# Now Daddy's Changing Diapers and Mommy's Making Her Career: Evaluating a Generous Parental Leave Regulation Using a Natural Experiment

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# ABSTRACT

## Now Daddy's Changing Diapers and Mommy's Making Her Career: Evaluating a Generous Parental Leave Regulation Using a Natural Experiment[*]

Over the last decades many OECD countries introduced parental leave regulations in order to counteract low and decreasing birth rates. In general, these regulations aim at making parenthood more attractive and more compatible with a working career, especially for women. The recent German *Elterngeld* reform is one example: By replacing 67 per cent of *prepartum* parental labor earnings for up to 14 months after birth of the child – if both father and mother take up the transfer – it intends to i) smooth or prevent households' earnings decline *postpartum*, ii) make childbearing attractive for working women while iii) keeping them close to the labor market, and iv) incentivize fathers to participate in childcare. We evaluate the reform by using a natural experiment created by the quick legislative process of the Elterngeld reform: Comparing outcomes of parents with children born shortly after and before the coming into effect of the law on 1 January 2007 yields unbiased estimates of the reform effects, because at the time when these children were conceived none of the parents knew that the regulation would be in force by the time their child is born. Our results are based on unique data from the official evaluation of the reform, which we conducted for the German government, and they show that the reform has been generally successful in attaining its objectives. In particular, we find a significant decrease in mothers' employment probability during the 12 months after giving birth, and a significant increase in mothers' employment probability after the Elterngeld transfer expires.

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1. Introduction

Most OECD countries have been facing low and decreasing birth rates for the last decades. To counteract this trend towards an ever aging and shrinking population, several countries introduced parental leave regulations that intend to make parenthood more attractive and more compatible with a working career, especially for women. In general, the core element of such regulations is a transitory financial transfer to parents of newborn children. Some countries (e.g. Austria and France) offer flat rate transfers, other countries (e.g. Canada and Norway) offer parental leave transfers that depend on parents' labor earnings in the period before the birth of the child, thus incorporating the opportunity costs implied for parents who leave the labor force for some time to take care of their child.

Germany took up such a system of parental leave benefit, the so-called Elterngeld, on January 1st 2007, replacing a much less generous system called Erziehungsgeld. The new Elterngeld offers a 67 per cent replacement rate of previous labor earnings (from employment or self-employment) for either father or mother for up to 12 months postpartum. If both father and mother participate, they can receive an extra 2 months, and the resulting total leave of 14 months can be freely distributed between the two parents. Single parents can receive a total of 14 months alone. The transfer is truncated at a maximum of 1800 Euros per month, and a flat rate minimum of 300 Euros per month is paid to every parent who has no previous earnings.

The regulation intends to achieve four objectives: First, prevent or smooth the earnings decline for working parents in the first year after birth. Second, increase incentives to re-enter the labor force once the benefit expires, by shifting the (potential) earnings decline from the time of delivery up to 12 months into the future. Third, make it more attractive for working fathers to stay home for some months and take care of the child. Fourth, make parenthood more attractive in particular for women with a working career, who receive a generous transfer reflecting the labor earnings they forfeit in order to become mothers and take care of the child after birth, and

thus increase the birth rate.

The take up rate of the Elterngeld transfer has been nearly 100 per cent. In this paper, we use a natural experiment created by the coming into effect of the Elterngeld law to estimate the causal effect of the new regulation on several outcomes reflecting its objectives. The law was put into effect in a rather quick legislative process: In fact, the Elterngeld regulation was decided by the government coalition only in May 2006, and parliament agreed in September 2006, generating the following natural experiment: At the point in time when those children born shortly after the date of coming into effect of the Elterngeld (January 1$^{st}$ 2007) were conceived, none of the parents knew that by the time their child is born the new regulation would be in force. That is, by comparing the labor market behavior and financial situation of parents with children born during the last months of 2006 with that of parents with children born during the first months of 2007, we obtain unbiased estimates of the reform effects.

Our empirical analysis uses unique data from a survey that specifically covers these two groups of parents. The data were collected as part of the official evaluation of the reform, which we conducted for the German government (RWI 2008). The empirical results indicate that the reform was effective: Parental households with Elterngeld experience a stabilization of their household income, and the probability of receiving other social transfers is reduced, especially among highly educated women. Moreover, mothers are significantly more likely to stay outside the labor force and take care of their child during the first 12 months. This increase in probability is particularly high for mothers who have their first child. At the same time, Elterngeld mothers are significantly more likely to re-enter the labor force or take up work 1.5 years after birth of the child. Taking also into consideration an increasing take-up rate of fathers, the Elterngeld reform thus seems to have fundamentally changed the situation and labor market behavior of young parents in Germany.

The paper is organized as follows. Section 2 discusses the rationale for implementing

parental leave benefits and gives details on the German Elterngeld reform. In section 3 we discuss the design of the natural experiment and the data. Section 4 presents estimates of the reform effects, and section 5 concludes.

## 2. Parental leave regulations in Germany

*a. The rationale for reform*

In comparison to other OECD countries Germany has been characterized by relatively generous parental leave regulations, especially with regard to job-protection periods. Starting in 1979 job-protected leave was set at 6 months after birth und continuously extended to up to 36 months after birth from 1992 on. Job-protection regulations bar employers from dismissing parents during that time, and safeguard the option to return to the same job held before childbirth (or a similar one within the same firm). Since 2001 parents have also been entitled to claim a part-time contract.

Besides job-protection, parents receive financial benefits while on leave. Until the end of 2006, the benefit was paid up to a maximum of 24 months after birth and targeted at low-income families (see section 2b below). As a consequence of previous extensions in job-protection periods German mothers have been induced to delay their return to work (Schönberg and Ludsteck 2008) and have relatively long out-of-job periods following childbirth (e.g. Gustafsson, Wetzels, Vlasblom and Dex 1996, Michaud and Tatsiramos 2009, Geyer and Steiner 2007). Also, female employment rates are lower than in most other countries of Northern or Central Europe (Figure 1).

< Figure 1 about here >

In light of these developments along with the emerging and expected consequences of

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demographic change, like an ever increasing number of pensioners relative to the active working population, German policy makers started to think about measures on how to increase the number of individuals contributing to the social security system. Raising the share of working women is seen as one remedy, which might be achieved by changing work-family related incentives. In addition, proponents of the Elterngeld reform hope that by shortening out-of-job periods of women and thus lowering human capital depreciation while being away from work, the reform might also help reduce gender disparities.

Another remedy alleviating the effects of demographic change in the long run would be to increase fertility rates. It has been well documented that these experienced a substantial decline in OECD countries over the last decades (e.g. Frejka and Sobotka 2008). In fact, fertility in Europe has seen a massive decrease from the high fertility rates of the 1950s and 1960s – generally in the range of 2.0 to 3.0 for all of Europe – to the low and very low fertility rates of the last two decades. During the time period 1970-1985 European fertility rates fell below the population replacement threshold of 2.1, since then bottoming out at very low rates of 1.2 to 1.4 in many countries, including Italy, Spain, Poland, Austria and Germany.[2] The German total fertility rate in 2006 was a mere 1.32.

While all European countries share the declining trend since the 1970s, large differences between countries exist. Notably, it is the Mediterranean countries Spain and Italy, the Central European countries Germany and Austria along with most countries from Eastern Europe that have very low fertility rates. In contrast, the Nordic countries Norway, Sweden, Denmark, and Finland have experienced relatively high and/or increasing fertility rates over the last decade. The Nordic states are joined within the high-fertility group by Ireland, France, and the Netherlands (Frejka and Sobotka 2008). These patterns have been discussed extensively in the literature: Adsera (2004) shows that the divergent trends within Europe can at least be partly explained by

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[2] Cf. Eurostat (2009) online database, http://epp.eurostat.ec.europa.eu

differences in labor market institutions across countries, and the impact that these institutions have on reproductive behavior. For instance, relatively high unemployment and the prevalence of unstable contracts – both common to Southern European countries such as Spain and Italy – depress fertility, in particular for younger women. On the other hand, institutions such as a large share of public employment (which provides employment stability) and generous maternity leave benefits linked to previous employment – both features common to Scandinavian countries – boost fertility of women in the age group 25-34 years.

Parental leave benefits are indeed intended to counteract the trend of a low and decreasing birth rate in a given country, by trying to make parenthood more attractive and more compatible with a working career, in particular for women. Generally, the core element of any parental leave regulation is a transitory financial transfer to parents of newborn children. The first option is to design this as a flat-rate regime, as is the case, for instance, in France and Austria. The alternative is to design the parental leave benefit as a transfer depending on parents' labor earnings prepartum, thus incorporating the opportunity costs associated with withdrawing from the labor force for a while in order to take care of the child. Such regimes exist, for instance, in Norway, Sweden, and Canada. Also the German Elterngeld regulation has the parental leave benefit depend on parental labor earnings prior to the birth of the child.


*b. The new Elterngeld regulation*

On 1 January 2007 a new parental leave benefit called Elterngeld ("parental money") replaced a previous benefit called Erziehungsgeld ("child-raising benefit"). Whereas the previous benefit was specifically targeted towards low-income families, the new Elterngeld is a much more generous transfer with, in principle, universal coverage. Most importantly, the Elterngeld transfer incorporates the opportunity costs of childbearing by depending on parental labor earnings in the prepartum period.

The Erziehungsgeld benefit in place until 31 December 2006 comprised two options: The first option was to receive 300 Euros per month for a period of up to 24 months, for mother or father. Alternatively, the second option was to receive 450 Euros per month for up to 12 months. The transfer was means tested and in order to be eligible the recipient was required to not be working full-time, i.e. less than 30 hours per week. 66 per cent of parents were covered by option 1, 10 per cent by option 2, and 24 per cent of parents did not receive the benefit.

Since 1 January 2007, the new Elterngeld replaces 67 per cent of previous labor earnings – i.e. with respect to the 12 months before birth of the child – for up to 12 months after birth of the child. If both father and mother take up the transfer, they can receive an additional 2 months, and the resulting total of 14 months can be freely distributed between the two parents. Single parents receive 14 months of Elterngeld transfer alone. The transfer is truncated at a maximum of 1,800 Euros per month, and a flat rate minimum of 300 Euros per month is paid to every parent who has no or very low labor earnings prepartum. In order to be eligible, recipients are also required to not be working full-time. Since its coming into effect, the take-up rate of the Elterngeld transfer has been nearly 100 per cent.

The Elterngeld reform has four main objectives. First, it intends to increase the birth rate in Germany by making parenthood more attractive for women with a working career. Second, it aims at preventing or smoothing the earnings decline for working parents in the period after birth of the child. Third, it intends to incentivize mothers to re-enter the labor market faster (after having taken care of the child during the first 12 months after birth). Fourth, it intends to incentivize fathers to take part in childcare.

The regulation contains an evaluation mandate, i.e. the law required government to inform parliament about the reform effects by October 2008.[3] RWI won the corresponding "call for

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[3] The evaluation mandate is specified in § 25 of the Elterngeld law (see Bundesgesetzblatt 2006). The text (in German) along with further details on the Elterngeld regulation and the evaluation report can be found at http://www.bmfsfj.de/Politikbereiche/familie,did=76746.html

tenders" and conducted the research project evaluating the reform for the Federal Ministry for Family, Seniors, Women, and Youths (BMFSFJ) during the time period July 2007 through October 2008. Part of the research presented in this paper originates in that project. Naturally, reform effects on the birth rate cannot be analyzed in such a short term.

3. Research design and data

To evaluate the reform effects, we make use of a natural experiment generated by the process of coming into effect of the Elterngeld law and compare parents giving birth during the last months of 2006 (the control group) with parents giving birth during the first months of 2007 (the treatment group receiving the Elterngeld benefit). Similar identification strategies comparing those giving birth shortly before a reform with those giving birth shortly after have been used for example by Schönberg and Ludsteck (2008), Lalive and Zweimüller (2009) and Ekberg, Eriksson and Friebel (2005). The identification strategy assumes that the month of birth has no impact on the behavior of parents, i.e. without the reform parents in both groups would have behaved similarly.

In order to be valid the identification strategy requires that fertility in the treatment and control groups was not influenced by the reform and that mothers did not time births in response to the reform. In fact, the legislative process was rather quick: The government coalition – consisting of the conservative Christian Democratic Party CDU and the Social Democrats SPD – agreed on the main features of the regulation in May 2006 and published the draft law in June 2006. Parliament then passed the Elterngeld law in September 2006, and the reform became effective on 1 January 2007. This timeline implies that at the point in time when those children born shortly after – and before – 1 January 2007 were conceived, none of the parents knew that by the time their child is born the new regulation would be in force.

To investigate the validity of the design, Figures 2 and 3 give two measures of when and

to what extent potential parents could have known about the reform. Figure 2 shows the frequency of reports on "Elterngeld" in major daily newspapers over time, while Figure 3 displays the Google Search Volume Index relating the number of "Elterngeld" searches to the number of total searches originating in Germany. Both figures show that there is a pronounced peak in May 2006 around the time the government coalition agreed on the cornerstones of the reform. This is the first point in time when there was reason to conjecture that starting with 1 January 2007 parents would receive a new type of parental leave benefit – but note that before the passing of the law in September 2006 this was not definite.


< Figures 2, 3 about here >


In principle there is a small probability that some of the parents in our treatment group self-selected into treatment, because once they learned about the possible coming into effect of the Elterngeld transfer in May 2006 they immediately decided to become parents (and otherwise would not have done so), and their child was then born before the end of March 2007. Given the fact, however, that the timing of conception cannot be completely controlled by parents, along with the fact that at the point in time at which parents would have had to act accordingly (May 2006) there was no definite knowledge on whether the reform would indeed be implemented, we think that this is a rather hypothetical scenario.

A potentially more severe caveat is that parents expected to give birth at the margin might have timed delivery accordingly to fall under either the old or the new regime. Tamm (2009) shows that a considerable share of mothers actually delayed deliveries. In particular, compared with the same time period in preceding years the number of births is significantly lower during the last three weeks of 2006 and significantly higher during the first week of 2007. These timing effects are highly selective, as they mostly occur among older women and women working before

childbirth.

Hence, comparing the outcomes of interest of parents with children born in the last quarter of 2006 (Q4/06) and parents with children born in the first quarter of 2007 (Q1/07) should yield unbiased estimates of the reform effects, if leaving out those parents giving birth very shortly before and very shortly after. Since our data contain month of birth but not the exact birthday, our analysis provides two sets of estimates: The first one compares outcomes of all parents giving birth during Q1/07 (the treatment group) and Q4/06 (the control group), while the second one restricts the comparison to those parents giving birth during February and March 2007 (restricted treatment group) with those giving birth during October and November 2006 (restricted control group).

The data on treatment and control groups were collected as part of the evaluation project, following the design just described. Specifically, in May 2008 we conducted a written survey among parents with children born in Q1/07 and Q4/06. The survey was implemented in cooperation with two health insurance funds (AOK Rheinland, AOK Sachsen-Anhalt), in order to have a uniform data base for the addresses of treatment and control groups. The sample contains N=1,266 households, of which N=694 are in the treatment group with delivery in Q1/07, and N=572 in the control group with delivery in Q4/06. The restricted sample comprises a treatment group of N=434 households with delivery in February or March 2007, and N=388 control households with delivery in October or November.

Table 1 presents summary statistics for both full and restricted samples, along with t-tests on differences-in-means between treatment and control groups. If the natural experiment as described above is valid, then there should be few or no covariate differences between the two groups. Indeed, as Table 1 illustrates, treatment and control groups are balanced in core covariates for both samples, the only significant exceptions being a residual variable describing if fathers' educational attainment is "other or missing", a dummy variable describing if fathers were

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employed prior to the birth of the child, and a dummy variable for mothers' "low education" in the full sample. We would thus argue that the natural experiment is valid, but will nonetheless also present estimates of reform effects adjusting for covariates.

< Table 1 about here >

Note that our sample is not necessarily representative of the German population, as the population from which it was drawn is defined as members of the two above-mentioned health insurance funds in two federal states (Nordrhein-Westfalen and Sachsen-Anhalt). AOK members are on average older, and are more likely to have lower income, to have a larger number of children, and to not be self-employed. This, however, constitutes the group for which reform effects are particularly interesting, since they were already targeted by the pre-reform Erziehungsgeld regulation, and are thus the group not obviously benefiting from the reform. Moreover, our main interest does not lie in estimating the average treatment effect for the entire population, but rather in heterogeneous effects by subgroups. As the results in the following section show, average effects on a particular outcome may indeed by insignificant, while subgroup effects are not. Finally, our data do allow us to investigate differential effects of the reform in West and East Germany.

4. Results

Tables 2 through 6 present impact estimates of the Elterngeld reform on a set of outcomes. Given the natural experimental design, these impact estimates are simple differences-in-means between the treatment and control groups (panel a in each table). We focus the discussion on the comparison between February/March 2007 and October/November 2006 births in the restricted sample (columns to the right), but also provide estimates for Q1/07 and Q4/06 births as a

sensitivity check (columns to the left). In addition the tables also report differences-in-means estimates controlling for background characteristics (panel b).

Table 2 presents results for female employment rates, analyzing the reform effect on the timing and structure of mothers' return to the labor force. It indicates that there is indeed a substantial reform effect on mothers' employment participation. First, in panel a) we see that the strong incentive created by the reform to stay home during the first 12 months postpartum indeed results in a significantly lower employment rate of mothers in the treatment group at 10 months after birth of the child. Looking at subgroups, we find this effect to be particularly strong for women having their first child and for those who were previously employed – both have significantly and about 11-14 percentage points lower employment rates at 10 months after delivery. These results remain unchanged when controlling for background characteristics in the bottom panel b).

Second, we see that mothers in the treatment group do not differ from the control group at exactly 12 months after delivery but then increasingly take up (or return to) work after the Elterngeld transfer expires (measured using the employment status 1.5 years after birth). Note that this refers to the expected employment status, as the interview took place less than 1.5 years after childbirth. Again looking at subgroups, this effect is mostly driven by women in East Germany and women who were not employed directly before birth. For the latter group, the Elterngeld seems to create an incentive to take up work after 1.5 years that under the old regulation apparently did not exist.

The larger impact among East German women compared with West Germans might be linked with the availability of childcare facilities. The availability of places for children below age 3 is much better in the Eastern regions than in the West (Statistisches Bundesamt 2008, Muehler 2008). Third, at around two years after birth the difference between treatment and control group becomes insignificant and is close to zero. This indicates that there is a timing

effect between the first and second year after delivery, but there is no long-run effect on participation rates.

Figure 4 provides further evidence by showing employment rates separately by month of birth of the child. Most of the differences between adjacent months are small, except for the employment status 1.5 years after birth, which experiences a sharp increase between December and January births, and employment status 10 months after birth, which appears quite a bit lower for February/March 2007 than October/November 2006. This indicates that under the new regulation mothers are indeed more likely to return to work in the second year after giving birth, while at the same time also being more likely to take care of the child during the first year.

< Table 2, Figure 4 about here >

Next we discuss the impact of the reform on the financial situation during the first year after birth of the child. Tables 3 and 4 contain impact estimates on household income and receipt of social transfer payments, respectively. In the survey we asked parents for changes in monthly net household income experienced between the year before and the year after childbirth. Simple difference-in-means results presented in panel a) of Table 3 indicate that parents in the treatment group might have experienced income changes (mostly reductions) between the year before and the year after the birth of the child which do not differ from those of the control group. Yet the insignificant overall effect hides that some subgroups of parents in the treatment group actually do experience significant changes. In particular, looking at the restricted sample mothers employed before birth and highly educated mothers experience significantly smaller income reductions (i.e. the comparison with the control group results in positive coefficients in the table), while mothers not employed before birth seem to experience no significant change. These effects are slightly more pronounced when we control for background characteristics (panel b).

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Table 4 shows the reform effect on mothers' probability of receiving a social transfer, i.e. welfare payments like ALG II (long-term unemployment assistance) or Sozialhilfe (social assistance). The estimate of the overall effect shows that the Elterngeld reform reduced this probability by around 6 percentage points. This overall effect is significant at the 10% level. Results for subgroups indicate that the overall effect is mainly driven by a reduction in welfare receipt of women who have their first child and by women with higher educational attainment, i.e. those groups of women who on average had higher employment rates and higher earnings prior to birth.

< Tables 3, 4 about here >

Finally we analyze the reform impact on fathers' behavior. RWI (2008) shows that in slightly more than 16 percent of households with newborn children the father receives Elterngeld. However, more than two thirds of these fathers receive the Elterngeld transfer for two months only. Given that this is a rather short period of time it does not come as a surprise that we do not find any significant effects on fathers' employment rates in the survey. The simple difference-in-means estimates presented in Table 5 indicate that the Elterngeld might have led to lower employment rates of fathers during the first 2 years after birth of the child. These negative point estimates are insignificant, however, or even become positive (at the 10%-level for employment status at 1 year after birth) once we control for fathers employment status before childbirth. (As has been shown in Table 1 there are significant differences in paternal employment already visible prior to birth.)

In addition to employment status the survey also asked respondents about the share that mother and father each allocate to overall childcare at home during the first year after birth. The sum of a mother's and father's share within a household had to add up to 100 per cent. We find

that within the treatment group fathers receiving Elterngeld took over considerably larger shares of childcare than fathers without Elterngeld (45 compared with 22 per cent share of childcare). Results comparing mothers in the treatment group with mothers in the control group, however, show that the share of involvement of their partners in childcare is higher by 3 percentage points only (Table 6). This difference is insignificant. That is, most of the difference between fathers receiving Elterngeld and those who do not might be a selection effect and thus no causal effect of the reform. Having said this, note that our dependent variable is the share of childcare the father takes over, which together with the mother's share adds up to 100 per cent. The insignificance of the difference between treatment and control group might result from a situation where neither fathers nor mothers change behavior. But it might also result from a situation where fathers and mother both increase the time with the child proportionally. Given the reduced labor market participation of mothers during the first 12 months after birth, the latter might actually be the case.

< Tables 5, 6 about here >

5. Conclusion

In line with many other OECD countries, Germany recently implemented a generous parental leave regulation in order to counteract a trend towards an ever lower number of births. Increasing fertility is intended to be achieved by making parenthood more attractive and more compatible with a working career, especially for mothers. To this end, the new Elterngeld benefit generally replaces 67 percent of prepartum labor earnings for up to 12 months after birth of the child, thus incorporating the opportunity costs of childbearing.

The legislative process through which the Elterngeld reform came into effect took only few months, allowing us to assess reform effects by comparing outcomes of parents whose

children were born shortly before and after the coming into force of the law, because at the time of conception parents did not know the reform would be effective by the time their child is born, and hence could not self-select into the treatment group. Using this natural experiment, we base our impact estimates on data specifically collected for this purpose.

We find that the Elterngeld reform is at least partially successful in attaining its objectives. Most importantly, the reform successfully generates incentives for (working) women to reduce employment during the 12 months postpartum and take care of the child, while after the Elterngeld transfer expires employment activity is significantly increased, also for women who were not employed prior to giving birth. In accordance with findings for previous reforms of the parental leave system in Germany regarding job-protection (Schönberg and Ludsteck 2008) the Elterngeld reform does seem to have an impact on the timing of re-entry into the labor market, but has very little or no impact on (planned) long-run participation rates of women.

In addition, results show that highly educated women experience smaller income losses during the first year after birth compared with prepartum income and have a lower probability of receiving welfare payments relative to the old regulation. Finally, fathers seem to be incentivized indeed to take advantage of parental leave benefits. Given that most men only take 2 months of Elterngeld, however, this is not (yet) reflected in significant changes in paternal employment rates or time devoted to childcare during the first 12 months after birth.

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Figure 1. Female employment rates, 2006



Source: Eurostat (2009), http://epp.eurostat.ec.europa.eu
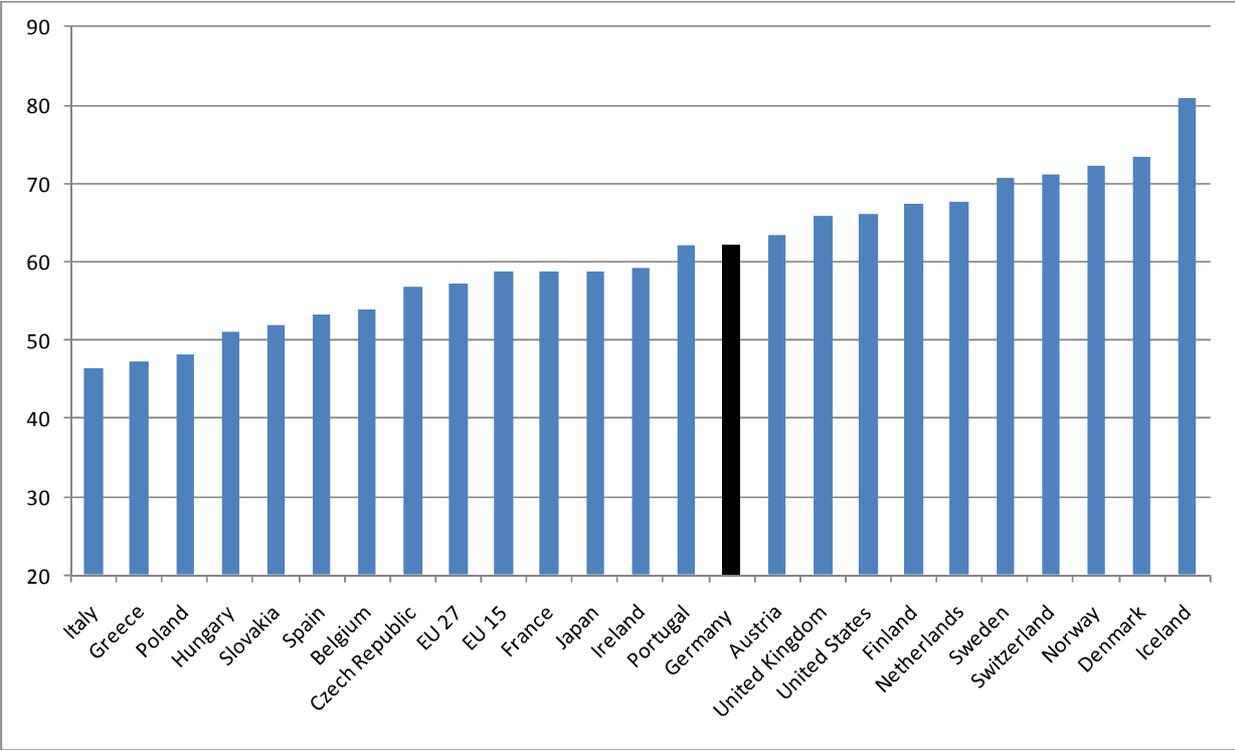
Figure 2. Number of reports on "Elterngeld" per month in major daily newspapers

Figure 3. Google Search Volume Index: Number of "Elterngeld" searches relative to all searches (originating in Germany)

Figure 4. Female employment rates after birth

Table 1. Summary statistics: Balance of treatment and control groups

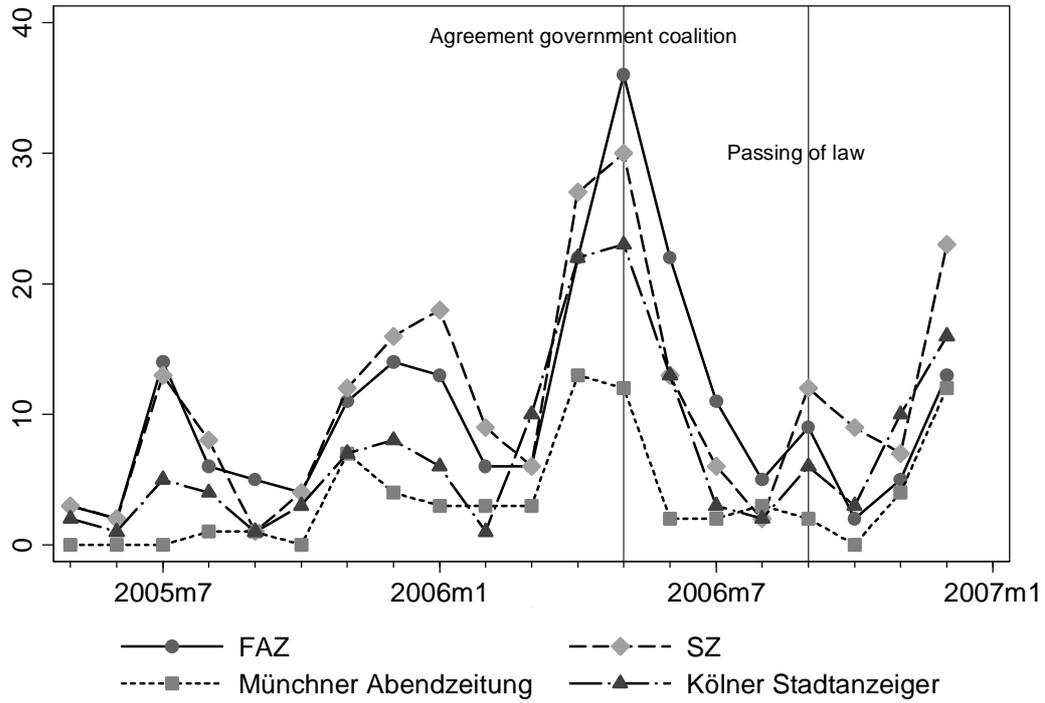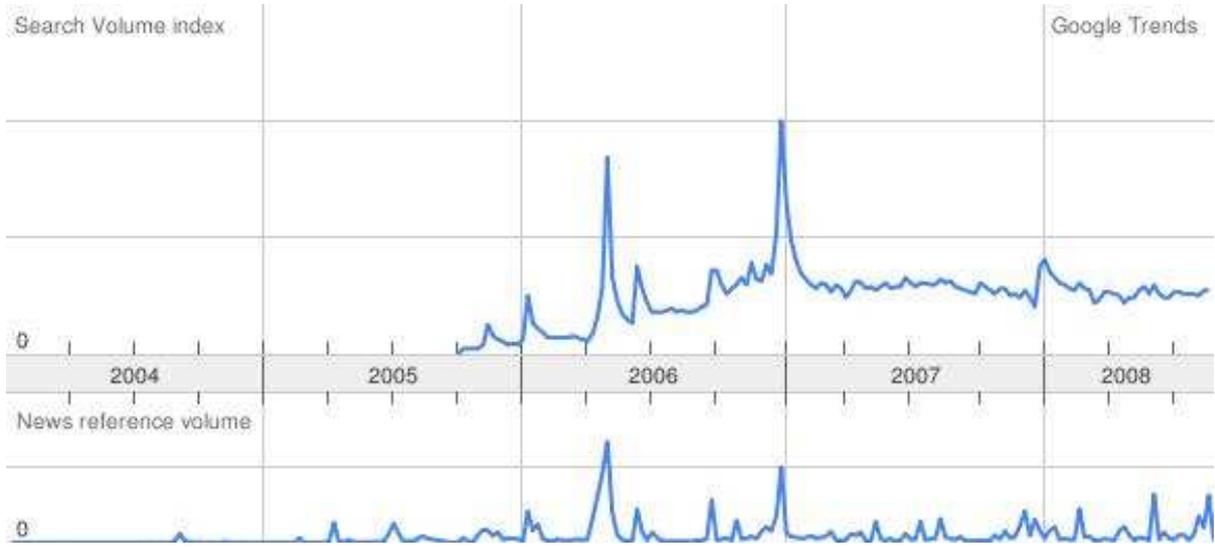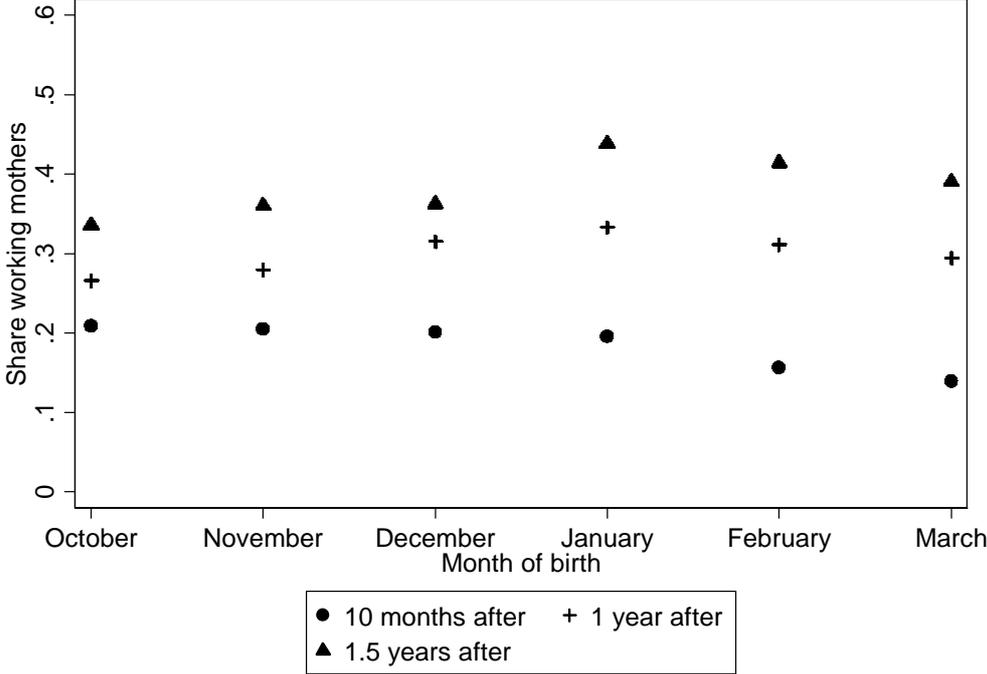| Covariate | Mean Control group | Mean Treatment group | t-stat on difference-in-means | N |
|---|---|---|---|---|
| | **Full sample: Q4/06 vs. Q1/07** | | | |
| Number of children | 1.77 | 1.81 | 0.78 | 1266 |
| Parents cohabitate | 0.85 | 0.88 | 1.19 | 1264 |
| Age of mother | 30.10 | 30.20 | 0.29 | 1244 |
| Age of father | 32.70 | 33.08 | 0.94 | 1072 |
| Low education mother | 0.20 | 0.25 | **2.12** | 1266 |
| Medium education mother | 0.43 | 0.39 | -1.30 | 1266 |
| High education mother | 0.17 | 0.16 | -0.61 | 1266 |
| University graduate mother | 0.09 | 0.10 | 0.87 | 1266 |
| Other education / missing mother | 0.11 | 0.10 | -0.90 | 1266 |
| Low education father | 0.26 | 0.29 | 1.12 | 1096 |
| Medium education father | 0.35 | 0.34 | -0.36 | 1096 |
| High education father | 0.09 | 0.13 | *1.72* | 1096 |
| University graduate father | 0.10 | 0.12 | 0.78 | 1096 |
| Other education / missing father | 0.19 | 0.13 | **-3.08** | 1096 |
| Foreign mother | 0.23 | 0.22 | -0.34 | 1249 |
| Employed prior to birth, mother | 0.46 | 0.51 | *1.73* | 1219 |
| Employed prior to birth, father | 0.73 | 0.65 | **-2.58** | 934 |
| West Germany | 0.63 | 0.64 | 0.33 | 1266 |
| Net household income prior to birth | 1773 | 1779 | 0.10 | 1035 |
| Transfer receipt mother | 0.49 | 0.45 | -1.53 | 1266 |
| Transfer receipt father | 0.32 | 0.30 | -0.59 | 1094 |
| | **Restricted sample: Oct/Nov 06 vs. Feb/Mar 07** | | | |
| Number of children | 1.80 | 1.81 | 0.07 | 822 |
| Parents cohabitate | 0.87 | 0.89 | 0.91 | 821 |
| Age of mother | 30.31 | 29.84 | -1.10 | 810 |
| Age of father | 32.66 | 32.56 | -0.19 | 705 |
| Low education mother | 0.21 | 0.26 | *1.73* | 822 |
| Medium education mother | 0.43 | 0.37 | -1.60 | 822 |
| High education mother | 0.16 | 0.15 | -0.41 | 822 |
| University graduate mother | 0.09 | 0.11 | 0.89 | 822 |
| Other education / missing mother | 0.11 | 0.10 | -0.21 | 822 |
| Low education father | 0.28 | 0.28 | -0.04 | 721 |
| Medium education father | 0.34 | 0.36 | 0.53 | 721 |
| High education father | 0.10 | 0.12 | 0.91 | 721 |
| University graduate father | 0.09 | 0.11 | 0.88 | 721 |
| Other education / missing father | 0.19 | 0.14 | **-2.12** | 721 |
| Foreign mother | 0.21 | 0.22 | 0.47 | 811 |
| Employed prior to birth, mother | 0.46 | 0.49 | 0.85 | 794 |
| Employed prior to birth, father | 0.73 | 0.65 | **-2.14** | 621 |
| West Germany | 0.64 | 0.62 | -0.64 | 822 |
| Net household income prior to birth | 1889 | 1754 | *-1.68* | 671 |
| Transfer receipt mother | 0.48 | 0.44 | -1.12 | 822 |
| Transfer receipt father | 0.30 | 0.29 | -0.36 | 720 |

Notes: Significance levels are indicated in italics (10%-level) and boldface (5%-level). "Transfer receipt" refers to welfare payments and unemployment benefits.

Table 2. Estimates of reform effects: Mothers' employment participation

| | Q1 vs. Q4 | | Feb/Mar vs. Oct/Nov | |
|---|---|---|---|---|
| | Coefficient | t-stat | Coefficient | t-stat |
| **a) Simple difference-in-means estimates** | | | | |
| Mother employed 10 months after birth | *-0.040* | -1.66 | **-0.059** | -2.06 |
| Mother employed 1 year after birth | 0.028 | 0.99 | 0.030 | 0.87 |
| Mother employed 1.5 years after birth | **0.063** | 2.1 | 0.054 | 1.47 |
| Mother employed 2 years after birth | -0.008 | -0.27 | -0.016 | -0.41 |
| | | | | |
| Subgroups | | | | |
| Mother employed 10 months after birth | | | | |
|   German citizen | *-0.047* | -1.7 | **-0.076** | -2.31 |
|   Employed before birth | **-0.085** | -2.16 | **-0.105** | -2.14 |
|   Primipara | **-0.083** | -2.39 | **-0.143** | -3.31 |
|   West Germany | *-0.059* | -1.96 | **-0.084** | -2.25 |
| Mother employed 1.5 years after birth | | | | |
|   German citizen | **0.075** | 2.19 | 0.069 | 1.64 |
|   East Germany | **0.105** | 2.05 | **0.150** | 2.44 |
|   Not employed before birth | *0.057* | 1.69 | *0.071* | 1.74 |
| | | | | |
| **b) Difference-in-means estimates controlling for background characteristics** | | | | |
| Mother employed 10 months after birth | **-0.054** | -2.43 | **-0.065** | -2.38 |
| Mother employed 1 year after birth | 0.010 | 0.37 | 0.022 | 0.69 |
| Mother employed 1.5 years after birth | *0.047* | 1.74 | 0.048 | 1.43 |
| Mother employed 2 years after birth | -0.028 | -1.05 | -0.028 | -0.85 |
| | | | | |
| Subgroups | | | | |
| Mother employed 10 months after birth | | | | |
|   German citizen | **-0.053** | -2.05 | **-0.070** | -2.22 |
|   Employed before birth | **-0.102** | -2.55 | **-0.118** | -2.39 |
|   Primipara | **-0.103** | -3.03 | **-0.151** | -3.63 |
|   West Germany | **-0.081** | -2.86 | **-0.094** | -2.70 |
| Mother employed 1.5 years after birth | | | | |
|   German citizen | **0.068** | 2.16 | *0.073* | 1.90 |
|   East Germany | 0.075 | 1.61 | **0.146** | 2.58 |
|   Not employed before birth | **0.066** | 1.99 | *0.066* | 1.66 |

Note: Employment status 1.5 years and 2 years after birth reflects expectations and plans, while employment status 10 month and 1 year after birth measures actual behavior. Background characteristics include indicators for West Germany, cohabitation, foreign citizenship, the number of children, mother's educational degree and her working status prior to birth. Significance levels are indicated in italics (10%-level) and boldface (5%-level).

Table 3. Estimates of reform effects: Household income

| | Q1 vs. Q4 | | Feb/Mar vs. Oct/Nov | |
| --- | --- | --- | --- | --- |
| | Coefficient | t-stat | Coefficient | t-stat |
| **a) Simple difference-in-means estimates** | | | | |
| Change in net household income between the year before and the year after birth (Euros/month) | -35.21 | -1.09 | 6.15 | 0.16 |
| | | | | |
| <u>Subgroups</u> | | | | |
| Change in net household income between the year before and the year after birth (Euros/month) | | | | |
| Mothers with low or medium education | -45.48 | -1.22 | -12.85 | -0.28 |
| Mothers with high or university education | 53.38 | 0.77 | 105.20 | 1.37 |
| Mothers not employed before birth | **-108.30** | -2.75 | -64.90 | -1.44 |
| Mothers employed before birth | 75.00 | 1.59 | **113.85** | 2.00 |
| | | | | |
| **b) Difference-in-means estimates controlling for background characteristics** | | | | |
| Change in net household income between the year before and the year after birth (Euros/month) | -16.02 | -0.52 | 19.28 | 0.53 |
| | | | | |
| <u>Subgroups</u> | | | | |
| Change in net household income between the year before and the year after birth (Euros/month) | | | | |
| Mothers with low or medium education | -28.26 | -0.78 | -6.08 | -0.13 |
| Mothers with high or university education | *114.63* | 1.74 | **150.88** | 2.13 |
| Mothers not employed before birth | **-102.75** | -2.57 | -56.41 | -1.23 |
| Mothers employed before birth | *76.05* | 1.65 | *103.06* | 1.82 |

Note: Background characteristics include indicators for West Germany, cohabitation, foreign citizenship, the number of children, mother's educational degree and her working status prior to birth. Significance levels are indicated in italics (10%-level) and boldface (5%-level).

Table 4. Estimates of reform effects: Probability of receiving social transfers

| | Q1 vs. Q4 | | Feb/Mar vs. Oct/Nov | |
| | Coefficient | t-stat | Coefficient | t-stat |
|---|---|---|---|---|
| **a) Simple difference-in-means estimates** | | | | |
| Receipt of social transfers postpartum, mother | **-0.063** | -2.28 | *-0.061* | -1.80 |
| | | | | |
| <u>Subgroup</u> | | | | |
| Receipt of social transfers postpartum, mother | | | | |
|   Primipara | **-0.110** | -2.83 | *-0.081* | -1.67 |
|   With siblings | -0.018 | -0.46 | -0.041 | -0.86 |
|   Mothers with low or medium education | -0.045 | -1.27 | -0.033 | -0.76 |
|   Mothers with high or university education | **-0.095** | -2.05 | *-0.097* | -1.72 |
| | | | | |
| **b) Difference-in-means estimates controlling for background characteristics** | | | | |
| Receipt of social transfers postpartum, mother | -0.021 | -1.19 | *-0.036* | -1.70 |
| | | | | |
| <u>Subgroups</u> | | | | |
| Receipt of social transfers postpartum, mother | | | | |
|   Primipara | *-0.047* | -1.70 | *-0.058* | -1.78 |
|   With siblings | 0.001 | 0.05 | -0.010 | -0.38 |
|   Mothers with low or medium education | 0.000 | -0.02 | -0.016 | -0.60 |
|   Mothers with high or university education | *-0.061* | -1.94 | **-0.098** | -2.70 |

Note: Background characteristics include indicators for West Germany, cohabitation, foreign citizenship, the number of children, mother's educational degree, her working status prior to birth and the receipt of social transfers prior to birth. Significance levels are indicated in italics (10%-level) and boldface (5%-level).

Table 5. Estimates of reform effects: Fathers' employment participation

| | Q1 vs. Q4 | | Feb/Mar vs. Oct/Nov | |
| --- | --- | --- | --- | --- |
| | Coefficient | t-stat | Coefficient | t-stat |
| **a) Simple difference-in-means estimates** | | | | |
| Father employed 10 months after birth | *-0.055* | -1.96 | -0.049 | -1.46 |
| Father employed 1 years after birth | -0.032 | -1.19 | -0.030 | -0.90 |
| Father employed 1.5 years after birth | -0.037 | -1.38 | -0.021 | -0.67 |
| Father employed 2 years after birth | *-0.048* | -1.84 | -0.033 | -1.08 |
| | | | | |
| **b) Difference-in-means estimates controlling for background characteristics** | | | | |
| Father employed 10 months after birth | 0.006 | 0.46 | 0.015 | 0.85 |
| Father employed 1 years after birth | *0.026* | 1.80 | *0.033* | 1.79 |
| Father employed 1.5 years after birth | 0.009 | 0.47 | 0.028 | 1.11 |
| Father employed 2 years after birth | -0.002 | -0.13 | 0.016 | 0.66 |

Note: Background characteristics include indicators for West Germany, foreign citizenship, the number of children, father's educational degree and his working status prior to birth. Significance levels are indicated in italics (10%-level) and boldface (5%-level).

Table 6. Estimates of reform effects: Fathers' contribution to childcare

|  | Q1 vs. Q4 | | Feb/Mar vs. Oct/Nov | |
|---|---|---|---|---|
|  | Coefficient | t-stat | Coefficient | t-stat |
| **a) Simple difference-in-means estimates** | | | | |
| Share father contributes to childcare | *2.78* | 1.84 | 2.88 | 1.54 |
| **b) Difference-in-means estimates controlling** | | | | |
| **for background characteristics** | | | | |
| Share father contributes to childcare | 2.29 | 1.56 | 2.23 | 1.22 |

Note: Background characteristics include indicators for West Germany, foreign citizenship, the number of children, father's educational degree and his working status prior to birth. Significance levels are indicated in italics (10%-level) and boldface (5%-level).