independent variable is the birth of a child. A birth is indicated by a change in the number of biological children reported in the birth biography data. Step-children and adopted children are excluded from the analysis because the process of having biological children differs markedly from that of having non-biological children.

We stratify the analysis by six socio-demographic characteristics to examine whether the parental benefits policy change affected population subgroups differently. These characteristics are all measured in the year preceding the first birth. They are sex, age at birth (30 years or above versus less than 30), partnership status (partnered versus un-partnered), educational attainment (12 years or more versus less than 12 years), household income (pre-tax inflation-corrected household income categorized into top or bottom half of the distribution), and labor force status (working versus not working).

We test whether specific domains of subjective well-being mediate the impact of the policy change on how childbearing influences parental well-being. We consider factors that the policy aimed to affect. First, we consider household income and subjective satisfaction with household income. Second, because the policy may also influence how household chores are shared between the partners, we also consider satisfaction with household functioning and satisfaction with family life. Each of these specific satisfaction measures is reported on the same scale as the global measure of life satisfaction (0-10).

In the British sample, parental well-being is measured with the question, "Have you recently been feeling reasonably happy, all things considered?" with responses ranging from one (much less happy than usual) to four (more happy than usual).[3] We rescale this variable to range from zero to ten, the same range as in the SOEP well-being measure, to allow comparison of the magnitude of the coefficients across BHPS and SOEP.[4] As in SOEP, a birth is indicated by a change in the number of biological children. We do not do stratified analysis or consider mediators in the placebo test that we do using the BHPS data, so other variables are not needed.

Empirical Approach

We use fixed-effects linear regression models to examine how the birth of a child influences subjective well-being and whether this effect differs between those who became parents before and after the 2007 reform. The reform effect is identified by comparing parental well-being trajectories of those who experienced a birth shortly before and shortly after the reform in 2007. This strategy yields unbiased estimates if there was no anticipation of the reform and those who experienced a birth before and after the policy change are compositionally similar. The policy led to a change in the tempo of fertility. There was some postponement of births whose due date was close to January 1, 2007 when the reform became effective. These births were more likely to be postponed to January 2007 rather than December 2006 (Tamm 2009). Because of the postponement around the change of the year, those who became parents right before and after the

[3] In addition, BHPS has a question "How dissatisfied or satisfied are you with your life overall," with answers ranging from one (not satisfied at all) to seven (completely satisfied). This is closer in formulation to the one used in SOEP; however the question is not asked consistently through waves. The general happiness question is measured consistently through all the BHSP waves. We experimented with both measures and found that the analytical results were highly similar independently of whether we use the general happiness or the life satisfaction question, the key difference being the loss in statistical power for the sporadically measured life satisfaction. Therefore we use the general happiness measure in BHPS.

[4] After this transformation, the parental happiness variables had similar distributional characteristics. The median, mean, and standard deviation of well-being (life satisfaction) in the SOEP are 7.0, 7.1 and 1.7 and in BHSP (general happiness) are 6.7, 6.8 and 1.9.

policy went into affect may be different on unobserved factors. Therefore we exclude people who became parents in 2006 and 2007 from the analysis. We focus on men and women who experienced a birth in the years 2003-2005 (before the reform) or in the years 2008-2010 (after the reform).[5]

The longitudinal fixed-effects approach allows controlling for individual-specific, time-invariant unobserved characteristics, such as personality or genetic endowments, which could bias the association between childbearing and happiness. We assume the cardinality of life satisfaction because of two reasons. First, others have found that treating life satisfaction as ordinal versus cardinal makes little difference (Ferrer-i-Carbonell and Frijters 2004) and second, this allows using linear regression models which are more straightforward to interpret and are more stable in the fixed-effects setting than fixed-effects models for ordinal data.

Our modeling approach follows that of Clark et al. (2008), with some modifications.[6] Respondents' life satisfaction at time t is a function of time to or after a birth and whether the birth took place before or after the policy change. In addition, we control for individual fixed characteristics and time-varying covariates. The regression equation is:

$$
\begin{aligned}
(1)\quad H_{it} = {} & (B_{it-2} + B_{it-1} + B_{it} + B_{it+1}) \times I_{2003-05} + \\
& (B_{it-2} + B_{it-1} + B_{it} + B_{it+1}) \times I_{2008-10} + \\
& \alpha_i + \boldsymbol{\beta}' \mathbf{age}_{it} + T + \boldsymbol{\theta}' \mathbf{x}_{it} + \varepsilon_{it}
\end{aligned}
$$

where H_{it} is life satisfaction for individual i at time t; B_{it} are indicators capturing the deviation in happiness from the individual baseline 2 years before the birth of a child (B_{it-2}), 1 year before (B_{it-1}), the interview following the birth (B_{it}), and one year after the birth (B_{it+1}); the B_{it} are

[5] However, including these two parent cohorts would change the results only little and would not affect the qualitative conclusions.

[6] The most important methodological difference between our approach and that of Clark et al.(2008) is that they estimate two regression equations- one for the happiness trajectory before the birth of a child, and another for the trajectory following the birth or a child. This approach may be biased because the reference level of happiness is not the same for the two equations. We resolve this problem by estimating only one equation.

indicators are interacted with variables $I_{2003-05}$ and $I_{2008-10}$ which indicate whether the birth took place before ($I_{2003-05}$) or after ($I_{2008-10}$) the 2007 policy reform; α_i is the individual fixed effect; age effects are controlled using a cubic age specification[7]; T captures a linear time trend; and $\mathbf{x}_{it}$ is a vector for other time-varying covariates which we test in regressions that study whether the effects of a birth on global life satisfaction is mediated by specific dimensions of life satisfaction (satisfaction with income, household functioning, family life). We include people in the regressions 4 years before birth; therefore the omitted category in time before/after birth is 3-4 years before. Thus the coefficients B_{it} represent differences with respect to this baseline level measured 3-4 years before birth.

We study whether the 2007 policy change influenced the way in which parents experience parenthood by studying whether the coefficients B_{it} which capture the happiness response of parents to the birth of a child, differ for those who became parents before or after the policy change. In practice, this reduces to testing whether the coefficients B_{it} are the same when interacted with the before policy change ($I_{2003-05}$) and after policy change ($I_{2008-10}$) dummies.

After examining whether the trajectory of parental well-being was shifted by the 2007 policy for the whole population, we then stratify the sample by various subpopulations to examine whether the policy had similar effects across subgroups. We stratify the analysis by sex, education, income, marital status, and labor force participation.

Last, we conduct two sensitivity analyses. First, we compare trajectories of parental well-being for first and second births for parents who experienced both births before the 2007 policy change to those who experienced the first before the change and the second after the policy change. The second robustness check examines whether there was a similar period change in the

[7] We also considered linear and quadratic age specifications; the key results did not change.

way in which new parents experienced a birth before and after 2007 in Britain. To test this, we use the British Household Panel Study to examine parental well-being trajectories in a context where there was no change in family policy.

The results are shown as follows. Table 1 presents descriptive characteristics of the SOEP data.[8] Then, we present the results of our analysis for the whole population, comparing those who became parents before and after the reform using model 1 and the full SOEP data sets with no controls for other time-varying covariates than age to establish the general pattern of happiness before and after the first child is born (Figure 2). To shed light on the mediating mechanisms, we estimate the models with and without controls for household income and satisfaction with income (Figure 3). We estimate the model for various sub-populations (Figure 4).[9] Lastly, the results of the two robustness checks are presented in Figures 5 and 6.

Results

Sample Characteristics

TABLE 1 HERE

Table 1 shows characteristics of respondents for the analytic sample, stratifying by whether one became parent in 2003-2005 or in 2008-2010 and by sex. Respondents are born between 1943 and 1990. Average age at entry to the survey is 26.0 and the average follow-up is 5.2 years. The total number of observed births is 1,113 in Germany, of which 663 are before the policy change and 450 are after the policy change. Most new fathers are employed in the interview following

[8] Appendix Table 1 shows the corresponding characteristics for the BHPS data that is used in the placebo test.
To examine subgroup differences in happiness trajectories, we run fixed-effects regressions by subgroups. We chose this strategy rather than using many interaction terms to make results easily interpretable and to allow coefficients for other control variables to vary by subgroup.

the first birth (88%), while the majority of mothers are on a maternity or comparable leave (69%).

The last three rows of Table 1 show the average life satisfaction of the respondents at the first interview, in the year of birth, and one year after the birth. At first interview, parents' levels of life satisfaction are 7.30 (scale 0-10). At first birth, life satisfaction is marginally higher, 7.53, decreasing again by the last interview to 7.21. The patterns are qualitatively similar for men and women. However, the descriptive patterns of life satisfaction from 4 years before birth to the year of first birth and the year after birth show interesting differences when comparing those who became parents before and after the 2007 policy change: For the parents who experienced their first birth *before the policy change*, average levels of life satisfaction are only marginally higher in the year of birth than they were 4 years before the birth (7.44 vs. 7.43), and a year after the birth average happiness is markedly lower than it was before the birth (7.13). Among those who experienced their first birth *after the policy change*, average levels of life satisfaction are markedly higher in the year of birth than they were 4 years before the birth (7.66 vs. 7.22), and a year after the birth average happiness continues to be higher than it was before the birth (7.37). These descriptive patterns suggests that those who became parents after the policy change, and who benefited from the more generous parental leave benefits, experienced larger and more long-lasting increases in subjective well-being than those who had children earlier and did not benefit from the expanded parental leave benefits.

Effect of Policy Reform on Parental Well-being

We begin by examining whether the 2007 German parental benefits policy altered the subjective well-being of new parents. Figure 2 presents the estimated changes in subjective well-being for those who became parents in the years 2003-05 and 2008-10. The y axis shows the coefficients

from the linear fixed effects model for average subjective well-being relative to levels 3-4 years before the birth of a first child (see regression equation (1)). The figure shows that respondents who became parents before the new parental benefits policy experienced moderate increases in subjective well-being in the year preceding and in the year of the birth when compared to the baseline 3-4 years before birth, but these increases are not statistically significant. In contrast, those who became parents after the policy change experienced large and statistically significant increases in subjective well-being in the year before the birth, in the year of birth, and in the year after the birth.

FIGURE 2 HERE

The size of the difference in subjective well-being in Figure 2 among those who became parents before and after the policy change is large. For example, the well-being difference in the year of birth is 0.31 units, which is of the same magnitude as the effects of other major life changes, such as to the effect of divorce (-0.49 in our data), going to from employed to unemployed (-0.47), or one unit increase in health on a 5-point scale (-0.36). The differences between the estimated subjective well-being curves are also statistically significant in the year before the birth, in the year of birth, and in the year after the birth. These results suggest that the parental benefits policy positively impacted parental well-being and eased the transition to parenthood. Interestingly, the well-being trajectories of the first-time parents start to differ already in the year preceding the birth. This suggests that the policy influences parental well-being not only after the birth when the benefits are being collected, but also in the year preceding birth because the parents are aware of the benefits and may therefore be less anxious about the challenges of parenthood.

FIGURE 3 HERE

Next, we examined whether the effect of parental benefits policy was mediated through income. Figure 3 presents the average trajectories of subjective well-being fore parents before and after the 2007 policy, controlling for household income and satisfaction with household income. Comparing Figure 3 to Figure 2 (same model but without controls for income and satisfaction with income), the differences in the trajectories of parents before and after the policy are markedly reduced. For example, the well-being difference in the year of birth between those who become parents before versus after the change decreases 50% from 0.36 units in the model that does not control for income and satisfaction with income to 0.17 in the model that controls for income and satisfaction with income. Moreover, the differences in the well-being responses between those who became parents before versus after the change are only marginally significant ($p<0.10$). Thus is seems that the policy affected parental well-being mainly through the financial transfers.

Next, we examine whether the positive effect of the parental benefits reform differed by population subgroups. We tested whether there were differences by sex or socioeconomic status (education and income). The results, shown in Figures 4a (sex), 4b (education) and 4c (income), suggest only small differences across the sub-groups. For example, it appears that women gained more from the parental benefits expansion than men. However, but the improved well-being trajectory of parents after the policy reform is found for all examined subgroups. Further analyses stratified by labor force participation, and marital status (measured in the year before the first child was born), and age at first birth also suggested only small differences across population groups (not shown). These results suggest that the effects of the policy reform on parental well-being were universal among these subgroups.

FIGURES 4A, 4B, 4C HERE

Sensitivity analysis

We conducted two robustness checks to support the argument that the parental benefits policy had a causal effect on parental well-being. First, we compare trajectories of parental well-being for first and second births for parents who experienced both births before the 2007 policy change and those who experienced the first before the change and the second after the policy change. Prior research suggests that the positive impact of the second birth is smaller than the positive impact of the first birth (Myrskylä and Margolis 2012); if the policy influenced parental well-being, the difference between the first and second birth should be smaller among those who experienced the second birth after the policy change.

FIGURE 5 HERE

Figure 5 plots parental well-being trajectories for first and second births for those who experienced the second birth before and for those who experienced the second birth after the policy change. Because of small sample size in the stratified analyses, the differences are not significant, but suggest that respondents who experienced both their first and second children before the 2007 policy change gained more from their first child than the second. The increase in well-being around the birth of the first child is substantial, but for the second child there are no changes in happiness. This may be because parents may be happiest when anticipating and experiencing parenthood for the first time and also because they can concentrate on their first and only baby. With a second birth, the gain in happiness may be less high because parents'

resources are diluted or they are more stressed and have more to take care of. If resources and stress explain the smaller well-being bump around a second birth, then we would expect those who had a second birth after the policy to have an easier time with a second birth. Indeed, as shown in Figure 5, respondents that had their first birth before 2007 and their second birth after the 2007 parental benefits policy change had the same increase in well-being for their second child as they did for the first. The effect of a second birth is half as large for parity 2 before the policy, but just as large for parity 2 births after the policy.

FIGURE 6 HERE

The second robustness check examines whether there was a similar period change in the way in which new parents experienced a birth before and after 2007 in Britain. To test this, we use the British Household Panel Study to examine parental well-being trajectories in a context where there was no change in family policy. As expected, there was no change in the way in which new parents experienced a birth in Britain. Shown in Figure 6, parents before and after 2007 had similar trajectories of well-being around the transition to parenthood. Details about the sample and full set of results can be found in the Appendix.

Discussion

This paper is the first to consider the effect of parental leave policies on parental well-being in the context of a developed, low-fertility country. We use the extension of parental leave benefits in Germany in 2007 as a natural experiment to analyze the impact of parental leave policies on the subjective well-being of new parents. Parental leave policies aim to increase fertility behavior and labor force participation, support parents of young children, and indirectly provide support for children (Fagnani and Math 2010; Henniger, Wimbauer and Dombroski 2008; Lewis, Knijn, Martin and Ostend 2008; Spiess and Wrohlich 2008). Often, only the first two targets, fertility behavior and labor force participation, are considered when evaluating the success of a policy. For example, the extension of the parental leave benefits in Germany in 2007 is widely considered to be unsuccessful because the impact on fertility and return to work appear to be modest (Bergemann and Riphahn 2010; Fagnani and Math 2010; Spiess and Wrohlich 2008). However, parental leave policies may also affect the well-being of new parents and young children.

We find that parents who had their first child after the policy change have markedly higher levels of subjective well-being than those who had their first child earlier. Analysis of sub-populations by sex, education, income, and age at first birth suggest that the positive effect of the policy change on parental well-being was universal. Our interpretation of the difference as being caused by the policy change is supported by a fixed-effects of the difference in happiness gain between the first and second births among those who had their first child before or after 2007, and by a placebo analysis of the change in parental well-being in Britain before and after 2007. These results suggest that extending parental leave benefits may have important positive impact on new parents. These results recast the German 2007 policy change as a success.

Should we care about parental well-being? We should, for at least two reasons. First, social policies that support parents help people to have the number of children that they want to have. The OECD explicitly targets enabling people to realize their plans to have children, especially since many people have fewer than their reported desired number of children (OECD 2011). Increasing parental well-being around the time when children are young may ward off persistent low fertility if the childless see that the transition to parenthood is aided by a variety of formal and informal mechanisms. Sweden is an interesting example, because its policies are aimed at supporting families rather than boosting fertility. The family support has translated to stable and higher fertility than in most of the developed world.

A second reason why we should care about parental well-being is that it's good for kids. Although there is little research on parents' subjective well-being and children's outcomes, many have studied negative aspects of well-being such as parents' depression and its links to children's general health and healthcare utilization (Turney Forthcoming SSR; Turney 2011a), and children's internalizing and externalizing behavioral problems (Meadows et all 2007; Turney 2011b), and cognitive development. Parents' well-being can affect children through parenting behaviors, health behaviors, etc. Given the importance of parental well-being for child outcomes, the 2007 parental benefits reform may have further spill-over effects that can be studied as data accumulates.

Our analysis suggests that the effect of the 2007 parental benefits reform is not only for first time parents. The effects also extend to those experiencing their second child. In our other research, we find preliminary evidence that those who have a more positive experience with the transition to parenthood are more likely to progress to parity two (Margolis and Myrskyla in preparation). If this is the case, then the parental leave policy could have an effect on fertility quantum, or the number of children that people have. The data are not yet available, however in a

few years we will see whether family policy influences the level of fertility through the happiness response to a first child.

There are limitations to the analysis. It is possible that the difference in the parental well-being trajectories before and after the policy change is driven by compositional differences in who was having children before and after the change. However, it appears that such compositional differences are not driving the results for four reasons. One, there have been no changes in overall fertility levels. Second, our descriptive characteristics shown in Table 1 did not suggest any large differences between the two groups of parents. Three, our regression analyses controlled for the observed compositional differences between the two groups. And four, the analysis of second births, in which we compared two groups of people which were homogeneous in the sense that they both had their first children before the policy change and differed only in the sense that their second births were either before or after the change, supported the main conclusions. It is also possible that overall time trends in how parental well-being responds to the birth of a child are driving the results. However, we controlled for observed time trends by including year of measurement in the regression analyses. The results could also be driven by unobserved contextual changes that influence how parenthood is experienced. However, we conducted a placebo check in another European country that could be subject for similar unobserved contextual changes, and found results that support our conclusions.

These results show that parental benefit policies may have an important impact on parental well-being. Previous work on parental benefit policies has mostly focused on the effects on fertility or labor force participation, neglecting the well-being effects documented here. The findings are important because parental well-being is an important factor for child outcomes, for the parents' own health, and potentially also for further parity progression. The results show that

parental benefit policies may be successful even when fertility or female labor force participation respond only little to the policies. Given the importance of parental well-being on child outcomes and further parity progression, the policies may have yet further spillover effects which can be studied as data accumulate.

References

Bergemann, Annette and Regina T. Riphahn. 2010. Female labour supply and parental leave benefits- the causal effect of paying higher transfers for a shorter period of time. Applied Economic Letters 81(1):17-20.

Bongaarts J. and T. Sobotka. 2012. A Demographic Explanation for the Recent Rise in European Fertility. *Population and Development Review*. 38(1): 83-120

Bonoli, G. 2011. The impact of social policy on fertility: Evidence from Switzerland. *Journal of European Social Policy* 18:331-360.

Buttner, T. and W. Lutz. 1990. Estimating Fertility Responses to Policy Measures in the German Democratic Republic. *Population and Development Review* 16(3):539-555.

Clark, A. E., E. Diener, Y. Georgellis and R. E. Lucas. 2008. "Lags and Leads in Life Satisfaction: A Test of the Baseline Hypothesis." *The Economic Journal* 118(529):F222-F243.

Demeny P. 2003. Population Policy Dilemmas in Europe at the Dawn of the Twenty-First Century. *Population and Development Review.*

Drago, R., K. Sawyer, K.M. Shreffler, D. Warren, and M. Wooden. 2011. Did Australia's Baby Bonus Increase Fertility Intentions and Births? *Population Research and Policy Review* 30(3): 381-397.

Dustmann and Schönberg 2011. Available at: http://www.homepages.ucl.ac.uk/~uctpusc/publications/MaternityChildren.pdf

Fagnani, J. And A. Math. 2010. "Recent Reforms in French and German Family Policies." *Sociologia, Problemas e Practicas*, 64: 11-35.

Ferrarini, T. and A.Z. Duvander. 2010. "Conflicting Directions? Outcomes and New Orientations of Sweden's Family Policy." *Stockholm University Linnaeus Center on Social Policy and Family Dynamics in Europe,* working paper 4.

Ferrer-i-Carbonell, A. and P. Frijters. 2004. "How Important is Methodology for the Estimates of the Determinants of Happiness?." *The Economic Journal* 114(497):641-659.

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(3):323-346.

Geyer, J., P. Haan, and K. Wrohlich. 2012. Labor supply of mothers with young children: Validating a structural model using a natural experiment. Available at: http://www.iza.org/conference_files/LaSuMo2012/geyer_j3182.pdf

Goldstein, Joshua R., tomáš Sobotka, and aiva Jasilioniene. 2009. "the end of lowest-low fertility?," *Population and Development Review* 35(4): 663–700.

Henninger, A., C. Wimbauer, and R. Dombrowski. 2008. Demography as a Push toward Gender Equality? Current Reforms of Germany Family Policy. *Social Politics* 15(3):287-314.

Hoem, J.M., A. Prskawetz, and G. Neyer. 2001. Autonomy or conservative adjustment? The effect of public policies and educational attainment on third births in Austria, 1975-96. *Population Studies* 55(3):249-261.

Human Fertility Database 2012

Kluve, J. and M. Tamm. 2009. Now Daddy's Changing Diapers and Mommy's Making Her Career- Evaluating a Generous Parental Leave Regulation Using a Natural Experiment.. SSRN. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1493194

Lalive et al. 2011. http://ideas.repec.org/p/jku/nrnwps/2011_14.html
And at: http://www.iza.org/en/webcontent/publications/papers/viewAbstract?dp_id=5792

Lewis, J., T. Kinijn, C. Martin and I. Ostner. 2008. "Patterns of Development in Work/Family Reconciliation Policies for Parents in France, Germany, the Netherlands, and the UK in the 2000s." *Social Politics*, 15(3): 261-286.

Luci, A. and O. Thevenon. The Impact of family policy packages on fertility trends in developed countries.
http://hal-paris1.archives-ouvertes.fr/halshs-00660630/ and
ftp://ftp.dondena.unibocconi.it/AlpPop2011/LuciThevenon.pdf

Manski, C.F. and J. Mayshar. 2003. Private Incentives and Social Interactions: Fertility Puzzles in Israel. *Journal of the European Economic Association*. 1(1):181-211.

Meadows Sarah O., McLanahan Sara S., Brooks-Gunn Jeanne. 2007. "Parental Depression and Anxiety and Early Childhood Behavioral Problems across Family Types." Journal of Marriage and Family 69:1162–177.

Newman, L. 2008. How parenthood experiences influence desire for more children in Australia: A qualitative study. *Journal of Population Research* 25(1): 1-27.

OECD 2011. OECD Family Database.OECD Social Policy Division, Directorate of Employment, Labour and Social Affairs, http://www.oecd.org/dataoecd/62/49/41919586.pdf.

Salles, A., C. Rossier and S. Brachet. 2010. "Understanding the long term effects of family policies on fertility: The diffusion of different family models in France and Germany." *Demographic Research*, 22(34):1057-1096.

Schönberg and Ludsteck 2007. http://ideas.repec.org/p/iza/izadps/dp2699.html

Spiess, C.K. and K. Wrohlich. 2008. The Parental Leave Benefit Reform in Germany: Costs and Labour Market Outcomes of Moving towards the Nordic Model. *Population Research and Policy Review* 27(5):575-591.

Tamm, M. 2009. The Impact of a Large Parental Leave Benefit Reform on the Timing of Birth around the Day of Implementation). SSRN Working Paper. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1375010

Thyrian, J.R., K. Fendrich, A. Lange, J.P. Haas, M. Zygmunt and W. Hoffman. 2010. "Changing maternity leave policy: Short-term effects on fertility rates and demographic variables in Germany." *Social Science and Medicine*, 71: 672-676.

Turney, Kristin. 2011a. "Maternal Depression and Childhood Health Inequalities." Journal of Health and Social Behavior 52:314-332.

Turney Kristin. 2011b. "Chronic and Proximate Depression among Mothers: Implications for Child Well-being." Journal of Marriage and Family 73:149–163.

Turney, Kristin, Forthcoming. "Pathways of Disadvantage: Explaining the Relationship between Maternal Depression and Children's Problem Behaviors." Social Science Research.

World Bank 2010.

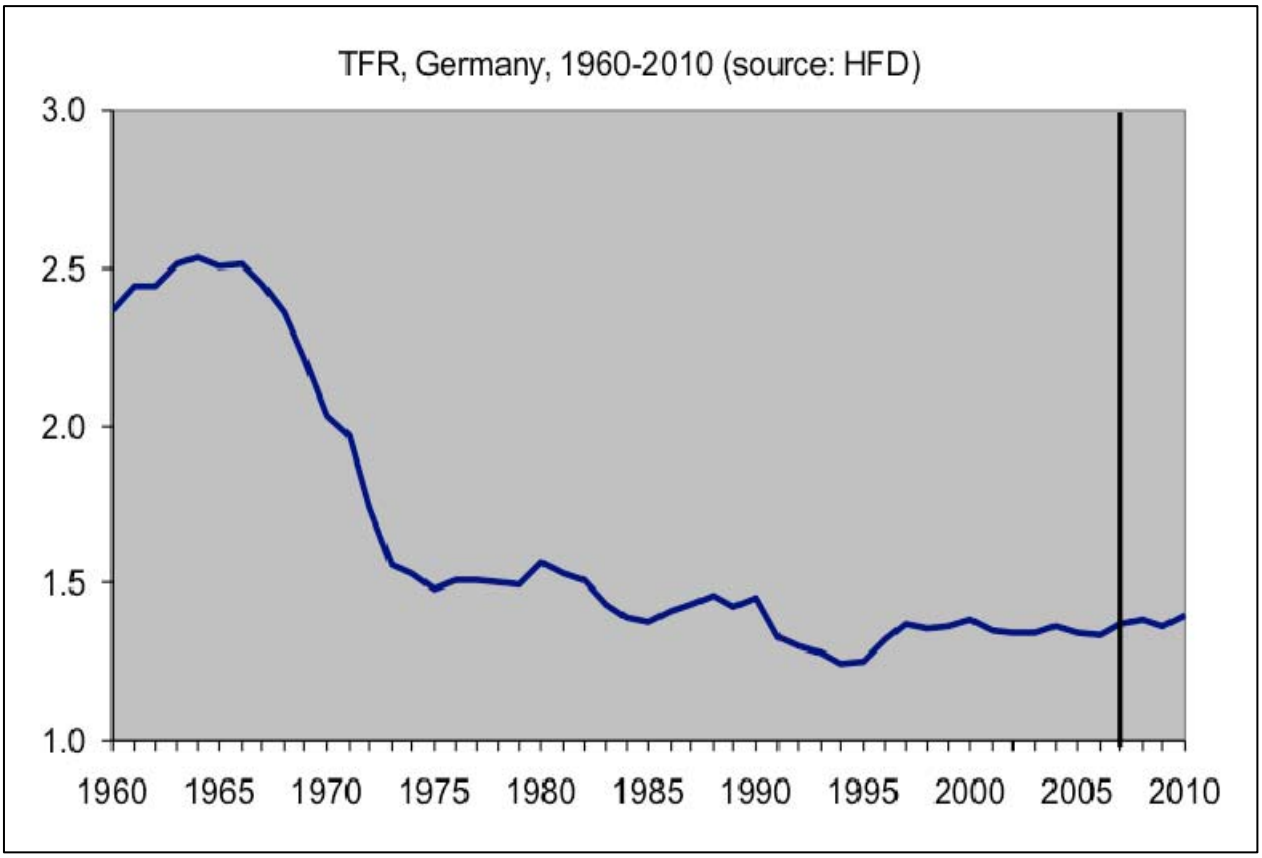
Table 1. Descriptive characteristics of the SOEP: German Socio-Economic Panel waves 1984-2010. The data includes persons who were childless in the beginning of the year 2003 and experienced a first birth between 2003 and 2010. Births occurring in years 2006-2007 are excluded.

Demographic characteristics	Total	Total, 1st birth in 2003-2005	Total, 1st birth in 2003-2005	Total, Men	Total, Women
Number of respondents (%)	1113	663	450	520	593
Age at entry, mean (SD)	26.0 (5.7)	29.6 (5.6)	30.7 (5.9)	27.7 (5.8)	24.6 (5.3)
-- Range (min, max)	15, 55	16, 55	18, 48	16, 55	15, 43
Year of birth, mean (SD)	1974.8 (6.0)	1973.6 (6.0)	1976.3 (5.8)	1973.1 (6.0)	1976.3 (5.5)
-- Range (min, max)	1943, 1990	1943, 1988	1962, 1990	1943, 1990	1965, 1989
Years of follow-up, mean (SD)	5.2 (1.3)	5.3 (1.1)	5.0 (1.4)	5.2 (1.3)	5.2 (1.3)
-- Range (min, max)	4,6	4,6	4,6	4,6	4,6
1st births observed during the follow-up	1113	663	450	520	593
Characteristics when the 1st child is born					
Married or living with a spouse, %	64.4%	65.0%	63.6%	67.6%	61.9%
Health, mean (SD)[a]	2.12 (0.81)	2.11 (0.78)	2.14 (0.84)	2.17 (0.81)	2.08 (0.80)
Income/1000, mean (SD)[b]	47.0 (35.6)	45.0 (32.8)	49.8 (39.1)	47.9 (32.2)	46.1 (38.3)
Labor Force Status					
-- Employed	50%	52%	47%	88%	17%
-- Unemployed	4%	5%	3%	8%	1%
-- Maternity leave or similar	38%	35%	41%	2%	69%
-- Other outside labour force	8%	8%	9%	2%	13%
Life satisfaction, mean (SD)[c]					
-- First interview	7.30 (1.61)	7.43 (1.43)	7.22 (1.60)	7.27 (1.54)	7.31 (1.67)
-- When the 1st child is born	7.53 (1.53)	7.44 (1.61)	7.66 (1.39)	7.45 (1.56)	7.60 (1.50)
-- Last interview	7.21 (1.66)	7.13 (1.72)	7.37 (1.52)	7.12 (1.65)	7.28 (1.67)

Notes
a. Measured on a scale from 1 (Excellent) to 5 (Poor)
b. SOEP: Income is measured at the household level and refers to pre-tax income in inflation-corrected Euro.
c. Scale is from 0 (Poor) to 10 (Excellent).

Figures

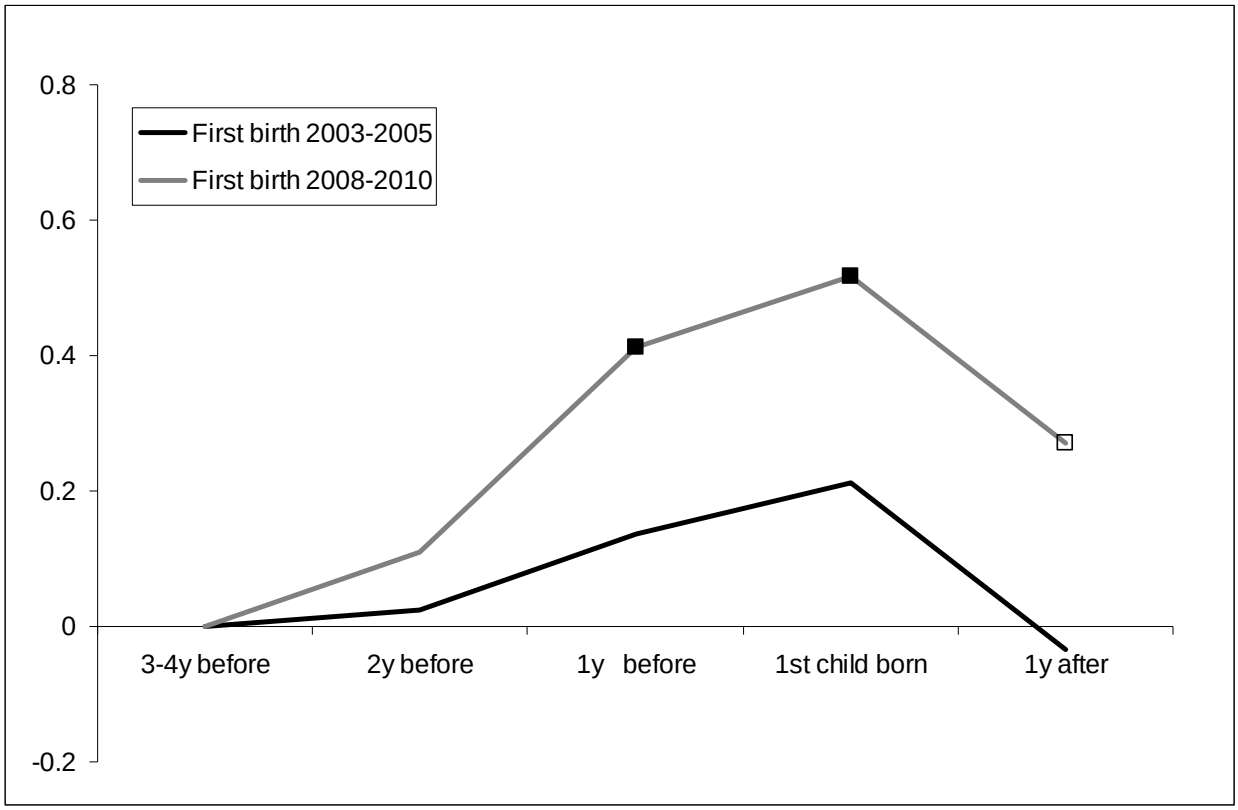
Figure 1. Total Fertility Rate, Germany 1960-2010, with the 2007 parental leave policy change indicated by the black vertical line.



Source: Human Fertility Database

Figure 2. Effect of the birth of a child on parental life satisfaction among those who had their first birth before the 2007 Parental Benefits Reform (2003-2005) and after the reform (2008-2010). Data: German Socioeconomic Panel.

Key message: The life satisfaction trajectory is much more positive among those who became parents after the reform than among those who became parents before the reform, suggesting that the reform influenced parental well-being.

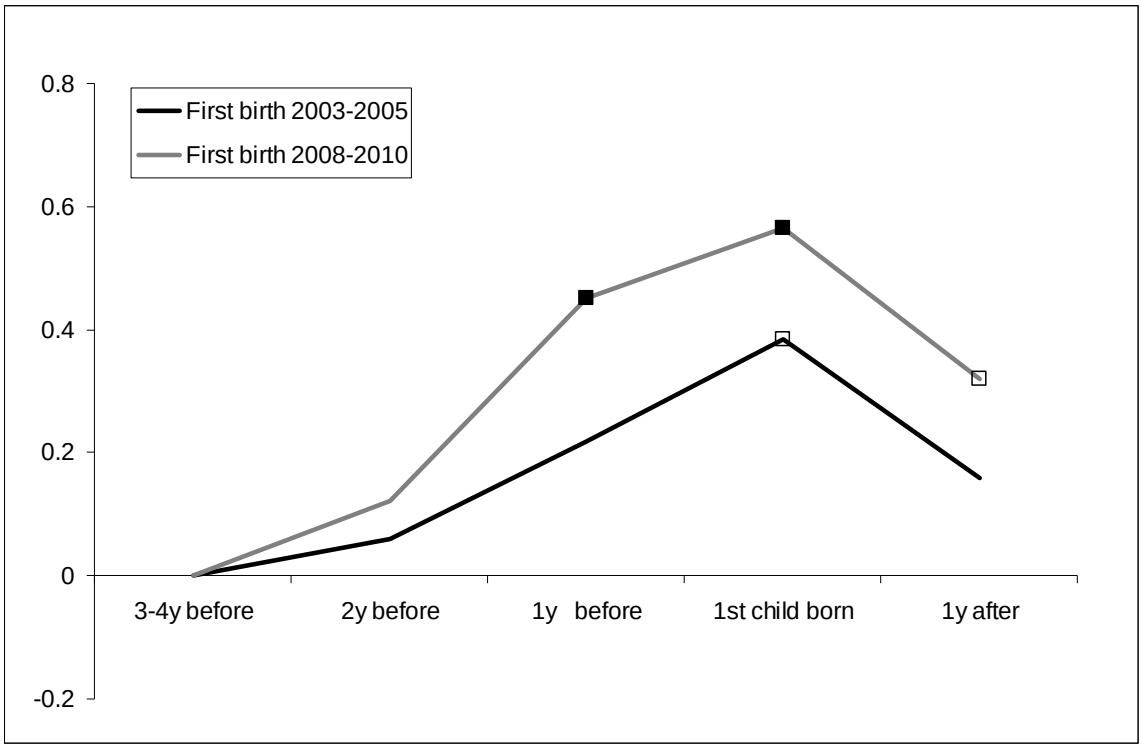


■ = p<0.05
□ = p<0.10

Notes: Fixed effects regression in which happiness 3-4y before the birth is the baseline; controls for age and period effects. 2006-2007 excluded because of short-term postponement of birth from December 2006 to January 2007.

Figure 3. Effect of the birth of a child on parental life satisfaction among those who had their first birth before the 2007 Parental Benefits Reform (2003-2005) and after the reform (2008-2010). The regression models control for the time-varying income levels (logged) and time-varying satisfaction with household income. Data: German Socioeconomic Panel.

Key message: A large fraction of the effect of the 2007 reform is mediated by changes in income. Comparison to Figure 2 shows that controlling for income reduces the difference between pre- and post-policy change parents by 50% or more.

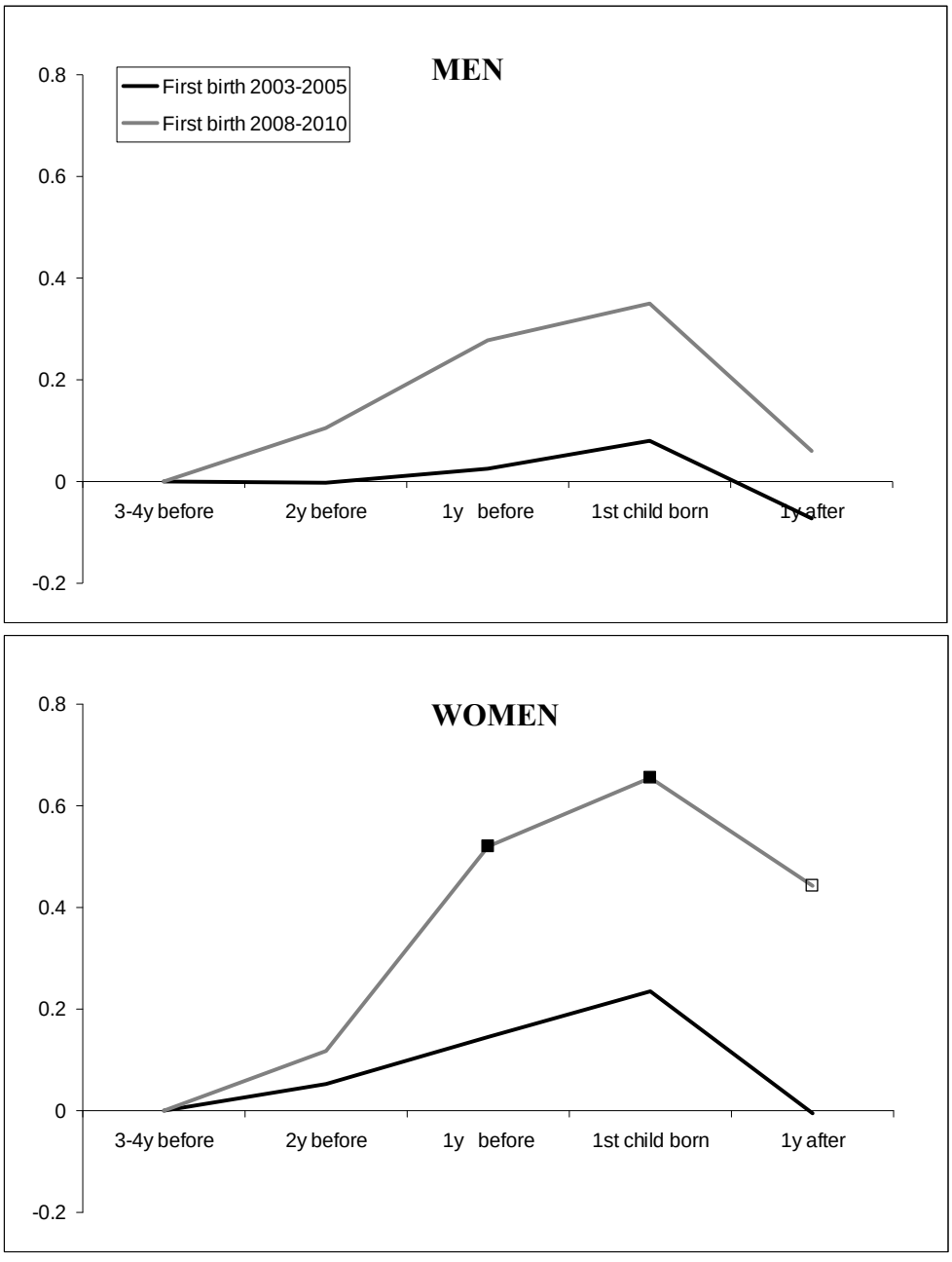


■ = p<0.05
□ = p<0.10

Notes: Fixed effects regression in which happiness 3-4y before the birth is the baseline; controls for age and period effects and time-varying income levels (logged) and time-varying satisfaction with household income. 2006-2007 excluded because of short-term postponement of birth from December 2006 to January 2007.

Figure 4a. Sex differences: Effect of the birth of a child on parental life satisfaction among those who had their first birth before the 2007 Parental Benefits Reform (2003-2005) and after the reform (2008-2010) by sex. Data: German Socioeconomic Panel.

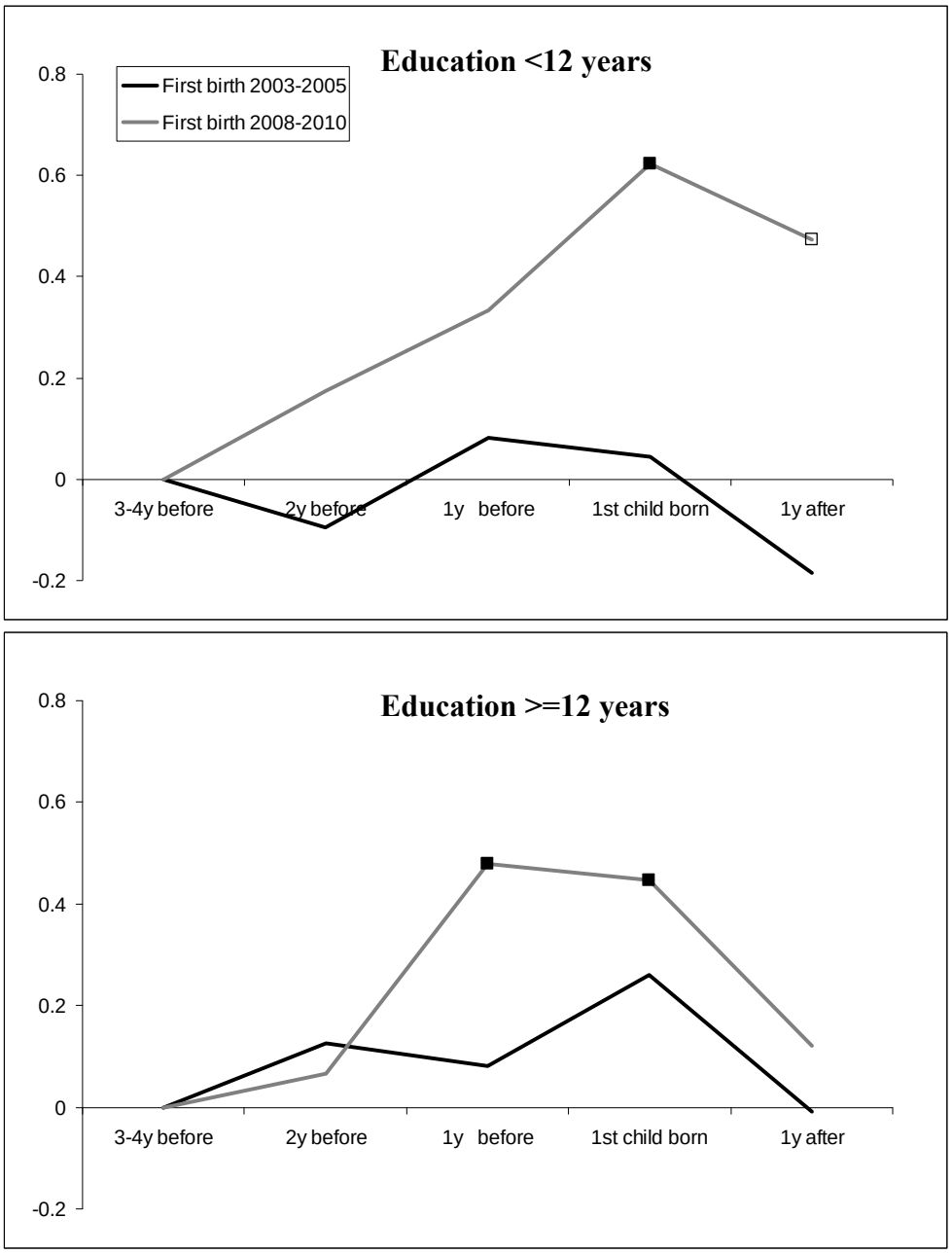
Key message: The results are qualitatively similar for both sexes



■ = p<0.05
□ = p<0.10
Notes: Fixed effects regression in which happiness 3-4y before the birth is the baseline; controls for age and period effects. 2006-2007 excluded because of short-term postponement of birth from December 2006 to January 2007.

Figure 4b. Education differences: Effect of the birth of a child on parental life satisfaction among those who had their first birth before the 2007 Parental Benefits Reform (2003-2005) and after the reform (2008-2010) by education. Data: German Socioeconomic Panel.

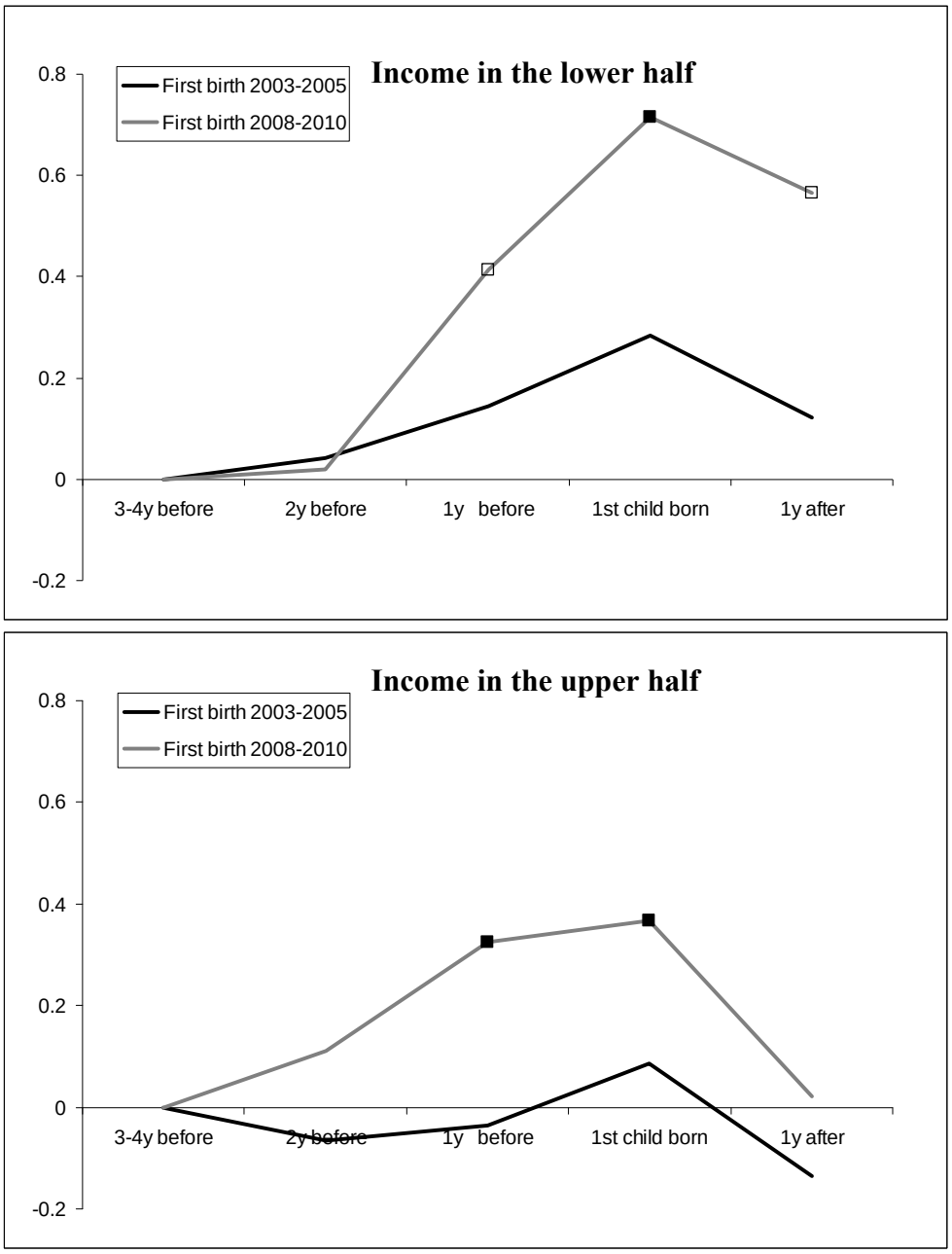
Key message: The results are qualitatively similar for both education levels.



■ = p<0.05
□ = p<0.10
Notes: Fixed effects regression in which happiness 3-4y before the birth is the baseline; controls for age and period effects. 2006-2007 excluded because of short-term postponement of birth from December 2006 to January 2007.

Figure 4c. Income differences: Effect of the birth of a child on parental life satisfaction among those who had their first birth before the 2007 Parental Benefits Reform (2003-2005) and after the reform (2008-2010) by education. Data: German Socioeconomic Panel.

Key message: The results are qualitatively similar for both income levels.

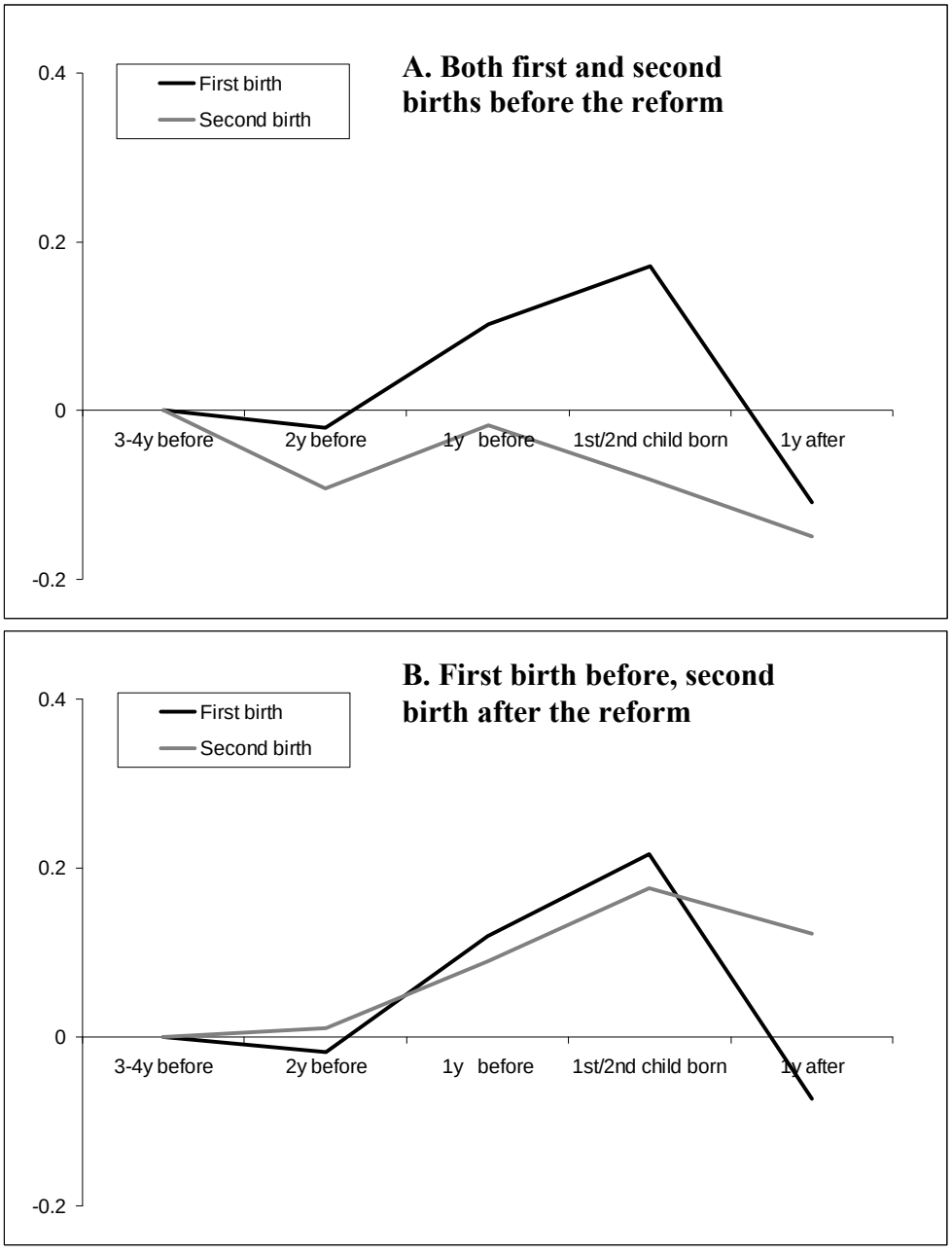


■ = p<0.05
□ = p<0.10

Notes: Fixed effects regression in which happiness 3-4y before the birth is the baseline; controls for age and period effects. 2006-2007 excluded because of short-term postponement of birth from December 2006 to January 2007.

Figure 5. Second births: Effects of the first and second child on parental life satisfaction among those who had their first birth before the 2007 Parental Benefits Reform and had also their second child before the reform (Panel A) or had their second child after the reform (Panel B). Data: German Socioeconomic Panel.

Key message: The policy influenced also the parental well-being response to second births.

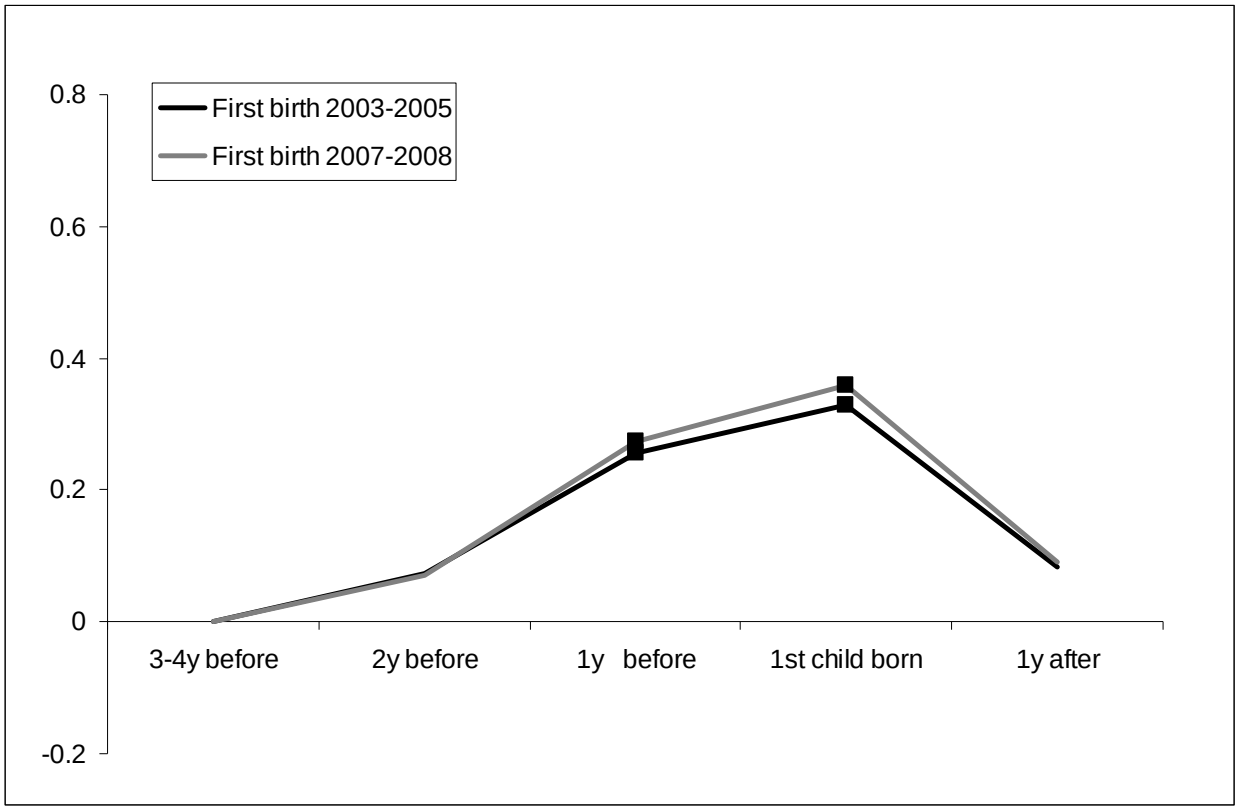


■ = p<0.05
□ = p<0.10

Notes: Fixed effects regression in which happiness 3-4y before the birth is the baseline; controls for age and period effects. 2006-2007 excluded because of short-term postponement of birth from December 2006 to January 2007.

Figure 6. Placebo test. Effect of the birth of a child on parental life satisfaction among those who had their first birth in 2003-2005 and in 2007-2008 in Britain where there was no policy change. Data: British Household Panel Survey.

Key message: In Britain there was no policy change and not change in how parental well-being responds to the birth of a child.



■ = p<0.05
□ = p<0.10

Notes: Fixed effects regression in which happiness 3-4y before the birth is the baseline; controls for age and period effects. 2006-2007 excluded because of short-term postponement of birth from December 2006 to January 2007.