DISCUSSION PAPER SERIES

IZA DP No. 10149

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August 2016

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

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ABSTRACT

Career Breaks after Childbirth: The Impact of Family Leave Reforms in the Czech Republic*

The Czech Republic is a country with a strong attachment of women to the labor market, but with one of the longest paid family leaves, which is often followed by a spell of unemployment. Using a difference-in-differences methodology, we study the impact of two reforms of the duration of the parental allowance on the labor market status of mothers 2 to 7 years after childbirth. While the 1995 reform prolonged the allowance from 3 to 4 years, the 2008 reform allowed some parents to shorten the duration of the allowance to only 2 or 3 years with an equivalent total monetary amount. The impact of the reforms on the length of women's career breaks following childbirth is substantial.

JEL Classification: J13, J18, J22

Keywords: family leave, female labor supply, unemployment, policy evaluation

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* This paper was financially supported by the Czech Science Foundation, grant number 14-36154G. This paper is based on data from the Czech Statistical Office, Labour Force Survey 1993–2013. The responsibility for all remaining errors and conclusions drawn from the data lies entirely with the authors.

1 Introduction

Work experience and job tenure are crucial for career development and wage growth. Although fathers increasingly participate in caring for their children, career breaks around childbirth remain a major cause of gender differences in labor market outcomes.[1] The duration of these career breaks is affected by family leave policies that regulate the length of job protection (which entitles women to return to their previous jobs up to a certain time after childbirth) and the amount and duration of the allowance (in case of paid family leave).

What is the optimal design for family leave policies? Longer family leave is associated with better child outcomes but is more detrimental to the professional development of mothers (Galtry and Callister 2005).[2] Previous studies on optimal duration of family leave conclude that 6–12 months minimize the negative impact on subsequent employment of mothers (Akgunduz and Plantenga 2013, Ciccia and Verloo 2012). The impact of family leave policies, however, also depends on other factors, such as social norms, childcare availability and labor market characteristics (Gornick and Meyers 2004), which renders the optimal family leave design a difficult task.

This paper considers the impact of an extremely long duration of statutory paid family leave (up to 4 years) on the labor market status of mothers with young children, using two reforms of parental leave allowance in the Czech Republic imple-

[1] Negative effects of career breaks on women's wages are documented e.g. by Anderson, Binder, and Krause (2002), Spivey (2005), Miller (2011), Ejrnaes and Kunze (2013). Impact on other labor market outcomes, such as loss of human capital and occupational choice is studied e.g. in Francesconi (2002), Adda, Dustmann, and Stevens (2011). Previous studies have also documented a strong positive correlation between duration of paid family leave and gender wage gaps (OECD 2012), as well as between duration of paid family leave and gender unemployment gaps (Bičáková 2012).

[2] Family leave of several months, which allows mothers to bond with their child while keeping their jobs, increases female labor force participation, employment and future earnings (Hashimoto et al. 2004, Han, Ruhm, and Waldfogel 2009, Baker and Milligan 2008). Family leave of several years, on the other hand, represents a major break in mothers' careers that often leads to human capital deterioration and productivity declines, which have negative impact on female labor market outcomes (Schone 2004, Lalive and Zweimüller 2009, Schönberg and Ludsteck 2014).

mented in 1995 and 2008.[3] We argue that the Czech Republic represents a unique economic context that helps us bring new evidence about the effect of family leave policies on career interruptions after childbirth: Czech women have very high labor force participation (exceeding 80%), a heritage of the Communist regime (Fodor 2005). This strong overall attachment of Czech women to the labor force contrasts sharply with the absence of mothers of children younger than 3 from the labor market.[4] The Czech Republic has one of the longest paid family leaves with one of the highest take up rates in the EU (OECD 2010) and very limited institutional childcare for children younger than 3.[5] This places the Czech Republic among the three EU countries (together with Slovakia and Hungary) with the most sizable consequences of childbirth on mothers' employment. The importance of family leave policies is highlighted by Figure 1, which shows strong positive correlation between the duration of statutory paid family leave and the impact of motherhood on employment (defined as a percentage point difference between the employment rate of childless women and women with at least one child under 6).

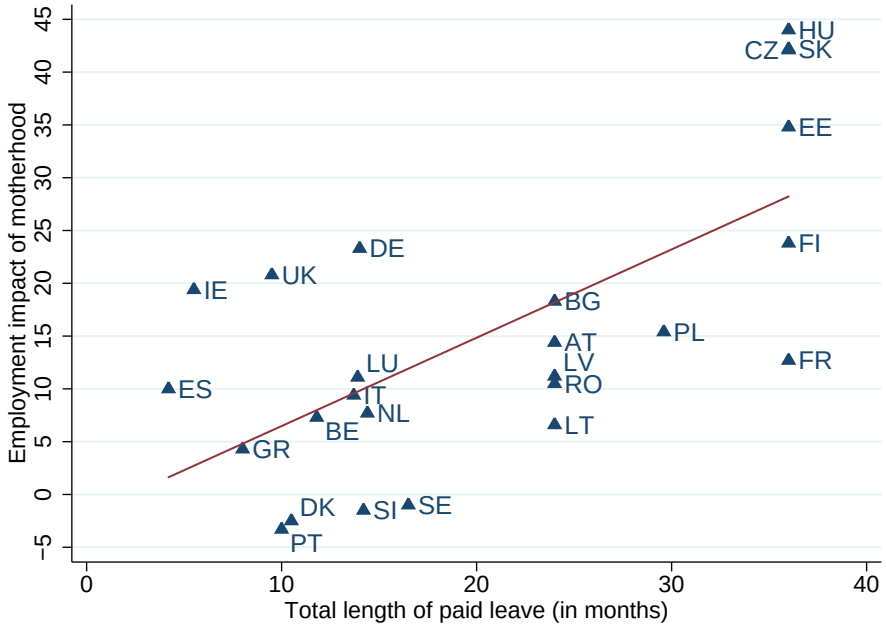
Our data reveal that the paid family leave in the Czech Republic is often followed by a spell of unemployment. Around 10% of Czech mothers whose youngest child was 3 were unemployed in 2010 and the share reached 15% for those with children aged 4 and 5. Over 80% of Czech mothers with children under 5 who were unemployed in 2010 entered unemployment immediately after the end of the family leave. In addition, women who return to their pre–childbirth jobs under the job protection provisions often become unemployed soon afterwards. While a majority of Czech

[3]Parental leave constitutes the second part of the family leave for a majority of Czech women, following a shorter but more highly paid maternity leave. We provide the details of the family leave policies in Section 2.1.

[4]When we exclude mothers with children 0–3, the labor force participation of the prime–age Czech women is as high as 93%. The situation is similar in other Central and Eastern European countries, but the employment rate of women without children younger than 3 is the highest in the Czech Republic (Fodor 2005).

[5]Only 0.4% of children younger than 3 were enrolled in institutional childcare in 2012 (source: Institute for Health Information and Statistics of the Czech Republic).

Figure 1: Family leave and employment impact of motherhood in the EU countries.



Note: The total length of paid leave is the statutory maximum length of postnatal paid leave (in months) in 2012. The employment impact of motherhood is the difference between the employment rate of childless women and women with at least one child under 6 (in percentage points) in 2013. Source: Annual reviews of the International Network on Leave Policies and Research and EUROMOD country reports for the length of leave. Eurostat: Employment rate of adults by gender, age groups, highest level of education attained, number of children and age of youngest child for the employment impact of motherhood.

mothers become employed again by the time their child is 7 (83% in 2010), the family leave followed by an unemployment spell is likely to have a detrimental impact on women's future labor market outcomes and professional careers. Strikingly, the job loss is experienced even by the college–educated.[6] In order to distinguish between the initial family leave and the subsequent unemployment spell (or a further unpaid inactivity spell), this paper focuses on all three types of labor market status: employment, unemployment and inactivity, separately.[7]

[6]Compared to the 1.3% (1.6%) of unemployed among 25–40 year old Czech male college graduates (childless female college graduates), the probability of unemployment among college educated mothers of the same age with children 3–6 was 5% in 2010.

[7]We use the International Labor Organization definition of unemployment, which classifies an individual as unemployed if s/he does not have a job, is actively seeking a job, and is ready to start working within 2 weeks. Inactive individuals are not in the labor force, i.e. neither employed, nor unemployed. We discuss the potential institutional and behavioral interchangeability between

Previous studies have only explored the impact of family leave reforms on *employment* of mothers after childbirth (Baker and Milligan 2008, Lalive and Zweimüller 2009, Baum 2003, Fitzenberger, Sommerfeld, and Steffes 2013, Schönberg and Ludsteck 2014, Geyer, Haan, and Wrohlich 2015; and, for the 1995 reform in the Czech Republic, also Müllerova 2014). Following the previous research, we first estimate the impact of the reforms of the duration of parental allowance in the Czech Republic on mothers' *non–employment*.[8] We then extend the previous literature by paying special attention to the post–leave *unemployment* or *inactivity*. As the intent of family leave policies is to help mothers to financially bridge the child–rearing period before they return to work, we call the impact of the reforms on unemployment and inactivity of mothers *after* the end of the statutory paid family leave the "unintended effects".[9]

The two reforms considered in this paper affected the length of the statutory paid family leave by altering the duration of the parental allowance. While the 1995 reform increased the duration from 3 to 4 years, and kept the monthly allowance level basically the same, the 2008 reform allowed higher–income women to choose a shorter duration with higher monthly payments, maintaining the total amount of the allowance. The job protection regulations remained unchanged during the two reforms, ensuring eligible women to return to their previous jobs up to their child's third birthday.[10]

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the post–leave unemployment and inactivity (as first questioned in general by Flinn and Heckman 1983) in Sections 2.2 and 3.2.

[8]The non–employment rate is the share of population that is not in employment. It is equal to 1 minus the employment rate (used in the previous studies).

[9]The only paper we are aware of that explores the impact of family leave policies on unemployment is Das and Polachek (2015). However, they consider the unintended effects of changes in family leave regulations on unemployment of all young women, and not specifically that of mothers after childbirth.

[10]Note that the duration of the benefit and that of the job protection are identical in a majority of the countries and their reforms typically alter both features in the same way. The few exceptions are the 1992, 1993, and 2007 German reforms studied in Schönberg and Ludsteck (2014), Bergemann and Riphahn (2015). The Czech reforms differ by a longer family leave duration and much higher take up rate (80% in the Czech Republic versus 65% in Germany, see OECD 2010).

We estimate the impact of the two reforms on the labor market status of women 2–7 years after childbirth separately by the age of their youngest child,[11] using a differences–in–differences design. We follow the standard approach in the literature (see for example, Naz 2004, Schone 2004, Sánchez-Mangas and Sánchez-Marcos 2008, Geyer, Haan, and Wrohlich 2015, Bergemann and Riphahn 2015) and choose women with older children to control for the aggregate trends in the labor market.[12] We find that the impact of the two reforms on the joblessness of Czech women 2–7 years after childbirth was indeed substantial. In response to the 1995 reform, around 40% of mothers prolonged their family leave beyond their child's third birthday (when their 3–year job protection period expired), and shifted post–leave unemployment forward to the fifth year after childbirth or beyond. The 2008 reform shortened the family leave of at least one fourth of mothers and shifted the post–leave job search back to when a child turns 2 or 3.

Overall, the 1995 reform increased the non–employment rate among mothers with children younger than 8 from 47% to 53%, while the 2008 reform reduced it from 56% to 53%. The "unintended" effects of the two reforms on the post–leave labor force status of women can be summarized as follows: The 1995 reform increased the non–employment rate among mothers of children aged 4–7 (i.e. beyond the new statutory duration) from 16% to 21%, out of which the occurrence of post–leave unemployment went up from 7% to 10% and that of post–leave inactivity from 9%

[11] We omit the first 2 years, as almost all women with children younger than 2 are on family leave in our sample. By the age of 7, all children are at elementary school and a majority (83% in 2010) of their mothers are again employed.

[12] An alternative approach would be to estimate the effect of the reforms using a regression discontinuity design around the birth of the child. Müllerova (2014) applies RD to the same data to estimate the impact of the 1995 reform on mothers' employment in the Czech Republic. The samples of mothers with exact information on a child's birth and with a child born around the date of the reforms, as used by Müllerova (2014), are, however, too small to enable a convincing estimation of the effect of the reforms by the age of the youngest child on inactivity and unemployment separately as we do in this paper. This and the measurement error in the exact ages of children were the main reasons we decided to use the stronger identification assumptions, but richer data that allowed us to address a wider range of questions. Note that the comparable subset of our results is similar to Müllerova's findings, suggesting validity of both identification strategies.

to 11%. The 2008 reform, on the other hand, has reduced the non–employment rate among mothers with children 4–7 (i.e. beyond the maximum new statutory duration) from 27% to 23%, with a decrease in the occurrence of unemployment from 15% to 13% and in post–leave inactivity from 12% to 10%.

The paper is organized as follows: The next section is devoted to the institutional and demographic background of the two reforms. We then present our empirical strategy and descriptive evidence of changes in labor market status of women after childbirth. The results section is followed by a robustness analysis, discussion of our identification assumptions and the conclusion.

2 Institutional and Demographic Background

2.1 Family Leave Policies

Family leave policies in the Czech Republic include job protection, maternity benefits, and parental allowance. Czech parents are eligible for *job–protected leave* until the child's third birthday.[13] The 3–year long job protection period was introduced in 1990 and has not changed since.

Czech women who were employed for at least 270 days in the 2 years prior to a child's birth are entitled to receive *maternity benefits* for 28 weeks (starting 6 to 8 weeks prior to birth). Maternity benefits pay 70% of a woman's salary from the last 12 months prior to the commencement of maternity leave. There were no substantial changes to maternity benefits since 1990.[14]

[13]The eligibility requirements are relatively modest. All employees employed on a permanent contract are eligible for job protection. An employee with a fixed–term contract is also eligible for job protection, but only up to the date of contract expiration.

[14]From 1990 to 2007, maternity benefits paid 69% of a woman's salary and were increased by 1 percentage point to 70% in 2008. The amount of maternity benefits is reduced for higher income levels using reduction bands and has a maximum threshold. The reduction bands have increased gradually over time since the early 1990s. There was no substantial change in the reduction bands with the exception of 2009, when the maximum daily amount of maternity benefits increased from CZK 479 to 963 per day (this corresponds to an increase from 13.5 to 27.1 year 2000 euros).

A parent caring for a child is also eligible for a *parental allowance*, a non–means–tested flat rate benefit. The parental allowance starts either immediately after maternity benefits end or right after childbirth if the mother is not eligible for maternity benefits.[15] The eligibility criteria for the parental allowance required the parent to earn below a certain threshold (in force until 2004, when the threshold was CZK 3480 per month—one fifth of the average wage at that time) and the child could not attend a childcare facility for more than a certain amount of time per month (this clause remains in force today).[16] Given very few part–time jobs in the Czech Republic, the income threshold strongly discouraged women from labor force participation while receiving parental allowance until 2004. The absence of institutional childcare is one of the key reasons only very few mothers work while receiving parental allowance even today.[17] It also seems that Czech women associate their family leave with the duration of the allowance rather than with the job protection period (Krizkova et al. 2011). The strength of job protection in transition economies has been often questioned in the literature due to an unstable business environment, in which companies and jobs disappear quickly (Kantorova 2004, Fodor 2005). Further, there is some anecdotal evidence that Czech employers often try to evade the job protection rule and/or discourage women from returning to their previous jobs even in times of economic prosperity (Kucharova 2006).

However, this change only affected benefits for women with very high wages (the maximum amount applied to women with a gross monthly income of CZK 71,000, which was more than three times the average female wage at that time).

[15]The paid family leave in the Czech Republic therefore consists of the maternity benefits and/or parental allowance. There is no paternity leave. Parental allowance can, in principle, be received by a father rather than a mother but this is very rare (1.8% of parental allowance recipients were fathers in 2015), as men's jobs still represent the main source of income for a majority of families.

[16]As discussed in Section 2.3, however, the availability of institutional childcare, in particular for children under 3, was very limited over the analyzed period.

[17]Fewer than 6% of women worked while receiving the parental allowance in 2012 (source: Survey of Income and Living Conditions 2012, author's calculations).

The 1995 Reform

Until 1995, duration of parental allowance coincided with the three–year job–protected leave. In the 1995 reform, parental allowance duration was prolonged until the child's fourth birthday and thus exceeded the unchanged job protection leave by one year. All parents with children under 4 as of October 1, 1995 (i.e. not only the parents of the newborns) were eligible for the prolonged parental allowance.

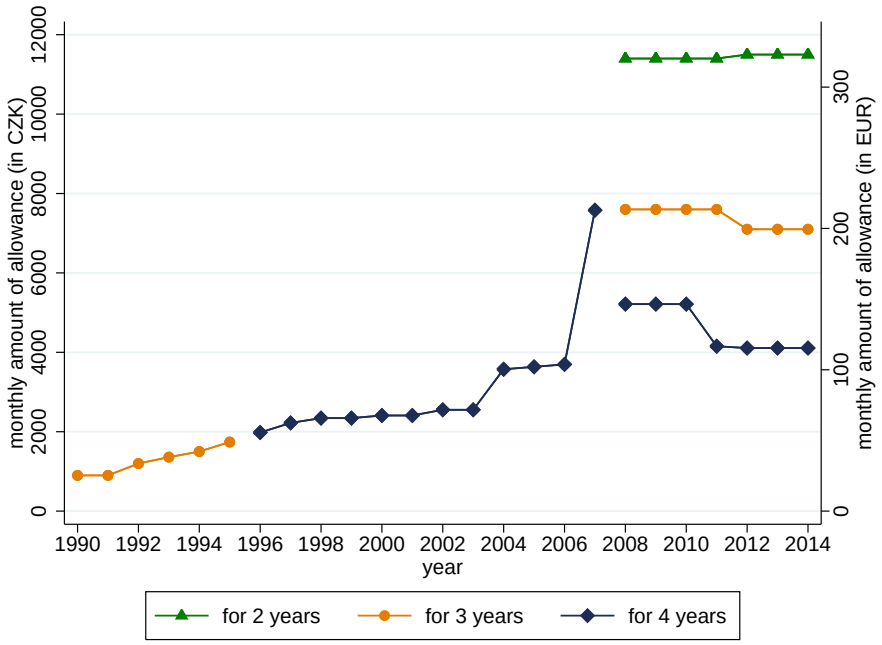
The monthly allowance payment increased only slightly from CZK 1,740 to CZK 1,848 (about 50 euros, which corresponded to one fourth of an average wage in the economy) in 1995. This minor change was part of the gradual increase in the monthly allowance over the 1990s and early 2000s due to the rise in the minimum subsistence income it was derived from (Figure 2). When evaluating the impact of the 1995 reform, we focus on 1993–1999, during which the monthly allowance payment experienced only negligible changes relative to the extension of the duration of the allowance by 1 year, and the corresponding rise in the total amount of benefits received.

A substantial increase in the amount of the parental allowance took place only in 2007, when the monthly amount doubled (from CZK 3,696 to CZK 7,580, which corresponded to an increase from EUR 104 to 213 in year 2000 euros, see Figure 2). However, this was a temporary change immediately followed by reform of the parental allowance in 2008, which also affected the parents of children born in 2007.

The 2008 Reform

Since January 1, 2008, parents have been allowed to choose the length and the corresponding level of the monthly parental allowance. The shortest track paid CZK 11,400 (EUR 320, in year 2000 euros) per month until the child's second birthday, the standard track paid CZK 7,600 (EUR 213) until the child's third birthday, and the longest track paid CZK 7,600 until the child was 21 months old and then CZK

Figure 2: Monthly parental allowance in the Czech Republic, 1990-2014.



Note: The figure depicts the average monthly amount of parental allowance for each maximum length of the allowance. The right axis reports amounts expressed in year 2000 euros.

3,800 (EUR 107) until the child's fourth birthday (see Figure 2). All parents were entitled to the 4–year track. Entitlement to the 3–year track was conditional on one of the parents having worked for at least 270 days in the 2 years prior to birth. If, in addition, one parent earned on average at least CZK 16,500 (EUR 463) per month in the 12 months prior to the birth,[18] they were also eligible for the 2–year track.

The new system of parental allowance covered not only parents of children born after January 2008. All parents of children younger than 22 weeks as of January 2008 could choose the 2–year, 3–year or 4–year track, and parents with children younger than 21 months as of January 2008 were eligible for the 3– or 4–year track, conditional on fulfilling the other eligibility criteria. Therefore, women who took advantage of the 2–year track of parental allowance might have returned to the labor market after 2 years of leave no sooner than in August 2009, and women who

[18]In 2008, an average male wage was CZK 29,429 and an average female wage CZK 21,789.

chose the 3–year track might have returned to the labor market after three years of leave no sooner than in May 2009.

There were some minor changes to the parental allowance scheme after 2008. The monthly amounts of the allowance decreased for the 4–year track in 2011 (it only paid CZK 7,600 until the child was 9 months old and then CZK 3,800 until the child's fourth birthday) and for the 3–year track in 2012 (from CZK 7,600 to CZK 7,100 per month). The purpose of these changes was to unify the total amount of allowance per child for all tracks. Since 2012, the maximum total amount of allowance per child has been CZK 220,000 (EUR 6,180), regardless of the length of parental allowance.

When we evaluate the impact of the 2008 reform, we focus on 2004–2012. We abstract from the other changes, as they are minor relative to the introduction of the flexible parental allowance system and they do not alter the duration of paid parental leave.[19] We exclude the cohorts affected by the 2007 and 2011 changes from the estimation of the impact of the 2008 reform as part of the robustness checks in Section 5.3.

2.2 Unemployment Benefits

As we also focus on the labor market status of mothers with young children after the statutory paid family leave and their high unemployment rate, we need to consider the monetary incentives provided by the unemployment benefit scheme. In general, unemployed individuals in the Czech Republic are eligible for unemployment benefits during their first 6 months of unemployment if they worked for at least 12 months in the prior 3 years. During the 1990s, the benefit paid 60% of previous monthly earnings for the first 3 months and 50% of monthly earnings for the next 3 months

[19]The 2007 increase in the monthly parental allowance was quite substantial, but it was in place for 1 year only and all parents (including those of children born in 2007) were forced to switch to the new parental allowance system in 2008.

of unemployment.[20]

An individual is also eligible for unemployment benefits if s/he cared for a child under 3 for at least 12 months in the last 3 years. However, if eligibility for unemployment benefits is based on the time spent caring for a child instead of formal work, the amount of unemployment benefits is much lower, corresponding to about 55% of the monthly parental allowance after 1995 and about 34% of the allowance for the 3–year track after 2008.[21]

Post–leave unemployment therefore represents, for a majority of Czech women who become unemployed immediately after the paid family leave, a substantial drop in monthly funds.[22] Post–leave inactive and long–term unemployed mothers receive no benefits, unless they are eligible for social assistance. The social assistance benefits, however, are means–tested by a low family income threshold, so that a majority of women with working husbands are not eligible. Nevertheless, all unemployed and non–working parents caring for a child younger than 7 have health insurance contributions covered by the state.

2.3 Fertility and Childcare Availability

The 1990s were marked by a steep decline in fertility rates in most transition economies (Sobotka 2003), the Czech Republic being no exception (see Figure 3). The transformation to democracy and a market economy was accompanied by a decline in real wages, changes in the life styles of young couples and other factors that

[20]In 1998, the amount went down slightly to 50 and 40% of previous earnings, and in 2005, it was again increased slightly to 50 and 45% of previous earnings, respectively. In 2009, the length of benefit receipt was shortened to 5 months, paying 65, 50, and 45% of previous earnings in the first 2 months, next 2 months, and the last month, respectively.

[21]The unemployment benefit in this case is calculated not from the previous wage, but from the minimum living standard, which corresponded to around 10–20% of the average wage in the economy throughout the 1990s and 2000s.

[22]The only exception are women on the 4–year track of the parental allowance, whose monthly allowance of 3,800 CZK (after the first 9 months, since 2008) is comparable to the unemployment benefit they receive for the first 6 months of unemployment if they become unemployed at the end of their parental allowance.

negatively affected fertility. The fertility rate of Czech women dropped from 1.67 in 1993 to 1.13 in 1999. Sobotka (2003) argues that in central Europe, this decline was mainly caused by postponement of parenthood (the average age of Czech women at first birth increased from 22.6 in 1993 to 24.6 years in 1999). The fertility rate then started to increase slowly in the early 2000s and reached its peak of 1.5 in 2008 (Figure 3). This increase was mainly a consequence of a generation of baby boomers from the 1970s entering childbearing age.

While fertility evolved rather dynamically over the two periods we study, the changes are contrary to the potential impact we would expect the reforms to have on fertility (suggesting our estimates represent the lower bounds) and are driven, primarily, by external factors (for discussion, see Section 5.4). The substantial decline in fertility rates in the early 1990s also impacted institutional childcare availability.

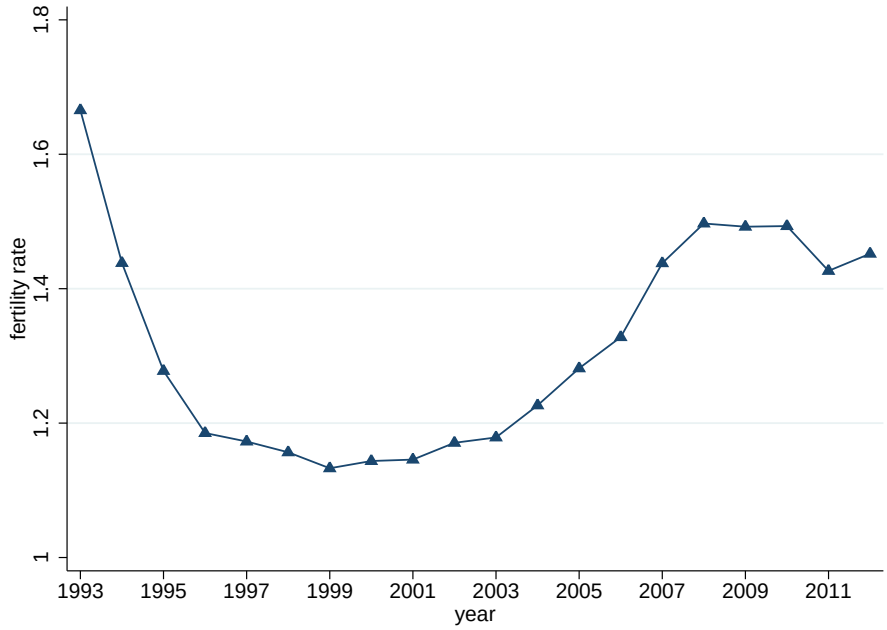
Pre–school education in the Czech Republic consists of nurseries (facilities for children under 3) and kindergartens (for children older than 3). Both public and private nurseries are fairly scarce in the Czech Republic. Only around 0.4% of children under 3 attend public nurseries (see Figure 4).[23] This is to a large extent a result of massive closures of public nurseries in the early 1990s driven by a substantial drop in fertility, but also by a broader change in family policy, which largely promoted conservative policies that encouraged women to leave the labor market to raise their children (Saxonberg and Sirovátka 2006).[24]

The situation is markedly different for children aged 3–5 (i.e., children under the compulsory school age of 6), as about 80% of them are enrolled in formal public childcare. The supply of kindergartens was also slightly reduced in the 1990s, but

[23]Official statistics for private nurseries are not available, but Eurostat estimates that the overall enrollment of children under 3 in some type of childcare was 2% in 2012 (source: Eurostat, Formal childcare by duration and age group).

[24]The number of nurseries declined from 1,043 in 1990 to 247 in 1993 and continued to slowly decline afterwards.

Figure 3: Fertility rates, 1993–2012



Note: The figure depicts fertility rates in the Czech Republic in 1993–2012. The fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age–specific fertility rates. Source: Czech Statistical Office.

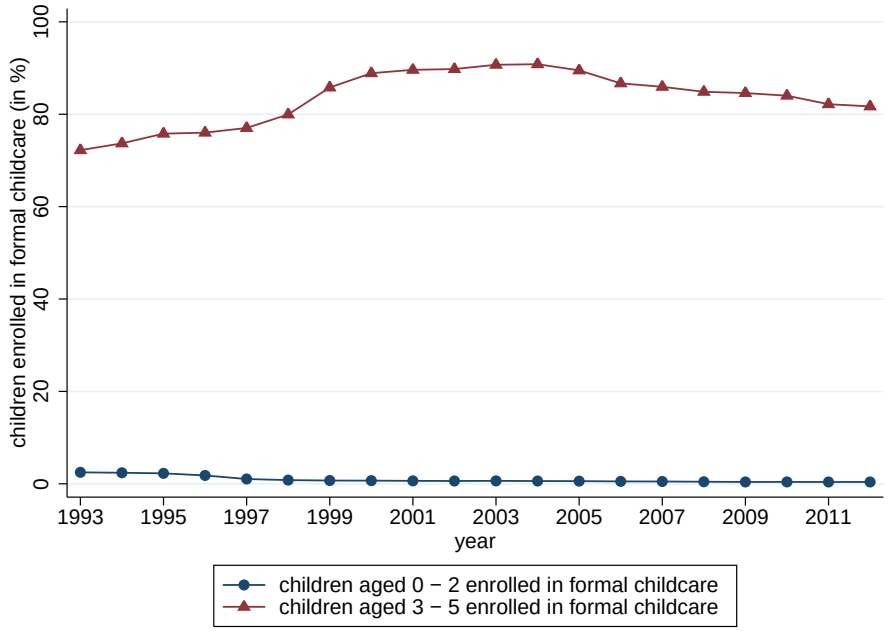
the decline was not substantial, so that the overall enrollment of children aged 3–5 increased slightly in the 1990s as a consequence of a large fertility drop. The enrollment started to diminish only in 2005 when the baby boom commenced and many kindergartens became too crowded to accept children under 4 (see Figure 4).

3 Empirical Strategy

3.1 Difference–in–Differences Approach

We use the 1995 and 2008 reforms of the parental allowance and the difference–in–differences design to identify the effect of the duration of paid family leave on the labor market status of prime-aged (25-55) women whose youngest child is 2-7 at the

Figure 4: Enrollment of pre–school children in formal childcare



Note: The figure depicts formal childcare enrollment for children aged 0–2 and 3–5 in the Czech Republic in 1993–2012. The enrollment is calculated as a share of children of a given age attending public childcare to all children in this age group. Source: Institute for Health Information and Statistics of the Czech Republic and the Czech Statistical Office.

time of the survey.[25] We do not study the effect on mothers with children under 2 years of age, since almost all mothers in that group are on leave (throughout the entire period of the analysis, see Section 4) and since the reforms have not altered the parental allowance during the first 2 years after childbirth. We choose 7 as the upper age limit, as this is the latest age at which children enter primary school.[26]

We estimate the impact of the reforms on mothers' labor market status separately by the age of their youngest child, i.e. women whose youngest child is 2, 3, 4, 5, 6 or 7 constitute separate treatment groups. We follow the standard approach in the literature (Naz 2004, Schone 2004, Sánchez-Mangas and Sánchez-Marcos 2008, Geyer, Haan, and Wrohlich 2015, Bergemann and Riphahn 2015) and use mothers

[25]Since eligibility for the parental allowance is universal (all women caring for children under a given age threshold are eligible), the treatment group consists of all women with children of a given age.

[26]Compulsory schooling starts at the age of 6, but is sometimes postponed till 7.

with older children to control for the aggregate trends and business cycle effects on the labor market. The control group for our difference–in–differences strategy is the same for all groups of treated women and consists of prime–aged women whose youngest child is 8–13 at the time of the survey. While these women were likely to face similar labor market conditions as mothers with somewhat younger children, they were not affected by the reform, because they were only entitled to parental leave in the pre–reform system with their youngest child.[27]

The period of interest covers 7 years of data around the 1995 reform (1993–1999)[28] and 10 years of data around the 2008 reform (2004–2013). We define the before period the same way for all treatment and control groups—it covers data from the first quarter of 1993 to the third quarter of 1995 for the 1995 reform, and data from 2004 to 2007 for the 2008 reform. The beginning of the after–period for the treatment group is set to the year when a mother of a child of a given age becomes affected by the reform. While a mother of a child aged 3 or younger is affected by the 1995 reform immediately, the potential impact on a mother of a child of 4 can be observed only in 1996, as the reform had no consequences on mothers whose children were already 4 in 1995. Therefore, the beginning of the after-period differs for each group of the treated women (the older the child, the later the beginning of the after–period) for both the 1995 and 2008 reforms (see Appendix Table A.1).

For each group of treated women (defined by the age of their youngest child) and for each reform, we estimate the following equation:[29]

$$Y_{it} = \beta_0 + \beta_1 Treat_i + \beta_2 After_t + \beta_3 (Treat_i * After_t) + X_{it}^{'}\theta + \gamma_t + \gamma_{gt} + \epsilon_{it}. \quad (1)$$

[27]There might have been an indirect effect of the reform on their unemployment or inactivity through their possible future child. However, the likelihood that these women will have another child is not very high as only around one quarter of women have another child when their youngest child is older than 7.

[28]The collection of the Czech LFS data started in 1993, so we cannot use earlier years.

[29]The control group remains the same in all estimated equations, consisting of mothers whose youngest child is 8–13.

The outcome of interest (Y_{it}) is a binary variable that denotes a woman's labor market status. We first estimate the impact of the reforms on non–employment, which includes both unemployment and inactivity, and then focus on unemployment and inactivity separately.[30] $Treat_i$ is the fixed effect for the treatment group and $After_t$ is the fixed effect for the after–reform period. The impact of the parental allowance reforms is captured by β_3, the coefficient of the indicator variable for the treated women in the after–reform period (the period in which this group of treated women was affected by the new parental allowance legislation). We also control for the common time trend in the labor supply using fixed effects for each quarter–year combination (γ_t), for education–specific time trends using interactions between the quarter–year fixed effects and four educational groups (γ_{gt}), and for the observable characteristics (X_{it}) including quadratic polynomial of age, four education dummies, dummy variables for cohabiting and married women, number of children, dummy variable for presence of elderly household members, and regional binary indicators.

3.2 Data Description and Key Definitions

We use the Czech Labor Force Survey (LFS), which is a quarterly survey covering about 60,000 Czech individuals.[31] The dataset includes detailed information about household structure, economic status of the household members and their demographic characteristics, including their age. Unfortunately, there is no information about the quarter or month of birth. Therefore, we only observe the age of children (and mothers) in years and do not know, for example, if a child is 2 years and 1 month or 2 years and 11 months. The age of the youngest child is therefore reported in completed years, e.g. children aged 2 are children older than 2 and under

[30] In these three sets of estimations, Y_{it} takes on value 1 if a woman is non–employed / unemployed / inactive, respectively, and 0 otherwise.

[31] It is a repeated cross–section with a 5–quarter rotational panel structure and limited information on the previous labor market status of the non–employed.

3 years.[32]

We define the economic status of women in the sample based on their self–reported status in the LFS data using the International Labour Organization (ILO) definitions. Consistently with the ILO definition, we classify an individual as unemployed if s/he does not have a job, is actively seeking a job, and is ready to start working within 2 weeks. However, we make one important adjustment to the ILO definition concerning maternity and parental leave. While the ILO often treats individuals on maternity and parental leave as employed, we treat them as inactive in our analysis. As we are interested in overall career interruptions after childbirth in a country with very long family leave duration and imperfect job protection, we treat individuals on maternity and parental leave as inactive even though they may have a formal attachment to work.[33]

There is a strand of literature that questions the difference between unemployment and inactivity (Flinn and Heckman 1983, Gönül 1992, Benati 2001) and the usefulness of the ILO definition (Jones and Riddell 1999, Brandolini, Cipollone, and Viviano 2006). We argue that career breaks after childbirth represent a situation where the distinction between the two states is both meaningful and important. First, the distinction helps us disentangle the initial period of paid family leave from the post–leave unemployment.[34] Second, the social costs associated with the

[32]The rotational panel structure allows observation of changes in the age of the youngest child between the consecutive quarters and thus creation of a more precise measure of the child's age. However, this approach (used e.g. by Müllerova 2014) leads to a substantial reduction in the sample size. In particular, as not all households are followed for all 5 quarters, the detailed age information can be inferred from a quarter–to–quarter changes in age only for a subset of households. Moreover, the exact change in the age of the child across the 5 quarters is not always observed due to imprecise reporting.

[33]According to the ILO definition, if a person has a formal attachment to his/her job, but is temporarily not at work because of the maternity/parental leave, the person is still employed. While this is a reasonable assumption when the leave is short and the likelihood of a parent returning to her/his job is close to one, it still ignores the fact that while on leave, an individual does not acquire work experience but, rather, his or her human capital is likely to deteriorate. Moreover, as attested by both the data and the anecdotal evidence, the formal attachment to one's job under the job protection in the Czech Republic may actually not ensure that a person can eventually return to that job.

[34]Post–leave unemployment is likely to have a more negative impact both on women's con-

post–leave unemployment and post–leave inactivity substantially differ. Third, the post–leave unemployment signals a job loss and an (in)voluntary change of a job, whereas post–leave inactivity may, in principle, reflect a mothers' decision to prolong her family leave beyond the statutory duration and does not necessarily mean a job change. Fourth, in line with the test designed in the literature (Flinn and Heckman 1983), the limited transition information that we have suggests that the unemployment to employment transition is much more frequent than the inactivity to employment transition both overall and, in particular among women with a child older than 4 (after the paid family leave).[35]

4 Changes in Labor Market Status Profiles

This section presents the changes in the labor market status (non–employment and unemployment) profiles of Czech mothers by the age of their youngest child over the two periods we study. Note that the evolution of the respective knots of these profiles over time shows the changes in the outcome variables of our difference–in–differences analysis in Section 5.

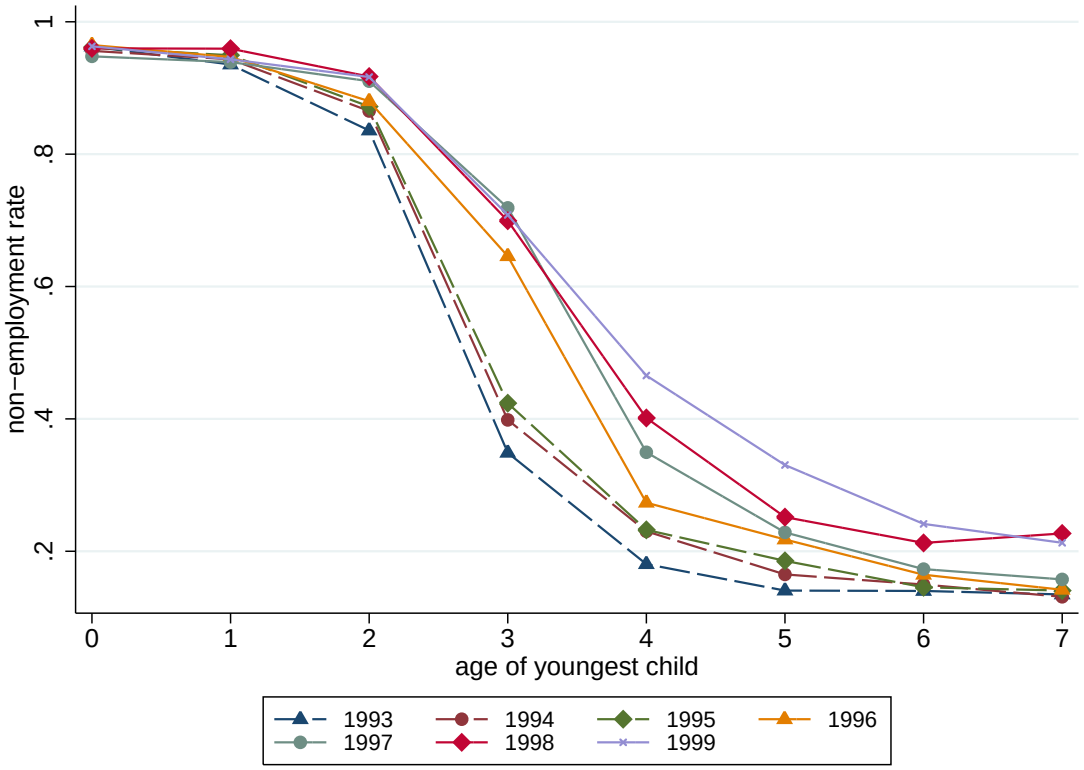
4.1 The 1995 Reform: Descriptive Evidence

Figure 5 illustrates the probability that a woman does not work (the non–employment rate) by the age of her youngest child in 1993–1999. The non–employment rate is almost 95% among women whose youngest child is 0 and 1 (till the child's first birthday, and between its first and the second birthday, respectively) and remains unaffected throughout the period. This points to a very high leave take–up rate

temporaneous utility as well as on the quality of post–childbirth jobs (Francesconi 2002, Adda, Dustmann, and Stevens 2011) compared to the initial period of inactivity while on paid family leave.

[35]While 36% of unemployed women with a child aged 4–7 enter employment in the subsequent quarter, only 20% of inactive women with a child of the same age do (source: LFS data, average over 1993–2014).

Figure 5: Female non–employment rate by the age of their youngest child, 1993–1999.



Note: The Figure illustrates the non–employment rate (share of inactive and unemployed in the population) for Czech women aged 25–54, by the age of their youngest child. The child's age is reported in years that the child had reached. Therefore, a child aged 3 is a child aged older than 3 and under 4 years, and therefore the mother of this child is no longer eligible for job protection. Source: Czech Labour Force Survey, 1993–1999.

among Czech mothers with children younger than 2 and is consistent with the fact that the first 2 years of family leave were not affected by the reform.[36] The non-employment rate is somewhat lower when the child is 2, and drops more substantially for women whose youngest child is 3 and 4. By the time the child is 5, only about 20% of women remain out of work, and this share remains fairly stable even for women with older children.

After the October 1995 reform, which prolonged the parental allowance from 3 to

[36]Unemployment among this group of mothers is close to zero—see Figure 6.

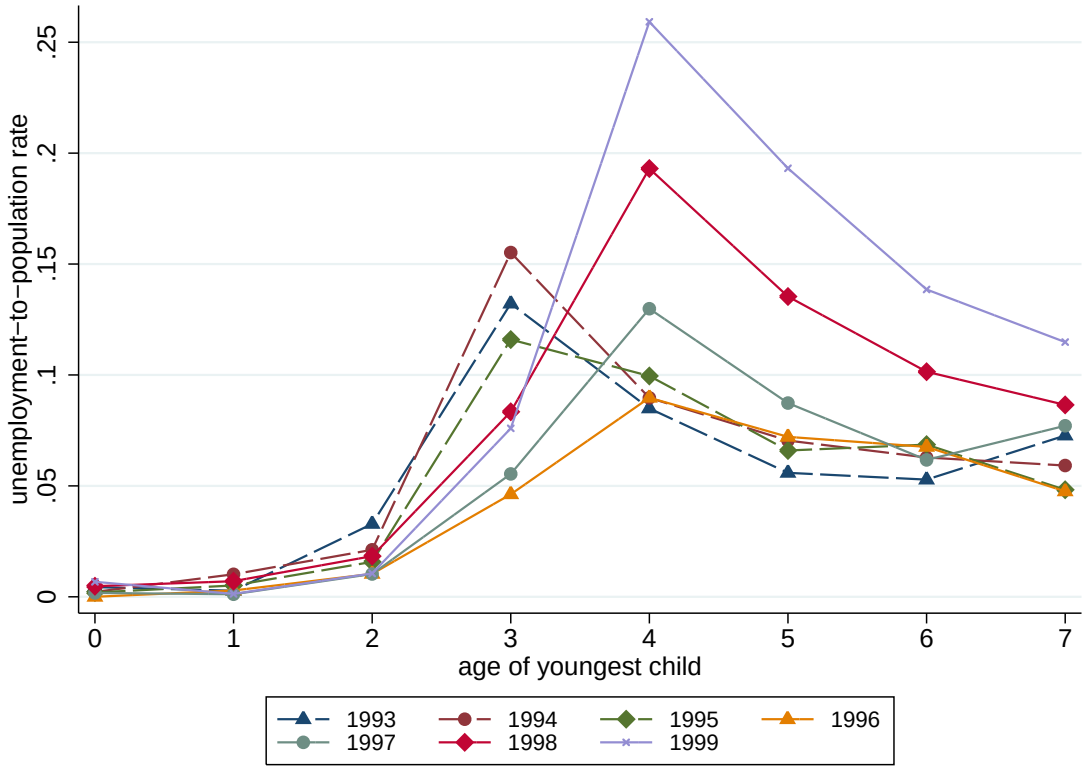
4 years, the profiles shift upwards for all groups of mothers with children aged 2 and older. The rise in non–employment is, however, most pronounced for mothers with a child of 3. Before the reform, only around 40% of women with a child aged 3 were out of work, but this share increased to 64% in 1996 and reached 70% in 1997 and stayed at this level for the rest of the period covered. This is not surprising, as the allowance receipt up to the child's fourth birthday required that a woman's earnings and the use of childcare facilities did not exceed certain limits. The interesting fact is that the monetary motivation was stronger than the fear of losing one's job, as the job protection continued to provide guarantees only up to a child's third birthday. We return to this fact when we discuss our main estimation results in Section 5. Figure 5 also illustrates a gradual after–reform increase in the non–employment rate among women whose youngest child was aged 4 and 5. This suggests that as a result of the reform, more women stayed out of work even past their child's fourth birthday, when the prolonged parental allowance payment finished.

Figure 6 reveals that a large part of the after–reform increase in non-employment among women with children aged 4, 5, 6, and, to some extent, 7, was driven by an increase in their unemployment. These women were no longer covered by job protection, so when they decided to return to work they had to search for a new job. The unemployment–to–population rate of women whose youngest child was aged 4 gradually increased from less than 10% in the pre–reform period to 26% in 1999.

Figure 6 also shows that the share of unemployed women with a child aged 3 dropped in the after–reform years. This is consistent with the prolonged return to the labor market and a shift of post–leave unemployment from the time the youngest child is 3 to 4 and more.[37] The gradual rise in unemployment of women

[37]Note that before the reform, the unemployment rate peaked among women whose youngest child was aged 3, the time when a majority of women returned from their leave to the labor force. As a result of the reform, this peak has shifted till the time when the child reaches 4.

Figure 6: Female unemployment–to–population rate by the age of their youngest child, 1993–1999.



Note: The Figure illustrates the unemployment–to–population rate (share of unemployed in the population) for Czech women aged 25–54, by the age of their youngest child. The child's age is reported in years that the child had reached. Therefore, a child aged 3 is a child aged older than 3 and under 4 years, and therefore the mother of this child is no longer eligible for job protection. Source: Czech Labour Force Survey, 1993–1999.

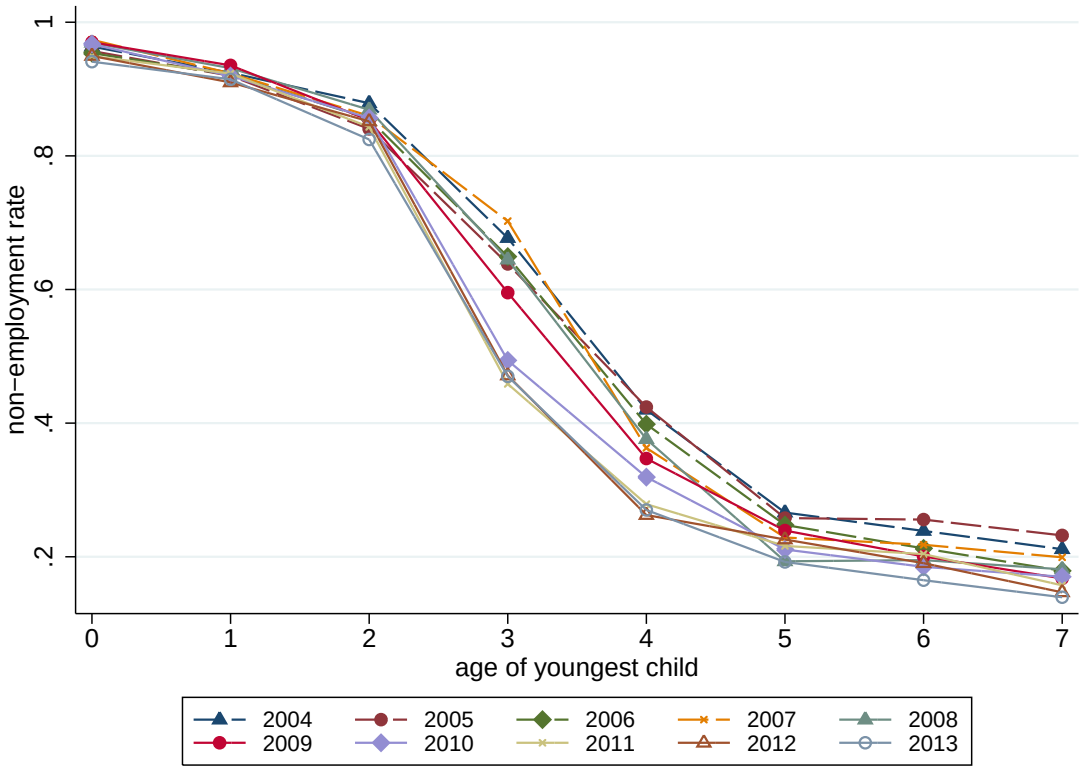
with children older than 4, however, might also be driven by the aggregate increase in the unemployment rate in the economy after the political and financial crises of 1997. In order to filter out the aggregate trends, we use the difference–in–differences strategy in the estimation of the impact of the reform in Section 5.

4.2 The 2008 Reform: Descriptive Evidence

The second reform (in effect since January 2008) introduced a flexible system of the duration of the parental allowance that enabled some women to shorten their paid

leave from 4 to either 3 or 2 years with a higher monthly allowance. Figure 7 reports the female non–employment rate by the age of the youngest child for 2004–2013 and reveals that the overall shape of the non–employment profile for the pre–reform years (2004–2007) is very similar to the one shown in Figure 5 for 1996–1999.

Figure 7: Female non–employment rate by the age of their youngest child, 2004–2013.



Note: The Figure illustrates the non–employment rate (share of inactive and unemployed in the population) for Czech women aged 25–54, by the age of their youngest child. The child's age is reported in years that the child had reached. Therefore, a child aged 3 is a child older than 3 and under 4 years, and therefore the mother of this child is no longer eligible for job protection.
Source: Czech Labour Force Survey, 2004–2013.

The figure reveals, however, that important changes in the non–employment of women with small children took place after the 2008 reform: The non–employment rate among mothers whose youngest child was 3 dropped from almost 70% in 2004–2007 to 60% in 2009 and then further plummeted to less than 50% in 2010–2013, sug-

gesting that many eligible women shortened their paid leave from 4 to 3 years.[38] Although the 2008 reform has also allowed women with sufficiently high pre–childbirth income to choose a 2–year track parental allowance, the data show no evidence that women were more likely to return to work after 2 years on leave in the after–reform period than prior to the reform.[39] We conjecture that the main reason was again the lack of childcare facilities for children under 3 (see Section 2.3).

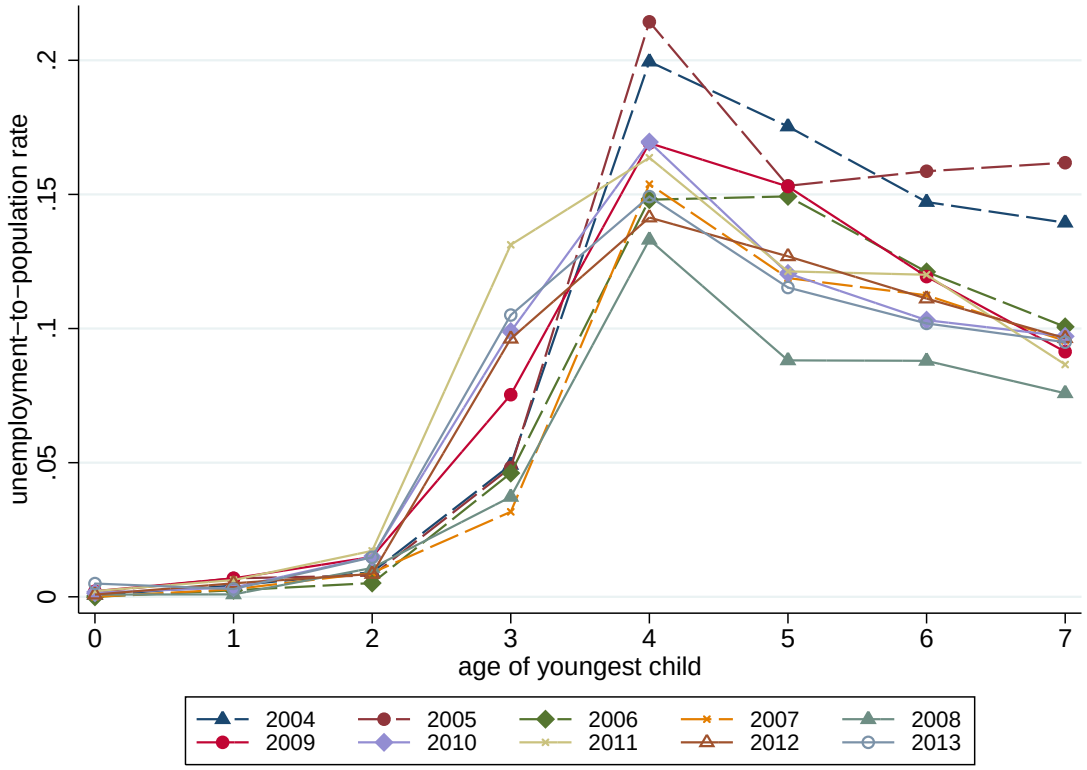
Finally, we also observe some decrease in the non–employment rate among women whose youngest child was aged 4 (and to a smaller extent also for children aged 5). As the unemployment–to–population rate for these women did not change much in response to the reform (see Figure 8), the decrease in their non–employment rate was driven by a decline in the post–leave inactivity. However, the unemployment–to–population rate increased substantially for women whose youngest child was 3, the period immediately following the 3–year track of the allowance.

Again, as in the case of the 1995 reform, we cannot rule out that the observed changes (in particular in unemployment) were not driven by the aggregate trends, in particular the economic crisis that hit the Czech labor market in 2009. We filter out the effect of aggregate labor market conditions using the control groups of women with older children in the next section.

[38]The delay in the effects of the reform was caused by its design. The first women who took advantage of the flexible system returned to the labor market only in 2009 (for details, see Section 2.1).

[39]This is consistent with the statistics of the Czech Ministry of Labour and Social Affairs, which report that only 6% of women chose the 2–year track in 2011.

Figure 8: Female unemployment–to–population rate by the age of their youngest child, 2004–2013.



Note: The Figure illustrates the unemployment–to–population rate (share of unemployed in the population) for Czech women aged 25–54, by the age of their youngest child. The child's age is reported in years that the child had reached. Therefore, a child aged 3 is a child older than 3 and under 4 years, and therefore the mother of this child is no longer eligible for job protection.
Source: Czech Labour Force Survey, 2004–2013.

5 Estimation Results

5.1 Baseline Specification

In our baseline specification, we estimate the effect of the 1995 and 2008 reforms on a mother's labor market status 2–7 years after childbirth by the age of her youngest child, using mothers with children 8–13 to control for aggregate trends in the labor market via the difference–in–differences design.[40] Our findings, reported in Tables 1

[40] Appendix Tables A.2 and A.3 show the summary statistics for the treatment and control groups, before and after the 1995 and 2008 reforms.

and 2, confirm the patterns already discernible from the changes in the labor market status profiles presented in Section 4.

The 1995 reform (which extended the parental allowance from 3 to 4 years) substantially increased the occurrence of non–employment among mothers with 3–6 year old children. Notably, mothers with a 3 year old child were 25.6 p.p. more likely not to work after the reform than before (see Panel A in Table 1).[41] The rise in non–employment of mothers of 4 and 5 year olds was 11.5 and 4.9 p.p., respectively. We observe no effect on women whose children had turned 7, suggesting that the impact of the reform on non–employment gradually faded away with time after childbirth.

Decomposition of the effect of the 1995 reform on the non–employment rate into the effect on inactivity and on unemployment (Panels B and C of Table 1) reveals that the impact of the parental allowance extension on the overall career breaks after childbirth operated through the following channels: The reform substantially raised the inactivity of all women with children 2–4, while shifting the after–leave unemployment from ages 2–3 towards 4–6. The impact of the reform on women's probability of staying at home until the youngest child turned 4 was enormous: it increased by as much as 35.7 p.p.

The fact that, in response to the 1995 reform, over one third of mothers of 3 year old children stayed on leave beyond the 3–year job protection period either implies a greater importance of the monetary aspect of the family leave over job security or questions the actual strength of the job protection in the Czech Republic.[42] Alternatively, the change in the parental leave policy may also have set a new social norm appealing to mothers to spend more time at home rearing their children, which could be equally as important as the pecuniary motive.[43] Unfortunately, with our

[41] Our non–employment results are strikingly similar to the estimates from Müllerova (2014) who finds—applying the regression discontinuity approach on mothers with 3 year old children around October 1995—that the employment probability of these mothers fell by 23 p.p.

[42] We discussed some evidence of weak job protection in Section 2.1.

[43] The 1995 reform was accompanied by a media campaign highlighting the benefits of mothers staying at home with their child.

Table 1: Results of the difference–in–differences estimation: 1995 reform

	Treatment group: women whose youngest child is:					
	aged 2	*aged 3*	*aged 4*	*aged 5*	*aged 6*	*aged 7*
	Panel A: impact on non–employment					
Treat*After	0.011	0.256***	0.115***	0.049***	0.018**	0.011
	(0.007)	(0.016)	(0.014)	(0.007)	(0.007)	(0.007)
R-squared	0.444	0.232	0.104	0.079	0.072	0.069
Observations	83549	83701	80879	68347	56513	44293
	Panel B: impact on inactivity					
Treat*After	0.047***	0.357***	0.065***	0.012**	0.001	0.003
	(0.008)	(0.016)	(0.006)	(0.005)	(0.004)	(0.005)
R-squared	0.539	0.25	0.058	0.043	0.04	0.04
Observations	83549	83701	80879	68347	56513	44293
	Panel C: impact on unemployment					
Treat*After	-0.037***	-0.100***	0.050***	0.038***	0.016***	0.008
	(0.004)	(0.006)	(0.012)	(0.007)	(0.005)	(0.005)
R-squared	0.039	0.042	0.06	0.053	0.049	0.047
Observations	83549	83701	80879	68347	56513	44293

Note: The treatment groups consist of prime–aged women (aged 25–55), whose youngest child is 2–7. The control group consists of prime–aged women whose youngest child is 8–13. For each treatment group, a separate regression is estimated by the age of the youngest child, but the control group is fixed in all regressions. All regressions include dummies for the treatment group and after period, quarter–year dummies, quarter–year dummies interacted with level of education, and other control variables. The beginning of the after–period for the treatment group is set to the year when a mother of a child of a given age becomes affected by the reform. Standard errors (in parentheses) are clustered at the group–year level (* p<0.10, ** p<0.05, *** p<0.01). Source: Czech LFS (1993–1999), own calculations.

data, we are not able to disentangle which of these factors was the most important in explaining the observed change in women's behavior.

The effect of the 1995 reform on non–employment of mothers with children aged 4 is a combination of an increase in post–leave inactivity (6.5 p.p.) and post–leave unemployment (5.0 p.p.). For mothers of older children (aged 5 and 6), the increase in non–employment is entirely driven by a rise in unemployment. The share of women who were inactive or unemployed with a child of 7 or more seems again unaffected by the reform. The absence of the long–term effects of the 1995 reform

on women's labor market careers will be, however, questioned when we later consider a heterogeneous impact of the reforms by education.

As expected, the 2008 reform that offered women from higher income families[44] an option to receive the same total amount of parental leave allowance over a shorter period of 2 or 3 years, had an opposite but smaller effect when compared to the 1995 reform. Panel A in Table 2 shows that the option to reduce the duration of paid parental leave led to a decrease in non–employment by 14.7 and 8.0 p.p. of mothers of 3 and 4 year old children, respectively. It raised, however, the probability of non–employment of mothers of 2 year old children by 2.9 p.p.

These results can again be partly explained by a "trade–off" between inactivity and unemployment, as in the case of the 1995 reform. Panels B and C of Table 2 reveal that the 2008 reform reduced the probability of inactivity of women with 3 and 4 year old children by as much as 22.4 and 7.4 p.p., respectively, but had almost no impact on other mothers. The observed reduction in inactivity of women with 3 year old children was partly compensated by a rise in the likelihood of unemployment (by 7.7 p.p.). The occurrence of unemployment increased among mothers of 2 year old children by 2.8 p.p. The flexible parental leave allowance schedule clearly induced some mothers from higher–income families to take shorter family leave and return to labor force sooner shifting the post–leave unemployment to an earlier stage (when their children were 2 or 3).

The dependence of the choice of the parental allowance duration on income, introduced by the 2008 reform, increased the heterogeneity among mothers in terms of the timing of their return to the labor market and strengthened the impact of selection on our results. We interpret the zero effect of the 2008 reform on unemployment of mothers of 4 year old children as a result of a reduction in unemployment risk of those who shortened their leave to 2 or 3 years and managed to find a job

[44] I.e. women who or whose husband met the 270 days work requirements and reached a certain monthly income level in the 2 years prior to birth, as described in Section 2.1.

Table 2: Results of the difference–in–differences estimation: 2008 reform

	Treatment group: women whose youngest child is:					
	aged 2	*aged 3*	*aged 4*	*aged 5*	*aged 6*	*aged 7*
	Panel A: impact on non–employment					
Treat*After	0.029***	-0.147***	-0.080***	-0.010*	-0.019***	-0.040***
	(0.006)	(0.013)	(0.007)	(0.006)	(0.006)	(0.006)
R-squared	0.456	0.243	0.14	0.117	0.118	0.115
Observations	86228	75829	66997	58713	51286	43896
	Panel B: impact on inactivity					
Treat*After	0.001	-0.224***	-0.074***	0.004	-0.006	-0.015***
	(0.005)	(0.016)	(0.007)	(0.005)	(0.005)	(0.004)
R-squared	0.589	0.28	0.067	0.045	0.044	0.044
Observations	86228	75829	66997	58713	51286	43896
	Panel C: impact on unemployment					
Treat*After	0.028***	0.077***	-0.006	-0.014***	-0.013**	-0.024***
	(0.004)	(0.005)	(0.007)	(0.004)	(0.005)	(0.007)
R-squared	0.077	0.066	0.085	0.085	0.089	0.088
Observations	86228	75829	66997	58713	51286	43896

Note: The treatment groups consist of prime–aged women (aged 25–55), whose youngest child is 2–7. The control group consists of prime–aged women whose youngest child is 8–13. For each treatment group, a separate regression is estimated by the age of the youngest child, but the control group is fixed in all regressions. All regressions include dummies for the treatment group and after period, quarter–year dummies, quarter–year dummies interacted with level of education, and other control variables. The beginning of the after–period for the treatment group is set to the year when a mother of a child of a given age becomes affected by the reform. Standard errors (in parentheses) are clustered at the group–year level (* p<0.10, ** p<0.05, *** p<0.01). Source: Czech LFS (2004–2013), own calculations.

by the time the child turned 4, and an increase in unemployment risk of those who shortened their post–leave inactivity to return to the labor market after 4 years (as reflected by the drop in inactivity of mothers of 4 year old children). The estimation results by education in the next section will further reveal the impact of the selection of women into the different parental allowance durations after the 2008 reform.

We have estimated the impact of the two reforms by the age of a woman's youngest child, in order to capture the changes in the evolution of women's attachment to the labor market after childbirth. If we assume a constant birth rate over

the two estimation periods,[45] we can summarize the impact of the reforms on women with young children by simply comparing the average pre–reform labor market status rates with the average after–reform labor market status rates as predicted by our differences–in–differences estimates.[46] In particular, we focus on the overall effect on women with children younger than 8 and on the "unintended" (post–statutory leave) effect on women with children 4–7, and find the following: The 1995 reform increased the non–employment rate among mothers with children younger than 8 from 47% to 53%. The non–employment among women of children aged 4–7 went up from 16% to 21%, with an increase in post–leave unemployment from 7% to 10% and a rise in post–leave inactivity from 9% to 11%. The 2008 reform achieved only a partial reversal of the effect of the 1995 reform and reduced the non–employment rate among women with children younger than 8 from 56% to 53%. In terms of the post–leave consequences, the non–employment among women with children 4–7 declined from 27% to 23%, with a decrease in unemployment from 15% to 13% and in post–leave inactivity from 12% to 10%.

5.2 Results by Education

Lalive and Zweimüller (2009) propose that monetary aspects of the family leave is of greater concern for lower–income women (with higher replacement rates), whereas job protection is more important for women with higher earnings potential and steeper labor market careers. This would suggest a greater impact of the reforms

[45] While the birth rate was indeed not constant over the two analyzed periods, it always moved in the opposite direction than the length of the statutory parental leave (as discussed in Section 2.3 and shown in Figure 3), i.e. in the direction that biases our results towards zero. These "aggregated" results (presented below) should be therefore also considered a lower bound of the true effects.

[46] In particular, we predict the after–reform non–employment (unemployment or inactivity) rate for each child–age category by adding the respective differences–in–differences estimates from Tables 1 and 2 to the corresponding pre–reform non–employment (unemployment or inactivity) rate (as shown in Appendix Tables A.2 and A.3). Assuming a constant birth rate, we then "aggregate" the pre– and after–reform non–employment (unemployment or inactivity) rate for a subgroup of women with young children by averaging the respective rates for each of the child–age categories.

of the duration of the parental allowance on lower–income women. We explore the potential heterogeneity in women's responses to the two reforms next. As income is not available in our data, we use the best proxy we have and estimate our baseline specification separately by two levels of education,[47] low and high, defined by woman's successful completion of high school.[48] Before we discuss the estimation results by education, we note that low– and high–educated women do not differ too much in terms of the use of parental leave (see Table 3). The differences in the non–employment rate between these two groups are driven to a great extent by a different likelihood of unemployment, which is twice as high (three times as high) among the low–educated when compared to the high–educated prior to the 1995 (2008) reform.

Table 3: Summary statistics by woman's education

	1995 reform				2008 reform			
	High education		Low education		High education		Low education	
	Before	After	Before	After	Before	After	Before	After
Non-employed	0.269	0.345	0.353	0.486	0.393	0.363	0.534	0.487
Inactive	0.215	0.284	0.258	0.371	0.334	0.305	0.377	0.341
Unemployed	0.053	0.061	0.095	0.115	0.059	0.059	0.157	0.147
Observations	14477	22268	13783	21149	18497	30948	15122	19174

Notes: The sample includes all treated women, i.e. women whose youngest child is 2–7. High education corresponds to ISCED 3 level with school leaving examination or more, while low education is defined as ISCED 3 level with apprenticeship certificate (but without school leaving examination) or less. The before period for the 1995 reform is defined as 1993 Q1–1995 Q3 and the after period as 1995 Q4–1999 Q4. The before period for the 2008 reform covers 2004–2007 and the after period 2008–2013. Source: Czech LFS (1993–2013), own calculations.

The estimation results by education confirm that the changes in the duration of the parental allowance affected the low–educated (i.e. low–income) mothers more than the high–educated mothers, but the differences are relatively small. While the 1

[47]Education as the key determinant in wage regressions serves also as a proxy for husband's income, given the well–documented evidence of assortative mating (see for example Pencavel 1998).

[48]'Low–educated' corresponds to the ISCED 3 level with apprenticeship certificate, but without school leaving examination, or lower level of education (corresponding to less than A levels in the UK, without a Baccalaureate in France or without a high–school diploma in the US). Finer classification using ISCED renders a too small sample size for some of the groups.

year extension of parental allowance in 1995 raised the probability of being inactive among low–educated women whose youngest child is 3 by 41 p.p., the increase among the high–educated women was 30 p.p. (see Panel B of Table 4).[49] Similarly, the inactivity of women whose youngest child is 3 dropped somewhat more for the low–educated (24 p.p.) than for the high–educated (20 p.p.) in response to the 2008 reform (see Panel B of Table 5). While these results support the conjecture of Lalive and Zweimüller (2009) that monetary aspects of parental leave matter more to low–income mothers, it questions the importance of job protection to high–income women: The results suggest that the 1995 reform induced almost one third of high–educated mothers to forfeit job protection and stay on leave beyond their child's third birthday. Again, whether this reflects ineffective job protection or the dominance of the impact of the family policy as a social norm cannot be addressed in our data.

Not surprisingly, the impact on unemployment (shifting the risk of unemployment to the post–leave period after the 1995 reform and increasing unemployment of mothers with 2 and 3 year old children in 2008) was always greater for the low–educated mothers (see Panel C in Tables 4 and 5).

In sum, the two reforms affected the total career breaks of low–educated mothers somewhat more than high–educated mothers due to both higher impact on the family leave duration and subsequent unemployment.[50] The smaller differences in the impact of the 2008 reform across the two education groups are in line with the fact that mothers with low pre–birth income (with the 4–year track as their only option) were not directly affected by the 2008 reform.

Interestingly, the impact of the two reforms by education level reveals some

[49]The reform, however, also induced high–educated mothers with 2 year old children to be more inactive than the low–educated.

[50]Somewhat surprisingly, the overall effect of the 1995 reform on non–employment was somewhat greater among the high–educated mothers of 4 year old children, but the impact on inactivity and unemployment are not statistically different across education levels.

Table 4: Difference–in–differences estimation by education: 1995 reform

	Treatment group: women whose youngest child is					
	aged 2	*aged 3*	*aged 4*	*aged 5*	*aged 6*	*aged 7*
	Panel A: impact on non–employment					
Treat*After	-0.015*	0.287***	0.098***	0.050***	0.046***	0.035***
	(0.008)	(0.014)	(0.018)	(0.009)	(0.010)	(0.011)
Treat*After*HighEduc	0.050***	-0.062***	0.034**	-0.001	-0.055***	-0.047***
	(0.015)	(0.010)	(0.016)	(0.009)	(0.014)	(0.011)
R-squared	0.444	0.232	0.104	0.079	0.072	0.07
Observations	83549	83701	80879	68347	56513	44293
	Panel B: impact on inactivity					
Treat*After	0.029***	0.412***	0.057***	0.014*	0.008	-0.002
	(0.008)	(0.016)	(0.009)	(0.007)	(0.005)	(0.009)
Treat*After*HighEduc	0.035**	-0.111***	0.016	-0.004	-0.013	0.009
	(0.013)	(0.013)	(0.010)	(0.008)	(0.008)	(0.010)
R-squared	0.539	0.252	0.058	0.043	0.04	0.04
Observations	83549	83701	80879	68347	56513	44293
	Panel C: impact on unemployment					
Treat*After	-0.044***	-0.125***	0.041**	0.036***	0.038***	0.036***
	(0.007)	(0.006)	(0.015)	(0.010)	(0.009)	(0.008)
Treat*After*HighEduc	0.015**	0.049***	0.018	0.004	-0.043***	-0.056***
	(0.006)	(0.011)	(0.012)	(0.009)	(0.010)	(0.007)
R-squared	0.04	0.042	0.06	0.053	0.05	0.047
Observations	83549	83701	80879	68347	56513	44293

Note: The treatment groups consist of prime–aged women (aged 25–55), whose youngest child is 2–7. The control group consists of prime–aged women whose youngest child is 8–13. For each treatment group, a separate regression is estimated by the age of the youngest child, but the control group is fixed in all regressions. All regressions include dummies for the treatment group and after period, quarter–year dummies, quarter–year dummies interacted with level of education, and other control variables. The beginning of the after–period for the treatment group is set to the year when a mother of a child of a given age becomes affected by the reform. Standard errors (in parentheses) are clustered at the group–year level (* p<0.10, ** p<0.05, *** p<0.01). Source: Czech LFS (1993–1999), own calculations.

evidence of the existence of long–term effects among low–educated women, not discernible from the baseline results:[51]

The 1995 reform increased the probability of non-employment (by 3.5 p.p.) of

[51]The existence of the long–term effects is in line with Schönberg and Ludsteck (2014), where a similar reform induces about 4% of women to remain out of the labor force by the time their child is 6.

Table 5: Difference–in–differences estimation by education: 2008 reform

	Treatment group: women whose youngest child is					
	aged 2	*aged 3*	*aged 4*	*aged 5*	*aged 6*	*aged 7*
	Panel A: impact on non–employment					
Treat*After	0.039***	-0.161***	-0.075***	0.003	-0.020**	-0.067***
	(0.008)	(0.013)	(0.012)	(0.012)	(0.010)	(0.013)
Treat*After*HighEduc	-0.021***	0.030**	0.001	-0.019	0.005	0.047***
	(0.007)	(0.012)	(0.013)	(0.014)	(0.013)	(0.015)
R-squared	0.457	0.244	0.141	0.117	0.118	0.115
Observations	86228	75829	66997	58713	51286	43896
	Panel B: impact on inactivity					
Treat*After	0.008	-0.243***	-0.058***	0.019**	0.001	-0.007
	(0.006)	(0.016)	(0.008)	(0.009)	(0.007)	(0.008)
Treat*After*HighEduc	-0.009	0.044***	-0.024***	-0.026***	-0.017*	-0.014*
	(0.007)	(0.012)	(0.007)	(0.009)	(0.009)	(0.007)
R-squared	0.589	0.284	0.067	0.045	0.044	0.044
Observations	86228	75829	66997	58713	51286	43896
	Panel C: impact on unemployment					
Treat*After	0.030***	0.081***	-0.017	-0.016*	-0.022**	-0.059***
	(0.005)	(0.010)	(0.013)	(0.009)	(0.009)	(0.011)
Treat*After*HighEduc	-0.013**	-0.014	0.025*	0.007	0.022**	0.061***
	(0.005)	(0.011)	(0.014)	(0.012)	(0.010)	(0.013)
R-squared	0.082	0.068	0.086	0.086	0.09	0.089
Observations	86228	75829	66997	58713	51286	43896

Note: The treatment groups consist of prime–aged women (aged 25–55), whose youngest child is 2–7. The control group consists of prime–aged women whose youngest child is 8–13. For each treatment group, a separate regression is estimated by the age of the youngest child, but the control group is fixed in all regressions. All regressions include dummies for the treatment group and after period, quarter–year dummies, quarter–year dummies interacted with level of education, and other control variables. The beginning of the after–period for the treatment group is set to the year when a mother of a child of a given age becomes affected by the reform. Standard errors (in parentheses) are clustered at the group–year level (* p<0.10, ** p<0.05, *** p<0.01). Source: Czech LFS (2004–2013), own calculations.

low-educated mothers whose youngest child is 7, driven predominantly by the rise in their unemployment. Similarly, the 2008 reform reduced the probability of non–employment among the low–educated mothers whose youngest child is 7 by reducing their unemployment.[52]

[52]This tendency was, however, partly offset by a rise in inactivity—possibly as a result of

5.3 Robustness Analysis

This section shows results of several robustness checks for the baseline difference–in–differences estimation.

First, we conduct a robustness check for the 1995 and 2008 reforms that uses alternative control groups of women with older children, who were not affected by past reforms of parental allowance. The control group in the baseline specification is defined by the age of the youngest child and thus includes different cohorts of women at different points in time. The baseline specification therefore assumes away potential long–term effects of family leave reforms that affected the mothers in the control group during the first years after their children were born. If such effects exist, the control group at the beginning of the period of interest might include women affected by different family leave policies than those who are in the control group at the end of the period. The first robustness check therefore uses an alternative control group comprised of earlier cohorts (mothers with older children), who experienced no reforms and thus were all exposed to the same family leave policies: women whose youngest child was 13–23 around the 1995 reform and women whose youngest child was 18–25 around the 2008 reform.[53]

Appendix Table A.6 shows the results of this robustness check for the occurrence of non–employment. The baseline results are largely confirmed.[54] The robustness check for the 1995 reform implies somewhat greater impact of the reform on non–employment and reveals evidence supporting the long–term effects in the form of a 4.9 p.p. increase in the non–employment of women with children aged 7 (see Table A.6). The robustness check for the 2008 reform suggests an even greater reduction in

previous unemployment and unsuccessful job search (the so–called discouraged worker effect).

[53]Women in the alternative control group for the 1995 reform have a youngest child born between 1970 and 1985—the period during which no major reform of parental leave took place. Women in the alternative control group for the 2008 reform gave birth to their youngest child between 1979 and 1992, i.e. in the pre–1995 parental allowance system.

[54]The same holds for the results for the other two outcomes (inactivity and unemployment) available upon request.

the probability of non–employment for mothers with children aged 3 to 7 compared to the baseline results (see Table A.6). Our baseline specifications therefore provide more conservative estimates of the main effects of the two reforms than implied by the sensitivity analysis.[55]

Second, we conduct two robustness checks for the 2008 reform that allow for the potential effects of 2007 and 2011 changes in parental allowance as described in Section 2.1. We filter out the possible confounding effect of the 2007 change by excluding women, who had a child aged 0–3 in 2007 and could have thus collected the parental allowance in 2007. Note that this substantially reduces the size of our treatment group and precludes the estimation of the impact on women with children aged 6 and 7. To filter out the potential impact of the 2011 change in parental allowance, we exclude women, who had a child younger than 2 at the beginning of 2011 or later and could have thus been affected by the 2011 decrease in the parental allowance.

Appendix Table A.7 shows the robustness of our results to the 2007 and 2011 changes in parental allowance. Again, our main results are largely confirmed. The robustness check for the 2007 reform gives somewhat higher effects on non–employment of mothers with children aged 2, 3, 4 and in particular 5. The robustness for the 2011 reform suggests somewhat smaller impact of the 2008 reform on non–employment of mothers with children aged 3.

[55] We conjecture that the relatively small dissimilarities are mainly driven by the fact that women with older children (who constitute the alternative control group) differ more substantially from both our treatment as well as our baseline control group in terms of lower sensitivity of their labor market outcomes to changes in the economy. The evolution of the labor market status of women in the two alternative control groups, however, is basically parallel to the baseline control groups evolution over the two periods that we study. Figures are not included due to space limitations but are available from the authors upon request.

5.4 Identification Assumptions

Our empirical strategy assumes that trends in labor market status (non–employment and unemployment) of the treatment groups (of women whose youngest child is 2–7) and that of the control group (of women whose youngest child is 8–13) would have been the same in the absence of treatment. To provide some evidence regarding the validity of this assumption, we plot the evolution of the non–employment and unemployment–to–population rates of all the treatment groups and the control group over the two studied periods in Appendix Figures A.1–A.4. The after period is denoted by a thick line for each group of treated women by the age of their youngest child.[56] To abstract from seasonality and allow a better focus on aggregate trends, all time series presented in this section were seasonally adjusted using standard MA(4) smoothing.

The evolution over the first period, covering the 1995 reform, is presented in Figures A.1 and A.2. The non–employment rate of women whose youngest child is 2 slightly increased over the pre–treatment period (Figure A.1 in the Appendix), which is consistent with the evolution of the control group (women whose youngest child is 8–13). Women with children aged 3 experienced a more pronounced increase in their non–employment rate in the early pre–treatment period, but this stabilized in the fourth quarter of 1994 and did not change much in the rest of the pre–reform period. The evolution of the non–employment rate seems to follow the control group very closely for all remaining groups of treated women (with children aged 4, 5, 6, and 7) in the pre–treatment period, denoted by a thin line.

Figure A.2 in the Appendix shows the evolution of the unemployment–to–population rate. The pre–treatment trend for women with children aged 2 seems to differ from

[56]The after–reform period differs for each group of treated women defined by the age of their youngest child according to the quarter in which children of women who were eligible for the after–reform parental allowance with this child reached that particular age (for details on after period definition, see Section 3.1 and Table A.1).

the control group, as these women experienced a gradual decrease in their unemployment probability, which was a likely consequence of an increasing share of inactive women in this group (see Figure A.1). For women with slightly older children (3 and 4), unemployment increased somewhat in 1993 and 1994, while the control group's unemployment was relatively stable over the whole pre–treatment period. The unemployment–to–population rate for mothers with children aged 5, 6, and 7 follows the overall evolution of the control group quite well, apart from an increase in the unemployment rate of women with children aged 5 in 1994 and women with children aged 6 in 1995. However, their unemployment decreased again and stabilized afterwards, so that it followed relatively closely the evolution of the control group for the rest of the pre–treatment period (up until 1997 and 1998, respectively). While the validity of the common trend assumption in case of unemployment might be questioned for some groups of treated women, the divergences in trends are quite small compared to the observed impacts of the reform.

The common trend assumption for the 2008 reform is investigated in Appendix Figures A.3 and A.4. The non–employment trends for women with children aged 2–7 are quite stable, sometimes with a mild decrease, in the pre–treatment period, but are quite similar to the control group of women with children aged 8–13 (see Figure A.3). The share of the unemployed women with children aged 2 is very low (below 2%) and relatively stable over the whole pre–reform period (Figure A.4). Women with children aged 3, 4, and 6 experienced some increase in unemployment probability in the second half of 2005 or in 2006 and a subsequent unemployment decline, which was again consistent with the evolution of the control group. Therefore, the common trend assumption seems to be quite reasonable for both the non–employment and unemployment–to–population rates around the 2008 reform.

The empirical strategy further requires that there were no significant composition changes in the treatment and control groups. This assumption could be violated

if fertility decisions of Czech couples were significantly influenced by reforms of the parental allowance, and the fertility changes then affected the composition of the treatment and control groups. The trends in fertility in the 1990s and early 2000s were described in Section 2.3 and seem unrelated to the reforms of parental allowance. The steep decline in fertility rates in the 1990s started long before the 1995 reform and was part of a general trend that decreased fertility in all post–communist countries (Sobotka 2003).[57] Fertility changes in the 2000s also took place before the 2008 reform and seem again unrelated. We have also showed (in Section 2.3 and Figure 4) that there were no substantial changes in institutional childcare availability and enrollment of pre–school children during the analyzed period.

The changes in the population during the analyzed periods could also alter the composition of women affected by the reform. Appendix Table A.8 reports characteristics of Czech mothers with a new–born child (child aged 0) from 1993 to 2012. Over time, mothers of new–born children have become slightly older, more educated, less likely to be married, have fewer children, and are less likely to live in a multi–generational household. However, these are all aggregate trends that describe changes in Czech society over the past twenty years and seem to be unrelated to fertility changes or parental allowance reforms.

Finally, one might argue that the substantial impact of the reforms on labor force participation of women with young children could have caused an aggregate labor market shock to the labor supply of young women. To the extent to which women with older children (our control group) are substitutes for women with young children (affected by the reforms), this may violate our identification assumptions.[58] However, all our treatment groups together constitute only 36% of women aged

[57]Moreover, this trend goes against the expected impact of the parental allowance reform on fertility—the more generous parental allowance should (if anything) promote parenthood.

[58]Note that this argument should not undermine our results, because the potential (opposite) impact of the reforms on the control group presupposes the existence of the effect on the treatment group in the first place. Moreover, such an impact would bias our results downwards, suggesting that our already sizable estimates represent a lower bound of the true effects of the reforms.

25–40, a share that is unlikely to generate a market–wide shock.

6 Conclusion

This paper examines the impact of the duration of paid family leave on the labor market status of women 2–7 years after childbirth, using two reforms of parental leave allowance in the Czech Republic in 1995 and 2008. We extend the previous literature along several dimensions. First, we estimate the impact of changes in paid family leave longer than 3 years in a country with a very high family leave take–up rate, but strong overall attachment of women to the labor market. Second, we disentangle the occurrence of non–employment into unemployment and inactivity. Third, in addition to the impact of the reforms on the family leave as intended by the statutory duration of the allowance, we focus on the "unintended" effects of the reforms on the occurrence of post–leave unemployment and inactivity, which constitute a non–negligible part of the entire career break mothers experience after childbirth.

We find that the 1995 reform, which prolonged paid family leave from 3 to 4 years, increased the non–employment rate among mothers with children younger than 8 from 47% to 53%. The 2008 reform, on the other hand, which introduced a choice of the length of paid family leave, reduced the non–employment rate among mothers with children younger than 8 from 56% to 53%. As for the "unintended" effects of the two reforms, captured by the labor force status of mother of children aged 4–7, the occurrence of post–leave unemployment went up from 7% to 10% and that of post–leave inactivity from 9% to 11% in response to the 1995 reform. The 2008 reform led to a decrease in post–leave unemployment from 15% to 13% and in post–leave inactivity from 12% to 10%.

The most striking result of our estimation by the age of the youngest child

shows that in response to the 1995 reform, an additional 36% of mothers of 3 year olds extended their family leave beyond the 3 year job protection period. Whether this reveals a greater importance of the monetary aspect of family leave over job security, questions the actual strength of job protection in the Czech Republic, or suggests that family leave policy can set social norms that could be stronger than the economic aspects needs to be answered by future research.

In terms of the inactivity and unemployment structure of the overall career breaks after childbirth, the 1995 reform on average prolonged paid family leave beyond 3 years and shifted the post–leave unemployment spell until the child is older than 4. The 2008 reform, on the other hand, shortened paid family leave and raised the occurrence of post–leave unemployment among women with children aged 2–3. Collection of much needed duration data would allow quantification of the impact of the reforms on the exact length of paid family leave and subsequent post–leave unemployment or inactivity spells.

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Appendix

Table A.1: Definition of the after–reform period by the age of the youngest child

age of the youngest child	year						
	Panel A: The 1995 reform						
	1993–1995 Q3	1995 Q4	1996	1997	1998	1999	
2	before	after	after	after	after	after	
3	before	after*	after	after	after	after	
4	before	.	after*	after	after	after	
5	before	.	.	after*	after	after	
6	before	.	.	.	after*	after	
7	before	.	.	.	.	after*	
	Panel B: The 2008 reform						
	2004–2007	2008	2009	2010	2011	2012	2013
2	before	after*	after	after	after	after	after
3	before	.	after*	after	after	after	after
4	before	.	.	after*	after	after	after
5	before	.	.	.	after*	after	after
6	before	.	.	.	.	after*	after
7	before	.	.	.	.	.	after*

Note: The Table defines the after–reform period for each group of treated women by the age of their youngest child. The asterisk denotes the first cohorts affected by each reform—women whose youngest child was born in 1992 for the 1995 reform and in 2006 for the 2008 reform (for details on the institutional background of these reforms, see Section 2.1). The before and after periods are defined the same way for the corresponding control groups.

Table A.2: Summary statistics by treatment group and period, 1995 reform

	Treatment group												Control group	
	Child aged 2		Child aged 3		Child aged 4		Child aged 5		Child aged 6		Child aged 7		Child aged 8-13	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Non-employed	0.854	0.906	0.377	0.677	0.211	0.359	0.162	0.243	0.143	0.186	0.126	0.175	0.091	0.13
Inactive	0.829	0.894	0.236	0.611	0.118	0.197	0.097	0.131	0.081	0.1	0.069	0.096	0.057	0.073
Unemployed	0.025	0.013	0.141	0.065	0.093	0.162	0.064	0.112	0.063	0.086	0.058	0.079	0.033	0.057
Age	29.98	29.98	30.54	30.39	31.10	31.16	31.64	31.82	33.00	32.57	33.85	33.62	37.67	37.37
Primary education	0.123	0.094	0.112	0.094	0.131	0.084	0.137	0.101	0.14	0.108	0.152	0.118	0.184	0.14
Secondary education without school–leaving exam	0.346	0.387	0.351	0.398	0.36	0.398	0.362	0.382	0.36	0.373	0.351	0.384	0.369	0.375
Secondary education with school–leaving exam	0.397	0.403	0.416	0.405	0.396	0.417	0.392	0.42	0.394	0.42	0.393	0.402	0.363	0.389
Tertiary education	0.133	0.116	0.121	0.103	0.113	0.101	0.109	0.097	0.107	0.099	0.104	0.096	0.084	0.096
Married	0.913	0.905	0.926	0.888	0.915	0.878	0.9	0.877	0.895	0.869	0.886	0.852	0.863	0.844
Cohabiting	0.034	0.042	0.022	0.041	0.025	0.043	0.033	0.039	0.032	0.035	0.031	0.04	0.033	0.037
Number of children	2.038	1.998	2.021	1.952	1.985	1.943	1.951	1.913	1.953	1.907	1.938	1.856	1.758	1.723
Presence of elderly	0.023	0.02	0.028	0.024	0.03	0.028	0.029	0.026	0.033	0.025	0.039	0.03	0.042	0.036
Observations	4656	6753	4579	6982	4755	7206	4795	7354	4851	7483	4624	7640	27806	44338

Notes: The treatment group consists of women whose youngest child is 2–7. Women whose youngest child is 8–13 serve as a control group. The reform was in force from October 1, 1995, so we define the before–reform period to cover 2 years and 3 quarters before the reform (1993 Q1–1995 Q3) and the after–reform period as 3 years and 1 quarter after the reform (1995 Q4–1999 Q4). Source: Czech LFS (1993–1999), own calculations.

Table A.3: Summary statistics by treatment group and period, 2008 reform

	Treatment group												Control group	
	Child aged 2		Child aged 3		Child aged 4		Child aged 5		Child aged 6		Child aged 7		Child aged 8-13	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Non-employed	0.859	0.848	0.663	0.509	0.39	0.3	0.247	0.209	0.225	0.186	0.205	0.156	0.155	0.126
Inactive	0.85	0.835	0.619	0.417	0.208	0.142	0.095	0.088	0.091	0.076	0.077	0.066	0.066	0.056
Unemployed	0.009	0.014	0.044	0.093	0.182	0.158	0.152	0.121	0.134	0.11	0.128	0.09	0.088	0.07
Age	31.19	32.74	31.86	33.60	32.60	34.37	33.17	35.05	33.74	35.75	34.67	36.47	37.65	39.02
Primary education	0.067	0.05	0.066	0.067	0.075	0.069	0.076	0.074	0.089	0.079	0.084	0.067	0.09	0.072
Secondary education without school–leaving exam	0.324	0.269	0.37	0.301	0.392	0.323	0.379	0.341	0.407	0.338	0.388	0.356	0.399	0.369
Secondary education with school–leaving exam	0.463	0.449	0.446	0.443	0.412	0.437	0.414	0.435	0.4	0.434	0.42	0.44	0.411	0.421
Tertiary education	0.147	0.233	0.118	0.189	0.122	0.171	0.131	0.15	0.104	0.148	0.108	0.137	0.1	0.138
Married	0.829	0.765	0.839	0.752	0.816	0.757	0.803	0.729	0.792	0.736	0.766	0.745	0.764	0.734
Cohabiting	0.099	0.157	0.077	0.151	0.072	0.123	0.069	0.125	0.068	0.107	0.067	0.096	0.061	0.076
Number of children	1.83	1.766	1.845	1.817	1.859	1.861	1.809	1.832	1.828	1.797	1.79	1.762	1.66	1.591
Presence of elderly	0.016	0.02	0.014	0.019	0.017	0.022	0.025	0.027	0.028	0.027	0.026	0.027	0.029	0.03
Observations	6544	11093	6148	9297	5595	8173	5077	7721	5228	7172	5029	6666	32040	36552

Notes: The treatment group consists of women whose youngest child is 2–7. Women whose youngest child is 8–13 serve as a control group. The reform was in force from January 1, 2008, so we define the before–reform period to cover 4 years before the reform (2004–2007) and the after–reform period as 6 years after the reform (2008–2013). Source: Czech LFS (2004–2013), own calculations.

Table A.4: Results of the difference–in–differences estimation: 1995 reform, full specification

	Treatment group: women whose youngest child is:					
	aged 2	*aged 3*	*aged 4*	*aged 5*	*aged 6*	*aged 7*
	Impact on non–employment					
Treat*After	0.011	0.256***	0.115***	0.049***	0.018**	0.011
	(0.007)	(0.016)	(0.014)	(0.007)	(0.007)	(0.007)
Treat	0.737***	0.270***	0.106***	0.061***	0.045***	0.030***
	(0.007)	(0.011)	(0.008)	(0.005)	(0.004)	(0.004)
After	0.084***	0.071***	0.108***	0.066***	0.140***	0.127***
	(0.004)	(0.009)	(0.008)	(0.002)	(0.003)	(0.002)
Age	-0.050***	-0.045***	-0.044***	-0.042***	-0.048***	-0.052***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age squared	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0)	(0)	(0)	(0)	(0)	(0)
Married	-0.033***	-0.037***	-0.038***	-0.044***	-0.048***	-0.042***
	(0.006)	(0.006)	(0.006)	(0.007)	(0.008)	(0.010)
Cohabiting	-0.025***	-0.017**	-0.015*	-0.015**	-0.023***	-0.020**
	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)	(0.009)
Secondary education w/o school-leaving exam	-0.096***	-0.099***	-0.113***	-0.114***	-0.101***	-0.095***
	(0.006)	(0.006)	(0.007)	(0.008)	(0.007)	(0.008)
Secondary education with school-leaving exam	-0.139***	-0.204***	-0.132***	-0.126***	-0.121***	-0.129***
	(0.029)	(0.007)	(0.009)	(0.005)	(0.005)	(0.005)
Tertiary education	-0.195***	-0.269***	-0.187***	-0.179***	-0.170***	-0.179***
	(0.030)	(0.009)	(0.010)	(0.006)	(0.007)	(0.008)
Number of children	0.025***	0.034***	0.035***	0.034***	0.032***	0.030***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
Presence of elderly	0.031***	0.032***	0.035***	0.034***	0.028***	0.031***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.007)	(0.006)
Constant	1.125***	0.986***	0.948***	0.943***	1.068***	1.135***
	(0.045)	(0.061)	(0.066)	(0.061)	(0.053)	(0.062)
R-squared	0.444	0.232	0.104	0.079	0.072	0.069
Observations	83549	83701	80879	68347	56513	44293

Note: The treatment groups consist of prime–aged women (aged 25–55), whose youngest child is 2–7. The control group consists of prime–aged women whose youngest child is 8–13. For each treatment group, a separate regression is estimated by the age of the youngest child, but the control group is fixed in all regressions. All regressions include quarter–year dummies, quarter–year dummies interacted with level of education, and regional dummies. The beginning of the after–period for the treatment group is set to the year when a mother of a child of a given age becomes affected by the reform. Standard errors (in parentheses) are clustered at the group–year level (* p<0.10, ** p<0.05, *** p<0.01). Source: Czech LFS (1993–1999), own calculations.

Table A.5: Results of the difference–in–differences estimation: 2008 reform, full specification

	Treatment group: women whose youngest child is:					
	aged 2	*aged 3*	*aged 4*	*aged 5*	*aged 6*	*aged 7*
	Impact on non–employment					
Treat*After	0.029***	-0.147***	-0.080***	-0.010*	-0.019***	-0.040***
	(0.006)	(0.013)	(0.007)	(0.006)	(0.006)	(0.006)
Treat	0.711***	0.510***	0.237***	0.100***	0.066***	0.051***
	(0.005)	(0.009)	(0.005)	(0.005)	(0.004)	(0.004)
After	0.01	-0.009	0.042***	0.020***	0.019	0.022*
	(0.022)	(0.026)	(0.007)	(0.005)	(0.013)	(0.012)
Age	-0.047***	-0.054***	-0.051***	-0.043***	-0.045***	-0.049***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
Age squared	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0)	(0)	(0)	(0)	(0)	(0)
Married	-0.053***	-0.067***	-0.072***	-0.075***	-0.072***	-0.072***
	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)
Cohabiting	-0.026***	-0.030***	-0.033***	-0.031***	-0.024***	-0.026***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.008)
Secondary education w/o school–leaving exam	-0.205***	-0.211***	-0.216***	-0.232***	-0.236***	-0.224***
	(0.008)	(0.008)	(0.006)	(0.007)	(0.006)	(0.006)
Secondary education with school–leaving exam	-0.292***	-0.297***	-0.321***	-0.335***	-0.318***	-0.320***
	(0.018)	(0.016)	(0.013)	(0.013)	(0.017)	(0.006)
Tertiary education	-0.355***	-0.373***	-0.391***	-0.398***	-0.385***	-0.390***
	(0.018)	(0.016)	(0.013)	(0.014)	(0.018)	(0.007)
Number of children	0.018***	0.032***	0.041***	0.037***	0.035***	0.035***
	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
Presence of elderly	0.004	0.008	0.011	0.020***	0.023***	0.020**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Constant	1.103***	1.406***	1.400***	1.231***	1.076***	1.216***
	(0.063)	(0.076)	(0.078)	(0.078)	(0.076)	(0.075)
R-squared	0.456	0.243	0.14	0.117	0.118	0.115
Observations	86228	75829	66997	58713	51286	43896

Note: The treatment groups consist of prime–aged women (aged 25–55), whose youngest child is 2–7. The control group consists of prime–aged women whose youngest child is 8–13. For each treatment group, a separate regression is estimated by the age of the youngest child, but the control group is fixed in all regressions. All regressions include quarter–year dummies, quarter–year dummies interacted with level of education, and regional dummies. The beginning of the after–period for the treatment group is set to the year when a mother of a child of a given age becomes affected by the reform. Standard errors (in parentheses) are clustered at the group–year level (* p<0.10, ** p<0.05, *** p<0.01). Source: Czech LFS (2004–2013), own calculations.

Table A.6: Robustness check: Alternative control groups

Treatment group: women whose youngest child is:		Impact on non-employment			
		1995 reform		2008 reform	
		baseline	robust	baseline	robust
aged 2	Treat*After	0.011	0.033***	0.029***	0.019***
		(0.007)	(0.007)	(0.006)	(0.005)
	R-squared	0.444	0.344	0.456	0.404
	Observations	83549	145265	86228	150096
aged 3	Treat*After	0.256***	0.279***	-0.147***	-0.157***
		(0.016)	(0.018)	(0.013)	(0.014)
	R-squared	0.232	0.184	0.243	0.214
	Observations	83701	145417	75829	132674
aged 4	Treat*After	0.115***	0.139***	-0.080***	-0.095***
		(0.014)	(0.016)	(0.007)	(0.009)
	R-squared	0.104	0.095	0.14	0.121
	Observations	80879	139979	66997	117087
aged 5	Treat*After	0.049***	0.081***	-0.010*	-0.027***
		(0.007)	(0.008)	(0.006)	(0.006)
	R-squared	0.079	0.079	0.117	0.1
	Observations	68347	117128	58713	103110
aged 6	Treat*After	0.018**	0.047***	-0.019***	-0.031***
		(0.007)	(0.006)	(0.006)	(0.007)
	R-squared	0.072	0.077	0.118	0.097
	Observations	56513	96132	51286	90109
aged 7	Treat*After	0.011	0.049***	-0.040***	-0.043***
		(0.007)	(0.007)	(0.006)	(0.006)
	R-squared	0.069	0.075	0.115	0.094
	Observations	44293	75022	43896	77444

Note: The treatment groups consist of prime–aged women (aged 25–55) whose youngest child is 2–7. In the baseline specification, the control group consists of prime–aged women whose youngest child is 8–13. In the robust specification, the control group consists of prime–aged women whose youngest child is 13–23 for the 1995 reform and 18–25 for the 2008 reform. For each treatment group, a separate regression is estimated by the age of the youngest child, but the control group is fixed in all regressions. All regressions include dummies for the treatment group and after period, quarter–year dummies, quarter–year dummies interacted with level of education, and other control variables. The beginning of the after–period for the treatment group is set to the year when a mother of a child of a given age becomes affected by the reform. Standard errors (in parentheses) are clustered at the group–year level (* p<0.10, ** p<0.05, *** p<0.01). Source: Czech LFS (1993–1999 and 2004–2013), own calculations.

Table A.7: Robustness check: Changes in parental allowance in 2007 and 2011

Treatment group: women whose youngest child is:		Impact on non-employment 2008 reform		
		baseline	robust 2007	robust 2011
aged 2	Treat*After	0.029***	0.036***	0.037***
		(0.006)	(0.006)	(0.006)
	R-squared	0.456	0.418	0.418
	Observations	86228	75797	81045
aged 3	Treat*After	-0.147***	-0.150***	-0.136***
		(0.013)	(0.007)	(0.017)
	R-squared	0.243	0.221	0.243
	Observations	75829	66176	73037
aged 4	Treat*After	-0.080***	-0.092***	-0.078***
		(0.007)	(0.007)	(0.007)
	R-squared	0.14	0.139	0.14
	Observations	66997	58015	65945
aged 5	Treat*After	-0.010*	-0.017***	-0.010*
		(0.006)	(0.005)	(0.006)
	R-squared	0.117	0.116	0.117
	Observations	58713	50785	58713
aged 6	Treat*After	-0.019***		-0.019***
		(0.006)		(0.006)
	R-squared	0.118		0.118
	Observations	51286		51286
aged 7	Treat*After	-0.040***		-0.040***
		(0.006)		(0.006)
	R-squared	0.115		0.115
	Observations	43896		43896

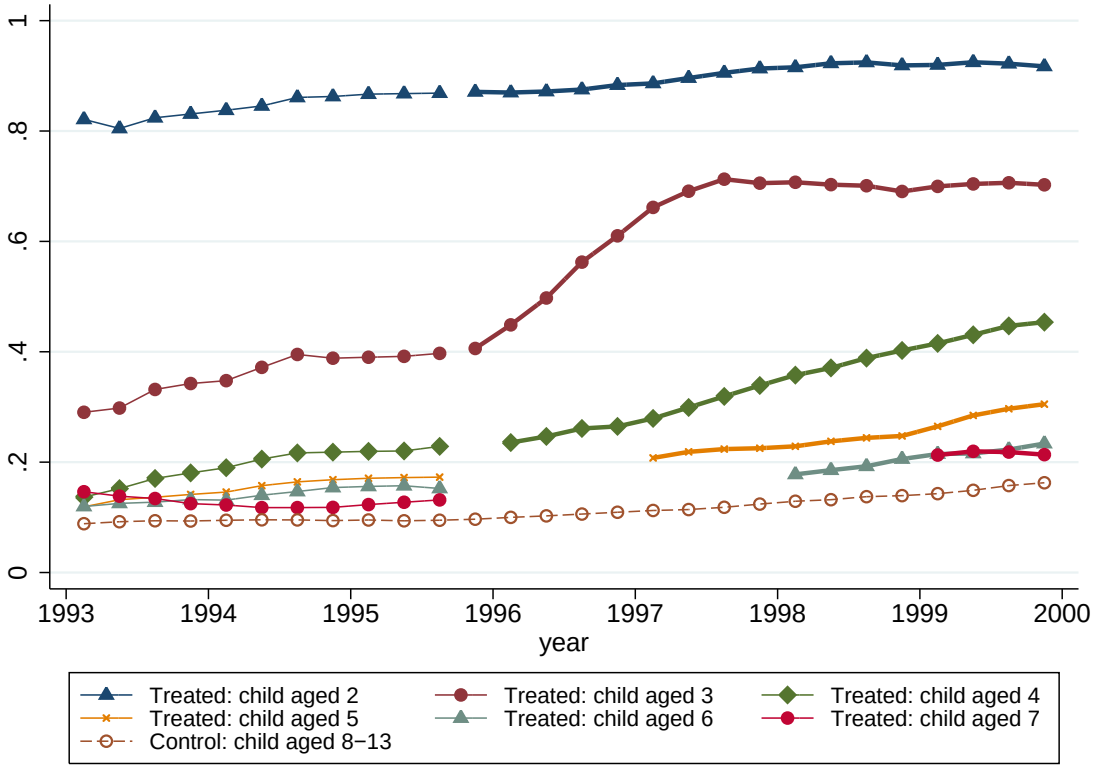
Note: In the baseline specification, the treatment groups consist of prime–aged women (aged 25–55) whose youngest child is 2–7 and the control group consists of prime–aged women whose youngest child is 8–13. In the robust 2007 specification, we drop from the sample women with a child 0–3 in 2007. In the robust 2011 specification, we drop from the sample women with a child under 2 at the beginning of 2011. For each treatment group, a separate regression is estimated by the age of the youngest child, but the control group is fixed in all regressions. All regressions include dummies for the treatment group and after period, quarter–year dummies, quarter–year dummies interacted with level of education, and other control variables. The beginning of the after–period for the treatment group is set to the year when a mother of a child of a given age becomes affected by the reform. Standard errors (in parentheses) are clustered at the group–year level (* p<0.10, ** p<0.05, *** p<0.01). Source: Czech LFS (2004–2013), own calculations.

Table A.8: Characteristics of Czech mothers with a new–born child

Year	Age	Primary education	Secondary education	Tertiary education	Married	Cohabiting	Number of children	Presence of elderly	Observations
1993	29.2	0.1	0.747	0.153	0.929	0.038	2.148	0.012	1200
1994	29.579	0.142	0.71	0.148	0.935	0.038	2.103	0.022	1078
1995	29.733	0.122	0.741	0.136	0.9	0.054	2.133	0.024	588
1996	29.467	0.085	0.753	0.162	0.912	0.058	2.167	0.023	1074
1997	29.466	0.099	0.727	0.174	0.887	0.065	2.133	0.02	999
1998	29.449	0.087	0.762	0.151	0.898	0.06	2.06	0.025	1063
1999	29.721	0.079	0.789	0.132	0.87	0.079	1.996	0.029	1050
2000	29.176	0.071	0.765	0.164	0.904	0.054	1.913	0.014	996
2001	29.454	0.075	0.76	0.165	0.853	0.078	1.903	0.021	1125
2002	29.382	0.076	0.762	0.162	0.858	0.074	1.865	0.014	1154
2003	30.157	0.061	0.786	0.154	0.823	0.102	1.875	0.014	1335
2004	30.183	0.076	0.765	0.16	0.83	0.11	1.88	0.02	1389
2005	30.254	0.068	0.746	0.186	0.819	0.133	1.829	0.017	1380
2006	30.402	0.052	0.751	0.197	0.808	0.143	1.818	0.009	1415
2007	30.809	0.055	0.752	0.194	0.771	0.157	1.837	0.008	1465
2008	31.363	0.063	0.723	0.214	0.731	0.196	1.827	0.01	1508
2009	31.387	0.058	0.72	0.222	0.739	0.191	1.844	0.013	1600
2010	31.365	0.057	0.676	0.268	0.701	0.227	1.819	0.012	1677
2011	31.641	0.052	0.613	0.335	0.73	0.206	1.791	0.017	1658
2012	31.674	0.046	0.619	0.335	0.715	0.211	1.768	0.016	1450

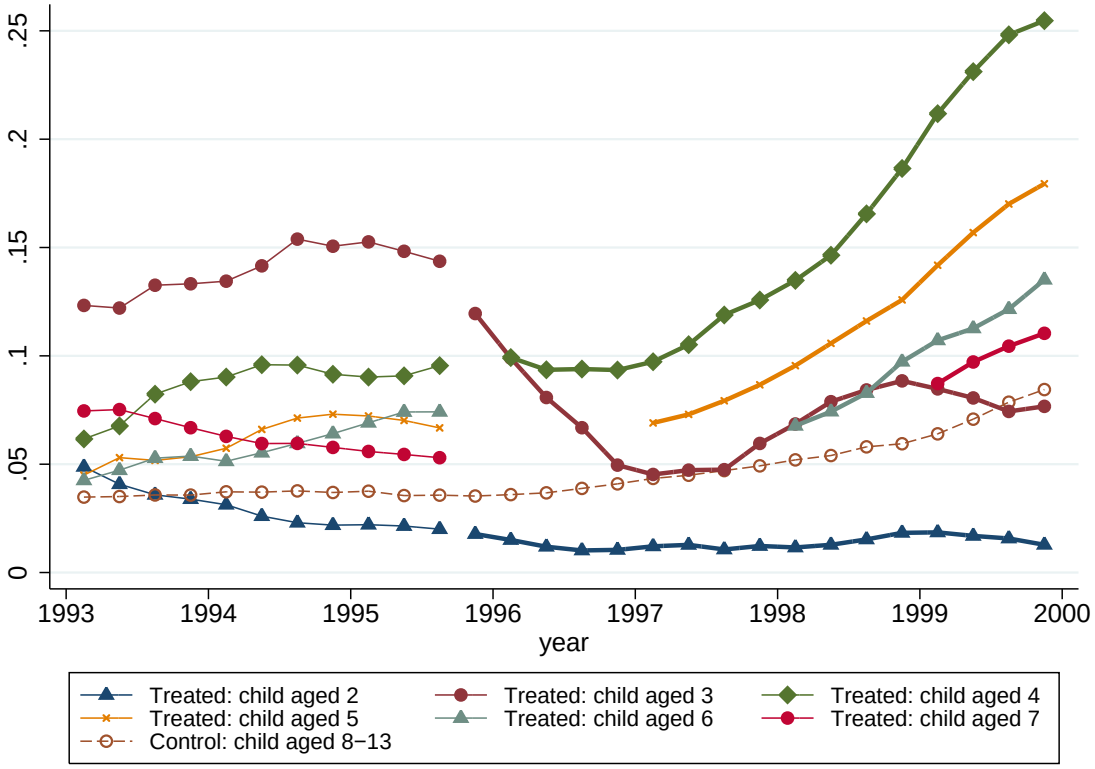
Notes: The table reports characteristics of women with children aged 0 from 1993 to 2012. The characteristics include average age, share of primary, secondary and tertiary educated, share of married and cohabiting, average number of children, share of women who live in a household with elderly (older than 65) household members, and number of observations in the sample. Source: Czech LFS (1993–2012), own calculations.

Figure A.1: Non–employment rate of women by the age of their youngest child, 1993–1999.



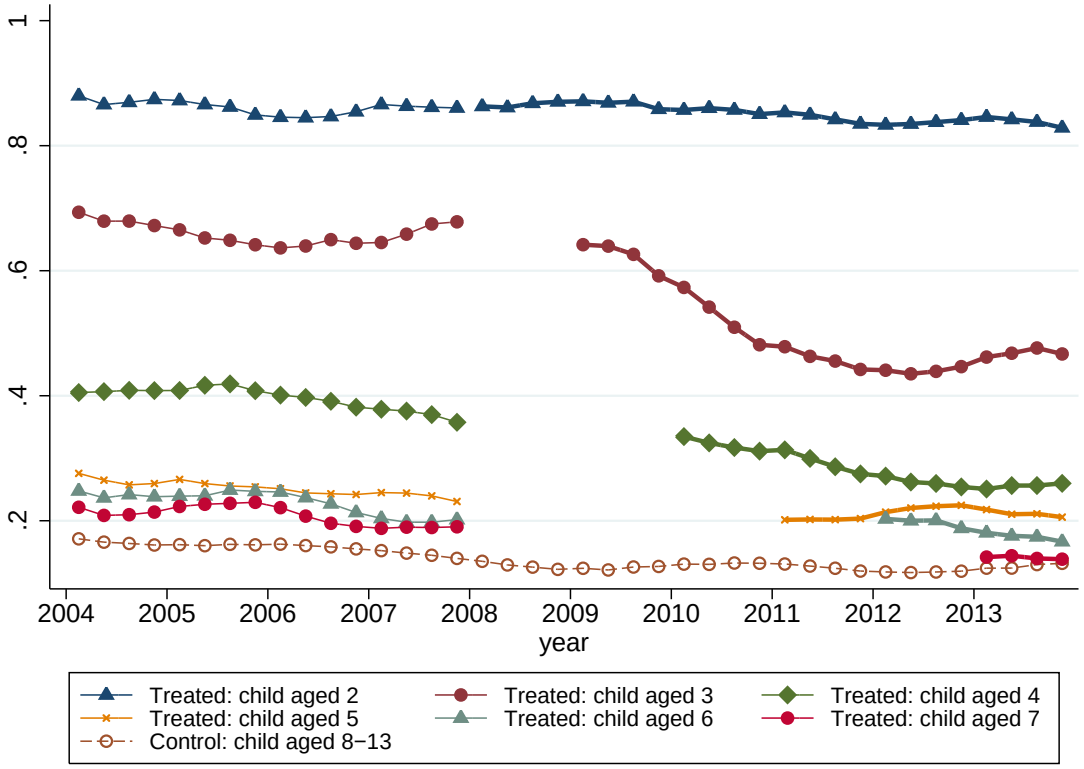
Note: The figure depicts the non–employment rate (share of inactive and unemployment in the population) for women in the treatment and control groups by the age of their youngest child. The after reform period is denoted by a thick line for each group of treated women. The time series were seasonally adjusted using MA(4) smoothing. Source: Czech LFS data (1993–1999).

Figure A.2: Unemployment–to–population rate of women by the age of their youngest child, 1993–1999.



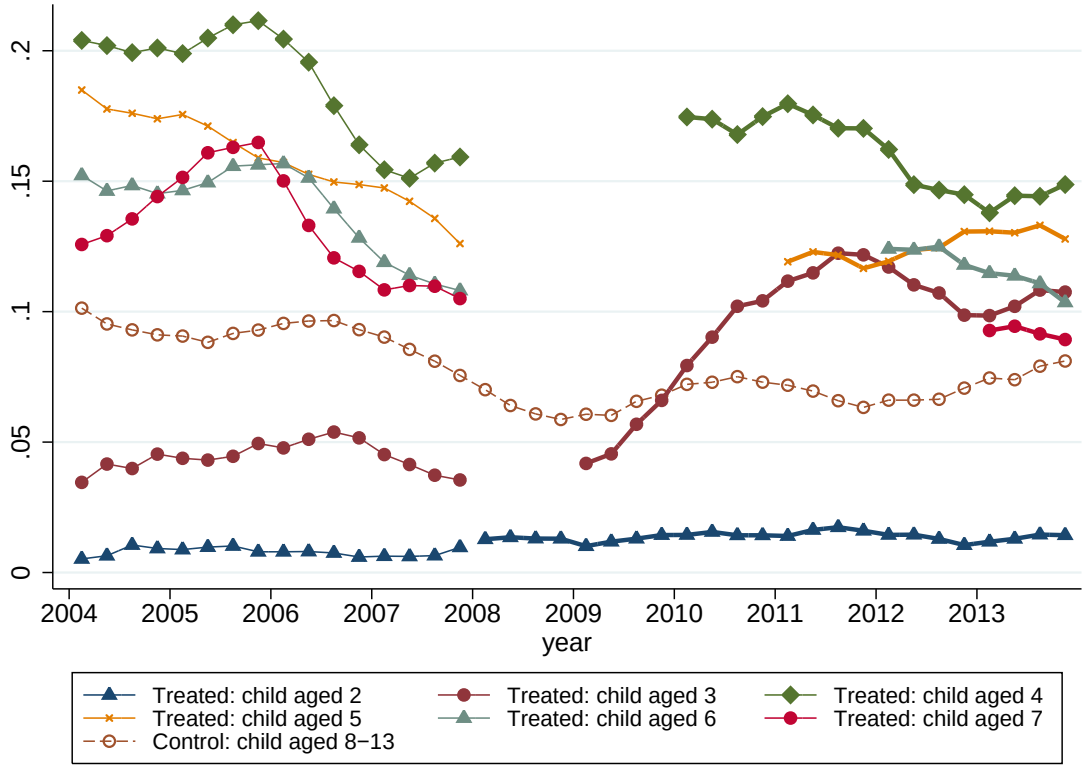
Note: The figure depicts the unemployment–to–population rate (share of unemployment in the population) for women in the treatment and control groups by the age of their youngest child. The after reform period is denoted by a thick line for each group of treated women. The time series were seasonally adjusted using MA(4) smoothing. Source: Czech LFS data (1993–1999).

Figure A.3: Non–employment rate of women by the age of their youngest child, 2004–2013.



Note: The figure depicts the non–employment rate (share of inactive and unemployed in the population) for women in the treatment and control groups by the age of their youngest child. The after reform period is denoted by a thick line for each group of treated women. The time series were seasonally adjusted using MA(4) smoothing. Source: Czech LFS data (2004–2013).

Figure A.4: Unemployment–to–population rate of women by the age of their youngest child, 2004–2013.



Note: The figure depicts the unemployment–to–population rate (share of unemployment in the population) for women in the treatment and control groups by the age of their youngest child. The after reform period is denoted by a thick line for each group of treated women. The time series were seasonally adjusted using MA(4) smoothing. Source: Czech LFS data (2004–2013).