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Abstract

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JEL Classification: N/A

Keywords: Female labor supply, Maternity Leave, return-to-work, Earnings, Fertility

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Mothers at Work: How Mandating Paid Maternity Leave Affects Employment, Earnings and Fertility *

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July 19, 2021

Abstract

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1 Introduction

Over the past century, the labor force participation rates of women in high-income countries have increased substantially, and this trend paralleled the adoption of many family friendly policies, among which paid maternity leave played a key role (Olivetti and Petrongolo, 2017). By the late 20th century, most high-income countries had already adopted national mandates for paid maternity leave (Rossin-Slater, 2017). In contrast, Australia, New Zealand, Switzerland, and the United Kingdom introduced such mandates only at the dawn of the 21st century. In 2021, the United States remains the only OECD country without a federal provision for paid maternity leave.

There is a large literature on the effects of family leave policies on female labor market outcomes, children's outcomes and fertility. However, many of these papers study *extensions of the duration* of existing family policies.[1] There are fewer papers that look at the effects of such policies in the first few months after birth, and notably, at the effects of the *introduction* of new policies. In addition, existing studies focus predominantly on labor market outcomes, with very few looking at fertility.[2] Understanding how a paid maternity leave mandate affects women's labor market and fertility outcomes is crucial, since reconciling the demands of work and family is particularly challenging in the period right after the birth of a child. Evidence on the effects of extensions of leave, which become salient several months after birth, might not inform well on the value of maternity leave that is taken right after birth, if the value of such leave declines, possibly in a non-linear fashion (Rossin-Slater, 2017).[3]

This paper studies the dynamic impact of the first federal paid maternity leave mandate intro-

[1] Studies on extensions of parental (mostly maternity) leave include: Austria (Lalive et al. (2013)), Germany (Ruhm (1998), Kluve and Tamm (2013), Schönberg and Ludsteck (2014), and Geyer et al. (2015)), Scandinavian countries (Ruhm (1998), and Dahl et al. (2016)), Czech Republic (Bicakova and Kaliskova (2019)), Japan (Asai (2015) and Yamaguchi (2019)), and Canada (Hanratty and Trzcinski (2009)), among others.

[2] The impact of an introduction of a short paid family leave on employment (and sometimes earnings) in California is studied by Rossin-Slater et al. (2013), Baum and Ruhm (2016), and Byker (2016)), in New Jersey by Byker (2016), and in Australia by Broadway et al. (2020). Only Baum and Ruhm (2016) and Byker (2016) analyze the anticipatory effects of these policies. None of these articles investigate the impact on subsequent fertility.

[3] Carneiro et al. (2015) use a similar argument to explain their findings of why a 4-month paid maternity leave introduction had significant (positive) impact on child outcomes in Norway while the previous literature had not found any effects. Parental leave taken by mothers plays a role for children's outcomes (Ginja et al., 2020), but leave taken by fathers does not improve the long-run gender balance in housework (Ekberg et al., 2013).

duced in Switzerland on women's labor market outcomes around the birth of their first child and on their subsequent fertility. The mandate became effective from 1st July 2005 and provided a 14-week paid maternity leave with job protection covering pregnancy and the 16-week period following birth. Before the mandate was introduced, around 40% of employers already offered their female workforce access to paid maternity leave, but such leave was not universal and leave provisions differed enormously (see Guillet et al. (2016) and Aeppli (2012)). The mandate aimed to provide a minimum level of paid maternity leave to all eligible women and thereby, reduce inequalities in coverage.

Studying the Swiss mandate is particularly interesting for four reasons. First, it is relatively short but with a high benefit level, at 80% of previous earnings for most women, while most other mandates in Europe are longer. We are interested in understanding if such a short but relatively generous maternity leave policy can affect labor market and fertility outcomes both in the short and long run after the leave itself has ended. Secondly, the maternity leave mandate takes place in a flexible labor market characterized by low rates of full-time employment among mothers, indicating problems in reconciling the demands of work and family life. Regional differences in the availability of early child care allow us to uncover how the mandate interacts with other family policies. Third, the mandate supersedes employer-provided maternity leave where it was offered previously, at least up to the mandated duration and level. Thus, the mandate leads to a differential treatment by *introducing paid maternity leave* for some groups of women, mostly those with lower earnings or who are young or self-employed, and *reducing costs for firms and public administration* that already offered employer-sponsored maternity leave prior to the reform. Finally, the timing of the announcement of the mandate and its implementation are ideal for studying both the *anticipatory and treatment effects*.

For our analysis, we compile a unique and rich dataset by linking several administrative registers. These include the social security register, which provides information on earnings and social security benefits, the vital statistics register, which provides information on life events, and the census. Our main population of interest is Swiss women who gave birth to a child shortly before and after the mandate was introduced on 1st July 2005. We construct a dataset of women's complete labor

market and fertility histories at a monthly frequency before and after giving birth to their first child. We employ a difference-in-differences approach in which we compare the difference in outcomes of women who gave birth to their first child in the three months before and after the introduction of the mandate, with the difference in a control cohort of women who gave birth in the same three-month windows in the year prior to the reform. This identification strategy allows us to estimate the causal effects of being covered by the mandate around the time of birth of the first child.[4] We include in our analysis pre-birth periods to understand behavioral responses in anticipation of the mandate. We also investigate the heterogeneous effects of the mandate by pre-birth earnings of first-time mothers and the availability of early child care in the mother's canton of residence at the time of birth of her first child.

Our empirical findings can be summarized as follows. First, our results reveal no or only small effects on most labor market outcomes. We do find increased job continuity with the pre-birth employer in the two to three years after birth but little effects on labor force participation and employment rates. In the long run, up to five years after birth, all labor market effects dissipate. The effects are similar for both low- and high-earning women. Second, our estimates uncover sizeable anticipatory responses by women covered by the mandate at the intensive margin of labor supply. That is, the earnings of these women increase compared to the control group prior to the birth of their first child, presumably reflecting a relative increase, or a smaller decrease, in the hours worked prior to birth. Third, we find a significant and persistent impact of the maternity leave mandate on subsequent fertility. An additional three out of 100 women exposed to the mandate gave birth to a second child in the long run, that is, in the nine years after the birth of their first child.[5] While the size of this subsequent fertility effect is similar among high-earning and low-earning women, it differs across regions with different levels of early child care provision. The mandate strongly increases subsequent fertility in regions that offer above-median number of places in early child care by four percentage points, but does not have a statistically significant impact in regions

[4] A similar approach was used by Lalive et al. (2013) and Schönberg and Ludsteck (2014) to study long expansions of maternity leave in Austria and Germany. Lalive et al. (2013) study two Austrian reforms that extended maternity leave durations from 12 to 24 and then to 30 months, while Schönberg and Ludsteck (2014) study German reforms extending the benefit duration from two to six months, and later up to 24 months.

[5] This result is in line with the findings of Barbos and Milovanska-Farrington (2019) that the 2005 mandatory paid maternity leave in Switzerland affected fertility intentions through an experience effect.

with below-median number of places in early child care. This evidence suggests complementarity between the maternity leave mandate and the availability of early child care leading to the effect we see on subsequent fertility.

Our paper ties into a growing literature on the effects of maternity leave on female labor market outcomes and fertility in developed countries. A large part of the literature has investigated the impact of parental leave policies on female labor market outcomes (for excellent recent reviews, see Rossin-Slater (2017) and Olivetti and Petrongolo (2017)), while fertility has received far less attention.[6]

The paper most similar to ours is Schönberg and Ludsteck (2014), who investigate several maternity leave expansions and their impact on post-birth labor market outcomes in Germany in the 1970s, 1980s and 1990s. We apply their analysis to the Swiss context but extend it in three important directions. First, we include pre-birth labor market outcomes in our analysis to gauge if anticipatory behavioral effects are present and to determine their quantitative importance. Our results indeed reveal sizeable adjustments at the intensive margin of labor supply before birth. Such behavioral adjustments are likely to occur for other parental leave reforms as well (except if such reforms are announced very late or implemented ex-post) and should be taken into account when quantifying the overall effects of such reforms.[7] Second, our paper sheds light on the heterogeneous effects of a universal maternity leave mandate that supersedes prior employer-provided maternity leave for some groups of women. While some women are not directly affected by the mandate, since they had been covered by employer-provided maternity leave, their employers see their maternity leave costs reduced. This could in turn trickle down to female workers through increased job continuity, more flexible work options, and higher earnings. Third, our analysis also encompasses the effect of the maternity leave mandate on subsequent fertility. While labor market effects of a short maternity leave reform could be limited, this does not preclude sizeable impacts on subsequent fertility decisions as our findings show.

[6] Some papers investigating the effect of maternity leave reforms on fertility include Lalive and Zweimüller (2009) for Austria, Dahl et al. (2016) for Norway, Malkova (2018) for Soviet Russia, and Cygan-Rehm (2016) and Raute (2019) for differential effects on earnings subgroups in Germany.

[7] Sizeable anticipatory effects have also been documented for welfare reforms (Blundell et al. (2011)), tort reforms (Malani and Reif (2015)) and health care reforms (Alpert (2016)).

An emerging literature studies the effects of interactions between different family policies, such as parental leave and provision of child care places or child care subsidies. As highlighted by Olivetti and Petrongolo (2017), family policies should not be analyzed in isolation, since a maternity leave mandate's impact could be determined not only by the duration and level of benefits, but also by the cost and availability of child care when the leave ends. Our heterogeneity analysis contributes to this literature, revealing statistically significant empirical evidence of such a complementarity between a paid maternity leave mandate and higher availability of child care for younger children, at least in the subsequent fertility dimension. To the best of our knowledge, this is a novel finding in this literature and warrants further attention both from researchers and policy makers.[8]

The remainder of this paper is organized as follows. In the next section, we discuss the background and details of the federal paid maternity leave mandate as it was implemented in Switzerland. Section 3 introduces our data and presents some descriptive statistics. In Section 4, we describe our empirical design and explain the assumptions that allow us to identify the causal effects of the new mandate on mothers' labor market outcomes and on their subsequent fertility. In Section 5, we present and explain our results. Finally, we conclude with a summary and discussion of our key findings in Section 6.

2 Policy Background

While Switzerland was among the first countries in the world to mandate leave from work (unpaid) for women giving birth, it was not until July 2005 that it implemented a federal mandate providing for paid maternity leave with job protection.[9] Since 1877, women in Switzerland were forbidden to work for eight weeks around the time of birth of their child. While this leave was unpaid, their jobs remained protected during this period. A federal mandate adopted in 1945 requested the

[8] Ravazzini (2018) investigates how expansions in child care from 2002 to 2009 affect maternal full-time and part-time employment. She uses variations in the implementation of paid maternity leave for public sector employees in Switzerland as a proxy for maternity leave availability. She does not find any medium-term labor market effect of the 2005 mandate on maternal employment. Kleven et al. (2020) estimate the joint effect of parental leave and child care subsidies for several policies reforms in Austria since the 1950s on the gender earnings gap. They find virtually no effect of either policy on gender earnings gap convergence.

[9] See the OECD Family data base on oe.cd/fdb and the PF2.5 Annex accessed on 5/02/2021 here: https://www.oecd.org/els/family/PF2_5_Trends_in_leave_entitlements_around_childbirth_Annex.pdf.

government to implement some form of paid maternity leave. Subsequently, job protection during pregnancy and 16 weeks following birth, as well as a wage payment during at least 3 weeks after birth were introduced in 1989.

In Switzerland, national referenda are usually held in order to pass contested new federal legislation. Several referenda on paid maternity leave were held between 1945 and 2000, but all of them failed.[10] The canton of Geneva implemented its own paid maternity leave mandate with job protection on 1st July 2001. Similarly, the canton of Jura also implemented a mandate in the same year. A new federal initiative for maternity leave was launched in June 2001 and passed parliamentary approval in October 2003. However, one major party opposed it and called for a federal referendum in January 2004. The referendum vote was held on 26th September 2004 and gained 55.4% of votes in favor of the maternity leave mandate. At this time, the implementation date of the new mandate was not yet known. On 24th November 2004, the federal council announced that the new maternity leave mandate - officially titled in French *Loi sur les Allocations pour Perte de Gains* (LAPG) - would become effective on 1st July 2005.

The mandate provides women with 14 weeks (98 days) of paid maternity leave beginning at the birth of the child. It also ensures job protection against dismissal during pregnancy and in the first 16 weeks after birth. The maternity benefits are set at 80% of average labor earnings (including from self-employment) prior to birth, subject to a daily cap. At the time of the mandate's introduction, the cap amounted to 172 CHF per day or 5,160 CHF per month.[11] The benefits are financed through employee and employer contributions similar to other existing social insurance schemes. The mandate fully covers all women who had a child on or after 1st July 2005 subject to meeting certain employment eligibility requirements. Women can request for a two-week extension after the end of the mandated 98 days, which, on account of the post-birth 16-week job protection period, is rarely refused by the employer. However, the employer is not required by the mandate to pay wages for these two extra weeks of leave.

[10] The last unsuccessful referendum on paid maternity leave was held in 1999, which failed to pass with 61.1% voting against.

[11] Hence, women with average monthly pre-birth earnings above 6,450 CHF would see their maternity leave benefits capped at 5,160 CHF (unless their employer paid the difference). In 2009, the cap was increased from 172 to 196 CHF per day. On 30th June 2005, 1 CHF corresponded to 0.79 USD.

In order to qualify for paid maternity leave, women need to: (1) have worked and contributed to social security for nine months in total before the birth; (2) have worked for at least five months during the nine months before birth, that is, during the pregnancy; and (3) be employed at the time of birth. Or alternatively, they need to have been receiving unemployment benefits during the pregnancy for an equivalent period and be officially unemployed at the time of birth.[12]

A majority of women, mainly employees in federal and cantonal public administrations, all women working in Geneva and Jura, as well as a considerable share of women working in the private sector (mostly in large firms and the banking/IT/insurance/consulting sector) had access to some form of private paid maternity leave prior to the implementation of the federal maternity leave mandate on 1st July 2005 (Guillet et al., 2016; Aeppli, 2012).[13] Eligibility for many of these employer-sponsored maternity leave insurance schemes was tied to tenure with the same employer, sometimes requiring up to nine years of tenure to become eligible for full, that is, three months of paid maternity leave. This practice disadvantaged younger women, those with frequent job changes, and those working in small and medium sized firms, which often did not offer paid maternity leave. Indeed, the mandate increased maternity leave coverage strongly for women who earned a pre-birth wage below the median, while women with high pre-birth earnings were already covered broadly by private maternity leave arrangements (Appendix Figure A.1). We will explore heterogeneity in the effects of the mandate by pre-birth earnings in our empirical analysis.

After the adoption of the new mandate, cantonal legislations and employer arrangements had to meet at least the federal standards, but those that were more generous such as that of Geneva remained in force.[14] Moreover, the federally guaranteed maternity leave was now paid by the federal government, and hence, it freed up the considerable cost of private maternity leave arrangements

[12]Every woman who met the eligibility criteria and had a child in the 98 days before the mandate came into effect, that is, they gave birth between 25 March and 30 June 2005, received *partial* benefits. They would receive benefits from the 1st July 2005 for the remaining number of days of the 14-week maternity leave period. Therefore, their maternity leave benefits lasted from one to 97 days. We define these women as *partially treated*. We do not include first-time mothers who gave birth between 1st April and 30 June 2005 in our main analysis.

[13]While most of these private schemes were at least as generous as the federal mandate in terms of the benefit level (i.e., 80% of previous earnings or more), a third offered a maternity leave payment duration of less than 14 weeks, which is the federally mandated duration.

[14]The Geneva legislation provides for 16 weeks (112 days) of paid maternity leave. The maternity benefits are at 80% of previous average earnings, subject to a minimum of 62 CHF per day and a maximum of 237 CHF in 2005, which was higher than the maximum level of federal benefits at the time (172 CHF).

covered by employers prior to the adoption of the federal mandate.[15] How firms used the freed up funds is critical for interpreting the estimates we report below. Unfortunately, no administrative data source provides detailed insights on how firms that provided paid maternity leave before the mandate used the funds that were freed up. A survey in 2011 of 402 firms suggests that 33% of firms used these funds to support families (through longer maternity leaves, paternity leave, child care, etc.), 20% hired a replacement worker, and the remaining firms did not use the funds in a particular way or did not answer the question (Aeppli, 2012).

2.1 Discussion of Mechanism and Motivation of Outcome Variables

After the policy change in 2005, maternity leave (ML) offers job protection and benefits to all eligible women. Job protection was already available under previous regulations, but benefits were not mandatory before the policy change in 2005. The benefits of the federal mandate are proportional to average earnings prior to birth (up to a cap), and conditional on an active employment history. Mandated benefits will, on average, increase incomes of women with newborn children after the policy change for the duration of the mandated leave (14 weeks). This increase will be substantial for those women who were not covered by paid employer provided ML benefits before the policy change. The mandate will not directly affect incomes of women who are already covered by paid leave through the previous employer, except for those with prior coverage below the mandated leave or where the employer extends the previous leave scheme further. The previous employer will, however, benefit from the transfer and possibly use this transfer to finance longer maternity leaves or improvements to the jobs held by women returning from maternity leave.[16]

Introducing paid leave has consequences on behavior before and after giving birth (*outcome variables* in *italics*). Prior to the mandate, some women tended to reduce employment and hours already before giving birth. With the introduction of the paid ML, women will increase (or decrease

[15] Estimates suggest that employers annually incurred maternity leave expenditures of 353 million CHF prior to the votation, while the total cost of the maternity leave mandate implementation for the government was expected to be 483 million CHF (Bundeskanzlei, 2004).

[16] Mandated employer provided ML tends to lower wages of women (Gruber, 1994). In our context, the federal mandate is financed through a tax, and employers decided to offer paid leave before the federal mandate. The federal mandate thus lowers the costs of employing women on ML, and employers could raise women's wages or offer family friendly policies to women returning from paid leave.

less) employment upon learning that they are pregnant to meet the employment requirement for ML before childbirth. Moreover, women will possibly increase hours to accumulate higher average *earnings* compared to the situation without paid ML because the marginal benefit of working an extra hour increases, as higher average prior earnings raise the ML benefit. We observe *employment* at the extensive margin, and *employment earnings*, which reflects both hours – the intensive margin of labor supply – but also wages. We denote these pre-birth effects as anticipation effects.

Paid ML could reduce post-birth labor market *participation* of women, through an income effect, or increase it through job protection (Lalive et al., 2013). But since job protection was already available to women before the policy change, its effects are likely to be limited. Paid ML likely affects the share of women in *employment*, and especially the share *employed at pre-birth employer* because women invest more into their jobs prior to birth, so the value of returning to the pre-birth employer increases. Also, women who work in firms that offered paid ML before the mandate may be offered better jobs or more flexibility upon returning to work, since employers can offer paid ML at a lower cost with the mandate compared to without it. If women are employed more, they need to rely less on other forms of transfer, e.g. unemployment insurance.

Effects on employment and return to the pre-birth employer will be stronger for women without access to paid ML prior to the policy change compared to women with access to paid ML. Although we do not have direct information on whether employers offer paid ML, women with high previous earnings are more likely to have access to paid ML prior to the policy change in 2005, than women with low previous earnings (see Figure A.1 in the Appendix). We expect to see higher returns to the pre-birth employer, and stronger effects on employment, for women with low previous earnings. Employment effects may also be heterogeneous with respect to the availability of child care. Generous availability of child care limits the extent to which women depend on the pre-birth employer to offer child care, and women could be less likely to return to the pre-birth employer.

Introducing paid ML raises the *cumulative income* of families who have one child, both through working more prior to birth, and through the ML benefit after birth. This increase in income may contribute to increase *subsequent fertility*. Family income increases directly for women whose employer did not offer paid ML before the mandate. Women who work for an employer that

already offers paid ML before the mandate may not receive a higher monetary transfer, but their employers could offer better work conditions, or child care, which in turn lower the costs of having an additional child. The costs of having an additional child are low in areas that offer generous child care, and high in areas that offer little child care. The fertility effects are thus expected to be stronger in areas with generous child care compared to areas with little child care.

3 Data and descriptive evidence

3.1 Data sources

Our analysis is based on data compiled from three different administrative registers provided by the Swiss Federal Office of Statistics (FOS) and the Central Compensation Office (CCO). These are the Swiss federal population census (FOS), the Swiss social security register (CCO), and the vital statistics register of Switzerland (FOS).

The federal population census contains sociodemographic information about the residential population of Switzerland in December 2010 and December 2012. It includes information on an individuals' status within a household (head, spouse or child), sex, date of birth, marital status, date of last change in marital status, current municipality of residence, past municipality or country of residence and more. In addition, the population census links individuals within a household and parents with their children. All individuals can be identified through their unique (anonymized) social security number called 'AVS13'. Our baseline sample are women (and their partners) who had a child between 1st January 2003 and 31st December 2007, and who were living in Switzerland in December 2010.

For each mother and partner in our sample, we retrieve their social security register information from 1995 to 2014 using the AVS13. The social security register records all individual earnings from employment and self-employment, as well as any federal benefits received for maternity leave, unemployment, disability, military service, and more.[17] The information is provided for spells of

[17]Every resident aged 18 years and above with annual earnings above 2,300 CHF must contribute to social security. Those with annual earnings below 2,300 CHF (corresponding to less than half of median monthly earnings) can choose to contribute voluntarily.

various lengths (from one day to one year) within the same calendar year. We aggregate all data at a monthly frequency and transform the nominal earnings data into real earnings using the CPI with base year 2010.

We complement this data with the vital statistics register covering the period from 1995 until 2014. This register for life events records information on individuals' marriage, divorce, live births, as well as complementary data such as residence at different life events, paternal acknowledgments of births (for unmarried parents), divorce arrangements, and more. From 2011 onwards, the AVS13 is recorded for all involved individuals of a life event.

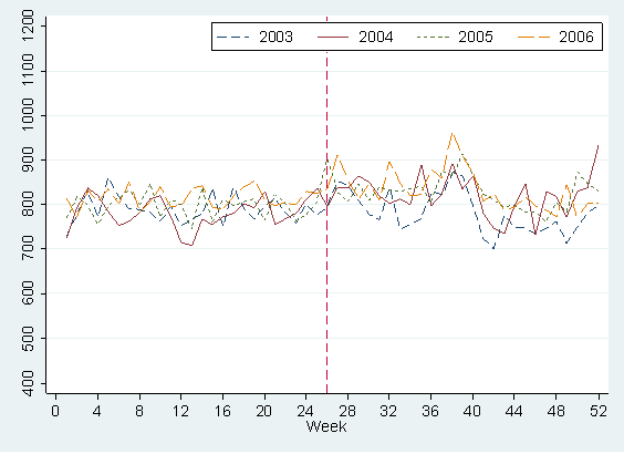
We merge the first two registers using individuals' AVS13. The third register is merged using the AVS13 for events from 2011 onwards and using unique combinations of date of life events, woman's date of birth and partner's/children's date of birth for life events prior to 2011.[18] From this merged dataset, we construct a monthly panel of every woman's labor market status, earnings, federal social security benefits received (including paid maternity leave), marital status, canton of residence and all living children born to her since she appeared in the social security register (usually between the ages of 18 and 20 years). Our final dataset spans the period from January 1995 to December 2014.

3.2 Descriptive evidence

Figure 1 plots the total weekly number of births of Swiss women in Switzerland for the years 2003 to 2006. The vertical red line marks the week of implementation of the maternity leave mandate on 1st July 2005.

Total numbers of births vary from week to week and over different years. Yet, while we observe some seasonal patterns in the total numbers of births, for example, an increase followed by a drop around 38 to 40 weeks after Christmas/New Year, there is no evidence of a drop in fertility prior to the introduction of the maternity leave mandate or an increase after its implementation on 1st of July 2005, nor is there any apparent time trend.

[18] This procedure allows us to match 96% of all births and 80% of all marriages. The unmatched marriages almost uniquely concern foreign individuals who are likely to have been married abroad. We do not include them in our main analysis.



Notes: Figure provides the number of births by week. The dashed vertical line identifies week 26 (week of year of 1st July 2005).
Source: Authors' calculations using Swiss vital statistics register.

Figure 1: Weekly number of children born to Swiss women 2003 - 2006

Following this descriptive evidence, we construct two samples of women who had their first child in two three-month periods in 2005, one before and one after the mandate became effective. Our pre-reform group comprises of women who had their first child in the period from 1st January 2005 to 31st March 2005, our post-reform group are first-time mothers of children born from 1st July 2005 to 30th September 2005.[19] We restrict our sample to women with Swiss nationality, who were not living in the cantons of Geneva and Jura, and who were aged between 15 and 45 years old at the time of birth following the literature (Lalive and Zweimüller (2009)).[20] The pre-reform and post-reform groups comprise of 5,073 and 5,362 first-time mothers, respectively. Table 1 presents descriptive statistics on demographics, labor market outcomes and potential federal maternity leave eligibility for these two groups in our sample.[21]

Pre-reform and post-reform first-time mothers are similar in many respects, in particular in

[19] As discussed previously, we exclude first-time mothers giving birth between 1st April and 30th June 2005 as they received partial benefits.

[20] For women without Swiss nationality, we often lack complete marital and residence histories. In addition, the period covered coincides with intensified economic relationships with the European Union (EU) that allowed for the free movement of persons between the EU and Switzerland. This drastically changed the composition of non-Swiss women in the sample over this period. We also exclude first-time mothers from Geneva and Jura since these cantons already had an existing paid maternity leave mandate since 2001 and women in these cantons would, therefore, have been unlikely to respond to the new federal mandate.

[21] Eligibility for federal maternity leave benefits depends on the *expected* date of birth, which we do not observe in our data. To define potential eligibility in our dataset, we use information on the *actual* date of birth of a child but reduce the requirement of being in the labor force prior to birth to eight months (instead of nine) and keep the employment requirement unchanged at five months.

Table 1: Descriptive Statistics

	Jan-March05	Jul-Sept05
A Demographics	Before	After
Age at first birth	30.505	30.017
	(0.071)	(0.068)
Age first observed	18.758	18.711
	(0.032)	(0.030)
Married at first birth	0.764	0.776
	(0.006)	(0.006)
B Labour market history		
Share in labour force (LF) 12m prior to first birth	0.903	0.911
	(0.004)	(0.004)
Share employed among those in LF 12m prior to first birth	0.981	0.980
	(0.002)	(0.002)
Monthly income from employment (CHF) 12m prior to first birth	5224.266	5242.502
	(40.751)	(41.405)
Cum. experience (months) from 6y to 12m prior to first birth	50.716	51.100
	(0.233)	(0.224)
C Eligibility and treatment		
Eligible	0.841	0.853
	(0.005)	(0.005)
Received federal paid maternity leave	0.000	0.807
	(0.000)	(0.005)
Received federal paid maternity leave among eligible	0.000	0.895
	(0.000)	(0.005)
Observations	**5,073**	**5,362**

Mothers who had their first child between January and March in 2005 were not affected by the reform and are classified as before period and those who had their first child between July-September in 2005 are classified as after the reform. We define as eligible those women who had been in the labor force for eight months prior to actual birth of their child and had been employed (or officially unemployed) for five months during pregnancy. Standard errors are in parentheses.

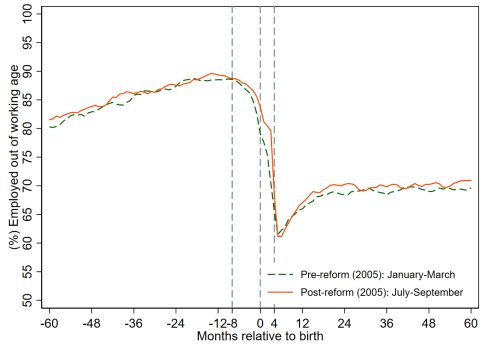
terms of labor market histories and potential eligibility for maternity leave. Twelve months prior to giving birth, pre-reform and post-reform women have almost identical labor force participation rates (90.3% and 91.1%, respectively), employment rates (98.1% and 98.0%, respectively), monthly earnings (5,224 CHF and 5,242 CHF, respectively) and cumulative work experience (50.7 vs 51.1 months over the last 60 months, respectively). Furthermore, the eligibility for federal maternity leave is also very similar at 84.1% and 85.3%, respectively.

One dimension in which pre-reform and post-reform mothers differ slightly are sociodemographic characteristics. The average age when mothers give first birth drops from 30.5 to 30 years among post-reform mothers, and the share of married mothers at first birth increases from 76.4% to 77.6%. However, these differences are driven by seasonality effects unrelated to the reform and will be taken care of by our estimation strategy (see Section 4).

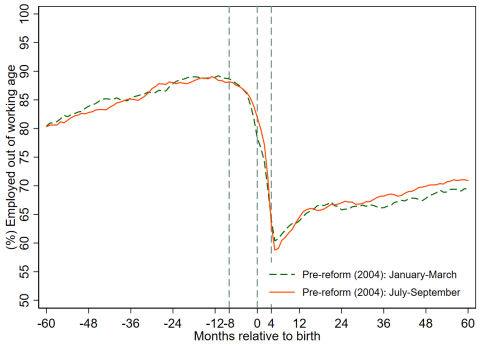
Figure 2 sheds further light on the dynamics of various labor market outcomes around the birth of the first child and subsequent fertility. It plots employment, monthly earnings, job stability (i.e., employment at pre-birth employer) and the share with a second child of pre-reform (dashed line) and post-reform women (bold line) in a 10-year-window around the birth of the first child.[22] The first column presents the outcomes for pre- and post-reform women who had a child in the year 2005. The second column shows the same outcomes for women who had a child in the same two three-month periods in the year 2004. These later women were not affected by the maternity leave mandate for their first child. The horizontal axis represents time in months relative to the birth month of the first child (marked by a dashed vertical line at month zero). The dashed vertical line at four months marks the approximate end of the federal paid maternity leave period. The dashed vertical line at eight months prior to birth represents the start of the period of employment during pregnancy that is needed to become eligible for the federal paid maternity leave if the woman did not work previously.

Figure 2a shows a share of female employment of almost 90% one year prior to giving birth.

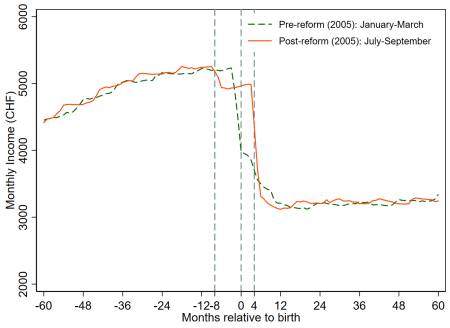
[22]We define women who receive federal maternity leave benefits (or maternity leave payments from their employer) as being in the labor force and employed. However, those on unpaid leave are considered being out of the labor force. We adopt this definition as we only observe income and the source, but not the effective labor market status (i.e., hours worked, paid and unpaid leave, being out of the labor market). We define as pre-birth employer the main employer of a women at 12 months prior to first birth.



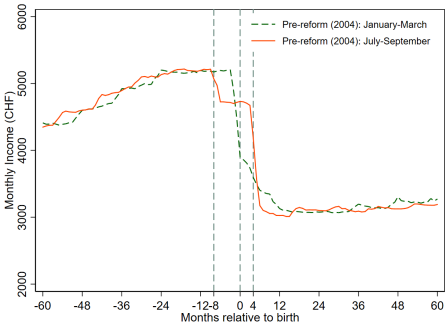
(a) Share Employed - 2005



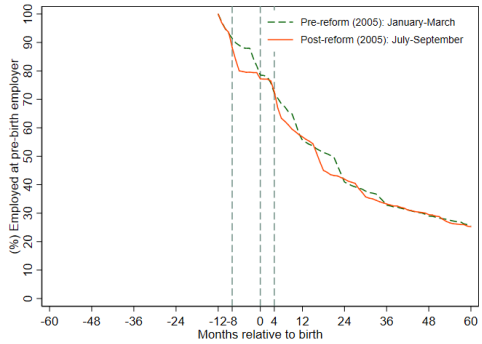
(b) Share Employed - 2004



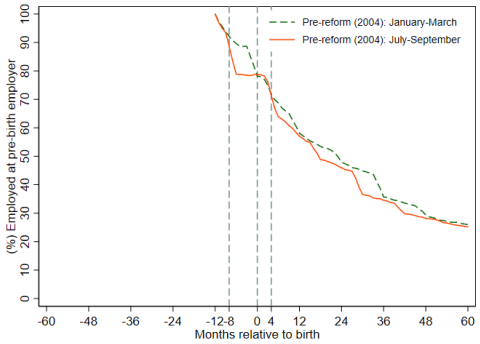
(c) Monthly Earnings - 2005



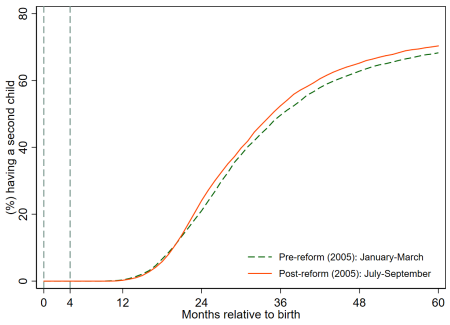
(d) Monthly Earnings - 2004



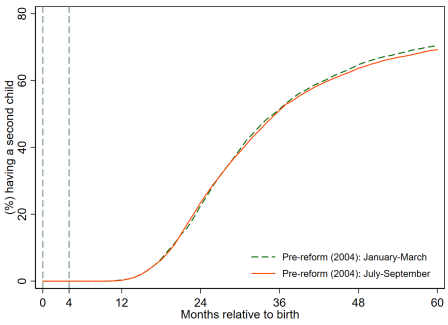
(e) Share Employed at Pre-Birth Employer - 2005



(f) Share Employed at Pre-Birth Employer - 2004



(g) Share with Second Child - 2005



(h) Share with Second Child - 2004

Notes: The figures of employment and fertility include all Swiss women. Employment at pre-birth employer (i.e., 12 months prior to the first birth) and monthly earnings are computed using the sample of employed Swiss women only. Women on paid maternity leave are classified as employed. Women on unpaid maternity leave are classified as out of the labor force.
Source: Authors' calculations using the merged data set.

Figure 2: Main Outcomes - All Swiss women

Employment declines to about 80% at the time of birth followed by a further drop, reaching a minimum at 60% four months after birth. It subsequently increases to about 70% within one year post-birth and remains fairly constant afterwards. The trend before birth is very similar for pre-reform and post-reform women. After birth, however, post-reform women are slightly more likely to be employed than pre-reform women during the four months following birth (a direct result of the federal maternity leave mandate) and in the three years following birth. For women who had their first child in 2004, the overall trends are similar (see Figure 2b).

Figures 2c and 2d present monthly earnings including maternity leave benefits of employed women. These earnings patterns could be interpreted as the intensive margin of labor supply, that is, the hours worked, if we assume that hourly wages remain constant over this period. The trends in earnings leading up to 12 months prior to birth, as well as earnings trends 12 months after birth are very similar not only across years, but also between pre-reform and post-reform women. Moreover, both year cohorts and groups of women see important drops in earnings - though at different times relative to birth. Women giving birth between January and March experience a sharp decrease in earnings in the three months leading up to birth, while earnings of women giving birth between July and September drop at seven months prior to birth (though to a smaller extent for the 2005 cohort) and four months after birth. These seasonal patterns are observed across both year cohorts and point towards strong end-of-year effects when working contracts are re-negotiated. Strong seasonal patterns are also apparent for the share of first-time mothers employed with their pre-birth employer (see Figures 2e and 2f).

Finally, Figures 2g and 2h depict the share of women who had a second child in the five years after the birth of their first child. Post-reform women in 2005 were slightly more likely to have a second child around 24 months after the birth of their first child than the pre-reform women in the same year. This difference is not merely a temporary gap but it remains (and slightly widens even) until the end of the five years analyzed. For women giving birth in 2004, we find no evidence of a difference across the two three-month periods (if anything, those giving birth between July and September are slightly less likely to have a second child).

Overall, the descriptive evidence points towards small to no changes in employment, strong

seasonal patterns, drops in earnings and job continuity both before and after birth, as well as slight differences in subsequent fertility.[23] The observed differences between the pre-reform and the post-reform women in 2005 could be the result of the federal maternity leave mandate or they could be caused by other factors. In the next section, we present the identification strategy which we use to pin down the causal effects of being covered by the federal maternity leave mandate for the first child.

4 Empirical Design

We employ a difference-in-differences design (similar to Lalive et al. (2013) and Schönberg and Ludsteck (2014)) to estimate the causal effects of the federal maternity leave mandate on first-time mothers' labor market outcomes and subsequent fertility. Our identification strategy hinges on comparing the outcomes of women who had their first child in a three-month period prior to the reform (1st January to 31st March 2005) with those who had their first child in a three-month period after the federal mandate became effective (1st July to 30th September 2005).[24] To isolate the causal effects of the federal mandate from seasonal differences across birth months, we use women who had their first child in the same three-month periods in the year preceding the reform, that is, 1st January to 31st March 2004 and 1st July to 30th September 2004, as the control group.

We estimate the following regression on all first-time mothers with Swiss nationality:

$$Y_{it} = \beta_{0t} + \beta_{1t} Reform_i + \beta_{2t} Months_i + \beta_{3t} Reform_i \times Months_i + x_i'\theta + \epsilon_{it}, \tag{1}$$

where i indexes women, and t indexes months relative to the first child's birth-month (t runs from 12 months before birth, to 60 or 108 months after birth in our main analyses). The binary variable $Reform_i$ is equal to one if mother i gave birth to her first child in the reform year 2005 and zero otherwise. $Months_i$ is a binary variable equal to one if mother i gave birth to her first

[23] Appendices B.A and B.B present further descriptive evidence on marital status changes and unemployment.

[24] While women who had their first child before 25th March 2005 were not exposed to the mandate at all, women who had their first child between 25th March and 31st March were partially treated and potentially eligible for one to six days of paid maternity leave. This is negligeable in comparison to the 98 days provided by the mandate and if anything, would only bias our estimates towards zero.

child between 1st July and 30th September, and zero otherwise. The interaction term between $Reform_i$ and $Months_i$ reports the difference in outcomes of exposed and non-exposed mothers in 2005 relative to the difference in outcomes of mothers who had their first child in the same months in 2004. The coefficient on the interaction term, i.e., β_{3t}, is the coefficient of interest as it identifies the causal effect of the federal maternity leave mandate on first-time mothers' outcomes in month t relative to the first child's month of birth. x_i' is a vector of individual characteristics of the mother including her age at birth and her pre-birth employment characteristics, such as cumulative work experience and cumulative income from six years to 12 months prior to birth.

For the dependent variable Y_{it}, we use different contemporaneous and cumulative labor market outcomes, as well as subsequent fertility of first-time mothers. The contemporaneous measures include labor force participation, share in employment, share in unemployment, real earnings from employment and share employed at pre-birth employer among employed mothers. The cumulative measures include the share ever returned to employment, cumulative months in employment post-birth, cumulative employment earnings post-birth (all since six months post-birth) and cumulative total earnings (including maternity leave benefits and other transfers) since nine months prior to the first birth. Finally, the share of women who had a second child measures subsequent fertility.

We estimate Equation 1 for different outcomes at different points in time relative to the month of birth of the first child indexed by subscript t. t equalling zero signifies the birth month of the first child for a woman i. Positive values indicate the months after birth for each woman i, while negative values indicate the months before birth. We estimate the equation for each outcome at 6, 12, and every 6 months until 60 months after birth (108 for subsequent fertility). Moreover, for labor market outcomes, we also report the estimation results for -12, -9, -6, -3 and -1 month prior to birth to uncover possible anticipatory effects of the mandate. For example, when we estimate Equation 1 for labor force participation at six months after birth, the coefficient β_{3t} reports the causal impact of the reform on labor force participation of mothers at six months after the birth of their first child.

There is one potential threat to our identification strategy and two caveats for interpreting the results. Selection into treatment through deferred fertility and timing of births, selection into

eligibility for the federal maternity leave policy, and the use of the 2004 cohort as a control group. The first threat, selection into our post-reform treatment group through timing of fertility and births, seems unlikely for three reasons. First, the implementation date of the reform on 1st July 2005 only became known on 24th November 2004. On this date, most (though not all) of the women in our post-reform group would have already conceived their child.[25] Secondly, we do not find any evidence of a significant change in the number of births between early July and end of September 2005 when compared to other years before the reform (see Section 2 for more details).[26] Finally, the sample of first-time mothers giving birth between January and March 2005 is very similar in terms of observed demographic and labor market characteristics to the sample of first-time mothers giving birth between July and September 2005. The observed differences in mothers' age at birth and the share married at birth are related to seasonal effects unrelated to the reform.[27]

While it is unlikely that post-reform women were able to time their births to invalidate our identification strategy, they could have affected their eligibility for the federal maternity leave prior to giving birth through increased labor force participation (extensive margin of labor supply) or by increasing (or not decreasing) the hours worked (intensive margin of labor supply). Thereby, they would qualify for higher maternity leave benefits, sice this is calculated based on average pre-birth earnings. To alleviate concerns about potential biases due to endogeneity of eligibility, we include all women who were exposed to the reform irrespective of whether they actually received maternity leave benefits. Therefore, we estimate an intent-to-treat effect. Moreover, we include some months prior to birth in the analysis, which allows us to quantify anticipatory effects along several dimensions.

The use of the preceding year as the control group is common in the literature (see Lalive et al. (2013) and Schönberg and Ludsteck (2014)), yet it is important to recognize that the causal effect we

[25]For the remaining women, one should bear in mind that only 30% of all couples conceive spontaneously within the first month of trying (Taylor (2003)).

[26]This does not preclude, however, selection into first-time fertility further away from the implementation date of the reform. In fact, changes in maternity leave benefits can have strong effects on first-order fertility as shown by Raute (2019) for a German reform in 2007.

[27]To formally test this we run the same DiD regression as described above using age at birth and marital status (i.e., a dummy indicator for being married) as dependent variables. The interaction coefficient of $Reform_i$ and $Months_i$ is not statistically significant at any convential level for either variable (results not shown). Figure B.1 in the Appendix presents the cumulative share of married women at any month relative to the birth of the first child who were single one year before birth.

identify relates to having been potentially covered by the *federal mandate for the first child* rather than the effect of the federal mandate per se. For all outcomes measured at 12 months or more after birth, the control group could also become eligible for paid maternity leave if they have another child. If the federal mandate has only temporary effects for the first child without any follow-on effects, we would not expect to see any significant effects beyond the 12-month threshold. For robustness, we also report the results using the 2003 cohort of first-time mothers as an alternative control group.

5 Results

We report the causal impact of the introduction of the federal paid maternity leave mandate on various contemporaneous labor market outcomes of first-time mothers as well as on their subsequent fertility. We also investigate the cumulative financial impact of the mandate. Our estimates always refer to all first-time mothers in the sample who were *exposed to the reform*, irrespective of their eligibility status or whether they actually received the mandated benefits. Therefore, our reported results should be interpreted as intention-to-treat estimates. We also conduct heterogeneity analyses by pre-birth earnings (Section 5.2) and child care availability (Section 5.3) to understand the factors and mechanisms driving the effects that we find. For all estimated effects of the mandate, we report the corresponding confidence intervals using robust standard errors.[28]

5.1 Employment, Earnings, Job Stability and Subsequent Fertility

Figure 3 depicts the estimated coefficient of interest at different times, that is, the coefficient β_{3t} from Equation 1. It captures the causal effect of being covered by the federal maternity leave mandate for the first child on mothers' labor market outcomes (Panels (a) to (c)), subsequent fertility (Panel (d)), and the cumulative financial impact (Panel (e)) at different months t relative to the first child's month of birth. Light and dark vertical lines indicate the 95% and 90% confidence

[28] Given that the policy implementation was universal and that our administrative data set covers the population of women in the reform year and control year cohorts, we rely on robust rather than clustered standard errors (see Abadie et al. (2017)). However, using clustered standard errors at the local labor market level (with more than 100 clusters) yields very similar results.

intervals respectively. Tables F.1 and F.4 in Appendix F present the corresponding estimated effects, with robust standard errors and p-values.

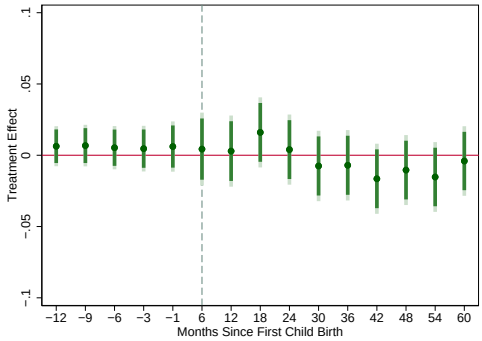
Overall, we do not find any significant effect of the federal mandate on employment prior to or after the birth of the first child (Figure 3(a)). Our results show a weak S-shaped pattern in employment with a moderate, positive employment effect of 1.6 percentage points at 18 months after birth followed by small, negative effects from 30 months onwards. None of these estimates are statistically significant. Our estimates on labor force participation and unemployment are quantitatively even smaller (see Figure C.1 in Appendix C).

While there seems to be little evidence that the federal mandate led to labor supply adjustments at the *extensive* margin prior to or after the birth of the first child, real earnings from employment reveal that the intensive margin was affected (Figure 3(b)). Our results show an increase in the real earnings of first-time mothers covered by the mandate, both before birth as well as after, though the later increase is much smaller.[29] Real earnings increase by more than 200 CHF at six, three and one months prior to birth. This corresponds to a 4% increase in real earnings for these months. We interpret these statistically significant estimates as anticipatory effects of the reform. Assuming constant hourly wages during this period, women who are likely to be covered by the federal leave mandate increase their hours worked (or decrease them less) than pre-reform women prior to giving birth and before the mandate is implemented. By doing so, they stand to qualify for higher maternity leave benefits, since this is calculated at a rate of 80% of pre-birth earnings. After birth, these earnings effects remain positive, but they are much smaller in size and are not statistically significant.

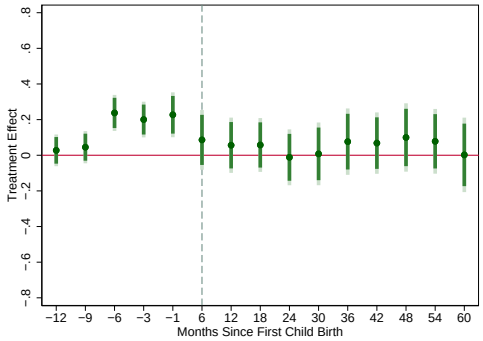
We also find moderate, positive effects in terms of job continuity.[30] Women exposed to the reform are slightly more likely to stay with their pre-birth employer during pregnancy and significantly more likely to be working for the same employer in the medium term after the birth of their first child (Figure 3(c)). This improvement in job continuity is closely related to the impact of the mandate on higher-order fertility, which will be discussed later.

[29] Earnings are adjusted for yearly inflation by using the CPI with base year 2010.

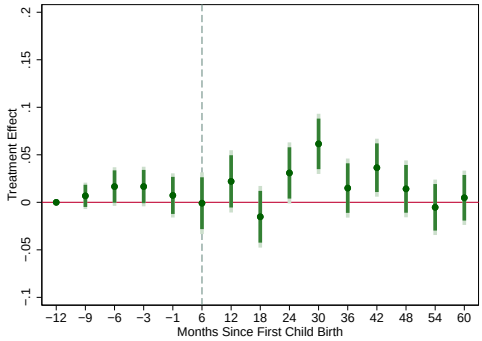
[30] We measure job continuity with an indicator variable that is equal to one if an employed woman in month t still works for the same employer as at 12 months prior to birth.



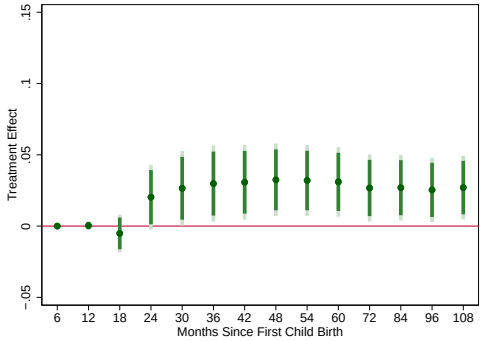
(a) Share Employed



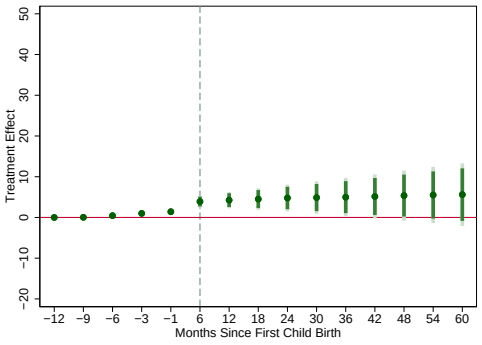
(b) Employment Earnings (in 1000s CHF)



(c) Share Employed at Pre-Birth Employer



(d) Share with Second Child



(e) Cumulative Total Earnings Since 9 Months Pre-Birth (in 1000s CHF)

Notes: Treatment effects identified by our DiD model for all Swiss women in our sample (unless otherwise noted). All regressions control for mothers' characteristics such as age at first birth, cumulative work experience and cumulative income from 6 six to 1 one year prior to first birth of first childbirth. Subfigure (a) shows the effects of the federal mandate on the share of women in employment at various points in time pre- and post-birth. Subfigures (b) and (c) relate to employed women. They show the effects on real earnings from employment and the share returning to their pre-birth employer (i.e., the main employer 12 months prior to birth). Subfigure (d) shows the effect on the share of women who had (at least) a second child up in the period up to 9 nine years after the birth of first birthchild. Subfigure (e) presents the cumulative total real earnings of all women (including earnings from employment, self-employment, maternity leave benefits, unemployment and other social insurance benefits) since nine months prior to the first birth (i.e., around the time of conception). All earnings are adjusted for inflation by using the CPI with base year 2010. Light vertical lines indicate the 95% per cent confidence intervals, the dark vertical lines indicate the 90% per cent confidence intervals. The dashed vertical line separates the time horizon into a pre-birth and post-birth period. Robust standard errors are used.

Figure 3: Results on Employment, Earnings and Subsequent Fertility

The most striking impact of the mandate is the significant and large effect on subsequent fertility (Figure 3(d)). Post-reform women are two percentage points more likely to have a second child following 24 months after the birth of the first. This fertility gap initially widens and then shrinks slightly over the next few years. In the long run, that is, in the nine years after the first child's birth, it still persists and stands at 2.7 percentage points (statistically significant at the 5% level). Given that around 70% of all first-time mothers have another child, this corresponds to an increase in subsequent fertility of almost 4%. The weak S-shaped pattern in employment and increased job stability post-birth are best understood in relation to the timing of the second child's birth. As discussed above, the share of employed mothers covered by the mandate increase 18 months after the first birth, most likely with the aim of achieving eligibility for maternity leave benefits for the second child. However, this effect is not statistically significant. Moreover, job continuity also increases around (and after) the second child's birth, only to dissipate in the long run.

The subsequent fertility effect is particularly interesting because pre-reform women could also become eligible for paid maternity leave for subsequent children, yet fewer of them go on to have a second child. To shed light on the cause of this result, we turn to the cumulative financial effect of the federal maternity leave mandate from nine months prior to the first child's birth until five years after. The financial impact measure adds up all earnings from employment, self-employment, maternity leave, unemployment and other social security benefits.[31] As shown in Figure 3(e), cumulative total earnings of women covered by the mandate are significantly higher during pregnancy, after the maternity leave ends, and in the medium run after the first birth. In the month prior to giving birth to their first child, women affected by the maternity leave mandate have accumulated 1,400 CHF more in total earnings, a statistically significant amount corresponding to approximately 30% of median monthly earnings from employment. These higher earnings are the combined result of slightly higher employment rates, marginally lower unemployment, an increase in the hours worked, and fewer job changes in the transition to parenthood as discussed above. Once

[31] Given the nature of the data, we cannot distinguish employment earnings from maternity leave earnings paid by the employer prior to the federal maternity leave mandate. Moreover, the mandate led to unemployment insurance benefits during the first 14 weeks after birth being displaced by maternity leave benefits. Hence, cumulative total earnings provide a more accurate measure of the total financial impact of the reform than a measure summing employment and maternity leave benefits only.

the first child turns six months old, the earnings gap caused by the mandate and its endogenous responses has widened to more than 3,900 CHF and it continues to grow, although less strongly, in the following months. By the time couples consider whether to have a second child, which is usually from when the first child is around one year old onwards, the women under the mandate have experienced a statistically significant and positive total financial impact of the reform, equivalent to around one month of median pre-birth earnings.

This total financial effect is the likely explanation of the higher subsequent fertility rates of first-time mothers affected by the reform compared to the control group mothers.[32] While both groups of mothers could become eligible for paid maternity leave for their second child, the post-reform mothers have more financial means at their disposal at this point in time and they have personally experienced the federal mandate, which could have led to a higher share of thse women having a second child.

5.2 Heterogeneity by Pre-Birth Earnings

Many women had access to employer-provided paid maternity leave prior to the federal maternity leave mandate. In this section, we investigate how the federal mandate differentially affected high- and low-earning employed women.[33]. We split our sample into two groups: first, those employed women with above-median earnings one year prior to the birth of their first child (high pre-birth earnings) and second, those employed with below-median earnings (low pre-birth earnings). We exclude women not in the labor force one year prior to the birth of their first child. As argued in Section 2, the exposure to the policy change differed across these two groups. The low-earning

[32]Other cumulative post-birth labor market outcomes are not statistically different between the control and policy-exposed groups of women (see Figure C.1 in Appendix C). Subsequent fertility could increase through higher marital stability. In our data, marital stability is not affected by the maternity leave mandate, and Avdic and Karimi (2018) show that parental leave taken by fathers decreases marital stability. Marital stability does not explain higher subsequent fertility, but an alternative mechanism could be an improvement in maternal health due to the mandated leave. Bütikofer et al. (2021) find evidence of improved maternal health (even in absence of income effects) as a result of the introduction of 18 weeks of paid maternity leave in Norway in 1977. We cannot investigate the role of this alternative mechanism - and how it affects subsequent fertility - due to a lack of health data.

[33]Given that eligibility for employer-provided paid maternity leave was often also contingent on tenure, an alternative split would be to consider women by different levels of tenure with their employer (or firm-specific human capital) one year prior to childbirth. We show these results in Appendix D Generally, the heterogeneity results by tenure are very similar to what is found below for different levels of pre-birth earnings. This is in spite of only weak positive correlation between pre-birth earning levels and tenure (0.14).

group was more directly affected with many women receiving paid maternity leave benefits for the first time. For high-earning women, the direct exposure to the policy change was arguably smaller, yet the employers of these high-earning women saw their costs related to maternity leave payments decrease as a result of the federal mandate. Therefore, we expect different effects for these two groups of first-time mothers.[34]

Generally, women with above-median pre-birth earnings show similar qualitative responses to the federal maternity leave mandate as those with below-median pre-birth earnings (see Figure 5 Columns A and B, respectively) but some notable differences also emerge.

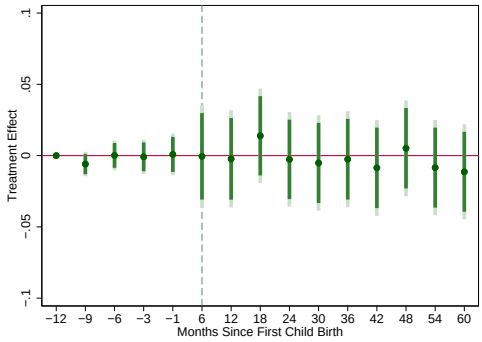
For both low- and high-earning women exposed to the mandate, we find anticipatory effects at the intensive margin of labor supply through increased earnings prior to birth. Women with low pre-birth earnings earned around 110 to 150 CHF more per month, while among high-earning women it was 220 to 280 CHF per month. While quantitatively different, the relative increase of almost 4% was similar for both groups.[35] There are further anticipatory responses by both groups of women. Low-earning women are significantly more likely to be employed, by 1.7 percentage point at nine months prior to birth than women in the control cohort, while high-earning women exposed to the mandate are significantly more likely to stay with their pre-birth employer during pregnancy.

Low-earning women experienced an increase in job stability of 5.3 percentage points at 24 months post-birth and 11.1 percentage points at 30 months post-birth. For high-earning women, this impact is smaller, only 4.1 percentage points, and takes effect 42 months post-birth. The larger impact on job continuity of low-earning women is not surprising since many high-earning women already had access to paid maternity leave and therefore, their return to the same employer is less likely to have been affected by the mandate. Nevertheless, since the reform affected the timing of second-order fertility of low- and high-earning women differently (see below), any observed differences in the labor market outcomes between these two groups in the medium run is a compositional

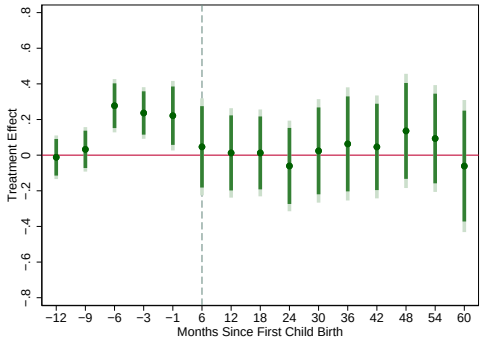
[34]Even if the treatment had been the same, these two groups of women would still have reacted differently due to differences in the opportunity cost of staying out of the labor force, financial means and constraints, preferences, norms, and other factors. See Table B.1 in the Appendix for descriptive statistics for low- and high-earning first-time mothers before and after the mandate's introduction in 2005.

[35]Mean income of low-earning women was around 3,400 CHF one year prior to birth compared to 7,000 CHF for high-earning women (see Table B.1 in the Appendix).

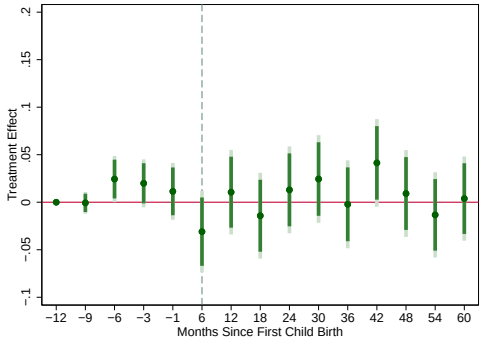
Column A. High Previous Earnings



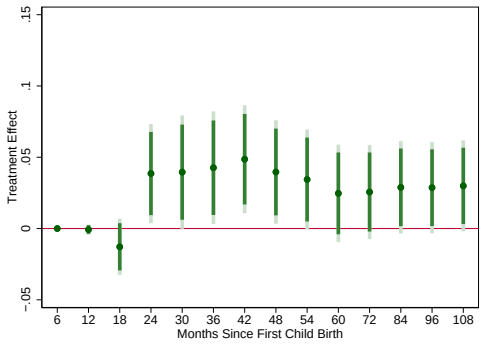
(a) Share Employed



(c) Employment Earnings (in 1000s CHF)

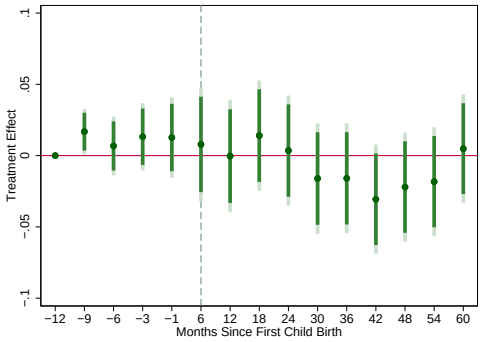


(e) Share Employed at Pre-Birth Employer

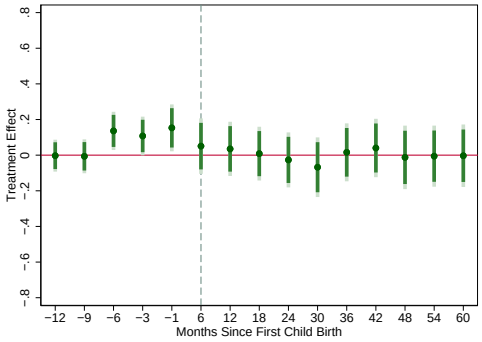


(g) Share with Second Child

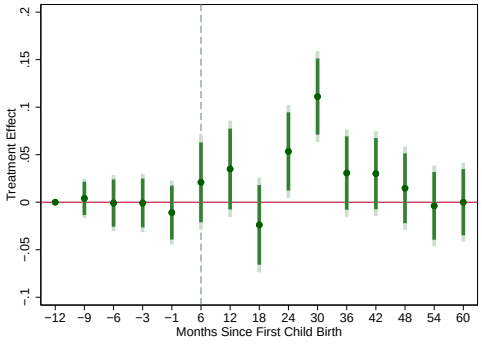
Column B. Low Previous Earnings



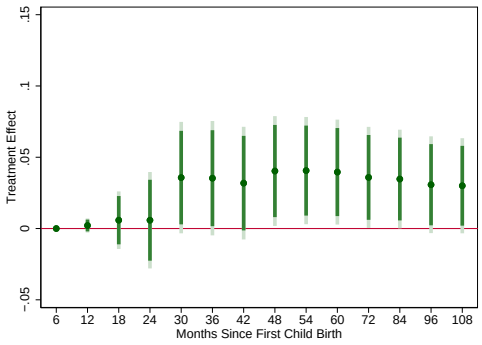
(b) Share Employed



(d) Employment Earnings (in 1000s CHF)



(f) Share Employed at Pre-Birth Employer



(h) Share with Second Child

Notes: This figure shows the treatment effects by level of employment earnings one year before birth on contemporaneous outcomes. All regressions control for mothers' characteristics such as age at first birth, cumulative work experience and cumulative income from six to one year prior to birth of first child. Figures in the left column (Panel A) show the effects for those women who earned above median earnings one year prior to birth while figures in the right column (Panel B) show the same effects for women who earned below median earnings one year before birth. Light vertical lines indicate the 95% confidence intervals, the dark vertical lines indicate the 90% confidence intervals (both based on robust standard errors). The dashed vertical line separates the time horizon into a pre-birth and post-birth period.

Figure 5: Heterogeneneous Effects by Pre-Birth Earnings

impact and needs to be interpreted cautiously.

In spite of being short compared to maternity leave mandates in other countries, the Swiss mandate significantly increased subsequent fertility among both groups of first-time mothers in the medium and long run, that is, up to nine years after the birth of the first child. While the long run quantitative effect of around three additional children per 100 women is similar for both low- and high-earning women, the timing and relative importance differs slightly. For high-earning women the fertility gap opens at 24 months after the first child, with some initial deferral as evidenced by a slight drop at 18 months, while for low-earning women the gap kicks in a bit later, at 30 months.[36]

The strong subsequent fertility effect seen for high-earning women is surprising, since many of these women likely already had access to employer-provided paid maternity leave prior to the reform and so, should not experience a large income effect from the mandate. However, as our results in Figure C.3 (Panel (c)) in Appendix C show, both high- and low-earning women covered by the federal mandate saw their cumulative total earnings, including transfers from maternity leave, increase during pregnancy and after birth. For example, one year after the birth of their first child, post-reform women have accumulated around 3,700 to 4,000 CHF more in total earnings. While for low-earning women, this is an expected direct result of the federal mandate of these previously mostly uncovered women, which therefore represents a larger relative treatment,[37] for high-earning women, this result arises from slightly increased earnings during pregnancy (Panels (b) in Figure 5) as well as the improved maternity leave coverage by the federal mandate for some of these women in terms of duration or benefit level or both. The overall income effect of the reform is the likely channel for the observed higher subsequent fertility. Five years after the birth of the first child, the cumulative total earnings effect (see Figure C.3 in Appendix C) as well as improved job continuity with the pre-birth employer has largely dissipated for both low- and high-earning women.

[36] Prior to the reform, 78% of low-earning women had a second child within nine years, whereas the share amounted to 76% among high-earning women.

[37] Comparing cumulative earnings at six months after birth with those at one month prior to birth shows that the mandate increased total earnings by 2,800 CHF for low-earning women and by 2,000 CHF for high-earnings women.

5.3 Heterogeneity by Child Care Availability

One key determinant of mother's post-birth labor market and fertility outcomes is the availability of child care services when maternity leave ends (Olivetti and Petrongolo (2017)). As a result, we expect to see significant complementarities from the interaction between policies relating to maternity leave and child care. Such interaction effects may be particularly important in a context like Switzerland where the demand for child care services far exceeds its supply (Bundesamt für Sozialversicherungen (2006)).[38] We investigate how these two policy instruments interact by comparing the effects of the federal maternity leave mandate among women living in cantons with high child care availability with those in cantons with low availability. To do so, we use the cantonal child care availability index of Ravazzini (2018). This index measures the number of places for children aged 0 to 3 years in all recognized private and public child care facilities of a canton relative to the population of young children. We define high child care availability when more than 10 places per 100 children aged 0 to 3 years were available in the canton in 2002, and low child care availability if the index is below 10 places per 100 children. If the federal maternity leave mandate has a positive, medium run impact on labor market outcomes, we would expect it to be stronger where child care places are relatively more abundant.[39]

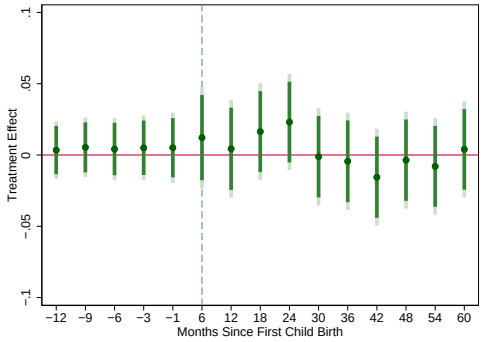
Women living in cantons with high child care availability (Column A in Figure 6) generally reacted more strongly to the federal maternity leave mandate than those in cantons with low availability (Column B in Figure 6). The difference is particularly notable for the mandate's impact on subsequent fertility. Women living in cantons with more child care places showed a strong and statistically significant subsequent fertility response of around four percentage points from two years post-birth onwards, while the effect was much weaker at two percentage points (and not statistically significant) among the group of women living in cantons with lower child care availability. This strong finding on subsequent fertility is surprising. The women in high child care cantons are characterized by a stronger attachment to the labor market, in terms of employment

[38] Krapf et al. (2020) study the effect of child care availability on child penalties across municipalities in the canton of Bern in Switzerland from 2005 to 2015. They find that the presence of child care facilities increases female earnings (and decreases the compensating increase in male earnings) in the first year after a child's birth among below median earning households.

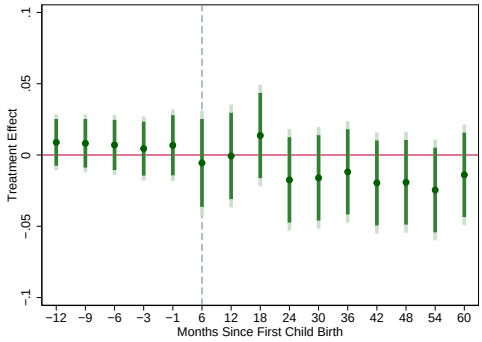
[39] Table B.2 in the Appendix presents descriptive statistics on how first-time mothers in high child care cantons differ from those in low child care cantons before and after the mandate came into effect.

A. High Child Care Availability (left column)

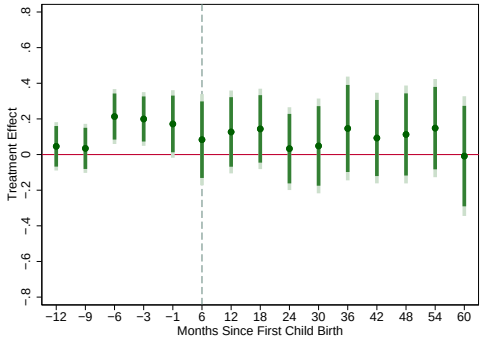
B. Low Child Care Availability (right column)



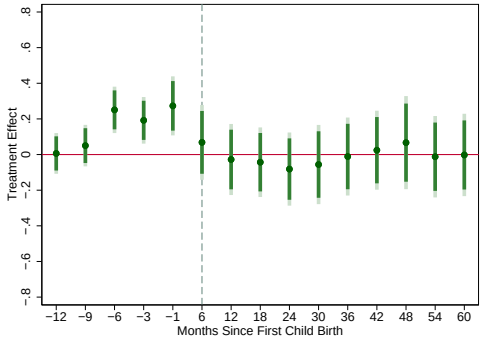
(a) Share Employed



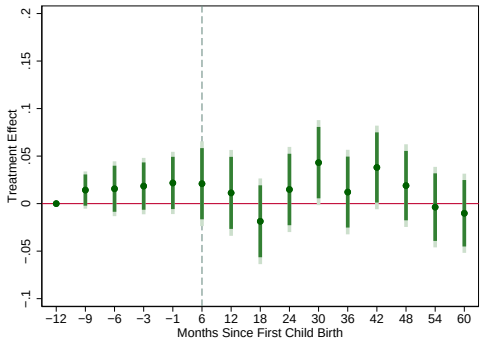
(b) Share Employed



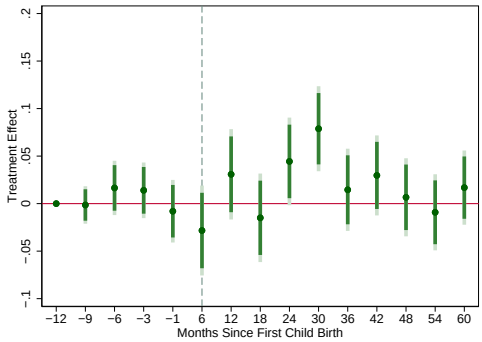
(c) Employment Earnings (in 1000s CHF)



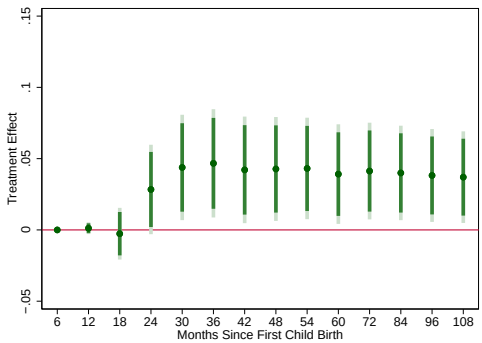
(d) Employment Earnings (in 1000s CHF)



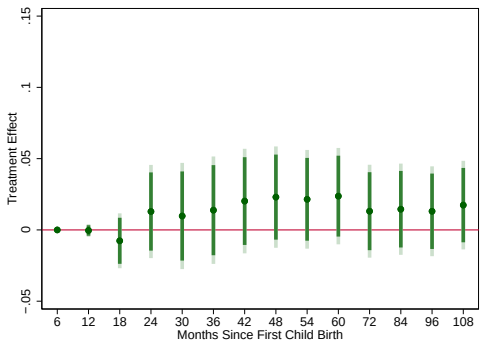
(e) Share Employed at Pre-Birth Employer



(f) Share Employed at Pre-Birth Employer



(g) Share with Second Child



(h) Share with Second Child

Notes: This figure shows the treatment effects for women according to the availability of child care places in the canton of residence for children aged 0 to 3 years in 2002. All regressions control for mothers' characteristics such as age at first birth, cumulative work experience and cumulative income from six to one year prior to birth of first child. We distinguish cantons by whether they offer above or below median number of child care places in the year 2002 (i.e., 10 places and more per 100 children corresponds to above-median, while below 10 places per 100 children corresponds to below-median child care availability). Light vertical lines indicate the 95% confidence intervals, the dark vertical lines indicate the 90% confidence intervals. The dashed vertical line separates the time horizon into a pre-birth and post-birth period. Robust standard errors are used.

Figure 6: Heterogeneous Effects by Child Care Availability

and hours worked as proxied by earnings, and hence, would face a higher opportunity cost of having another child. Women living in high-child care cantons were also slightly more likely to be employed and saw their monthly post-birth employment earnings increase by 100 to 250 CHF post-birth as a result of the mandate, though none of these effects are found to be statistically significant.

Women living in cantons with low child care availability, in contrast, showed slightly stronger anticipatory effects in terms of earnings prior to birth and attachment to their pre-birth employer around 24 to 30 months after the birth of the first child, which is for many women around the birth of their second child.

In terms of the cumulative financial impact of the mandate (see Figure C.4 in Appendix C), we find similar effects of the mandate six months after the birth of the first child in both low- and high-child care cantons. However, while this cumulative financial impact dwindles away in low-child care cantons over the following months, it continues to grow and remains statistically significant in high-child care cantons.

All in all, our estimation results point towards an important complementarity between maternity leave policies and the availability of formal child care for very young children. Unless child care is widely available for children below three years of age, little impact of maternity leave reforms should be expected beyond the duration of the maternity leave itself. However, if child care is sufficiently available, a maternity leave mandate could have some small labor market effects in the medium run, and persistent and large effects on subsequent fertility.[40]

5.4 Robustness

In our main specification, we use as the control group those women who had their first child in the same three-month periods in the year preceding the reform, which is the year 2004. This implies that for all coefficients estimated at 12 months and later relative to the first birth, the control group women would have also been eligible for paid maternity leave for subsequent children. This could raise concerns regarding the interpretation of estimated effects at 12 months and later relative to the first birth.

[40] Additional analyses on the interaction between pre-birth earnings and child care availability in the canton of residence at birth reveal similar patterns. These figures are available upon request.

In Appendix E, we thus present the same regression analyses as shown before, but using the 2003 cohort of women as the control group. Our robustness analyses reveal very similar patterns as in our previously presented results, indicating that our results are generally robust to the choice of the control group. For some outcome variables, however, the significance level changes slightly. For example, the effect on the cumulative total employment earnings post-birth is now statistically significant at the 5% level up to 24 months post-birth, while the effect on the share with a second child among high-earning women is not statistically significant anymore at the 10% level. Our preferred specification remains the one with the 2004 cohort of first-time mothers as the control group since the common trend assumption is more likely to hold than for the 2003 cohort.

6 Conclusion

In this paper, we evaluate the impact of the first federal mandate providing paid maternity leave in Switzerland on various labor market outcomes and subsequent fertility of women who had their first child just after the mandate was introduced. To do so, we use a rich administrative dataset and employ a difference-in-differences approach. The mandate provides women with 14 weeks of paid maternity leave at 80% of their pre-birth wages, subject to a ceiling cap, and also offers job protection during pregnancy and for 16 weeks after birth. Before this mandate was introduced, it was mainly high-earning women, especially those employed in public administration and in large firms, who had access to paid maternity leave through their employer. The mandate, therefore, extended coverage to all employed and self-employed women fulfilling certain eligibility criteria and defined a minimum level of benefits. Hence, many low-earning women had access to paid maternity leave for the first time, and firms that already offered paid maternity leave saw reduced labor costs.

First, the mandate had some small, positive effects on employment, job continuity with the pre-birth employer, and real earnings in the medium run. However, all labor market effects dissipate in the long run. Women who had lower pre-birth earnings and who remain employed are significantly more likely to work for their pre-birth employer at 24 to 30 months after the birth of their first child. However, most post-birth labor market outcomes do not differ substantially between low- and high-earning women despite their differential treatment given that many high-earning women

were more likely to have had access to employer-financed paid maternity leave prior to the mandate. Our results on similar effects of the mandate on women with different levels of pre-birth earnings challenge the common finding that universal paid maternity leave benefits less advantaged women more (Olivetti and Petrongolo (2017); Broadway et al. (2020)). In a context where a public mandate supersedes private employer-provided maternity leave insurance, firms benefit from reduced maternity leave costs, which could in turn trickle down to female workers through increased job continuity, increased overall earnings, and, as a result, higher subsequent fertility. This insight is particularly relevant in a context such as the U.S., where the introduction of a federal paid family leave mandate is currently being debated (Bartel et al. (2021)).

Second, we find sizeable anticipatory effects prior to birth. These include increased earnings for all women in the last six months of pregnancy, which likely reflect a relative increase in hours worked, higher employment rates among low-earning women, and higher job continuity among high-earning women. We find no such anticipatory effects at the extensive margin, that is, on employment, for high-earning women. In addition, the medium run employment effects discussed previously, starting from 18 months after the birth of the first child, could be interpreted as anticipatory effects for a potential second child. Our dynamic analysis of the mandate's impact in anticipation of birth, as well as in the medium and long run after birth sheds light on the relationship between subsequent fertility responses and the corresponding behavioral adjustments in the labor market. Moreover, the large and significant anticipatory effects in terms of increased earnings prior to birth indicate that any future studies should include the pre-birth period to capture the overall impact of similar reforms. Comparing only post-birth outcomes would probably underestimate the full impact of such mandates.

Third, we find a strong and significant impact of the mandate on subsequent fertility. Starting from three years after the birth of their first child, women affected by the reform were three percentage points more likely to have a second child. This sizeable effect persists even in the long run, up to at least nine years after the first child's birth. Overall, we find similar quantitative effects on subsequent fertility as reported by Lalive and Zweimüller (2009) for the Austrian reform in 1991, which extended maternity leave from one to two years. This result is interesting since their paper

studies an extension of a *long* maternity leave with *moderate benefits*[41], while our findings result from an introduction of a *short* maternity leave mandate with *high benefits*. This suggests an income effect as the driving force behind these fertility results. Our estimated subsequent fertility effect is likely to be an underestimate of the overall fertility effect. As shown by Raute (2019), extensions in maternity leave payments also increase first-order fertility and hence, one would expect an even larger overall fertility effect in Switzerland.

Finally, our analysis reveals a complementarity between the maternity leave mandate and the availability of child care for very young children. In cantons with higher child care availability, the mandate had stronger effects on employment, cumulative total earnings and subsequent fertility. We also estimate a small, positive impact on employment earnings post-birth in high-child care cantons, although these effects are not precisely estimated. Our findings on the complementarity between paid maternity leave and availability of child care, in particular for subsequent fertility, suggest that these two important family policy tools should not be studied and implemented separately.[42] This novel result warrants further attention both from researchers as well as policy makers to improve the work-life balance of families around the globe.

[41]The Austrian maternity leave mandate paid a benefit of 340 euros per month, which corresponds to 31% of median gross female earnings according to Lalive and Zweimüller (2009).

[42]Our results stand in contrast to those of Kleven et al. (2020) for Austria where the authors cannot find any interaction effects between parental leave and child care provision in Austria on gender earnings gaps. Malkova (2018) finds large fertility effects of paid maternity leave in Soviet Russia and mentions the availability of widespread and affordable preschool care for children of all ages at the same time.

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A Appendix: SESAM data

We complement our empirical analysis by drawing from the Social Protection and labor Market (SESAM) survey in Switzerland for the years 2004 to 2008. SESAM is a matched panel data set linking the Swiss labor Force Survey (SLFS) with data from different social insurance registers. The SLFS is a nationally representative, rotating household panel that offers a rich set of information on household composition, as well as sociodemographic and labor market characteristics of one (main) individual of the household. It includes survey questions about education, tenure, part-time work and childcare. This information is not available in the administrative data set that we use for the main analysis. However, it is invaluable for understanding the mechanisms behind our results.

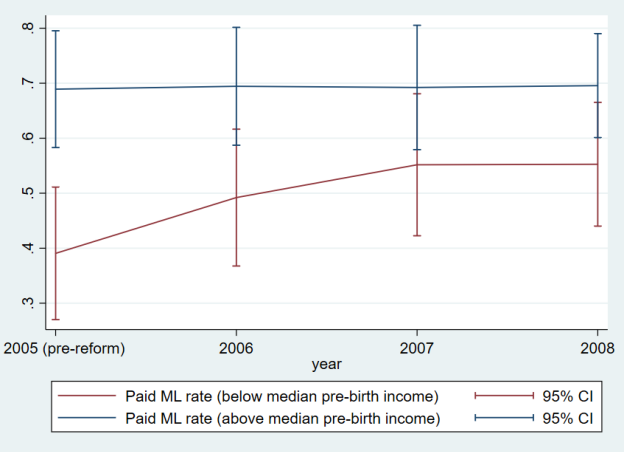
Each individual remains in the SESAM panel for five years or less. During our sample period the survey was run on a yearly basis in the second quarter (i.e., between April and June every year). The analysis in this paper relies on a sample of women who have a child in their household below one year old in the second quarter, who do not have another child in the household below 18 years and who have not previously had children in the household. We denote this sample of women as *first-time mothers* and believe that they are comparable to our sample used in the main analysis. In total, we have a cross-section of 902 *first-time mothers* in our SESAM sample who were interviewed in years 2005 to 2009.[43] As the survey was conducted in the second quarter of each year, we can interpret the data from year 2005 as *pre-reform* data points whereas years 2006 to 2008 reflect *post-reform*.

Figure A.1 presents descriptive evidence on paid maternity leave from the SESAM data set using a pooled cross-section of *first-time mothers* (i.e., mothers with a first child younger than 1 year old) who were working in the second quarter of years 2005 to 2008. We split the sample by mothers' pre-birth income (i.e., below or above the median pre-birth income).

Figure A.1 illustrates the differential impact of the mandated maternity leave reform on women across different pre-birth income levels.[44] The federal mandate sharply increased the maternity leave coverage of first-time mothers with below-median past earnings not only from before the reform in 2005 until the 2006 (by 10pp), but even in 2007 (by another 6pp). This second increase could be explained by ongoing

[43] Because we use the household status and earnings prior to a child aged zero appearing in a household, we only observe *first-time mothers* from 2005 onwards.

[44] The sample includes all employed first-time mothers irrespective of their eligibility status. The eligibility status cannot be verified in the SESAM data set. This could explain why the share of first-time mothers with paid maternity leave hovers around only 70% even after the reform. The information about paid maternity leave is only available among women who were employed at the time of the interview. Therefore, while the level of *paid maternity leave* is not representative of all women, we can still rely on and meaningfully interpret the *differences* over time as the share of out-of-the labor force has remained constant over the years (not shown).



Notes: Share with paid maternity leave in the past 12 months among employed first-time mothers by pre-birth income level.
Source: Authors' calculations using SESAM data set.

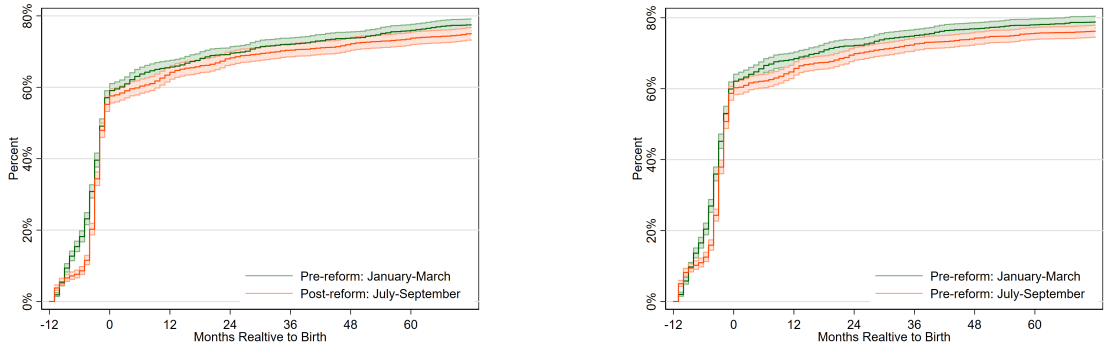
Figure A.1: First-time mothers on paid maternity leave 2005-2008

increased eligibility of women with low pre-birth incomes (i.e., behavioural adjustments after the reform of these women by not dropping out of the labor force prior to birth in order to accumulate the required months of work experience).

B Further Descriptive Evidence

Appendix B.A Descriptive Evidence on Changes in Marital Status

Figure B.1 presents the cumulative share of women (and its 95% confidence interval) who had been single one year prior to birth and were married in month t relative to the birth of their first child. The difference in marriage rates prior to birth observed between the pre-reform and post-reform mothers in 2005 are also apparent for the 2004 cohort. This suggest the presence of strong seasonal effects.



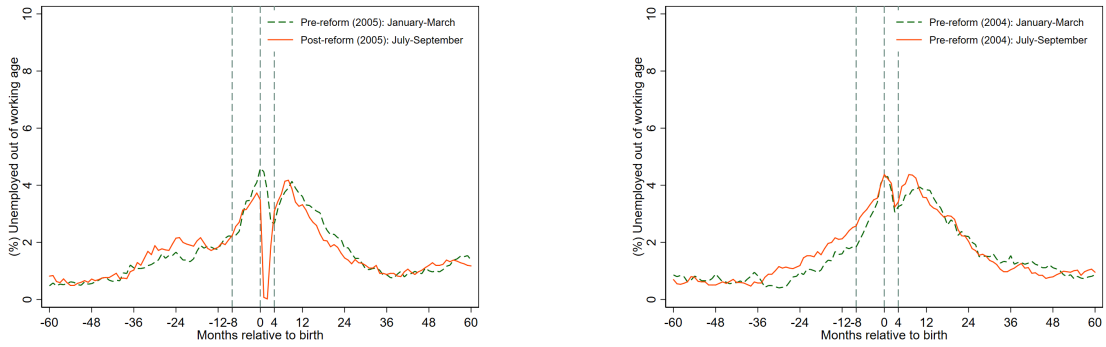
(a) July-September Treated - 2005

(b) July-September Treated - 2004

Figure B.1: Single one year before birth to married

Appendix B.B Descriptive Evidence on Unemployment

Figure B.2 provides descriptive evidence on the dynamics of unemployment in a 10-year window around the birth of the first child. It plots unemployment of pre-reform (dashed line) and post-reform women (bold line). The first column shows the outcomes for pre- and post-reform women who had a child in year 2005. The second column shows the same outcomes for women who had a child in the same two three-month periods in year 2004.



(a) Share Unemployed - 2005 (b) Share Unemployed - 2004

Notes: The figures of unemployment include all Swiss women. Monthly earnings are computed using the sample of employed Swiss women only. Women on paid maternity leave are classified as employed. Women on unpaid maternity leave are classified as out of the labour force.
Source: Authors' calculations using the merged data set.

Figure B.2: Unemployment - All Swiss women in sample

Figures B.2a and B.2b reveal hump-shaped unemployment rates around the time of giving birth both in 2004 and 2005. Generally, unemployment increases until birth (doubling from below 2 per cent 12 months prior to birth), plateaues until 12 months after birth and then decreases within another 12 months almost to its pre-birth level. For post-reform women in 2005 we observe virtually no unemployment in the four months following birth, a direct result of the implementation of the federal maternity leave mandate which also covers unemployed women as long as they are fulfilling the labour force eligibility criteria. For these women the difference is insofar important as paid maternity leave comes without obligations and does not require a minimum number of applications to remain eligible in contrast to unemployment insurance.

Appendix B.C Descriptive Statistics by Previous Earnings

Table B.1 presents descriptive statistics on first-time mothers with below-median and above-median earnings one year prior to childbirth before and after the maternity leave mandate came into effect in 2005.

Table B.1: Descriptive statistics by pre-birth income

	High-income		Low-income	
	Jan-March05	Jul-Sept05	Jan-March05	Jul-Sept05
A. Demographics				
Age at First Birth	32.385	31.939	29.192	28.640
	0.084	0.079	0.106	0.101
Age First Observed	18.690	18.600	18.739	18.718
	0.040	0.034	0.050	0.048
Married	0.818	0.818	0.736	0.762
	0.008	0.008	0.009	0.009
B. Labor market history				
Monthly income from employment (CHF) 12m prior to first birth	7093.068	7005.213	3381.914	3419.138
	53.037	57.853	28.130	27.147
Cum. experience (months) from 6y to 12m prior to first birth	57.076	57.359	51.127	51.510
	0.176	0.157	0.305	0.294
C. Eligibility and treatment				
Eligible	0.972	0.979	0.886	0.889
	0.003	0.003	0.007	0.006
Received federal paid maternity leave	0.000	0.892	0.000	0.843
	0.000	0.006	0.000	0.008
Received federal paid maternity leave among eligible	0.000	0.899	0.000	0.898
	0.000	0.006	0.000	0.007
Observations	2,229	2,435	2,261	2,345

Mothers who had their first child between January and March in 2005 were not affected by the mandate and those who had their first child between July-September in 2005 are classified as after the mandate. Standard errors are in parentheses. We distinguish women by their earnings level 12 months prior to birth (i.e., below or above median pre-birth earnings).

Appendix B.D Descriptive Statistics by Child Care Availability

Table B.2 presents descriptive statistics on first-time mothers living in low- and high-child care availability cantons before and after the mandate came into effect. Low-child care availability cantons offered below 10 places per 100 children aged 0 to 3 in year 2002, while high child care cantons offered 10 places and more per 100 children.

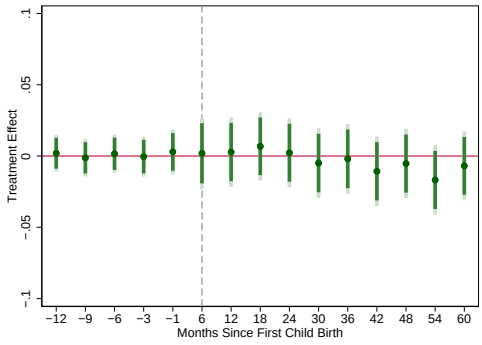
Table B.2: Descriptive Statistics by Child Care Availability

	High child care availability		Low child care availability	
	Jan-March05	Jul-Sept05	Jan-March05	Jul-Sept05
A. Demographics				
Age at First Birth	30.771	30.193	30.240	29.833
	0.101	0.096	0.100	0.097
Age First Observed	18.865	18.846	18.650	18.571
	0.048	0.048	0.042	0.036
Married	0.762	0.785	0.766	0.766
	0.008	0.008	0.008	0.008
B. Labor market history				
In LF 12 months prior to birth	0.903	0.909	0.903	0.915
	0.006	0.005	0.006	0.005
Employed 12 months prior to birth	0.979	0.979	0.982	0.981
	0.003	0.003	0.003	0.003
Monthly income from employment (CHF) 12m prior to first birth	5502.620	5447.484	4948.381	5029.935
	65.417	61.798	48.101	54.503
Cum. experience (months) from 6y to 12m prior to first birth	50.386	50.622	51.044	51.599
	0.333	0.317	0.327	0.317
C. Eligibility and treatment				
Eligible	0.847	0.849	0.835	0.857
	0.007	0.007	0.007	0.007
Received federal paid maternity leave	0.000	0.799	0.000	0.817
	0.000	0.008	0.000	0.008
Received federal paid maternity leave among eligible	0.000	0.890	0.000	0.902
	0.000	0.007	0.000	0.006
Observations	2,529	2,740	2,544	2,622

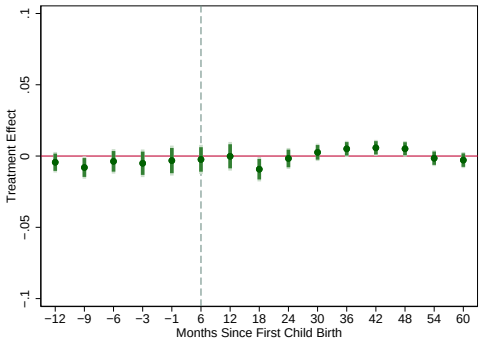
Mothers who had their first child between January and March in 2005 were not affected by the mandate and those who had their first child between July-September in 2005 are classified as after the mandate. Standard errors are in parentheses. We distinguish women by their canton of residence. Low child care availability cantons offered below 10 places per 100 children aged 0 to 3 in year 2002, while high child care cantons offered 10 places and more per 100 children.

C Additional estimation results

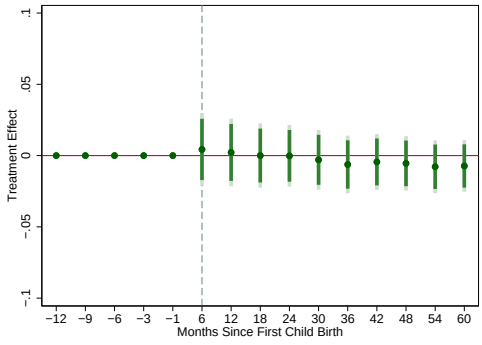
This section presents additional estimation results on contemporaneous and cumulative outcomes which have not been included in the main text.



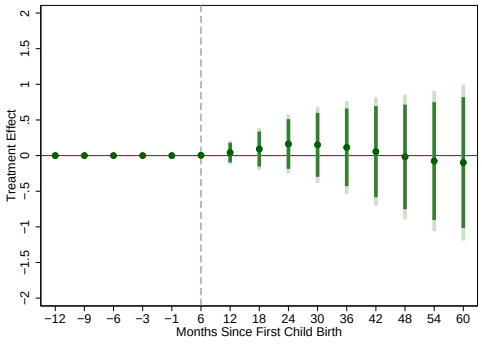
(a) Labor Force



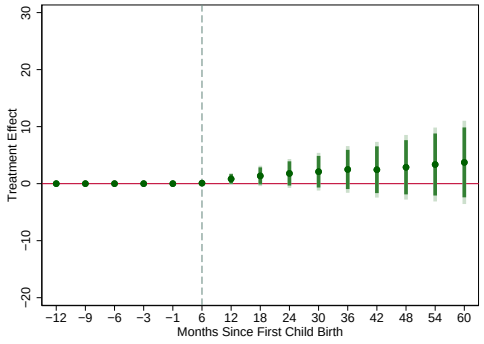
(b) Share Unemployed



(c) Ever Returned to Employment Post-Birth



(d) Cumulative Employment Post-Birth (in months)

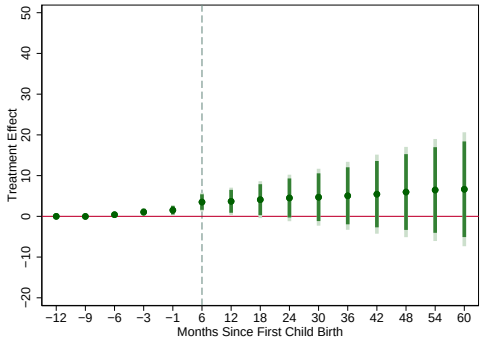


(e) Cumulative Employment Earnings Post-Birth (in 1000s CHF)

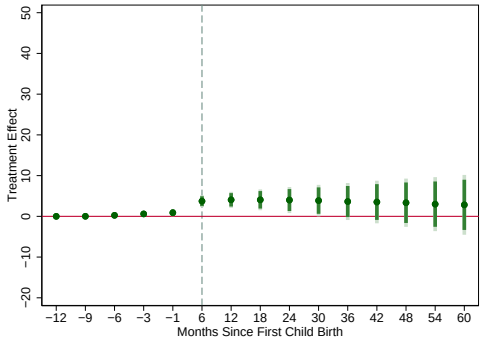
Notes: Treatment effects identified by our DiD model for all Swiss women in our sample. Subfigures (a) and (b) show the effects of the federal mandate on the share of women in the labor force and unemployment at various points in time pre- and post-birth. Subfigures (c) to (e) show the effects of the federal mandate on the share of women who ever returned to employment after birth, cumulative months employed and cumulative real employment earnings of employed women since 6 months after the first birth.Light vertical lines indicate the 95 per cent confidence intervals, the dark vertical lines indicate the 90 per cent confidence intervals. The dashed vertical line separates the time horizon into a pre-birth and post-birth period. Robust standard errors are used.

Figure C.1: Further Results on Labor Market Outcomes

Column A. High Previous Earnings



Column B. Low Previous Earnings



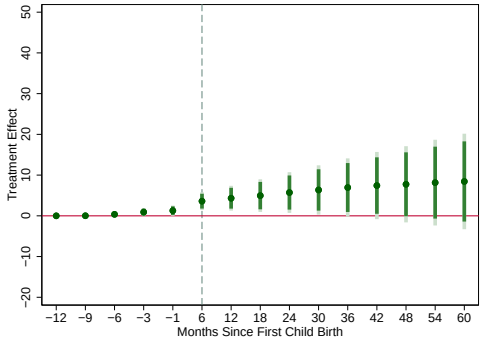
(a) Cumulative Total Earnings Since 9 Months Pre-Birth (in 1000s CHF)

(b) Cumulative Total Earnings Since 9 Months Pre-Birth (in 1000s CHF)

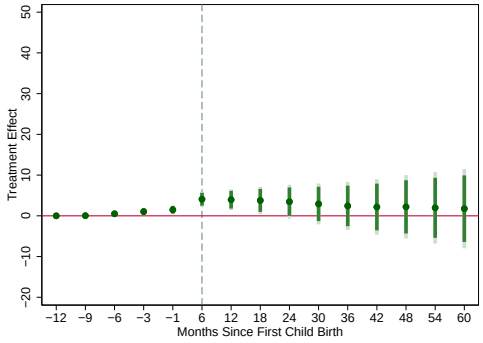
Notes: This figure shows the treatment effects by level of employments earnings one year before birth on cumulative total earnings. Figures in the left column (Panel A) show the effects for those women who earned above median earnings one year prior to birth, while figures in the right column (Panel B) show the same effects for women who earned below median earnings one year before birth. Light vertical lines indicate the 95% confidence intervals, the dark vertical lines indicate the 90% confidence intervals. The dashed vertical line separates the time horizon into a pre-birth and post-birth period. Robust standard errors are used.

Figure C.3: Heterogeneity by Previous Earnings: Cumulative Effects

Column A. High Child Care Availability



Column B. Low Child Care Availability



(a) Cumulative Total Earnings Since 9 Months Pre-Birth (in 1000s CHF)

(b) Cumulative Total Earnings Since 9 Months Pre-Birth (in 1000s CHF)

Notes: This figure shows the treatment effects for women according to the availability of childcare places for children aged 0 to 3 years in the canton of residence. We distinguish cantons by whether they offer above (Figures in left column, Panel A) or below median (Figures in right column, Panel B) number of childcare places in the year 2002 (i.e., 10 places and more per 100 children corresponds to above-median, below 10 places per 100 children corresponds to below-median childcare availability). Light vertical lines indicate the 95% confidence intervals, the dark vertical lines indicate the 90% confidence intervals. The dashed vertical line separates the time horizon into a pre-birth and post-birth period. Robust standard errors are used.

Figure C.4: Heterogeneity by Child Care Availability: Cumulative Effects

D Heterogeneity by Firm-specific Human Capital (Tenure)

Appendix D.A Descriptive Statistics by Tenure

Table D.1 presents descriptive statistics on first-time mothers with less than and more than 2 years tenure with their current employer one year prior to childbirth. The statistics are shown for first-time mothers before and after the maternity leave mandate came into effect in 2005.

In general, women with higher firm-specific human capital are older and have higher earnings and work experience. There is a weak correlation of 0.14 between being a high-earner and having a high-tenure.

Table D.1: Descriptive by Tenure at Pre-Birth Firm

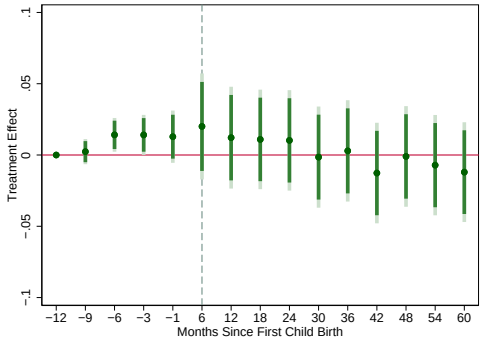
	High-tenure		Low-tenure	
	Jan-March05	Jul-Sept05	Jan-March05	Jul-Sept05
A. Demographics				
Age at First Birth	31.520	31.078	29.954	29.434
	0.092	0.085	0.109	0.106
Age First Observed	18.629	18.551	18.810	18.785
	0.038	0.031	0.052	0.052
Married	0.806	0.799	0.746	0.781
	0.008	0.008	0.009	0.009
B. Labor market history				
Total monthly income from employment (CHF) 12m prior to first birth	5540.418	5597.478	4879.918	4830.989
	48.728	51.989	65.979	65.003
Cum. experience (months) from 6y to 12m prior to first birth	57.637	57.913	50.159	50.499
	0.151	0.127	0.324	0.318
C. Eligibility and treatment				
Eligible	0.955	0.967	0.900	0.897
	0.004	0.004	0.006	0.006
Received federal paid maternity leave	0.000	0.887	0.000	0.846
	0.000	0.006	0.000	0.008
Received federal paid maternity leave among eligible	0.000	0.900	0.000	0.896
	0.000	0.006	0.000	0.007
Observations	2,355	2,573	2,132	2,215

Appendix D.B Regression Results by Tenure

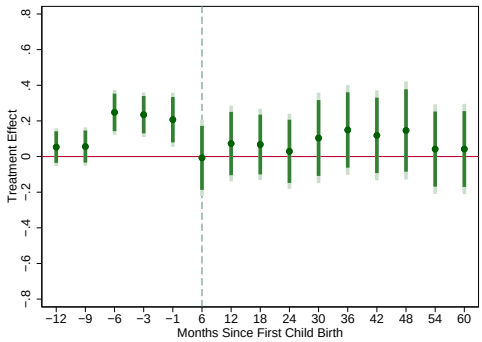
Figure D.1 reports the estimated coefficient of interest at different times, i.e., β_{3t}. The results on labour market outcomes of women with high- and low- tenure are reported in Panels (a) to (f), and on subsequent fertility in Panels (g) and (h). Similar to the split by earnings we do not find that the reform had an impact on employment and earnings of women after the birth of the child. We however observe an increase in both extensive and intensive margins of employment prior to reform indicating that in anticipation of receiving maternity leave women increased their hours of work to become eligible for a higher maternity benefit during the leave. In terms of job stability, we observe that both high- and low-tenure women are more likely to be employed at the pre-birth employer 30 months after the first birth. Similar to our main results, the impact on fertility is the most striking effect of the reform. Low-tenure women are more likely to have a child 24 months after the reform compared to women who were not treated by the reform upon having their first

child: the effect is large (about 7 pp) and decreases 5 years after the first child but does not completely dissipate 9 years after birth of the first child. The fertility effects for women with higher attachment to the previous employer takes longer to kick in and only happens 54 months after the first birth and similar to that of women with low-tenure does not completely dissipate 9 years after birth of the first child.

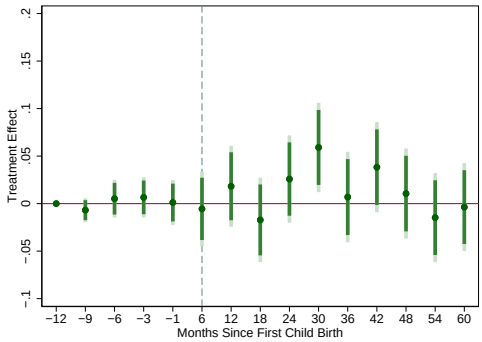
Column A. High Tenure (>= 24 months)



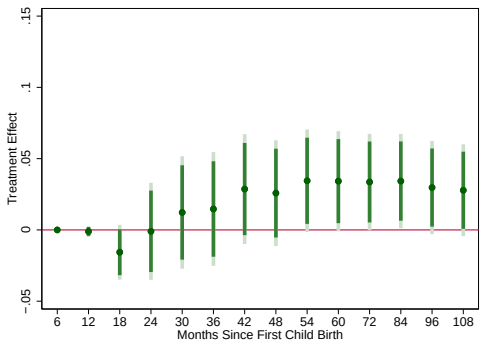
(a) Share Employed



(c) Employment Earnings (in 1000s CHF)

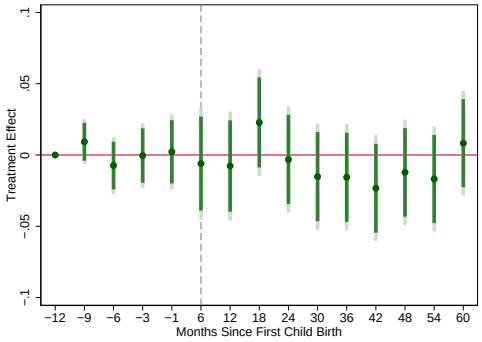


(e) Share Employed at Pre-birth Employer

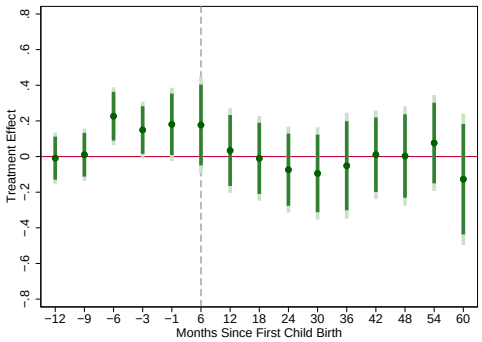


(g) Share with Second Child

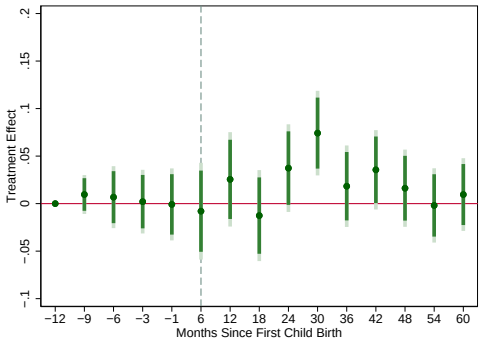
Column B. Low Tenure (< 24 months)



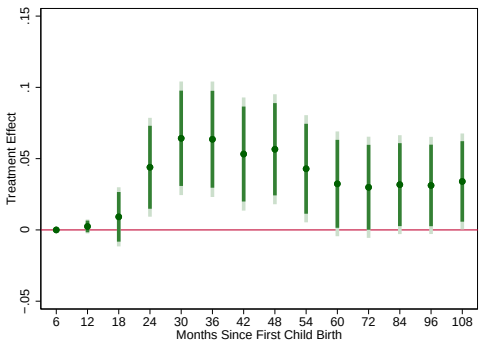
(b) Share Employed



(d) Employment Earnings (in 1000s CHF)



(f) Share Employed at Pre-birth Employer



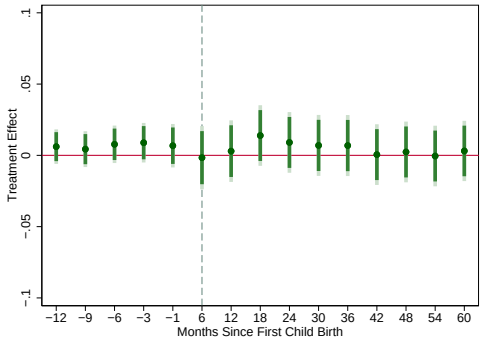
(h) Share with Second Child

Notes: This figure shows the treatment effects by tenure with employer one year before birth on contemporaneous outcomes. All regressions control for mothers' characteristics such as age at first birth, cumulative work experience and cumulative income from 6 to 1 year prior to the first birth. Figures in the left column (Panel A) show the effects for those employed women with high tenure (i.e., two years and more) one year prior to birth, while figures in the right column (Panel B) show the same effects for employed women with low tenure (i.e., less than two years). Light vertical lines indicate the 95% confidence intervals, the dark vertical lines indicate the 90% confidence intervals (both based on robust standard errors). The dashed vertical line separates the time horizon into a pre-birth and post-birth period.

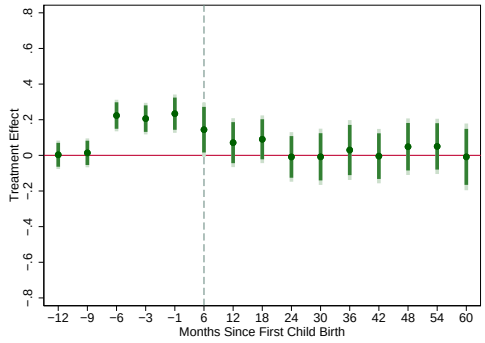
Figure D.1: Heterogeneneous Effects by Tenure at Previous Employer

E Robustness results

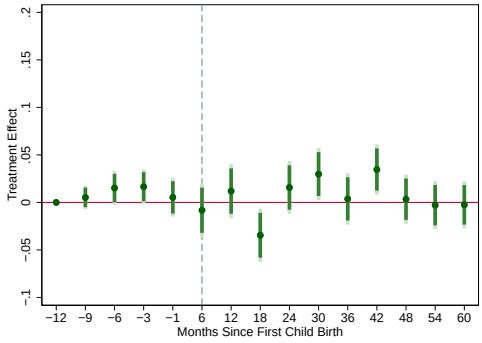
This section presents all main estimation results using the 2003 cohort of women as a control group. We report them both for the main sample, as well as by pre-birth earnings and child care availability.



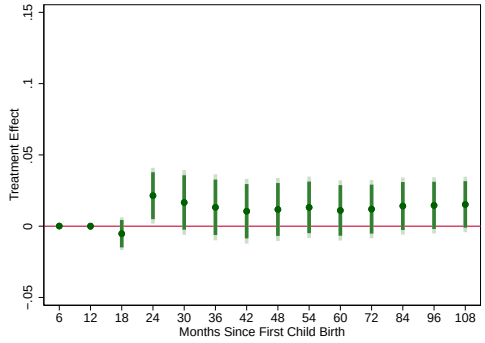
(a) Share Employed



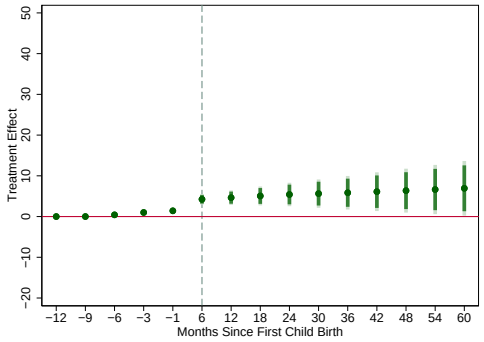
(b) Employment Earnings (in 1000s CHF)



(c) Share Employed at Pre-Birth Employer



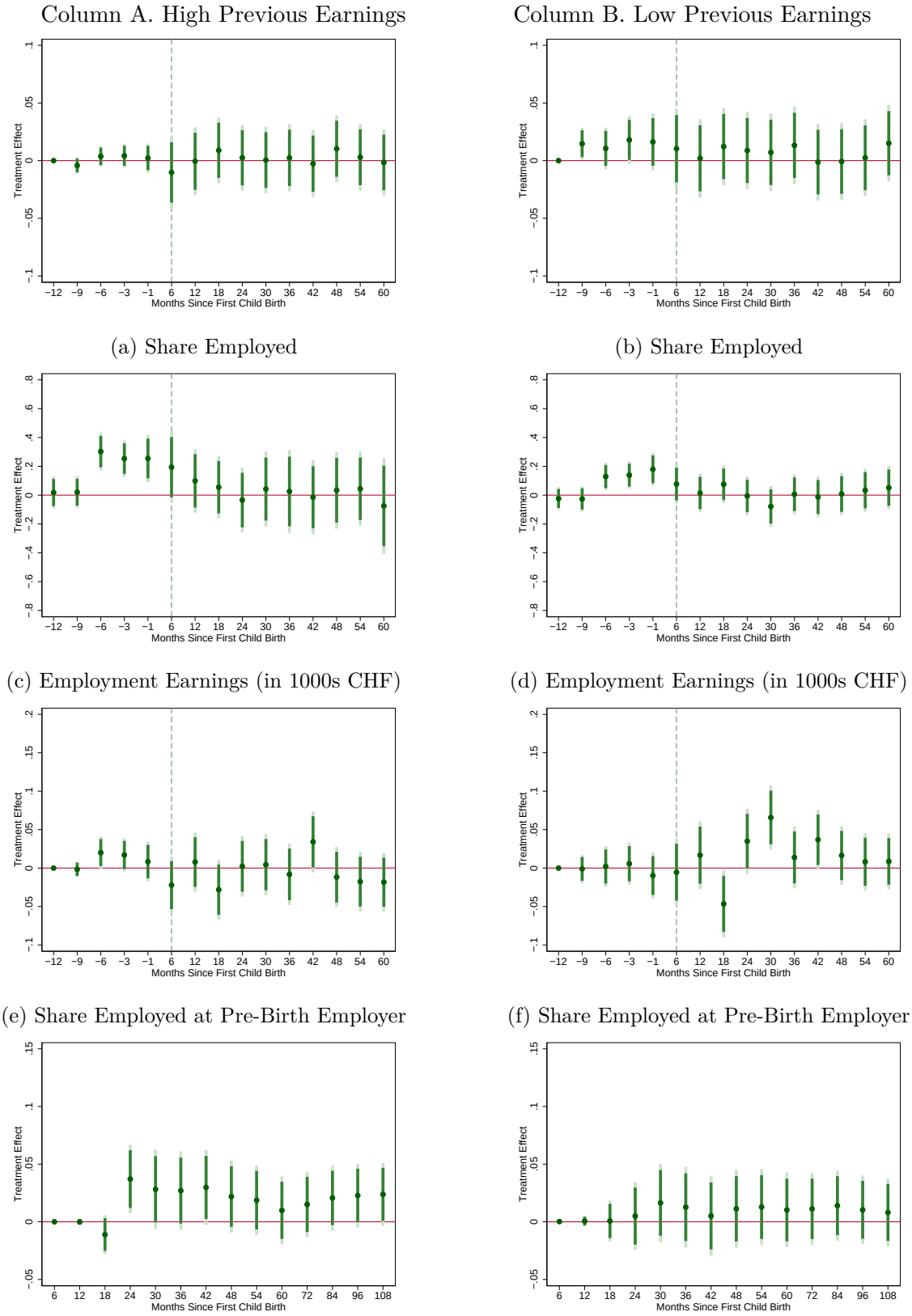
(d) Share with Second Child



(e) Cumulative Total Earnings Since 9 Months Pre-Birth (in 1000s CHF)

Notes: Treatment effects identified by our DiD model for all Swiss women in our sample. Subfigures (a) to (c) show the effects of the federal mandate on the share of women in the labor force, employment and unemployment at various points in time pre- and post-birth. Subfigures (d) and (e) shows the effects on returning to the pre-birth employer (i.e., the employer one year prior to birth) and real earnings from employment for employed women. Subfigure (f) shows the share of women who had at least a second child (higher-order fertility) up to 9 years after the first birth. Light vertical lines indicate the 95% confidence intervals, the dark vertical lines indicate the 90% confidence intervals (both based on robust standard errors). The dashed vertical line separates the time horizon into a pre-birth and post-birth period.

Figure E.1: Results on Employment, Earnings and Subsequent Fertility (using 2003 as control group)



(a) Share Employed

(b) Share Employed

(c) Employment Earnings (in 1000s CHF)

(d) Employment Earnings (in 1000s CHF)

(e) Share Employed at Pre-Birth Employer

(f) Share Employed at Pre-Birth Employer

(g) Share with Second Child

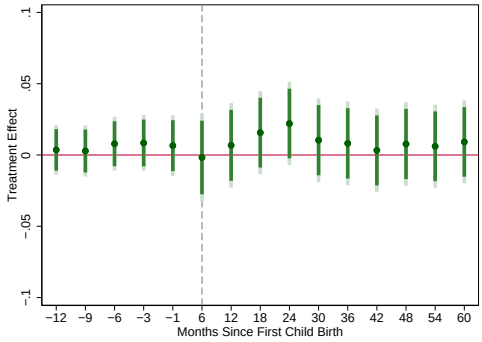
(h) Share with Second Child

Notes: This figure shows the treatment effects by level of employments earnings one year before birth on contemporaneous outcomes. Figures in the left column (Panel A) show the effects for those women who earned above median earnings one year prior to birth, while figures in the right column (Panel B) show the same effects for women who earned below median earnings one year before birth. Light vertical lines indicate the 95% confidence intervals, the dark vertical lines indicate the 90% confidence intervals (both based on robust standard errors). The dashed vertical line separates the time horizon into a pre-birth and post-birth period.

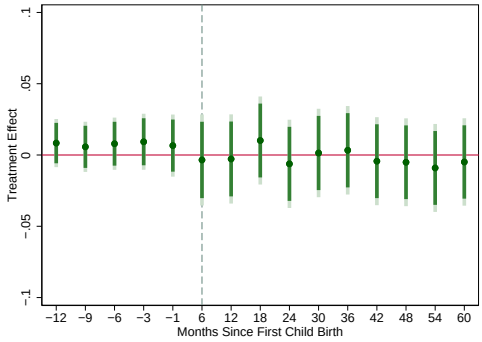
Figure E.2: Heterogeneous Effects by Previous Earnings (using 2003 as control group)

A. High Childcare Availability (left column)

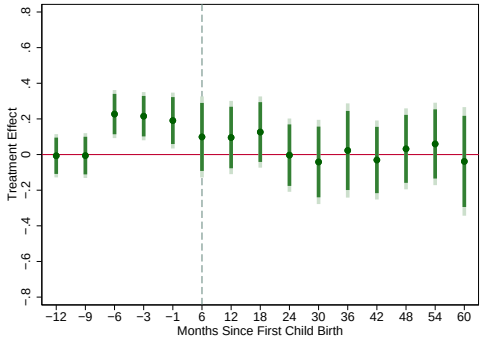
B. Low Childcare Availability (right column)



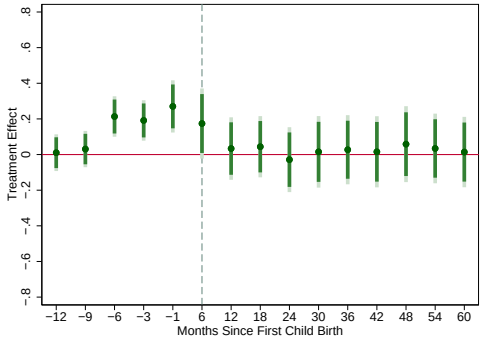
(a) Share Employed



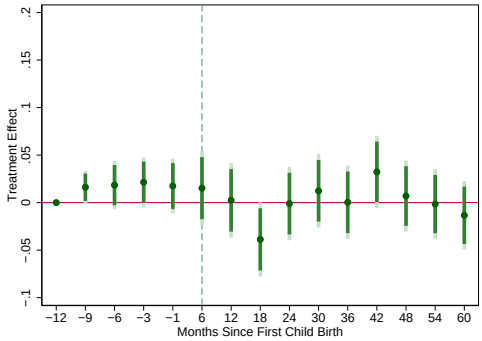
(b) Share Employed



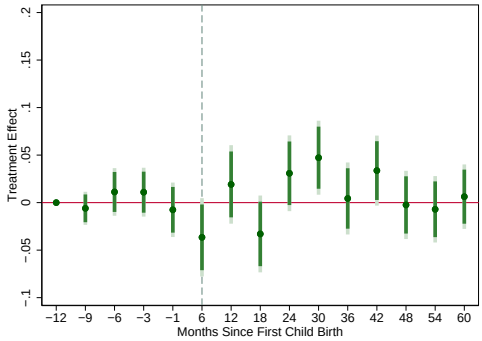
(c) Employment Earnings (in 1000s CHF)



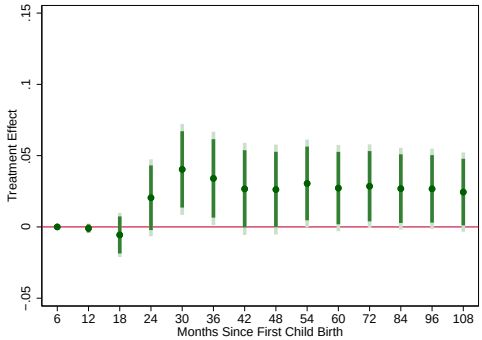
(d) Employment Earnings (in 1000s CHF)



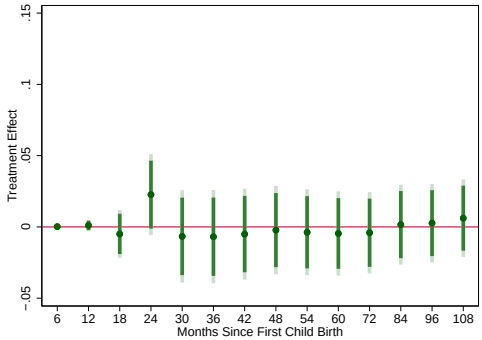
(e) Share Employed at Pre-Birth Employer



(f) Share Employed at Pre-Birth Employer



(g) Share with Second Child



(h) Share with Second Child

Notes: This figure shows the treatment effects for women according to the availability of child care places in the canton of residence for children aged 0 to 3 years in 2002. We distinguish cantons by whether they offer above or below median number of childcare places in the year 2002 (i.e., 10 places and more per 100 children corresponds to above-median, below 10 places per 100 children corresponds to below-median childcare availability). Light vertical lines indicate the 95% confidence intervals, the dark vertical lines indicate the 90% confidence intervals (both based on robust standard errors). The dashed vertical line separates the time horizon into a pre-birth and post-birth period.

Figure E.3: Heterogeneous Effects by Child Care Availability (using 2003 as control group)

F Tables with Regression Results

This section contains all regression results in the standard table format in addition to the figures shown in the main text for the main regression results, as well as by pre-birth earnings and by child care availability. We report the estimated coefficient, robust standard errors and corresponding p-value of a significance test.

Table F.1: Results on labour market outcomes and financial impact

	-12	-9	-6	-3	-1	6	12	18	24	30	36	42	48	54	60
Employed	0.006	0.007	0.005	0.005	0.006	0.004	0.003	0.016	0.004	-0.008	-0.007	-0.016	-0.010	-0.015	-0.004
Ste	0.007	0.007	0.008	0.008	0.009	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.012	0.012
P-value	0.376	0.362	0.494	0.570	0.497	0.741	0.819	0.201	0.752	0.551	0.577	0.189	0.407	0.222	0.746
Income	0.028	0.045	0.238	0.200	0.227	0.086	0.056	0.058	-0.012	0.008	0.076	0.068	0.100	0.078	0.002
Ste	0.045	0.046	0.052	0.051	0.064	0.085	0.079	0.077	0.080	0.090	0.095	0.088	0.098	0.093	0.107
P-value	0.544	0.326	0.000	0.000	0.000	0.313	0.477	0.454	0.885	0.931	0.421	0.437	0.308	0.398	0.984
Same Employer	0.000	0.007	0.017	0.017	0.007	-0.001	0.022	-0.015	0.031	0.062	0.015	0.036	0.014	-0.005	0.005
Ste	.	0.007	0.010	0.011	0.012	0.017	0.017	0.017	0.016	0.016	0.016	0.016	0.015	0.015	0.015
P-value	.	0.337	0.109	0.118	0.539	0.956	0.187	0.358	0.059	0.000	0.345	0.019	0.353	0.724	0.742
Cum. Income	0.000	0.031	0.444	0.995	1.401	3.903	4.246	4.519	4.783	4.877	4.984	5.143	5.369	5.511	5.602
Ste	.	0.049	0.197	0.333	0.427	0.736	1.026	1.345	1.672	2.021	2.388	2.757	3.130	3.521	3.918
P-value	.	0.527	0.024	0.003	0.001	0.000	0.000	0.001	0.004	0.016	0.037	0.062	0.086	0.118	0.153

Notes: Treatment effects identified by a DiD model for all Swiss women in the sample (unless otherwise noted). All regressions control for mothers' characteristics such as age at first birth, cumulative work experience and cumulative income over 6 to 1 years prior to first childbirth. The table shows the effects of the federal mandate on the share of women in employment (*employed*) at various points in time pre- and post-birth. The line denoted *Income* shows the effects on real earnings from employment on employed women and *Same employer* the effects on the share of employed women returning to their pre-birth employer (i.e., the main employer 12 months prior to birth). Line *Cum. Income* presents the effects on the cumulative total real earnings of all women (including earnings from employment, self-employment, maternity leave benefits, unemployment and other social insurance benefits) since 9 months prior to the first birth. All earnings are adjusted for inflation using the CPI (with base year 2010). Robust standard errors and p-values of individual significance test are reported below each estimate.

Table F.2: Heterogeneneous Effects by Previous Earnings

	-12	-9	-6	-3	-1	6	12	18	24	30	36	42	48	54	60
A. High Previous Earnings															
Employed	0.000	-0.006	0.000	-0.001	0.001	-0.001	-0.002	0.014	-0.003	-0.005	-0.003	-0.009	0.005	-0.008	-0.011
Ste	.	0.004	0.005	0.006	0.007	0.018	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017
P-value	.	0.172	0.981	0.888	0.913	0.978	0.897	0.410	0.876	0.763	0.883	0.617	0.763	0.622	0.504
Income	-0.012	0.033	0.277	0.237	0.221	0.047	0.013	0.013	-0.061	0.024	0.063	0.046	0.136	0.093	-0.061
Ste	0.062	0.064	0.076	0.074	0.100	0.139	0.128	0.124	0.130	0.148	0.162	0.147	0.163	0.153	0.189
P-value	0.849	0.609	0.000	0.001	0.026	0.737	0.922	0.920	0.641	0.871	0.696	0.753	0.405	0.541	0.746
Same Employer	0.000	-0.001	0.024	0.020	0.011	-0.031	0.011	-0.014	0.013	0.024	-0.002	0.041	0.009	-0.013	0.004
Ste	.	0.006	0.012	0.013	0.015	0.022	0.023	0.023	0.023	0.024	0.024	0.024	0.023	0.023	0.023
P-value	.	0.908	0.049	0.122	0.454	0.156	0.642	0.537	0.577	0.299	0.927	0.078	0.694	0.561	0.866
Total Income	0.000	-0.020	0.406	1.056	1.510	3.505	3.690	4.094	4.517	4.699	5.045	5.444	5.969	6.468	6.651
Ste	.	0.067	0.294	0.487	0.633	1.159	1.710	2.310	2.912	3.564	4.256	4.951	5.654	6.389	7.136
P-value	.	0.768	0.167	0.030	0.017	0.003	0.031	0.076	0.121	0.187	0.236	0.271	0.291	0.311	0.351
B. Low Previous Earnings															
Employed	0.000	0.017	0.007	0.013	0.013	0.008	-0.000	0.014	0.004	-0.016	-0.016	-0.031	-0.022	-0.018	0.005
Ste	.	0.008	0.010	0.012	0.014	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.019	0.019
P-value	.	0.038	0.517	0.270	0.378	0.700	0.987	0.477	0.857	0.415	0.418	0.117	0.259	0.348	0.803
Income	-0.003	-0.006	0.136	0.108	0.153	0.051	0.035	0.009	-0.027	-0.068	0.016	0.040	-0.012	-0.006	-0.003
Ste	0.046	0.048	0.055	0.055	0.067	0.079	0.078	0.077	0.079	0.085	0.083	0.084	0.091	0.087	0.089
P-value	0.950	0.894	0.013	0.052	0.022	0.524	0.650	0.912	0.735	0.428	0.848	0.631	0.891	0.949	0.971
Same Employer	0.000	0.004	-0.001	-0.001	-0.011	0.021	0.035	-0.024	0.053	0.111	0.031	0.030	0.015	-0.004	0.000
Ste	.	0.011	0.015	0.016	0.017	0.026	0.026	0.025	0.025	0.024	0.023	0.023	0.022	0.022	0.021
P-value	.	0.705	0.955	0.957	0.527	0.412	0.177	0.349	0.032	0.000	0.190	0.187	0.510	0.859	0.999
Cum. Income	0.000	0.016	0.250	0.597	0.892	3.723	4.057	4.058	4.003	3.869	3.639	3.517	3.344	2.998	2.826
Ste	.	0.050	0.193	0.342	0.439	0.735	1.000	1.304	1.633	1.971	2.317	2.667	3.021	3.380	3.746
P-value	.	0.752	0.197	0.081	0.042	0.000	0.000	0.002	0.014	0.050	0.116	0.187	0.268	0.375	0.451

Notes: Treatment effects identified by a DiD model for all Swiss women employed at 12 months prior to childbirth by pre-birth earnings. Panel A presents estimates for those with high previous earnings (i.e., above median pre-birth earnings), Panel B presents the corresponding estimates for those with low previous earnings. All regressions control for mothers' characteristics such as age at first birth, cumulative work experience and cumulative income over 6 to 1 years prior to first childbirth. The table shows the effects of the federal mandate on the share of women in employment (*employed*) at various points in time pre- and post-birth. *Income* shows the effects on real earnings from employment and *Same employer* the effects on the share of employed women returning to their pre-birth employer (i.e., employer 12 months prior to birth). *Cum. Income* presents the effects on the cumulative total real earnings of all women (including earnings from employment, self-employment, maternity leave benefits, unemployment and other social insurance benefits) since 9 months prior to the first birth. All earnings are adjusted for inflation using the CPI (with base year 2010). Robust standard errors and p-values of individual significance test are reported below each estimate.

Table F.3: Heterogeneneous Effects by Previous Child Care Availability

	-12	-9	-6	-3	-1	6	12	18	24	30	36	42	48	54	60
A. High Child Care Availability															
Employed	0.003	0.005	0.004	0.005	0.005	0.012	0.004	0.016	0.023	-0.001	-0.004	-0.016	-0.004	-0.008	0.004
Ste	0.010	0.011	0.011	0.012	0.013	0.018	0.018	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017
P-value	0.739	0.615	0.708	0.663	0.684	0.502	0.803	0.341	0.180	0.947	0.800	0.368	0.835	0.644	0.818
Income	0.046	0.035	0.213	0.200	0.172	0.083	0.127	0.144	0.033	0.048	0.146	0.093	0.113	0.148	-0.009
Ste	0.069	0.070	0.079	0.077	0.097	0.131	0.119	0.115	0.119	0.136	0.148	0.130	0.140	0.141	0.171
P-value	0.504	0.621	0.007	0.009	0.076	0.523	0.285	0.211	0.780	0.722	0.324	0.475	0.421	0.291	0.960
Same Employer	0.000	0.014	0.016	0.018	0.022	0.021	0.011	-0.019	0.015	0.043	0.012	0.038	0.019	-0.004	-0.010
Ste	.	0.010	0.015	0.015	0.017	0.023	0.023	0.023	0.023	0.023	0.023	0.022	0.022	0.022	0.021
P-value	.	0.154	0.288	0.223	0.193	0.357	0.624	0.419	0.515	0.059	0.593	0.090	0.393	0.864	0.633
Cum. Income	0.000	0.020	0.365	0.916	1.267	3.597	4.322	4.961	5.717	6.350	6.949	7.429	7.741	8.151	8.434
Ste	.	0.074	0.302	0.502	0.641	1.106	1.553	2.043	2.548	3.086	3.648	4.211	4.771	5.366	5.982
P-value	.	0.786	0.227	0.068	0.048	0.001	0.005	0.015	0.025	0.040	0.057	0.078	0.105	0.129	0.159
B. Low Child Care Availability															
Employed	0.009	0.008	0.007	0.004	0.007	-0.006	-0.001	0.014	-0.017	-0.016	-0.012	-0.020	-0.019	-0.025	-0.014
Ste	0.010	0.010	0.011	0.012	0.013	0.019	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
P-value	0.373	0.428	0.511	0.697	0.593	0.767	0.971	0.452	0.338	0.378	0.515	0.280	0.288	0.173	0.439
Income	0.006	0.050	0.251	0.192	0.273	0.068	-0.028	-0.043	-0.082	-0.056	-0.011	0.024	0.067	-0.012	-0.002
Ste	0.058	0.059	0.066	0.067	0.085	0.107	0.102	0.100	0.105	0.113	0.112	0.113	0.133	0.117	0.118
P-value	0.915	0.398	0.000	0.004	0.001	0.523	0.785	0.666	0.436	0.621	0.921	0.829	0.616	0.917	0.985
Same Employer	0.000	-0.001	0.017	0.014	-0.008	-0.028	0.031	-0.015	0.044	0.079	0.015	0.030	0.007	-0.009	0.017
Ste	.	0.010	0.015	0.015	0.017	0.024	0.024	0.024	0.024	0.023	0.022	0.021	0.021	0.020	0.020
P-value	.	0.886	0.257	0.349	0.634	0.241	0.203	0.530	0.059	0.001	0.510	0.167	0.751	0.655	0.398
Total Income	0.000	0.037	0.508	1.038	1.483	4.078	3.958	3.783	3.463	2.924	2.433	2.170	2.204	1.967	1.753
Ste	.	0.063	0.247	0.433	0.558	0.956	1.318	1.715	2.124	2.561	3.020	3.488	3.973	4.471	4.963
P-value	.	0.556	0.040	0.017	0.008	0.000	0.003	0.027	0.103	0.254	0.421	0.534	0.579	0.660	0.724

Notes: Treatment effects identified by a DiD model for all Swiss women (unless otherwise noted). Panel A presents estimates for mothers residing in cantons with high child care availability, Panel B presents the corresponding estimates for those in low child care availability cantons. All regressions control for mothers' characteristics such as age at first birth, cumulative work experience and cumulative income over 6 to 1 years prior to first childbirth. The table shows the effects of the federal mandate on the share of women in employment (*employed*) at various points in time pre- and post-birth. *Income* shows the effects on real earnings from employment of employed women and *Same employer* the effects on the share of employed women working for their pre-birth employer. *Cum. Income* presents the effects on the cumulative total real earnings of all women (including earnings from employment, self-employment, maternity leave benefits, unemployment and other social insurance benefits) since 9 months prior to the first birth. All earnings are adjusted for inflation using the CPI (with base year 2010). Robust standard errors and p-values of individual significance test are reported below each estimate.

Table F.4: Fertility results and heterogeneous effects by previous earnings and child care availability

	6	12	18	24	30	36	42	48	54	60	72	84	96	108
A.Overall	0.000	0.000	-0.005	0.020	0.027	0.030	0.031	0.032	0.032	0.031	0.027	0.027	0.025	0.027
Ste	.	0.002	0.007	0.012	0.013	0.014	0.013	0.013	0.013	0.012	0.012	0.012	0.012	0.011
P-value	.	0.815	0.445	0.079	0.048	0.029	0.021	0.012	0.012	0.012	0.026	0.022	0.028	0.018
B.High Income	0.000	-0.001	-0.013	0.039	0.040	0.043	0.049	0.040	0.034	0.025	0.026	0.029	0.029	0.030
Ste	.	0.002	0.010	0.018	0.020	0.020	0.019	0.018	0.018	0.017	0.017	0.017	0.016	0.016
P-value	.	0.701	0.203	0.030	0.051	0.034	0.012	0.032	0.055	0.158	0.129	0.081	0.080	0.066
C.Low Income	0.000	0.002	0.006	0.006	0.036	0.035	0.032	0.040	0.041	0.040	0.036	0.035	0.031	0.030
Ste	.	0.003	0.010	0.017	0.020	0.020	0.020	0.020	0.019	0.019	0.018	0.018	0.017	0.017
P-value	.	0.397	0.570	0.736	0.073	0.084	0.114	0.040	0.034	0.035	0.047	0.049	0.076	0.078
D.High Ccare	0.000	0.001	-0.003	0.028	0.044	0.047	0.042	0.043	0.043	0.039	0.041	0.040	0.038	0.037
Ste	.	0.002	0.009	0.016	0.019	0.019	0.019	0.019	0.018	0.018	0.017	0.017	0.017	0.016
P-value	.	0.569	0.774	0.076	0.020	0.016	0.027	0.022	0.018	0.028	0.017	0.018	0.022	0.024
E.Low Ccare	0.000	-0.000	-0.008	0.013	0.010	0.014	0.020	0.023	0.021	0.024	0.013	0.015	0.013	0.017
Ste	.	0.002	0.010	0.017	0.019	0.019	0.019	0.018	0.018	0.017	0.017	0.016	0.016	0.016
P-value	.	0.863	0.437	0.439	0.608	0.471	0.279	0.204	0.224	0.169	0.430	0.373	0.416	0.272

Notes: Treatment effects on likelihood of having a second child identified by a DiD model for all Swiss women at various points in time after the first childbirth. Panel A presents overall estimates, Panel B and C splitting by mothers' pre-birth earnings, and Panel D and E by child care availability in mothers' canton of residence at first childbirth. Robust standard errors and p-values of individual significance test are reported below each estimate.