Mothers at Work in Switzerland: Impact of First Paid Maternity Leave on Mothers' Earnings and Employment

ESTHER MIRJAM GIRSBERGER, LENA HASSANI-NEZHAD, KALAIVANI KARUNANETHY AND RAFAEL LALIVE*

This draft: 21 May 2019

Studies show that a large share of the persistent gender earnings gap comes about due to parenthood, the so-called Motherhood Penalty. Therefore, family policies aim at helping mothers continue to stay employed and increase their earnings. Contributing to this discussion, this paper analyzes the impact of the first Swiss federal maternity leave legislation guaranteeing paid maternity leave on women's earnings and employment rates around the birth of their first child. Using unique, rich administrative data and a difference-in-difference approach, we find that the new legislation had a small and negative impact on first-time mothers' monthly earnings 12 months before birth, but a small and positive effect on their earnings at four years after birth. It also had a very small and negative impact on mothers' employment 12 months before birth and again at four years and five years after birth. We do not find any impact on their likelihood of returning to work in the three years and seven years after birth.

* Girsberger: University of Technology Sydney, UTS Business School, 14-28 Ultimo Rd, Ultimo NSW 2007 (e-mail: EstherMirjam.Girsberger@uts.edu.au). Hassani-Nezhad: Royal Holloway, University of London, London, Egham TW20 0EX (e-mail: Lena.HassaniNezhad@rhul.ac.uk). Karunanethy: University of Lausanne, Internef 533, Quartier de Chamberonne, CH-1015 Lausanne (e-mail: Kalaivani.Karunanethy@unil.ch). Lalive: University of Lausanne, Internef 553, Quartier de Chamberonne, CH-1015 Lausanne (e-mail: Rafael.Lalive@unil.ch).

The persistent gender wage and earnings gap between women and men has been a contentious issue in both public policy and in economic research. Despite encouraging progress in the past decades, further convergence has proven elusive since 2000 (DeNavas-Walt and Proctor 2015). This has motivated intense research to identify the causes. One area of focus in recent years has been on the effects of parenthood on women's earnings and employment, what has become known as the "*Motherhood Penalty*" or "*Family Gap*", the lower wages that women earn soon after becoming parents, or the lower wage trajectory that they end up on as compared to men or women without children. [literature]

In one of the earliest studies on this topic, (Waldfogel 1998) finds that for women born between 1944 and 1954 in Great Britain and in the USA, family variables (combining marriage and children) accounted for 35 per cent of the gender wage gap at age 30, as compared to 56 per cent for those born between 1957 and 1965. Juhn and McCue (2017) highlight recent research that shows as the overall gender earnings gap has fallen, parenthood has contributed to a growing share of the remaining gap. They find that for women born between 1936 and 1945, having children contributed to 39 per cent of the gender earnings gap at age 30, but for those born between 1966 and 1975, it was also 56 per cent. Comparing all workers to those who work full-time and full-year, they find that a large part of this is due to the reduced number of hours and weeks worked. They note that the gender earnings gap, although small upon labor market entry, increases to a maximum between the ages of 30 to 40, when most women would have young children, and that it is not clear, whether it ever recovers at later ages among the most recent cohorts. They also point out that most of the past research has focused on the gender *hourly wage* gap and that the gender median annual earnings gap is even larger due to more women working part-time and/or part-year.

Therefore, it is clear that while women's achievements in increasing their levels of education and work experience led to the early convergence in the gender wage and earnings gap, the remaining gap is largely attributable to marriage and parenthood and has been persistent over the last two decades.

Parenthood could affect the gender wage and earnings gap in multiple ways, through shorter accumulated work experience or shorter tenure (accumulated work experience with the same employer), selection into 'family-friendly' jobs that pay lower wages in return for non-pecuniary amenities (e.g. flexible hours, generous health insurance, etc.), part-time work and/or part-year work, lower productivity, and employer discrimination, among others.

Ramey and Francis (2009) provide a clue in their article, "A Century of Work and Leisure". They find that while women aged between 25 to 54 increased their average time spent working outside the home from 7.9 weekly hours in 1990 to 26.1 weekly hours in 2005, they only decreased their time spent working at home (what the authors label "home production") from 50.4 to 31.1 weekly hours. Whereas men in the equivalent age group decreased their time spent working outside the home from 49.4 weekly hours to 36.8 and increased their time on home production from 3.7 weekly hours to only 17.3, which is about half of that of women. Leisure time, the residual, has remained relatively flat for both genders at around 30 weekly hours for women and 33 for men. Therefore, women face a barrier to increasing their time working outside the home due to their much greater time spent on home production, which includes child care.

In this context, we need to consider the impact that paid maternity leave legislation (MLL) may have on mothers' labor market decisions. Many believe, as former US President Obama said in his campaign to implement six weeks of paid

parental leave in 2015, that paid family leave could help increase the percentage of women in the work force (Davis 2018).

Olivetti and Petrongolo (2017) provide a detailed survey of papers that studied the impact of family policies including maternity leave in high-income countries over the past century. They find that with the exception of the US and until 2005, Switzerland, most high-income industrialized countries provided paid maternity leave of between 14 and 22 weeks. In the European Union, paid maternity leave as well as paid parental leave have been longstanding public policies. Therefore, many papers have studied the impact of extensions of such existing paid maternity leave and parental leave, such as Lalive and Zweimüller (2009), who found that extensions of paid and job protected parental leave in Austria in 1990 from 12 to 24 months decreased mothers' return-to-work and employment rates as well as earnings in the short run but did not affect their employment and earnings in the medium run.

However, there are not many papers that have looked at the impact that the *introduction* of paid MLL have had. Baker and Milligan (2008) analyzed the introduction of paid maternity leave in Canada and showed that the introduction of short paid maternity leaves (of less than six months) did not seem to affect the time women take to recover after birth. It did, however, increase their employment and labor force participation as well as job continuity with their pre-birth employer. Rossin-Slater, Ruhm, and Waldfogel (2013) found that in California, which was the first state in the US to introduce paid family leave, the hours worked by mothers of young children increased by 10 to 17 per cent, with a similar impact on their wages.

Since Switzerland was the last country in Western Europe to implement paid MLL at the federal level, guaranteeing the provision of paid maternity leave only in 2005, it therefore presents a valuable opportunity to understand how the introduction of paid MLL affected women's labor market behavior in a more recent economic clime. The Swiss legislation provides for paid leave of 14 weeks' duration only and there is no additional parental leave, paid or unpaid.

In this paper, we focus on the effects that Switzerland's first paid MLL had on women's earnings and employment in the transition to motherhood. Therefore, we only consider women who had their first child around the time of the reform. Using a unique and rich administrative dataset and a difference-in-difference approach, we find that the legislation had a small and negative impact on their monthly earnings 12 months before birth but a small and positive effect on their earnings at four years after birth. It also had a very small and negative impact on mothers' employment 12 months before birth and again at four years and five years after birth. We do not find any impact on their likelihood of returning to work in the three years and seven years after birth.

In the next section, we discuss the background and details of the maternity leave legislation as it was implemented in Switzerland. We then introduce our data and present some descriptive statistics. In the third section, we describe our empirical design and explain the assumptions that allow us to identify the causal effects of the new policy on mothers' labor market outcomes such as employment and earnings as well as return to work. In the subsequent section, we present and explain our results. Finally, we conclude with a summary of our key findings.

I. Policy Background

Switzerland was one of the first countries in the world to mandate leave from work for pregnant women for eight weeks around the time of child birth in 1877 (OECD 2017). However, despite a federal mandate adopted in 1945 to implement some form of paid maternity leave, it was not until 2005 that Switzerland implemented legislation providing for paid maternity leave with job protection.

In Switzerland, national referenda are often held in order to pass new legislation. The first referendum on paid maternity leave was held in 1999, which however failed to pass with 61.1 per cent voting against. The canton of Geneva then decided to implement its own paid maternity leave with job protection starting from 1 July 2001. Similarly, the canton of Jura implemented its paid MLL in 2001.

A second initiative was launched in October 2003. The federal referendum was held on 26 September 2004 and this time, 55.4 per cent voted in favor. It was adopted by the federal council in October 2004. Officially titled *Loi sur les Allocations pour Perte de Gains* (LAPG), it became effective on 1st July 2005. It covered all women who had a child on or after this date subject to meeting the eligibility requirements for employment. The 2005 legislation provided women with 14 weeks (98 days) of paid maternity leave, that only starts after the birth of the child. It also ensures job protection against dismissal during the pregnancy and in the first 16 weeks after birth. The maternity benefits are set at 80 per cent of previous average monthly earnings, subject to a maximum of 196fr per day. The benefits are financed through employee and employer contributions similar to other social insurance schemes.

The Geneva legislation provided for 16 weeks (112 days) of paid maternity leave. The maternity benefits are also 80 per cent of prior average wage, subject to a

minimum of 62fr per day and a maximum of 280fr, which is higher than the maximum level of federal benefits (196fr). After the passage of LAPG, 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.

Women could 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, could not be refused by the employer. These two extra weeks of leave, however, would be unpaid.

In order to qualify for paid maternity leave, women had 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 on official unemployment receiving unemployment benefits during the pregnancy for an equivalent period and/or at the time of birth.

II. Data and Descriptive Statistics

The data is compiled from three different administrative datasets provided by the Swiss Federal Office of Statistics (FOS). These registers are the federal population census, the social security register and the vital statistics register.

Our dataset has the universe of mothers who had a child between 1st January 2003 to 31st December 2007, which covers the 30 months before and after the implementation of the MLL on 1st July 2005, their complete employment history from 1st January 1995 to 31st December 2014, and the dates of births of their other children who were born up to 31st December 2010. We thus have variables describing their earnings[1], whether they received paid maternity benefits and the duration of payment, the value of the benefits they received, and their employment status[2], as well as the mothers' canton of residence at the time of birth[3]. Data is constructed as a monthly panel giving 240 month-year data points for each individual woman.

In this paper, we only include women who had their first child in the 24 months before and after the MLL was implemented, therefore looking at a four-year window around the reform. We further limit the sample to those who were working and contributing to social security for at least one month before the birth of their first child and who were aged between 15 and 45 years old at the time of birth

[1] Every resident aged 18 years and above with annual earnings above 2,300fr must contribute to social security. Those with annual earnings below 2,300fr can choose to contribute voluntarily.

[2] The data does not have information on women's education, their hours worked (and hence wages), and their occupation. We also do not have information on firms and industries beyond the variable used to identify the employee on whose behalf the firm paid the social security contributions. However, this variable is not a unique identifier of firms and a change in the code could indicate that the employee has moved to a different role, department or subsidiary company, etc., or that the company changed the entire set of their employee identifiers, for example, due to a software change.

[3] Although maternity leave benefits are determined according to the canton in which the mother works and not where they reside, we assume that they coincide.

following the literature (Lalive and Zweimüller, 2009). We have 118,983 women in total in our sample. We split this sample into two groups, those whose first child was born before the reform (55,033 women) and those after (63,950 women). Table 1 presents the descriptive statistics of these two groups in our sample. In Table 2, we split each group further by considering women who resided in one of the cantons where the new MLL applied (treated cantons) and those who lived where it did not (control cantons, specifically Geneva and Jura).

Comparing the demographics of these two groups of women (Table 1 - Panel A), we can see that the average age at which women started working and contributing to social security (22.6 and 22.0 respectively), the average age at which they had their first child (30 and 30.1 respectively), and the average total number of children they had within three years of the first one (1.6 and 1.5 respectively) did not vary greatly between them. However, those in the second group were less likely to have a second child within three years after the first (only 45.4 per cent of the first group had only one child as compared to 50 per cent of the second group).

Referring to their labor market history (Table 1 - Panel B), we also see little variation in their employment status at 12 months before birth (85.7 per cent versus 83.4 per cent were employed) and their average monthly earnings (4,135fr for the first group as compared to 4,039fr for the second). Although the average total accumulated months of work experience at 12 months before birth was greater for those who had their first child after the reform, by about six months, this could be due to the construction of our dataset. Those who had a child before the reform are more likely to have been working and contributing to social security before the year that our data starts, in 1995. But we only see their social security contributions from 1995 onwards.

With respect to their labor market behavior 12 months after the birth of the first child (Panel C), we see that the second group was more likely to be employed (62 per cent versus 65.6 per cent) and had higher monthly earnings (1,983fr versus 2,271fr). However, both groups were equally likely to have returned to work at least once within a three- and seven-year period.

We also identify the women who would have been considered "eligible" for paid maternity leave benefits based on the criteria set out in the MLL (see previous section). We define eligibility for paid maternity leave benefits as follows: (1) having been employed for a minimum of four months at 12 months before the birth; (2) were employed or on official unemployment status for a minimum of five months during the pregnancy (we assume that every pregnancy lasted nine months); and (3) were either employed or officially unemployed in the month of birth. Given the high labor force participation rate of women in Switzerland, based on these criteria, there is little difference between the two groups: 90.5 per cent and 88.9 per cent would have been considered eligible. However, only 76.9 per cent of all women in the second group actually received paid maternity benefits. When we condition on their eligibility, we find that 83.9 per cent of those considered eligible received paid maternity leave.

Comparing women between the treated and control cantons (Table 2), we note that women who lived in the control cantons were much more likely to have only one child, had lower total number of months of experience and slightly lower employment rates at 12 months before birth but with no great differences in monthly earnings. At 12 months after birth, they had higher employment rates and much higher average monthly earnings.

TABLE 1—DESCRIPTIVE STATISTICS

Variables	Before	After
	Mean	**Mean**
A Demographics		
Age started contributing to social security	22.6	22.0
Age at first birth	30.0	30.1
Average total no. of children in three years after first child	1.6	1.5
Women with only one child in three years after first child (%)	45.4	50.0
B Labor Market History (12 months before birth)		
Average total months employed	70.5	76.8
Share of women employed (%)	85.7	83.4
Average monthly earnings (CHF)	4,135	4,039
C Labor Market Outcomes (12 months after birth)		
Share of women employed (%)	62.0	65.6
Average monthly earnings (CHF)	1,983	2,271
Ever returned to work in 3 years after birth (%)	89.1	89.8
Ever returned to work in 7 years after birth (%)	93.7	93.7
D Treatment		
Eligible (%)	90.5	88.9
Received paid maternity leave (%)	-	76.9
Eligible & received paid maternity leave (%)	-	83.9
No. of total observations (118,983)	**55,033**	**63,950**

Notes: Sample restricted to only those women who were contributing to social security before the birth of their first child, were aged between 15 to 45 years old at the birth of their first child, and had their first child between 01/07/2003 and 30/06/2007.

Source: FOS, own calculations.

TABLE 2—DESCRIPTIVE STATISTICS

Variables	Treated Cantons		Control Cantons	
	Before	**After**	**Before**	**After**
A Demographics				
Age started contributing to social security	22.6	22.0	23.2	22.8
Age at first birth	29.9	30.1	30.2	30.4
Average total no. of children in three years after first child	1.6	1.5	1.5	1.4
Women with only one child in three years after first child (%)	45.0	49.8	52.6	57.2
B Labor Market History (12 months before birth)				
Average total months employed	71.2	77.6	60.2	64.9
Share of women employed (%)	86.1	84.0	80.9	80.5
Average monthly earnings (CHF)	4,129	4,022	4,214	4,286
C Labor Market Outcomes (12 months after birth)				
Share of women employed (%)	61.8	65.2	65.5	70.1
Average monthly earnings (CHF)	1,911	2,179	3,005	3,588
Ever returned to work in 3 years after birth (%)	89.1	90.0	90.0	90.5
Ever returned to work in 7 years after birth (%)	93.7	93.7	93.5	93.5
D Treatment				
Eligible (%)	90.6	89.0	89.2	87.9
Received paid maternity leave (%)	-	77.0	-	75.5
Eligible & received paid maternity leave (%)	-	84.0	-	83.6
No. of total observations (118,983)	**51,396**	**59,797**	**3,637**	**4,153**

Notes: Sample restricted to only those women who were contributing to social security before the birth of their first child, were aged between 15 to 45 years old at the birth of their first child, and had their first child between 01/07/2003 and 30/06/2007.

Source: FOS, own calculations.

III. Identification and Empirical Design

Since the time from the federal referendum (September 2004) to the adoption of the legislation (October 2004), and finally to its implementation (July 2005) was a matter of just 10 months, this allows for a quasi-experimental setting. Our identification strategy hinges on comparing the labor market outcomes of women who had their children in the cantons that already provided paid ML and hence where the 2005 federal mandate should not have an effect (Geneva and Jura), with the women who had children in the cantons that did not guarantee paid ML until the federal mandate was applied. We have 7,790 women in our sample from the cantons of Geneva and Jura and 111,193 women from all the other cantons.

Every eligible woman who had a child before 1st July 2005 in all the cantons except Geneva and Jura would not have received paid maternity leave as per the MLL. But every eligible woman who had a child on or after 1st July 2005 in all the cantons including Geneva and Jura would have received paid maternity leave for at least 98 days. And every eligible woman who had a child on or after 25th March 2005 would have received partial benefits, starting from 1st July 2005, up to the maximum of 98 days[4].

Therefore, in this setting, we adopt a classical Differences-In-Differences (DID) design. The econometric model we estimate is as follows.

$$y_{ict} = \alpha + \beta_1 * law + \beta_2 * treatedcanton + \beta_3 * (law * treatedcanton) + \mu_c + \lambda_y + \gamma_m + \epsilon_{ict} \quad (1)$$

[4] In our sample, 8,218 women received these "partial" benefits. We consider these women to be "untreated".

In Equation (1), the subscripts *i* indexes individuals and *t* indexes time in months with respect to birth of first child. Therefore, when "*t*" is equal to zero, that would signify the month of birth of the first child for a woman "*i*", and negative values would indicate the months before birth and positive values the months after birth for each respective woman "*i*". The subscript *c* refers to the cantons. The binary variable *law* indicates whether the mother had her child before or after the reform, that is, before, or on or after 1st July 2005. The variable *treatedcanton* is also a binary variable that is equal to 1 if the mother resided in the cantons that did not provide paid maternity leave until the 2005 mandate. And finally, *law*treatedcanton* is the interaction term. Our coefficient of interest is $\boldsymbol{\beta_3}$ multiplying the *law*treatedcanton* variable.

The two main dependent variables are the natural logarithm of the mother's monthly earnings and her employment status. Employment status is a binary indicator that specifies whether the mother was employed or not in the respective month. Since each dependent variable is estimated at a particular point in the woman's professional trajectory with respect to the birth of her first child, we are, in fact, estimating a series of cross-sections of our panel data, where each woman appears exactly once. We estimate each equation at 12 months before birth, and again at six, 12, 24, 48 and 60 months after birth (columns 1 to 6 in Tables 2 to 4).

We also include as dependent variables, a dummy variable if she ever returned to work in the 36 months (three years) after birth, and another one if she returns to work in the 84 months (seven years) after birth. We include canton fixed effects (μ_c) to account for canton-specific characteristics. We also include year (λ_t) and month (γ_m) dummies in all our estimations to control for year-specific and month-specific fixed effects. Standard errors are clustered at the cantonal level.

Parallel Trends assumption - In Figures 1 to 3, we present different labor market variables between two groups of women, those who had their first child before the federal mandate and those who had their child after. Women who had a first child before the reform are identified by the dashed line and women who had a first child after by the bold line. The horizontal axis represents time before and after birth in months. That is, month zero would be the month of birth of the first child.

Figure 1 shows the average monthly earnings of the two groups of women. We can see that while before their transition to parenthood, they had practically identical wage trajectories, these start to diverge, especially around 12 months before birth. Four months after birth, when paid maternity leave and job protection would have ended, the women who likely benefited have higher wages by about 300fr and this persists over the next five years, although the gap shows signs of narrowing.

FIGURE 1. AVERAGE MONTHLY EARNINGS

Notes: Average monthly earnings of women who had their first child in the two years before and after paid MLL was implemented.

Figure 2 shows the average employment rate. Employment rate is defined as all those women who were employed in the respective month as a share of all the women in the sample. Here, the levels are different while the trends are similar. Those who had a child after the reform have higher employment rates starting from four months after birth. Similar to the trend in the average monthly earnings, the difference persists over the next five years but shows signs of convergence.

Figure 3 shows that there is no difference in the rate and share of women who ever returned to work after the birth of their first child. Most women eventually return to work within five years after the birth.

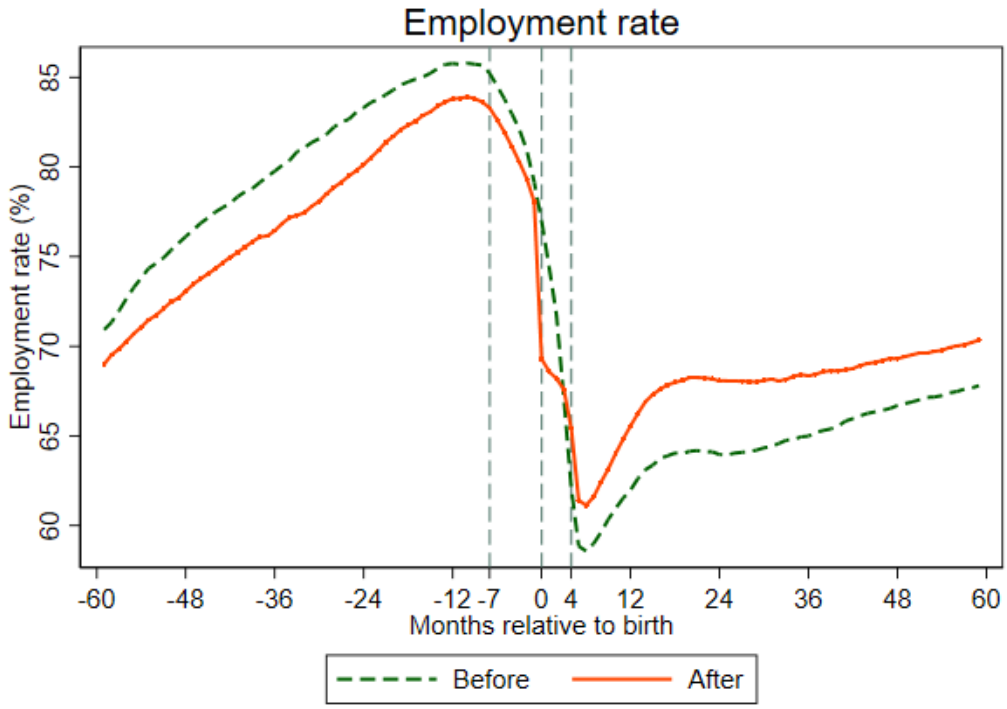

FIGURE 2. EMPLOYMENT RATE

Notes: Employment rate of women who had their first child in the two years before and after paid MLL was implemented.

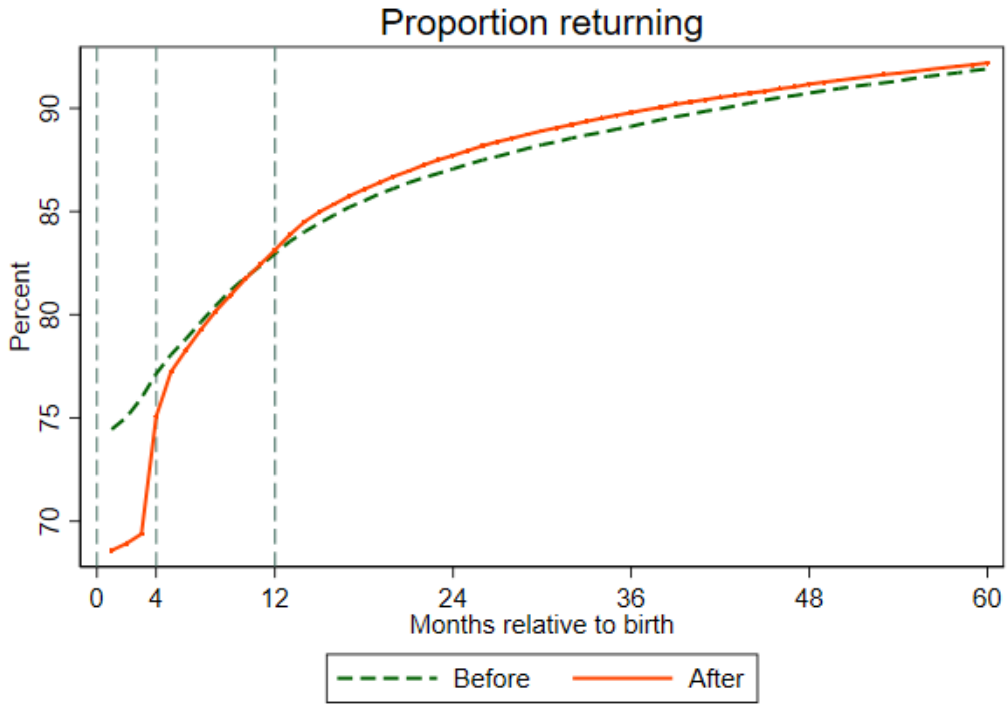

FIGURE 3. SHARE OF WOMEN RETURNING TO WORK

Notes: Share of women who ever worked after the birth of their first child.

Figures 4 and 5 show the same variables, monthly earnings and employment status, but only at four years after birth, and separately for the control and treatment groups. In these figures, the horizontal axis reflects chronological time with respect to the birth month and the time of policy change. For example, -10 indicates the earnings or employment status of women who had their first child 10 months before the policy became effective, whereas 10 indicates the earnings or employment status of those women who had their first child 10 months after the policy was implemented. It is difficult to identify trends due to the noise in the data, especially in that of the control group, which is much smaller in comparison with the treatment group. The noise is due to the fact that many women have unstable employment and large shares are entering or dropping out of the labor force. The figures are

similar when we consider earnings and employment status at different times (two years and five years after birth).

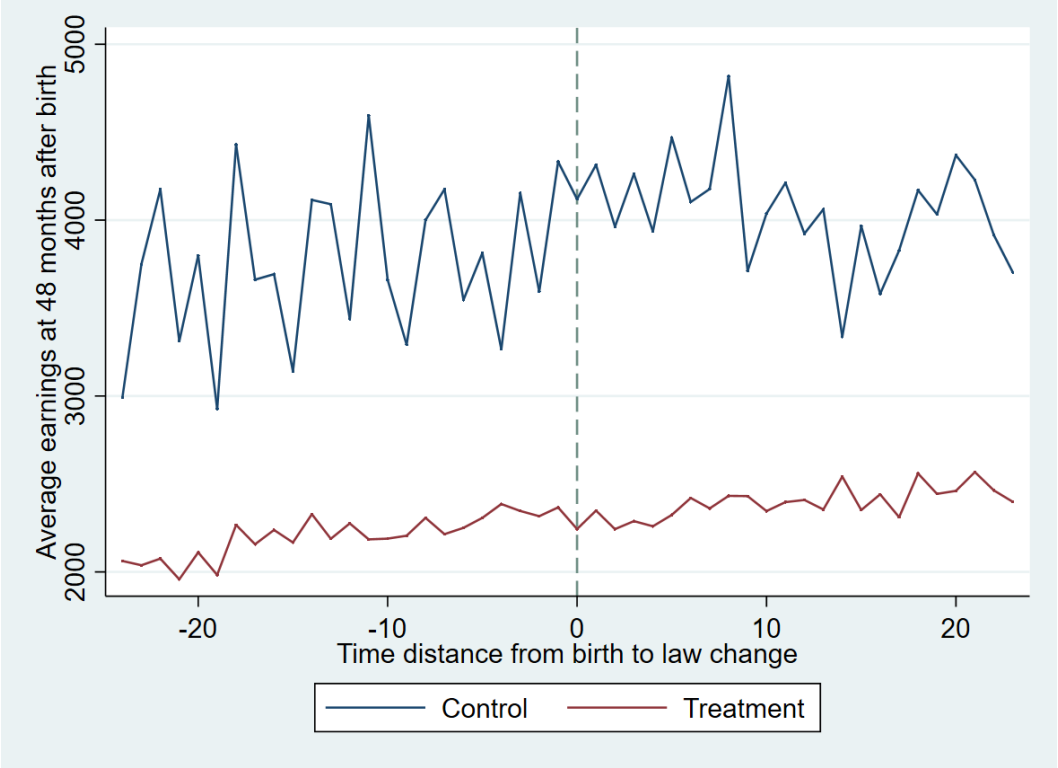

FIGURE 4. AVERAGE MONTHLY EARNINGS FOUR YEARS AFTER BIRTH

Notes: Average monthly earnings of women who had their first child in the two years before and after the federal paid maternity leave legislation was implemented.

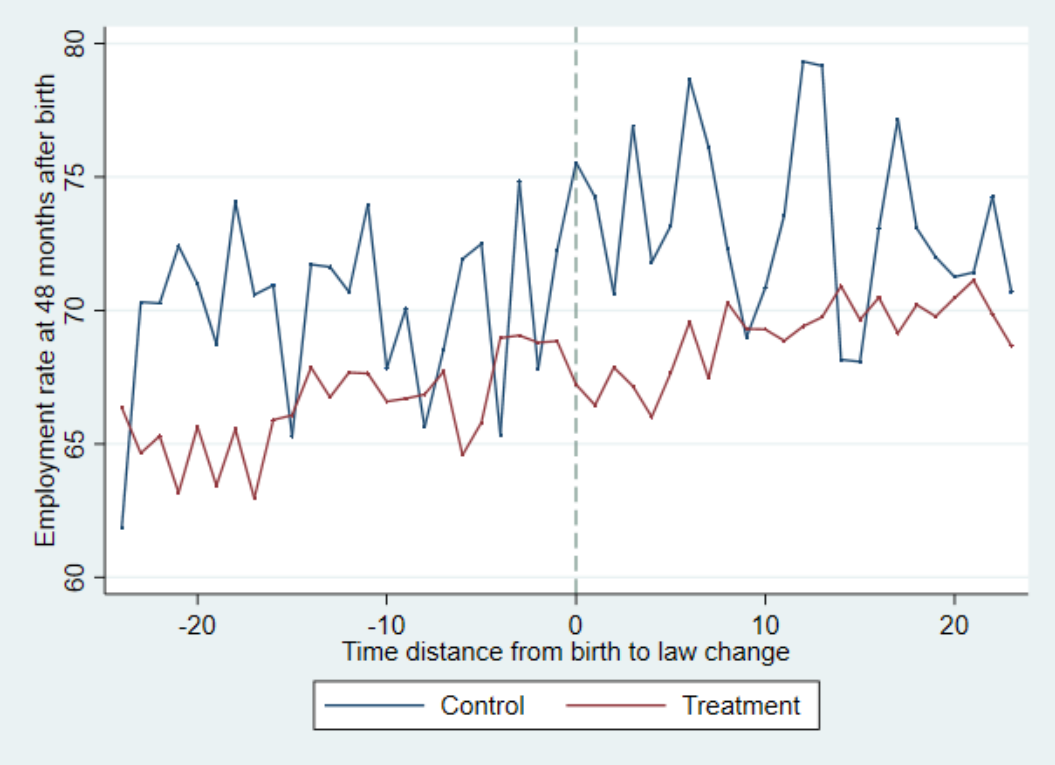

FIGURE 5. EMPLOYMENT STATUS OF WOMEN FOUR YEARS AFTER BIRTH

Notes: Employment rate of women who had their first child in the two years before and after the federal paid maternity leave legislation was implemented.

IV. Results

We present the results from our econometric model (Equation 1) in Tables 3 to 5. Table 3 presents the impact on women's log monthly earnings at different times relative to the birth of the first child, Table 4 their employment status, while Table 5 shows the impact on women returning to work in the three-year and seven-year periods after birth.

We find that the MLL had a small and negative effect of about 4 per cent on monthly earnings 12 months before birth but a positive effect of 2 per cent at four years after birth. A large share of women in Switzerland are employed and would theoretically qualify for paid maternity leave even before the legislation, as shown in Tables 1 and 2. The new legislation could have incentivized the small group of women who would otherwise have stayed out of the labor market to participate before their first pregnancy. These women, given their weak attachment to the labor market, may have lower education levels or lower total work experience, and hence would receive a lower pay. Since these women are incentivized to stay employed during pregnancy, when normally many start to drop out of the labor force, and since many may also plan for a second child and hence would be induced to return to employment, these factors could then lead to more women staying employed for longer than they otherwise would have and hence, earn more because of greater experience and/or tenure; or they may work at a higher intensity and earn more simply due to a greater number of working hours.

We also find a very small and negative effect on women's employment rate 12 months before birth, and at four and five years after birth of first child. It is not surprising that there is a decrease in employment after women become mothers, especially if this is driven by the women with weak attachment to the labor market

who were induced by the maternity leave benefits to join before their pregnancies. Due to the cultural emphasis on women as the primary child care providers and a shortage of affordable childcare places (Ravazzini 2018), many women drop out of the labor market or work only at part-time rates when they have young children.

The decrease in employment before birth, however, is puzzling, as we expect to instead see an increase in employment since the policy will incentivize women who planned to become mothers to join the labor market in order to benefit from the paid maternity leave. We find no significant effects on mothers' likelihood to return to work in the three years and seven years after birth. Eventually, most mothers return to the labor market at some point in the next five years.

It is probable that the public mandate simply duplicated already existing private employer provided maternity leave, for which we do not have data, and this could explain the small effects that we find. This again would imply that the policy mainly benefited those women who would otherwise not receive paid maternity leave, i.e. those not in the labor force, or those working in smaller firms, low wage or transient jobs, or with shorter work experience. Ravazzini (2018) used variations in the implementation of paid maternity leave for public sector employees in Switzerland as a proxy and found no effect of the 2005 legislation on maternal employment.

Finally, since all women in all of the cantons in Switzerland who qualified received paid maternity leave benefits after the reform, unlike in the classic DID design where the control group does not receive any treatment, our empirical design could have under-estimated the impact of the policy.

TABLE 3 — MONTHLY EARNINGS (LOG)

VARIABLES	t=-12 (1)	t=6 (2)	t=12 (3)	t=24 (4)	t=48 (5)	t=60 (6)
Law*Treated Cantons	-0.0359***	-0.00151	0.00136	0.0158	0.0205**	0.00803
	(0.00811)	(0.0135)	(0.00923)	(0.0117)	(0.00850)	(0.0165)
Law	0.0301*	0.143***	-0.00519	-0.0280*	-0.0183	-0.00207
	(0.0149)	(0.0127)	(0.0184)	(0.0148)	(0.0121)	(0.0174)
Treated Cantons	0.175***	0.0193**	-0.0680***	-0.0539***	-0.0566***	-0.0208**
	(0.00438)	(0.00782)	(0.00527)	(0.00625)	(0.00461)	(0.00867)
Constant	8.209***	7.701***	7.749***	7.759***	7.814***	7.786***
	(0.0105)	(0.0211)	(0.0154)	(0.0154)	(0.0127)	(0.0156)
Year FE	X	X	X	X	X	X
Month FE	X	X	X	X	X	X
Canton FE	X	X	X	X	X	X
Observations	102,352	74,246	79,034	82,361	83,769	84,770
R-squared	0.009	0.041	0.055	0.058	0.061	0.062

Notes: Clustered standard errors at the cantonal level are in parentheses. Includes cantonal, year and month fixed effects. Sample is restricted to women aged 15-45 years old at birth of first child and who were contributing to social security before the birth. Columns 1 to 6 show the estimation at different time periods relative to birth: from 12 months before birth (1) to 6 (2), 12 (3), 24 (4), 48 (5) and 60 (6) months after birth.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE 4 — EMPLOYMENT STATUS

VARIABLES	t=-12 (1)	t=6 (2)	t=12 (3)	t=24 (4)	t=48 (5)	t=60 (6)
Law*Treated Cantons	-0.0175***	-0.0174	-0.0140	-0.00252	-0.00975*	-0.0128**
	(0.00460)	(0.0109)	(0.00925)	(0.00610)	(0.00520)	(0.00608)
Law	0.0160**	0.0579***	0.0152*	-0.00175	-0.00338	0.00981
	(0.00590)	(0.0107)	(0.00824)	(0.00649)	(0.00630)	(0.00797)
Treated Cantons	-0.0182***	-0.125***	-0.104***	-0.0984***	-0.0838***	-0.0668***
	(0.00246)	(0.00556)	(0.00475)	(0.00323)	(0.00269)	(0.00306)
Constant	0.886***	0.686***	0.694***	0.699***	0.715***	0.717***
	(0.00543)	(0.00561)	(0.00913)	(0.00788)	(0.00782)	(0.00868)
Year FE	X	X	X	X	X	X
Month FE	X	X	X	X	X	X
Canton FE	X	X	X	X	X	X
Observations	118,983	118,983	118,983	118,983	118,983	118,983
R-squared	0.006	0.010	0.010	0.011	0.008	0.007

Notes: Clustered standard errors at the cantonal level are in parentheses. Monthly earnings are in natural logarithms and have not been indexed. Includes cantonal, year and month fixed effects. Sample is restricted to women aged 15-45 years old at birth of first child and who were contributing to social security before the birth. Columns 1 to 6 show the estimation at different time periods relative to birth: from 12 months before birth (1) to 6 (2), 12 (3), 24 (4), 48 (5) and 60 (6) months after birth.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

TABLE 5 —WOMEN WHO EVER RETURNED TO WORK AFTER BIRTH

VARIABLES	(1) Ever returned to work in 3 years after birth	(2) Ever returned to work in 7 years after birth
Law*Treated Cantons	-0.00148	0.000673
	(0.00221)	(0.00201)
Law	0.00817***	0.000134
	(0.00150)	(0.00115)
Treated Cantons	-0.0257***	-0.0111***
	(0.00116)	(0.00107)
	(0.000810)	(0.000664)
Constant	0.918***	0.950***
	(0.000752)	(0.000575)
Year FE	X	X
Month FE	X	X
Canton FE	X	X
Observations	28,555,920	28,555,920
R-squared	0.003	0.002

Notes: Clustered standard errors at the cantonal level are in parentheses. Includes cantonal, year and month fixed effects. Sample is restricted to women aged 15-45 years old at birth of first child and who were contributing to social security before the birth.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

V. Conclusion

Taking advantage of the variation in the implementation of paid MLL in Switzerland among its different cantons, we used a rich administrative dataset and a difference-in-difference approach to estimate the impact of the first Swiss paid maternity leave legislation on first-time mothers' earnings and employment as well as on their likelihood to return to work in the medium term after birth. We identified a small and negative reduction in monthly earnings at 12 months before birth of about 4 per cent but a small and positive impact on earnings of 2 per cent at four years after birth, as well as small and negative impacts on employment 12 months before birth and at four and five years after. We did not find any impact on mothers' likelihood to return to work in the medium term.

These results are mostly in line with our hypothesis that the policy primarily incentivized the small group of women who were out of the labor force to participate before and during their pregnancies and who then dropped out once they had children, due to their weak attachment to the labor market and/or due to cultural values emphasizing mothers as the primary child care providers and the shortage of affordable childcare places. In addition, since the paid maternity leave increased incentives to stay employed for longer and to increase working hours, these could explain the higher earnings we see post-birth.

VI. REFERENCES

Adda, Jérôme, Christian Dustmann, and Katrien Stevens. 2017. “The Career Costs of Children.” Journal of Political Economy 125 (2): 293–337. https://doi.org/10.1086/690952.

Anderson, Deborah J., Melissa Binder, and Kate Krause. 2002. “The Motherhood Wage Penalty: Which Mothers Pay It and Why?” The American Economic Review 92 (2): 354–58.

———. 2003. “The Motherhood Wage Penalty Revisited: Experience, Heterogeneity, Work Effort, and Work-Schedule Flexibility.” Industrial and Labor Relations Review 56 (2): 273–94. https://doi.org/10.2307/3590938.

Angelov, Nikolay, Per Johansson, and Erica Lindahl. 2015. “Parenthood and the Gender Gap in Pay.” Journal of Labor Economics 34 (3): 545–79. https://doi.org/10.1086/684851.

Angrist, Joshua D., and William N. Evans. 1998. “Children and Their Parents’ Labor Supply: Evidence from Exogenous Variation in Family Size.” The American Economic Review 88 (3): 450–77.

Asai, Yukiko. 2015. “Parental Leave Reforms and the Employment of New Mothers: Quasi-Experimental Evidence from Japan.” Labour Economics 36 (October): 72–83. https://doi.org/10.1016/j.labeco.2015.02.007.

Attanasio, Orazio, Peter Levell, Hamish Low, and Virginia Sánchez-Marcos. 2015. “Aggregating Elasticities: Intensive and Extensive Margins of Female Labour Supply.” w21315. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w21315.

Baker, Michael, and Kevin Milligan. 2008. “How Does Job-Protected Maternity Leave Affect Mothers’ Employment?” Journal of Labor Economics 26 (4): 655–91. https://doi.org/10.1086/591955.

Baum, Charles L. 2002. “A Dynamic Analysis of the Effect of Child Care Costs on the Work Decisions of Low-Income Mothers with Infants.” Demography 39 (1): 139–64. https://doi.org/10.2307/3088368.

———. 2003a. “The Effects of Maternity Leave Legislation on Mothers’ Labor Supply after Childbirth.” Southern Economic Journal 69 (4): 772–99. https://doi.org/10.2307/1061651.

———. 2003b. “The Effect of State Maternity Leave Legislation and the 1993 Family and Medical Leave Act on Employment and Wages.” Labour Economics 10 (5): 573–96. https://doi.org/10.1016/S0927-5371(03)00037-X.

Berger, Lawrence M., and Jane Waldfogel. 2004. “Maternity Leave and the Employment of New Mothers in the United States.” Journal of Population Economics 17 (2): 331–49.

Bianca, Buligescu, Crombrugghe Denis De, Mentesoglu GÃ¼lcin, and Montizaan Raymond. 2008. “Estimating the Wage Penalty for Maternal Leave.” 005. ROA Research Memorandum. Maastricht University, Research Centre for Education and the Labour Market (ROA). https://ideas.repec.org/p/unm/umaror/2008005.html.

Broadway, Barbara, Guyonne Kalb, Duncan McVicar, and Bill Martin. n.d. “The Impact of Paid Parental Leave on Labour Supply and Employment Outcomes,” no. 9801: 49.

Budig, Michelle J., and Paula England. 2001. “The Wage Penalty for Motherhood.” American Sociological Review 66 (2): 204–25. https://doi.org/10.2307/2657415.

Budig, Michelle J., and Melissa J. Hodges. 2010. “Differences in Disadvantage: Variation in the Motherhood Penalty across White Women’s Earnings Distribution.” American Sociological Review 75 (5): 705–28.

———. 2014. “Statistical Models and Empirical Evidence for Differences in the Motherhood Penalty across the Earnings Distribution.” American Sociological Review 79 (2): 358–64.

Buligescu, Bianca, Denis Crombrugghe, Mentesoglu Gülcin, and Raymond Montizaan. 2008. “Estimating the Wage Penalty for Maternal Leave.” Maastricht : ROA, Research Centre for Education and the Labour Market, Research Memoranda, January.

Correll, Shelley J., Stephen Benard, and In Paik. 2007. “Getting a Job: Is There a Motherhood Penalty?” American Journal of Sociology 112 (5): 1297–1338. https://doi.org/10.1086/511799.

Davis, Julie Hirschfeld. 2018. “Obama Plans to Push Paid Family and Sick Leave for Workers.” The New York Times, January 19, 2018, sec. U.S. https://www.nytimes.com/2015/01/15/us/politics/obama-plans-to-push-bill-for-providing-paid-leave-to-workers-.html.

DeNavas-Walt, Carmen, and Bernadette D Proctor. 2015. “Income and Poverty in the United States: 2014,” 80.

Erosa, Andres, Luisa Fuster, and Diego Restuccia. 2010. “A General Equilibrium Analysis of Parental Leave Policies.” Review of Economic Dynamics 13 (4): 742–58.

Gangl, Markus, and Andrea Ziefle. 2009. “Motherhood, Labor Force Behavior, and Women’s Careers: An Empirical Assessment of the Wage Penalty for Motherhood in Britain, Germany, and the United States.” Demography 46 (2): 341–69.

“GESIS - Leibniz-Institut Für Sozialwissenschaften.” n.d. Accessed March 4, 2018. https://dbk.gesis.org/dbksearch/sdesc2.asp?no=3880&search=issp%202002&search2=&field=all&field2=&DB=e&tab=0&notabs=&nf=1&af=&ll=10.

Goldin, Claudia, and Joshua Mitchell. 2017. “The New Life Cycle of Women’s Employment: Disappearing Humps, Sagging Middles, Expanding Tops.” Journal of Economic Perspectives 31 (1): 161–82. https://doi.org/10.1257/jep.31.1.161.

Goodpaster, Natalie K. 2010. “Leaves and Leaving: The Family and Medical Leave Act and the Decline in Maternal Labor Force Participation.” The B.E. Journal of Economic Analysis & Policy 10 (1): 1–38.

Gruber, Jonathan. 1994. “The Incidence of Mandated Maternity Benefits.” The American Economic Review 84 (3): 622–41.

Guillet, Delphine, Johanna Huber, Laura Ravazzini, and Christian Suter. n.d. “Conditions de travail dans les administrations cantonales en Suisse, 1991-2012.” Text. Accessed February 21, 2019. https://libra.unine.ch/Publications/32969.

“How Big Is the Wage Penalty for Mothers? - Daily Chart.” n.d. Accessed May 26, 2019. https://www.economist.com/graphic-detail/2019/01/28/how-big-is-the-wage-penalty-for-mothers?fsrc=scn/fb/te/bl/ed/howbigisthewagepenaltyformothersdailychart&fbclid=IwAR2wHzxNIpGamwJUXtmFNRzT8afIiYnj80zP6-KUIyCOA-AYboSJc8NMDdk.

Juhn, Chinhui, and Kristin McCue. 2017. “Specialization Then and Now: Marriage, Children, and the Gender Earnings Gap across Cohorts.” The Journal of Economic Perspectives 31 (1): 183–204.

Juhn, Chinhui, and Kevin M. Murphy. 1997. “Wage Inequality and Family Labor Supply.” Journal of Labor Economics 15 (1): 72–97.

Kelly, Kimberly, and Linda Grant. 2012. “Penalties and Premiums: The Impact of Gender, Marriage, and Parenthood on Faculty Salaries in Science, Engineering and Mathematics (SEM) and Non-SEM Fields.” Social Studies of Science 42 (6): 869–96.

Killewald, Alexandra, and Jonathan Bearak. 2014. “Is the Motherhood Penalty Larger for Low-Wage Women? A Comment on Quantile Regression.” American Sociological Review 79 (2): 350–57.

Klerman, Jacob Alex, and Arleen Leibowitz. 1998. “Labor Supply Effects of State Maternity Leave Legislation.” Product Page. 1998. https://www.rand.org/pubs/reprints/RP715.html.

Kleven, Henrik, Camille Landais, and Jakob Egholt Søgaard. 2018. “Children and Gender Inequality: Evidence from Denmark.” Working Paper 24219. National Bureau of Economic Research. https://doi.org/10.3386/w24219.

Lalive, Rafael, Analia Schlosser, Andreas Steinhauer, and Josef Zweimuller. 2014. “Parental Leave and Mothers’ Careers: The Relative Importance of Job Protection and Cash Benefits.” The Review of Economic Studies 81 (1 (286)): 219–65.

Lalive, Rafael, and Alois Stutzer. 2010. “Approval of Equal Rights and Gender Differences in Well-Being.” Journal of Population Economics 23 (3): 933–62.

Lalive, Rafael, and Josef Zweimüller. 2009. “How Does Parental Leave Affect Fertility and Return to Work? Evidence from Two Natural Experiments.” The Quarterly Journal of Economics 124 (3): 1363–1402.

Leung, Man Yee Mallory, Fane Groes, and Raul Santaeulalia-Llopis. 2016. “The Relationship between Age at First Birth and Mother’s Lifetime Earnings: Evidence from Danish Data.” PLOS ONE 11 (1): e0146989. https://doi.org/10.1371/journal.pone.0146989.

Miller, Claire Cain. 2017. “The Economic Benefits of Paid Parental Leave.” The New York Times, December 21, 2017, sec. The Upshot. https://www.nytimes.com/2015/02/01/upshot/the-economic-benefits-of-paid-parental-leave.html.

Moffitt, Robert. 1984. “Profiles of Fertility, Labour Supply and Wages of Married Women: A Complete Life-Cycle Model.” The Review of Economic Studies 51 (2): 263–78. https://doi.org/10.2307/2297691.

Oesch, Daniel, Oliver Lipps, and Patrick McDonald. 2017. “The Wage Penalty for Motherhood: Evidence on Discrimination from Panel Data and a Survey Experiment for Switzerland.” Demographic Research 37 (December): 1793–1824. https://doi.org/10.4054/DemRes.2017.37.56.

Olivetti, Claudia, and Barbara Petrongolo. 2017. “The Economic Consequences of Family Policies: Lessons from a Century of Legislation in High-Income Countries.” The Journal of Economic Perspectives 31 (1): 205–30.

Paula England, Jonathan Bearak, Michelle J. Budig, and Melissa J. Hodges. 2016. “Do Highly Paid, Highly Skilled Women Experience the Largest Motherhood Penalty?” American Sociological Review 81 (6): 1161–89. https://doi.org/10.1177/0003122416673598.

Perrenoud, Stéphanie. 2015. La protection de la maternité: étude de droit suisse, international et européen. Collection de l’Institut du droit des assurances et du travail IDAT 39. Berne: Stämpfli.

Petersen, Trond, Andrew M. Penner, and Geir Høgsnes. 2010. “The Within-Job Motherhood Wage Penalty in Norway, 1979-1996.” Journal of Marriage and Family 72 (5): 1274–88.

Ramey, Valerie A., and Neville Francis. 2009. “A Century of Work and Leisure.” American Economic Journal: Macroeconomics 1 (2): 189–224. https://doi.org/10.1257/mac.1.2.189.

Ravazzini, Laura. 2018. “Childcare and Maternal Part-Time Employment: A Natural Experiment Using Swiss Cantons.” Swiss Journal of Economics and Statistics 154 (1): 15. https://doi.org/10.1186/s41937-017-0003-x.

Rossin-Slater, Maya, Christopher J. Ruhm, and Jane Waldfogel. 2013. “The Effects of California’s Paid Family Leave Program on Mothers’ Leave-Taking and Subsequent Labor Market Outcomes.” Journal of Policy Analysis and Management 32 (2): 224–45. https://doi.org/10.1002/pam.21676.

Ruhm, Christopher J. 1998. “The Economic Consequences of Parental Leave Mandates: Lessons from Europe.” The Quarterly Journal of Economics 113 (1): 285–317.

Staff, Jeremy, and Jeylan T. Mortimer. 2012. “Explaining the Motherhood Wage Penalty During the Early Occupational Career.” Demography 49 (1): 1–21.

Waldfogel, Jane. 1998. “The Family Gap for Young Women in the United States and Britain: Can Maternity Leave Make a Difference?” Journal of Labor Economics 16 (3): 505–45. https://doi.org/10.1086/209897.

Zabel, Cordula. 2009. “Eligibility for Maternity Leave and First Birth Timing in Great Britain.” Population Research and Policy Review 28 (3): 251–70.