Parental Leave, Intra-Household Specialization and Children's Well-Being*

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Abstract

This paper examines the impacts of a long period of paid parental leave on parents' labor market decisions and children's development. I leverage a French program that provided recipients with three years of partially paid leave conditional on being out of the labor market or working part-time. Initially, the program was reserved for parents of three children and more. On July 25, 1994, benefits were extended to parents whose second child was born on or after July 1, 1994. For identification, I use a regression discontinuity design based on the second child's date of birth cutoff. I find that mothers decrease their labor force participation and fathers increase their hours of work in the three years following the birth of a second child. The policy has no effect on children's health but harms their verbal skills at age 6.

JEL Classification: I10, J12, J13, J22

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1 Introduction

Many governments provide paid leave for parents who wish to take time off from work after the birth of a child. While the provision of leave is widespread, entitlements vary substantially across countries. For example, in the United States, only California, New Jersey and Rhode Island currently grant up to six weeks of job-protected leave with partial income replacement. This is in stark contrast to European countries such as Norway and Sweden which offer up to 13 months of coverage at high pay. Over the past years, governments have been expanding these programs along two dimensions. First, there has been an increase in the length of job-protected leave, with some countries like Austria and Germany extending coverage to 24 and 36 months, respectively.[1] Second, although programs that target women are prevalent, those that cover men are less common. Recently, more countries have been extending benefits to both mothers and fathers, with some even providing additional incentives for fathers.[2]

These expansions are motivated by the idea that mothers' and fathers' leave-taking can help narrow the gender gap in labor force participation and wages, promote family formation and have positive effects on children's health and development. Although the literature on parental leave is extensive, two issues warrant further consideration. Little work has been done regarding the impact of these programs on fathers' labor market outcomes. Furthermore, few papers look at how children are affected by the extension of leave beyond their first year of life.

In this paper, I ask how the provision of a long period of parental leave with partial income replacement affects parents' labor market decisions, as well as children's health and development. I focus on a French program, the "Allocation Parentale d'Education" (or APE), which offered one or both parents a fixed monthly cash allowance to take time off from work until the child's third birthday. Parents who held a job in the same company for at least a year prior to birth were guaranteed to return to their old position once the leave expired. Benefit receipt was conditional on the parent being out of the labor force or working part-time. For identification, I exploit a change in the program's eligibility conditions. Specifically, upon its instigation, only parents of three children and more qualified for the APE. On July 25, 1994, benefits were extended to parents whose second child was born on or after July 1, 1994. This new eligibility threshold and the retroactive nature of the extension allow me to use a regression discontinuity design based on the second child's date of birth cutoff.

[1] Income replacement is offered for 24 months in Austria and 17.5 months in Germany (Ruhm, 2011).

[2] For example, since 2004, several states in the U.S., started implementing the Paid Family Leave program which offers benefits to both mothers and fathers (Bartel et al., 2015). Countries that provide leave that is exclusive to fathers include Norway, Sweden and the United Kingdom (Ruhm, 2011).

I find that, consistent with leave take-up, mothers decrease their labor force participation in the three years following the birth of a second child. I further show that fathers increase their weekly hours of work by decreasing the likelihood of taking time off from work. There are two possible explanations for this finding. On one hand, the APE does not offer full income replacement. Therefore, mothers' leave-taking could generate a loss of household income. On the other hand, if couples substitute their time in home production, then men's opportunity cost from working might decrease. Both of these effects would induce fathers to increase their work hours. For children, I detect no significant effects on indicators of health. However, the APE has a negative impact on their verbal skills measured at age 6. This is captured by a decline in their performance on tests that assess their phonological awareness and vocabulary development. As further discussed in section 5.2, this effect can be driven by a decrease in the time children spend with their fathers or other caregivers. It can also be induced by a negative income shock due to the mother withdrawing from the labor market.

This paper is related to a large body of literature which documents the impacts of parental leave on a wide range of family outcomes. An extensive set of papers investigates whether mothers take up leave and how this alters their labor market outcomes and fertility. Piketty (2005) and Lequien (2012) respectively show that the APE has no impact on fertility and negatively affects mothers' earnings in the long run.[3] The evidence, however, regarding fathers' response to parental leave is relatively scarce. Previous studies focus on whether programs increase fathers' leave-taking (Han, Ruhm and Waldfogel, 2009; Ekberg, Eriksson and Friebel, 2013; Dahl, Løken and Mogstad, 2014; Cools, Fiva and Kirkbøen, 2015; Bartel et al., 2015) and how this affects the intra-household division of childcare (Tanaka and Waldfogel, 2007; Ekberg, Eriksson and Friebel, 2013).

To the best of my knowledge, only a few other papers look at fathers' labor market response to parental leave. Cools, Fiva and Kirkbøen (2015) show that offering four weeks of paternity leave has no impact on men's earnings or hours of work. Dahl, Løken, Mogstad and Salvanes (Forthcoming) focus on a series of maternity leave reforms in Norway- which resulted in an increase in paid leave from 18 to 35 weeks- and also find no effect on fathers' earnings. However, these programs are different from the APE as they provide a shorter period of leave. I show that providing three years of partially paid parental leave can significantly alter fathers' labor supply and increase intra-household specialization.

My paper also builds on a series of studies that investigate the connection between parental leave and children's development. Carneiro, Løken and Salvanes (2015) find that

[3]For further evidence on the topic in other countries, see papers by Ruhm (1998), Waldfogel (1999), Baum (2003), Baker and Milligan (2008), Han, Ruhm and Waldfogel (2009), Lalive and Zweimüller (2009), Lalive, Schlosser, Steinhauer and Zweimüller (2014), Ludsteck and Schönberg (2014), Dahl, Løken, Mogstad and Salvanes (Forthcoming).

providing mothers with 4 months of paid leave has positive effects on children's education and earnings. However, other studies generally report no significant effects on measures of cognitive skills and education from subsequent expansions in coverage in the child's first year of life (Baker and Milligan, 2010; Rasmussen, 2010; Dustmann and Schönberg, 2012; Baker and Milligan, 2015; Dahl, Løken, Mogstad and Salvanes, Forthcoming). My paper is closest to previous work which focuses on programs that extend leave beyond the child's first birthday. Liu and Skans (2010) find that children's test scores are unaffected by an expansion in leave from 12 to 15 months in Sweden. Dustmann and Schönberg (2012) show that increasing the duration of unpaid leave from 18 to 36 months in Germany has small negative effects on educational attainment at age 14. Danzer and Lavy (2014) document heterogeneous impacts on boys in Austria from providing an additional 12 months of paid leave after the child's first year.

I find that extending paid leave until the child's third birthday has detrimental effects on measures of verbal skills at age 6. My results differ from previous studies in several ways. First, aside from the leave used by Dustmann and Schönberg (2012), the APE is the only studied program that provides benefits until the child's third birthday. Furthermore, although the German extension was from 18 to 36 months, mothers only took up the benefits for an additional 1.4 months. In the case of the APE, I find that mothers decrease their labor force participation in the second and third years after the birth of the child. These differences could be driven by the fact that the APE offered partial income replacement as opposed to the unpaid leave in Germany. Second, I document an increase in fathers' labor market hours, which could potentially cause a decrease in paternal time spent with the child. This suggests that fathers' labor response could play an important role in determining how parental leave affects children.

Section 2 presents detailed information on the institutional setting. Section 3 describes the data I use. Section 4 reviews my identification strategy. Section 5 presents the main empirical results as well as robustness checks. Finally, I conclude in section 6.

2 Institutional Background

2.1 The "Allocation Parentale d'Education"

All working mothers in France are entitled to job-protected maternity leave. Mothers of one or two children have access to 6 weeks of prenatal leave and 10 weeks of postnatal

leave.[4] A maximum of 3 weeks of prenatal leave can be transferred until after the child's birth. Mothers also receive 100% of their income, averaged over the three months prior to taking the leave.[5]

The "Allocation Parentale d'Education" (APE) was created in 1985 to help parents balance their work and family life. The APE provides either one or both parents a fixed nontaxable monthly cash allowance to take time off from work after birth and until the child's third birthday. Mothers can therefore take maternity leave first then start benefiting from the APE. Initially, the program was reserved to parents of three children and more. The law "Famille", passed on July 25, 1994, extended benefits to parents whose second child was born on or after July 1, 1994.[6] The extension of the APE was retroactive and was not announced before the law was passed (Lequien, 2012).

Parents are eligible for the APE if they work or receive unemployment benefits for 2 years in the 5 years prior to birth.[7] A parent has to be either out of the labor force or working part-time while receiving benefits. The monthly payment is around €460 euros if the parent exits the labor market, €300 euros if the parent works less than 20 hours a week and €225 for working between 20 and 32 hours a week. Parents can take the leave simultaneously– with a combined monthly payment of €460 euros– if they are both working part-time. A parent can combine the APE with the "Congé Parental d'Education" (CPE) if he/she works in the same company for at least a year prior to birth. The CPE allows parents to take job-protected unpaid leave until the child's third birthday. Specifically, they are guaranteed to return to the same job they held prior to taking the leave.

Following the reform, the number of APE recipients went up from 156,000 at the end of 1993 to 447,000 by the end of 1996.[8] Take-up was higher than expected and 98% of recipients were women (Piketty, 2005). Single mothers had access to another policy, the "Allocation pour Parent Isolé", which offered significantly higher benefits (Piketty, 2005). As a result, take-up was restricted to women who were either married or had a partner. Most beneficiaries withdrew completely from the labor force and only 20% worked part-time (Afsa, 1999). The projected costs of the APE for mothers of two children who exited the labor market were around €1 billion euros but by 1997, the actual costs were already around €1.38 billion.

[4]Mothers of three children and more can take 8 weeks of prenatal leave and 18 weeks of postnatal leave. 34 to 46 weeks of leave are given for multiple births.

[5]There is a ceiling on the amount of payments that can be disbursed.

[6]The law "Famille" changed several other family policies but the APE extension was the only one with a cutoff date of July 1994.

[7]This eligibility condition applies only to parents of two children. Parents of three children and more are eligible if they work for 2 years in the 10 years prior to birth.

[8]270,000 were parents of two children.

2.2 Other Childcare Options in France

Parents of children aged less than 3 have access to several paid but subsidized child care services. Children can be placed in publicly-funded nurseries (*crèches*) or in the care of registered childminders. However, due to high demand, access to these services is usually limited. In 1995, around 4% and 17% of households – with a child aged less than 11– paid for the services of an in-home and out-of-home registered childminder. Another 14% used publicly-funded nurseries (Flipo, 1996).

Although not mandatory, nearly all children between ages 3 and 6 are enrolled in public preschools – i.e. *Ecole Maternelle* (Goux and Maurin, 2010). Around one third are admitted at age 2. Preschools are universal, free of charge, offer a government-mandated curriculum and employ teachers who have the same credentials as those who work in elementary schools. Children are grouped into classes according to their age. Therefore, children who enroll at an earlier age get to spend more years in preschool. Compulsory schooling starts at age 6.

3 Data

3.1 The 1990-2002 French Labor Force Survey

Data on mothers' and fathers' labor supply is taken from the French Labor Force Survey (LFS). The LFS is a household survey that is administered by the French statistical office (INSEE) and provides individual-level information on labor market outcomes such as labor force participation, employment and hours worked, as well as the month and year of birth of each child living in a household.

From 1990 to 2002, the LFS is conducted on a yearly basis and covers around 100,000 households per year. Each household member aged 15 years and above is interviewed in March of every year for three consecutive years. To analyze parents' labor supply responses, I restrict my sample to mothers and fathers who are observed in at least one of the 4 years after the birth of their second child. In my main analysis, the labor market outcomes are stacked for the second through fourth years and each individual is allowed to repeat. Results for the first year are reported in the appendix.

I do not have data on actual take-up of the APE. To document whether parents took up the leave, I look instead at their labor force participation and part-time work. The means for these outcomes in the second through fourth years after birth are reported in Table 1.[9] Almost 40% of mothers are out of the labor force in the first through third years while this

[9]The sample includes mothers who are within 16 months on either side of the cutoff, i.e. the preferred bandwidth.

number drops to 28% in the fourth year. Mothers' part-time work increases from 19.7% in the first year to 25.8% in the fourth year. For fathers, around 2% are out of the labor force and 3% work part-time in all years.

I focus on two measures of work hours for men, actual hours of work during the reference week and usual hours of work in a typical week. Usual hours reflect the number of weekly hours of work over a long period of time and, contrary to actual hours of work, they do not include individuals who have irregular work schedules as well as irregular overtime work or absences. In that sense, for individuals with regular work schedules, actual hours of work can be interpreted as the sum of usual hours of work and any unusual overtime or absences (Goux et al., 2014). To reduce the influence of outliers on my results, I cap actual hours of work at the 99th percentile. Although not shown in this draft, my results are robust to using different topcoding percentiles and to not topcoding at all. Fathers' usual work hours are on average around 42 hours per week, while their actual hours are approximately 40 hours per week.

3.2 Enquête Santé en Milieu Scolaire 1999-2000

Data for children's outcomes is taken from the Enquête Santé en Milieu Scolaire 1999-2000. This survey provides information on children's month and year of birth, birth order as well as health and other outcomes such as weight, vaccinations, dental health and scores on verbal skills tests. The information is reported by government-affiliated physicians, for 30,000 children who are enrolled in their last year of preschool. Given that children of the same age are grouped in the same classes in preschools, the sample only covers children aged 6 who are born in 1994.

Since preschool enrollment is not mandatory, one might worry about selection into the sample. Specifically, since parents are able to spend more time at home, the policy can induce them to not enroll the child in preschool. However, in the French context, this scenario is extremely unlikely. First, although not mandatory, it is estimated that 99% of children are enrolled in preschools by age 4. Second, APE benefits can only be received until the child's third birthday. While it is possible that parents may delay children's preschool enrollment if they are induced to spend more time at home, it is unlikely that they would do so until the child is aged 6.

Means for indicators for child health are reported in Table 2. On average, second children in my sample received 1.26 Hepatitis B vaccines. 94.7% took the measles-mumps-rubella vaccine. Around 14% have an untreated cavity and are overweight. Approximately 6% and 4% have asthma and a chronic disease, respectively.

I also use children's performance of on phonological awareness and vocabulary development tests. The phonological awareness test focuses on whether the child is aware of the sound structure of words. The child is asked to identify rhymes and syllables. The vocabulary development test assesses the child's vocabulary development and comprehension. The child is given a series of pictures and asked to identify what he sees. The survey does not report the score on each test but instead, whether the child has a normal score, is between 1 and 2 standard deviations of the normal score or within more than 2 standard deviations of the normal score. The outcomes I look at are dummy variables that are equal to 1 if the child has a normal score on either tests. 87.9% and 92.7% of children have a normal score on the phonological awareness and vocabulary development tests, respectively.

4 Empirical Strategy

To identify the effects of the APE extension, I exploit the facts that (i) parents of two children are only eligible to receive benefits if their second child is born on or after July 1, 1994, and (ii) the policy is not pre-announced. These two features allow me to use a regression discontinuity design based on the month and year of birth of the second child. For children's short-run outcomes, I further complement the analysis with a difference-in-discontinuity approach (RD-DID), due to data limitations that I discuss in section 4.2. The following describes both identification strategies and presents tests of the validity of the design.

4.1 Regression Discontinuity Design

I use a regression discontinuity design (Imbens and Lemieux, 2008; Lee and Lemieux, 2010) which leverages the cutoff date of July 1, 1994. Specifically, I document parents' response to the APE by comparing the outcomes of parents whose second child was born before July 1, 1994 to parents whose second child was born on or after that date. I also focus on how the APE affects children's well-being by comparing the outcomes of second children born before July 1, 1994 to second children born on or after that date. The only difference between these two groups of parents (children) should be that the latter are exposed to APE benefits while the former are not. The main identifying assumption of the RD design is that they are otherwise similar.

I estimate the following reduced form equation:

$$Y_i = \alpha + \beta D_i + \tau g(R_i) + \delta g(R_i) * D_i + \epsilon_i$$

where the dependent variable Y represents one of various outcomes for parent or child i. D is a dummy variable that is equal to 1 if the second child was born on or after July 1, 1994. R is the running variable and represents the second child's month and year of birth. It is defined as months relative to the cutoff. In most specifications, $g(.)$ is a linear function of R and the equation is estimated using a local linear regression. I allow for differential trends in month-year of birth on either sides of the cutoff by interacting $g(.)$ with D. ϵ is the error term. The coefficient of interest, β, captures the intent-to-treat (ITT) effects of the APE extension on various outcomes. To get the average treatment effect, I would need to rescale β by an estimate of the take-up of the APE. Unfortunately, data on actual take-up of APE benefits is not available. Therefore, all the results in this paper are intent-to-treat effects.

I employ local linear regressions using a narrow range of data around the cutoff. For each outcome, I use uniform kernel weights and the preferred bandwidth is chosen using a robust data driven procedure introduced by Calonico, Cattaneo and Titiunik (2014). I also show that my results are robust to (i) the use of different bandwidths and functional forms, and (ii) the inclusion of second child's month of birth fixed effects and a set of controls. These controls include the parent's age at the birth of the second child, a dummy variable that is equal to 1 if the parent is born in France and the sex of the second child. In all regressions, standard errors are clustered at the second child's month-year of birth level to deal with concerns over random misspecification error resulting from a discrete running variable (Lee and Card, 2008).

4.2 Difference-in-Discontinuity

As previously mentioned, children's short-run outcomes are drawn from the Enquête Santé en Milieu Scolaire 1999-2000, which provides information on children born in 1994. Therefore, the outcomes are only available for children who are born within 6 months on either sides of the cutoff. One concern is that seasonal effects could be confounding the estimates. In other words, my estimates could be reflecting both month of birth effects and the impact of the policy. To deal with this issue, I show that the estimates for children's short-run outcomes are similar when using both an RD-DID and a regression discontinuity design.

I combine the regression discontinuity and difference-in-differences (RD-DID) approaches by using first children born in the same year, i.e. 1994, as a control group. This is motivated by the fact that parents of first children are not eligible for the APE. Therefore, the policy should not induce any differences between first children born before or after July 1, 1994. The intuition behind the RD-DID estimator is that it takes the difference between

the discontinuity at the cutoff for second children (i.e. the effect of the policy and any seasonal effects) and the discontinuity at the cutoff for first children (i.e. the seasonal effects). Assuming that the seasonal effects are the same for first and second children, the RD-DID isolates the effects of the policy on second children's outcomes.

I estimate the following reduced form equation:

$$Y_i = \beta_0 + \beta_1 R_i + \beta_2 A_i + \beta_3 T_i + \beta_4 R_i * T_i + \beta_5 A_i * T_i + \beta_6 A_i * R_i + \gamma_i$$

where the dependent variable Y represents one of various outcomes for child i. R is the child's age in months. A is a dummy variable that is equal to 1 if the child is born on or after July 1, 1994. T is a dummy variable that takes the values of 1 for second children (treated group) and 0 for first children (control group). I allow T to interact with R and A. β_5 is the coefficient of interest and γ_i is the error term.

To deal with random misspecification error, standard errors should be clustered at the month-year of birth level (Lee and Card, 2008). However, when looking at children's short-run outcomes, the number of clusters is small and cluster-robust standard errors can be downward biased. Therefore, in all specifications concerning children's short-run outcomes, I show both cluster-robust standard errors and p-values computed using a clustered wild bootstrap-t procedure (Cameron, Gelbach and Miller, 2008).

4.3 Validity Tests

One concern with the identification strategy is that if individuals are able to manipulate the running variable to receive treatment, then the estimated treatment effects would be biased. In this context, it would be problematic if parents are able to strategically time the conception or the date of birth of the second child to become eligible for APE benefits. The extension of the APE was retroactive and was not pre-announced. The law was passed on July 25, 1994 but awards benefits to parents of children born before this date, on July 1, 1994. Therefore, it is unlikely if not impossible that parents are able to precisely time the conception or the date of birth of the child. I present two formal tests that allow me to address concerns over manipulation of the assignment variable.

First, I show that the distribution of the running variable is smooth around the cutoff. Figure 1 plots the frequency of the running variable. Each circle represents the number of second children born in each month-year. The graph shows no clear discontinuity at the threshold. This is consistent with the ex-ante belief that parents have little opportunity to manipulate the date of birth of their second child.

Second, I test whether the distributions of predetermined characteristics are continuous around the threshold. Panels A through E in Figure A1 respectively plot the likelihood that

the second child is male, parents' age at the birth of the second child and dummy variables for whether parents were born in France, as a function of the running variable. The figures take the same format as those after them. Specifically, they use a linear fit with data that is within 16 months on either side of the cutoff, and each circle represents the outcome's local average over a one-month range. None of the graphs shows any clear discontinuity at the cutoff. In Figures A2 and A3, I also plot indicators for parents' highest educational level and socioeconomic background.[10] Again, all baseline covariates are smooth around the cutoff. Regression estimates for all predetermined characteristics, using different bandwidths, are shown in Tables A1 and A2. Consistent with the visual evidence, the estimates are not statistically significant suggesting that, on average, individuals on either side of the threshold are comparable.

5 Results

5.1 Parents' Labor Market Decisions

The first set of results focus on the impact of the APE on mothers' and fathers' labor market decisions. As discussed in section 3.1, the main analysis is restricted to parents who are observed in the second through fourth years after the birth of their second child. The results for the first year are reported in the appendix.

Mothers' Leave Take-up

Although both parents are eligible to take the APE, the vast majority of recipients were women (Piketty, 2005). I start by documenting how the extension of eligibility to mothers of two children affects their take-up of the leave. Unfortunately, I do not have access to data on actual take-up of the APE. I focus instead on mothers' labor supply since receiving APE benefits is contingent on the parent either being out of the labor force or working part-time. The different panels in Figure 2 graphically show the relationship between mothers' various labor market outcomes and distance to the cutoff. Unless stated otherwise, these graphs have the same format as subsequent ones. Specifically, they depict local linear regressions within 16 months on either side of the threshold and circles represent the outcome's average over a one month range.

Panel A shows a clear discontinuity in the probability of being out of the labor force in

[10] Highest educational level is captured by dummy variables for whether the parent has no diploma, a high school diploma or a college degree. I use the main occupation of parents' fathers as a proxy for socioeconomic status. Specifically, I show indicators for whether a parent's father is a manual worker, in a high-skilled or managerial occupation or in any other occupation (i.e. intermediate occupations, business owner, etc...).

the second through fourth years after birth. On the other hand, the graphs in Panels B and C which correspond to the likelihood of working part-time (versus being out of the labor force, unemployed or working full-time) and the natural log of wages for working mothers are smooth around the cutoff. The regression estimates in Table 3 confirm these results as mothers are 16.7 percentage points more likely to be out of the labor force and no significant effects are detected for part-time work or wages. These findings are consistent with previous studies which document that mothers are taking the leave mainly through exiting the labor market (Afsa, 1999; Piketty, 2005).

Parents are eligible for the APE if they either worked or received unemployment benefits for 2 years in the 5 years before birth. Panel D of Figure 2 and the estimate in Table 3 reveal a 13.7 percentage points decrease in the share of mothers who are employed, suggesting that the leave extension mainly induced employed women to exit the labor market. Panel B of Table 3 shows that all results are robust to the inclusion of controls and second child's month of birth fixed effects. Table A3 further reports regression estimates for the various outcomes, with and without controls, using bandwidths that are within 3, 6 and 12 months of the preferred bandwidth of 16 months. The main results are again not sensitive to the choice of bandwidth.

The Labor Force Survey contains detailed information on individuals' occupations. This allows me to examine which types of occupations are most affected by the policy. In Panel A of Figure A4 and Table A4 and consistent with leave take-up, women are 15.6 percentage points more likely to be stay-at-home mothers. Panels B through C of Figure A4 and Table A4 indicate that mothers are mostly leaving intermediate occupations. This is reflected through a 17.4 percentage points decrease in the probability of being in such occupations while no significant impacts can be detected for the likelihood of holding a managerial or high-level occupation, being in a liberal profession or an entrepreneur, or being a manual worker.

The different panels in Figure A5 and Table A5 report results for the same outcomes in the first year after the birth of the second child. The findings are consistent with the ones from the second through fourth years. Specifically, mothers are around 19 percentage points more likely to exit the labor market and be stay-at-home mothers. This is concurrent with an 18.9 percentage points decrease in the likelihood of being in intermediate occupations and no significant effects on working in other professions.

Effect of APE on Fathers' Labor Market Outcomes

Both parents are eligible to receive APE benefits and some previous studies show that fathers may be incentivized to take up parental leave (Bartel et al. 2015). To understand whether

fathers are induced to take the APE, I focus on their labor force participation and likelihood of part-time work in Panels A and B of Figure 3 and columns 1 and 2 of Table 4. Both graphs are smooth around the cutoff and the estimates are not statistically significant. This indicates that fathers do not seem to benefit from the leave and is consistent with previous reports which document that 98% of APE recipients are women.

Fathers can still however change their labor market behavior due to mothers' take-up of the leave. In fact, the APE does not provide full wage replacement, which could lead to a decrease in household income and push men to try to compensate for that loss. Furthermore, if couples substitute their time in home production, then fathers' opportunity cost from working might decrease which would induce them to work more.

In Panels C through E of Figure 3 and columns 3 to 5 of Table 4, I look at men's labor market behavior along the intensive margin. Men's usual hours of work are not affected by the APE extension but there is a clear discontinuity at the cutoff in actual hours of work. This corresponds to an increase of around 2.6 hours per week. In Panel E, I find no significant impact of the APE on father's natural log of wages. Table A6 shows that the regression estimates for fathers' outcomes are robust to using different bandwidths as well as to including controls and second child's month of birth fixed effects.

The increase in actual work hours might be driven by either an increase in overtime hours or a decrease in work absences. In Figure A6, I examine which channel is more likely to drive the observed effects. Panel A plots overtime hours– i.e. the difference between actual and usual hours of work for individuals with a regular work schedule– as a function of the running variable. The graph does not exhibit any clear discontinuities and the estimates in Table A7 are not statistically significant. Panel B shows that the probability that a father works less than usual hours during the reference week decreases by 5.2 percentage points at the cutoff. This is likely driven by a 4.4 percentage points decrease in the probability of not working during the reference week (Panel D), while no significant effects are observed for the likelihood of having a short workweek (Panel C).[11] Taken together, these results suggest that fathers are increasing their work hours through taking less time off from work.

Finally, the different panels in Figure A7 and Table A8 show the impact of the APE on fathers' main labor market outcomes in the first year after the birth of the second child. Again, I find no effect on fathers' likelihood of exiting the labor force or working part-time, albeit the estimates are imprecise. I also find no significant effects on usual and actual hours as well as the log of wages, suggesting that men adjust their work hours following mothers'

[11]Having an unworked week is defined as having 0 actual hours of work during the reference week for individuals with both regular and irregular work schedules. Having a short workweek is the likelihood of having positive actual hours during the reference week, that are lower than usual hours of work.

leave take-up.

Placebo Tests

I conduct two placebo tests to show that my results are indeed driven by the extension of the APE. First, I examine whether we see significant effects in parents' main outcomes using July 1992 as a fake cutoff. Panels A and B of Figure A8 plot mothers' labor force participation and fathers' actual work hours as a function of the month-year of birth of the second child but around the July 1992 threshold. Both graphs reveal no significant treatment effects. Table A9 further shows regression discontinuity estimates for the main outcomes when shifting the eligibility cutoff by 18 and 24 months on either side of the actual cutoff. Again, we see no significant effects on any of these outcomes which implies that my results are driven by the policy and not seasonal effects.

Second, I check for discontinuities in the main outcomes when using the month-year of birth of the first child as a running variable in Panels C and D of Figure A8. Given that parents of first children are not eligible for APE benefits, we should not see any discontinuities at the threshold. The graphs for mothers' labor force participation and fathers' actual hours of work are smooth at the cutoff and the regression estimates from this exercise, reported in Table A10 are not significant for various outcomes of interest.

5.2 Children's Outcomes

I now analyze the effects of the APE extension on children's outcomes. I start by discussing why parental leave is expected to affect children's well-being. I then show results for measures of children's health and verbal development at age 6.

Parental leave and children's outcomes

The main channel through which parental leave can affect a child's health and development is through increasing the time that parents spend at home. Mothers' time away from work is associated with an increase in the incidence and length of breastfeeding, as well as more frequent medical check-ups and closer monitoring of children (Berger, Hill and Waldfogel, 2005; Baker and Milligan, 2008). Breastfeeding in particular can decrease the occurrence of certain diseases and may have positive effects on children's cognitive outcomes (Ruhm, 2000; Tanaka, 2005). While the evidence regarding paternal involvement is scarce, it is often believed that increased time spent with the father can have positive effects on the child's development (El Nokali, Bachman and Votruba-Drzal, 2010).

An increase in parents' time at home usually reduces the time that the child spends

with other caregivers. Although it is important for the child to bond with his mother in his first year, he/she could benefit more from interacting with other individuals at a later age (Dustmann and Schönberg, 2012).

A child's well-being can also be affected by a loss of household income. Specifically, negative income shocks can reduce access to health care, pediatric services and investments in child-related goods and services. This might deteriorate the child's health and impede his development. The APE offers partial compensation to parents who wish to exit the labor force or switch to part-time work. In that sense, it could lead to a loss of income for some households. However, it is unlikely that this would reduce access to medical services because France has a universal health care system.

Effect of APE on children's health and verbal development

I now turn to the effects of the APE on children's outcomes. I start by looking at how APE eligibility affects various measures of child health. I first focus on measures that could indicate closer monitoring of children. Specifically, Table 5 reports regression discontinuity estimates for the number of Hepatitis B vaccines a child received by age 6, as well as dummy variables for whether the child had the measles-mumps-rubella vaccine (MMR), whether the child has an untreated cavity and whether the child is overweight. I find no significant effects on any of these outcomes. Table 5 also shows results for whether a child has asthma or a chronic disease, since breastfeeding is usually negatively correlated with the incidence of such diseases. Again, the estimates are not statistically significant implying that the APE has no impact on children's health.

Next, I examine how the APE affects children's verbal development at age 6. To do so, Panels A and B of Figure 4 respectively plot dummy variables for whether the child has a normal score on phonological awareness and vocabulary development tests. The figures show a clear drop at the cutoff. Panel A of Table 6 indicates that children experience a 3.8 and 2.4 percentage points decrease in the likelihood of having normal scores on these tests.

As a placebo test, I check for discontinuities in these outcomes for first children and using the month and year of birth of the first child as the running variable in Panels C and D of Figure 4. The intuition here is that since parents of first children are not eligible to receive the APE, we should not expect to see any discontinuities in these outcomes. Consistent with ex-ante expectations, both graphs show no discontinuities at the cutoffs.

As an additional robustness check, I investigate whether my regression discontinuity estimates are robust when using a difference-in-discontinuity approach with first children as a control group. These estimates are presented in Panel B of Table 6. Although precision is reduced, the estimates are close to the ones from the regression discontinuity approach,

indicating that the observed discontinuities in second children's outcomes are driven by the policy and not seasonal effects.

6 Conclusion

This paper analyzes the effects of a long period of paid leave on parents' labor market decisions and children's well-being. I exploit the extension of a three-year French leave program to parents of second children born on or after July 1, 1994. Using a regression discontinuity design based on second child's date of birth cutoff, I find that this program increases intra-household specialization. Mothers take the leave by exiting the labor force for three years after the birth of a second child and fathers increase their hours of work. I further show that offering a long period of paid leave has no significant effects on children's health but negatively affects their verbal skills in the short run.

My findings suggest that parental leave programs can work against their intended goals and could potentially have significant implications. In fact, the leave promotes a traditional division of labor within the household for at least three years. This could lead to possible losses for women in the labor market and a reduction of their bargaining power within the marriage.

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Figure 1: Frequency of the running variable

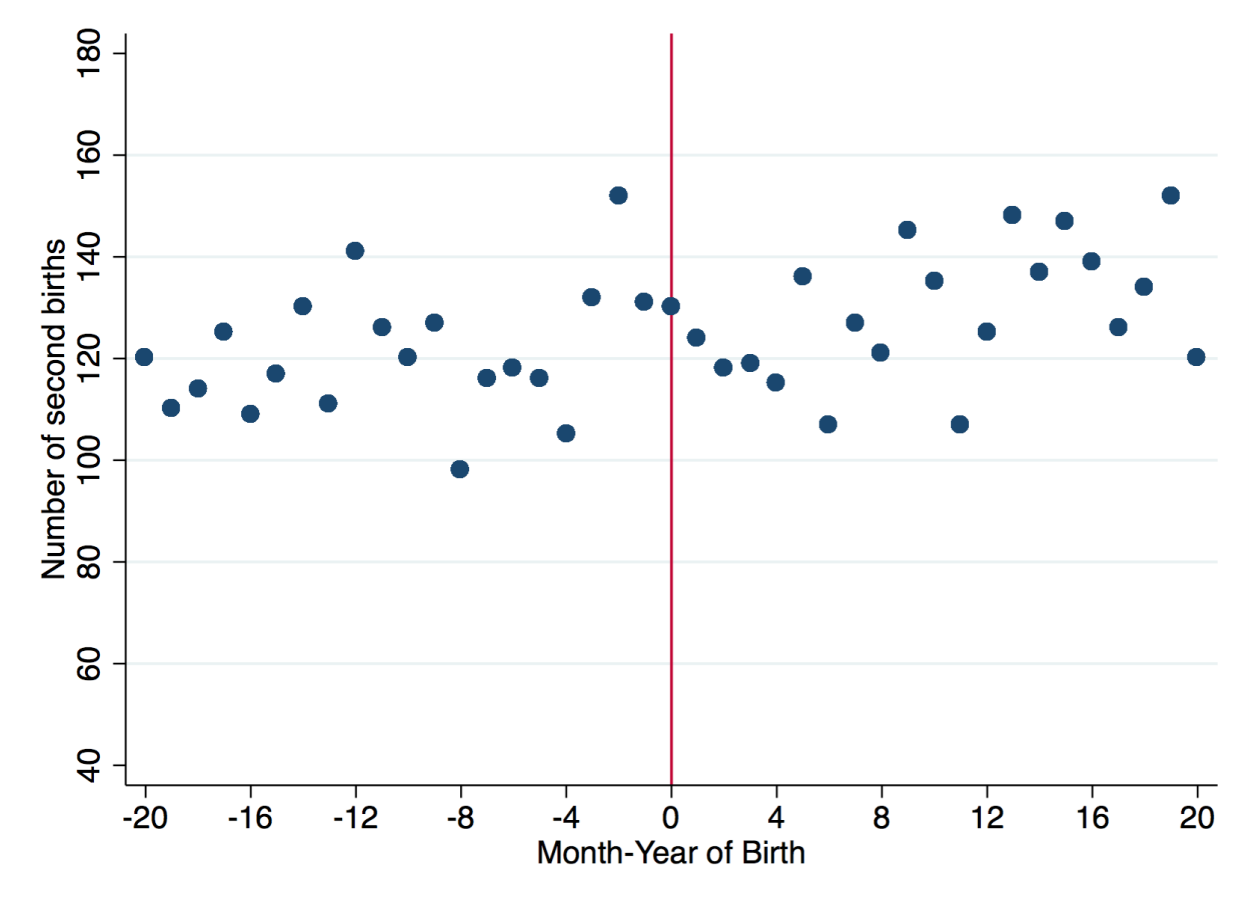
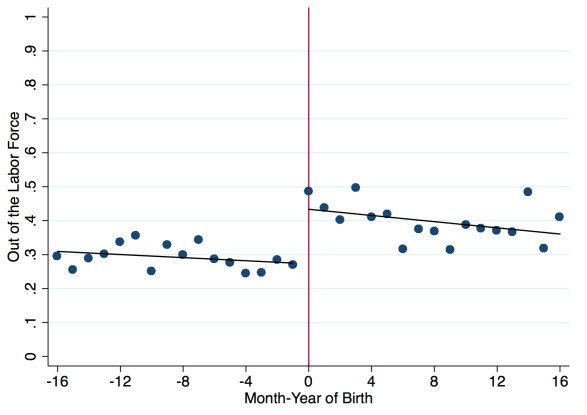
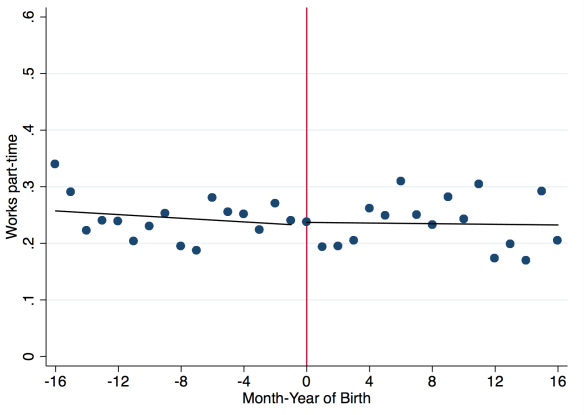


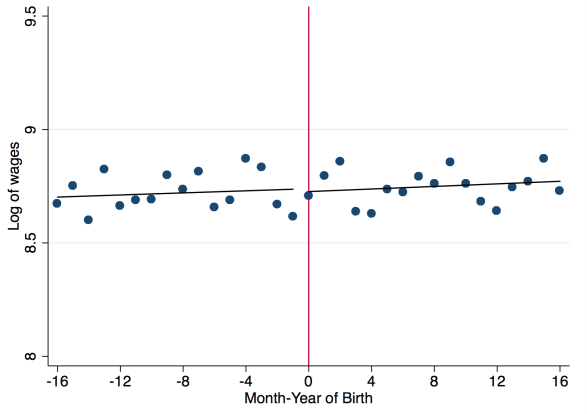
Figure 2: Effect of APE on Mothers' Labor Market Outcomes



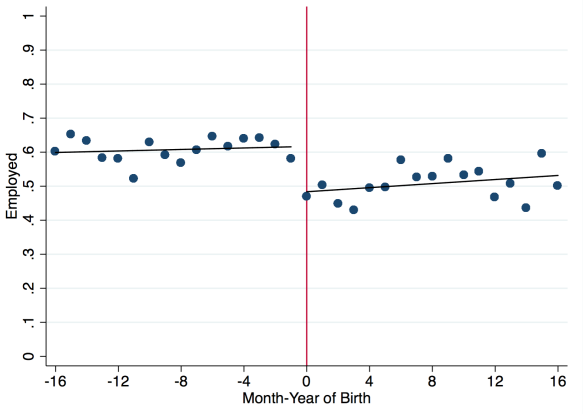
(a) Probability of being out of the labor force



(b) Probability of working part-time

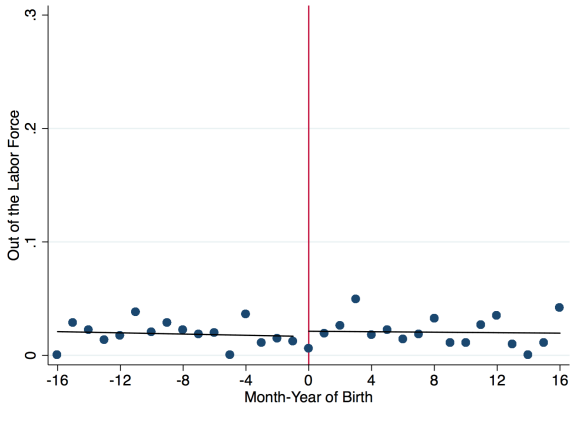


(c) Natural log of wages

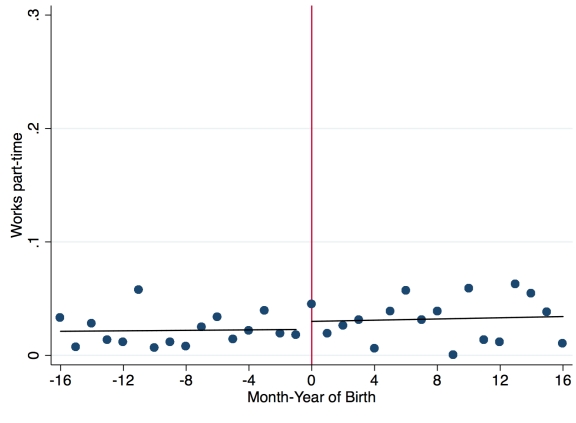


(d) Probability of being employed

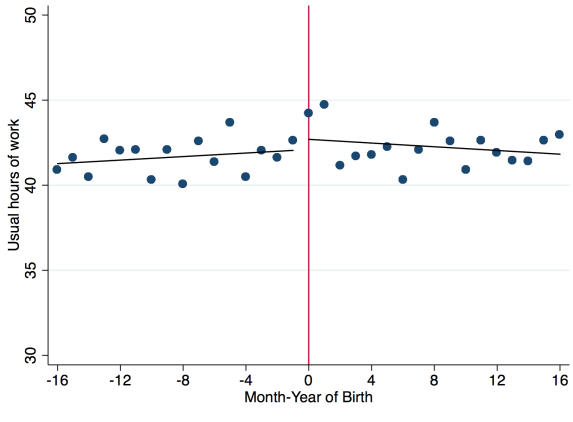
Figure 3: Effect of APE on Fathers' Labor Market Outcomes



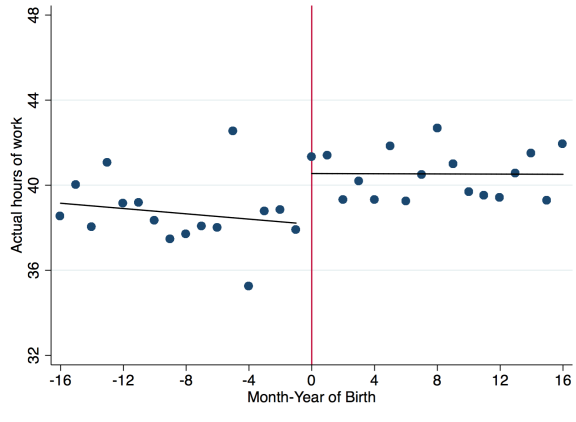
(a) Probability of being out of the labor force



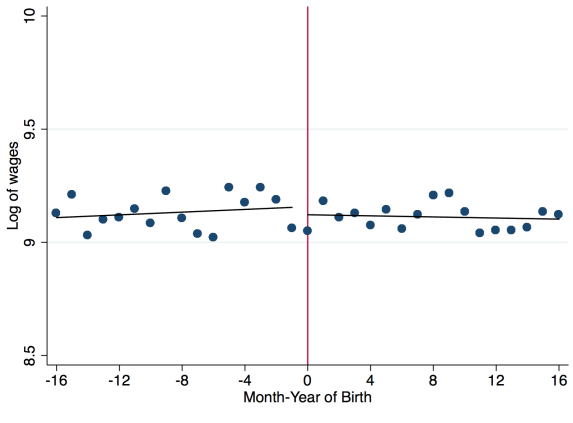
(b) Probability of working part-time



(c) Usual hours of work

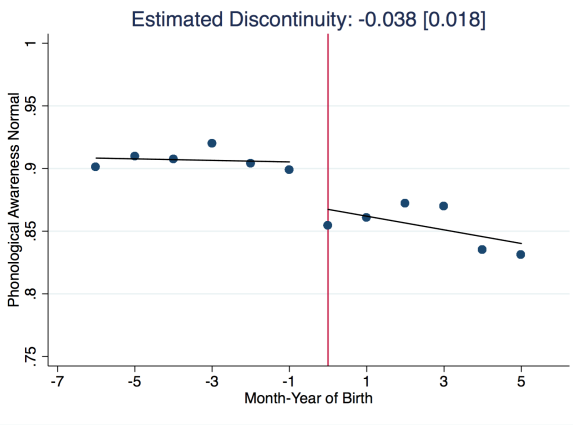


(d) Actual hours of work

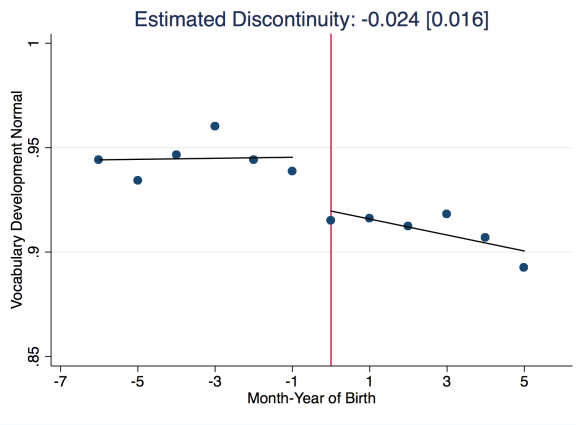


(e) Natural log of wages

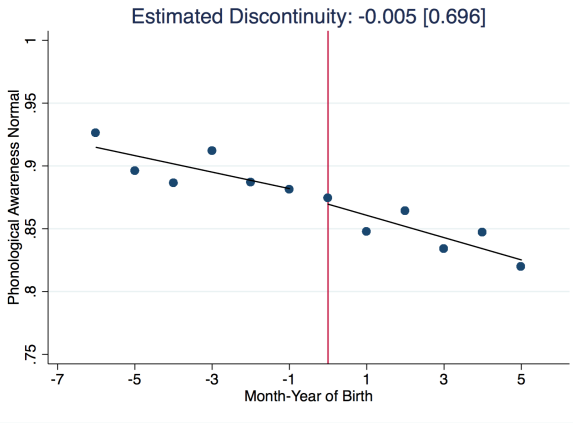
Figure 4: Effect of APE on Children's Verbal Development



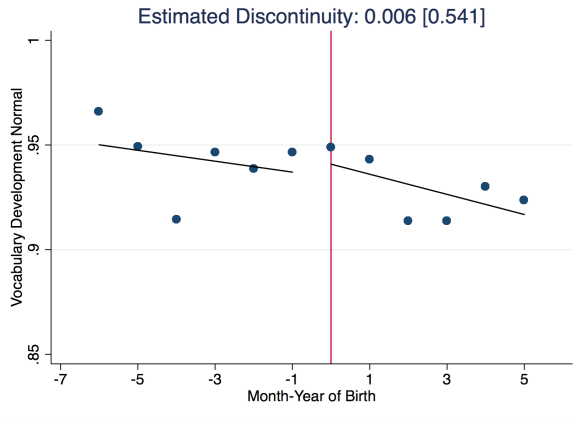
(a) Second child's phonological awareness



(b) Second child's vocabulary development



(c) First child's phonological awareness



(d) First child's vocabulary development

Table 1: Means for Parents' Main Outcomes in First through Fourth Years after Birth

	Year 1	Year 2	Year 3	Year 4
Mothers				
Out of labor force	0.393	0.384	0.365	0.281
Works part-time	0.197	0.224	0.241	0.258
Employed	0.518	0.529	0.544	0.600
Observations	1,820	1,814	1,764	1,677
Fathers				
Out of labor force	0.021	0.020	0.017	0.019
Works part-time	0.022	0.025	0.030	0.030
Observations	1,820	1,814	1,764	1,677
Usual work hours	42.07	41.82	42.10	41.89
Observations	1,429	1,404	1,350	1,265
Actual work hours	39.24	39.39	40.14	40.88
Observations	1,659	1,664	1,633	1,559

Table 2: Means for Children's Main Outcomes

	Mean	Observations
Health Indicators		
Number of Hepatitis B vaccines	1.259	7,610
Had MMR vaccine	0.937	7,610
Has untreated cavity	0.137	7,610
Is overweight	0.136	7,610
Has asthma	0.061	7,610
Has chronic disease	0.044	7,610
Tests of Verbal Skills		
Phonological awareness is normal	0.879	6,197
Vocabulary development is normal	0.927	6,197

Table 3: Local Linear Regression Estimates for Mothers' Labor Market Outcomes

	Probability of being out of labor force (1)	Probability of working part-time (2)	Natural log of wages (3)	Probability of being employed (4)
Panel A:				
No Controls	0.167***	0.002	– 0.019	– 0.137***
	(0.025)	(0.024)	(0.062)	(0.023)
Panel B:				
With Controls	0.150***	0.028	– 0.029	– 0.115***
	(0.025)	(0.020)	(0.037)	(0.020)
Observations	5,255	5,255	2,638	5,255

Notes: Each cell reports the reduced form estimate of the effect of the APE on the corresponding outcome. Panel A shows estimates from regressions that do not include controls. Panel B reports coefficients from regressions that account for second child's month of birth fixed effects (except for the bandwidth of 4 months), dummy variables for whether the second child is male, whether the second child is French, whether parents were born in France, parents' age at the birth of the second child, and fixed effects for parents' socioeconomic background and parents' highest diploma. Standard errors are clustered by month-year of birth of the second child and are reported in parentheses (*** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$).

Table 4: Local Linear Regression Estimates for Fathers' Labor Market Outcomes

	Probability of being out of labor force	Probability of working part-time	Usual hours of work	Actual hours of work	Natural log of wages
	(1)	(2)	(3)	(4)	(5)
Panel A:					
No Controls	0.008	0.004	0.753	2.583***	– 0.033
	(0.008)	(0.008)	(0.754)	(0.893)	(0.048)
Panel B:					
With Controls	0.008	0.003	0.600	2.511***	– 0.012
	(0.008)	(0.011)	(0.529)	(0.772)	(0.018)
Observations	5,255	5,255	4,019	4,807	4,114

Notes: Each cell reports the reduced form estimate of the effect of the APE on the corresponding outcome. Panel A shows estimates from regressions that do not include controls. Panel B reports coefficients from regressions that account for second child's month of birth fixed effects (except for the bandwidth of 4 months), dummy variables for whether the second child is male, whether the second child is French, whether parents were born in France, parents' age at the birth of the second child, and fixed effects for parents' socioeconomic background and parents' highest diploma. Standard errors are clustered by month-year of birth of the second child and are reported in parentheses (*** p < 0.01 ** p <0.05 * p <0.1).

Table 5: Regression Estimates for Indicators of Child Health

	HB vaccines (1)	MMR vaccine (2)	Untreated Cavity (3)	Is Overweight (4)	Has Asthma (5)	Chronic Disease (6)
RD Estimate	-0.051	-0.007	0.017	0.015	0.008	-0.004
	[0.468]	[0.554]	[0.280]	[0.315]	[0.410]	[0.677]
Observations	7,610	7,610	7,610	7,610	7,610	7,610

*** p <0.01 ** p <0.05 * p <0.1.
This table shows regression discontinuity estimates for various indicators of child health.
The numbers in brackets are p-values computed using a clustered wild bootstrap-t procedure.

Table 6: Regression Estimates for Children's Verbal Skills

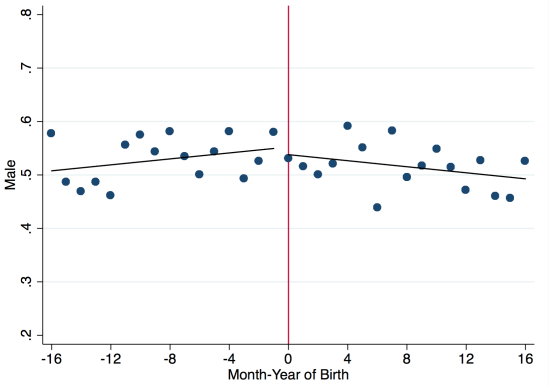
	Phonological awareness (1)	Vocabulary development (2)
Panel A: RD		
4 months	–.040**	–.022**
	(.00)	(.00)
	[.038]	[.033]
Observations	4,290	4,290
6 months	–.038**	–.024***
	(.01)	(.01)
	[.018]	[.016]
Observations	6,197	6,197
Panel B: RD-DID (control: First child)		
4 months	–.038**	–.027
	(.02)	(.03)
	[.023]	[0.213]]
Observations	9,486	9,486
6 months	–.031**	–.030*
	(.01)	(.01)
	[.018]	[.058]
Observations	13,815	13,815

*** p <0.01 ** p <0.05 * p <0.1.

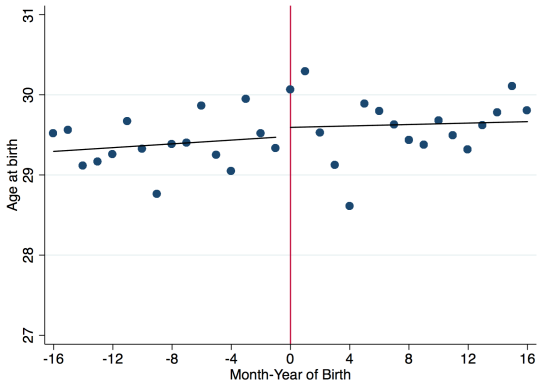
Notes: Each cell reports the reduced form estimate of the effect of the APE on the corresponding outcome. Panel A shows estimates from a regression discontinuity design using bandwidths of 4 and 6 months around the cutoff. Panel B reports coefficients from a difference in discontinuity approach using bandwidths of 4 and 6 months around the cutoff . Numbers in parentheses represent standard errors that are clustered at the month-year of birth level. Numbers in brackets are p-values derived from a clustered wild bootstrap-t procedure.

A Appendix Figures and Tables

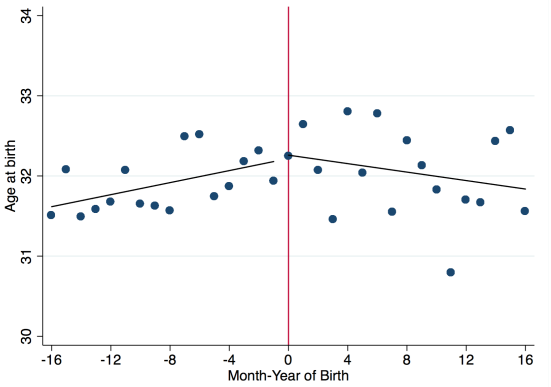
Figure A1: Smoothness of Baseline Covariates



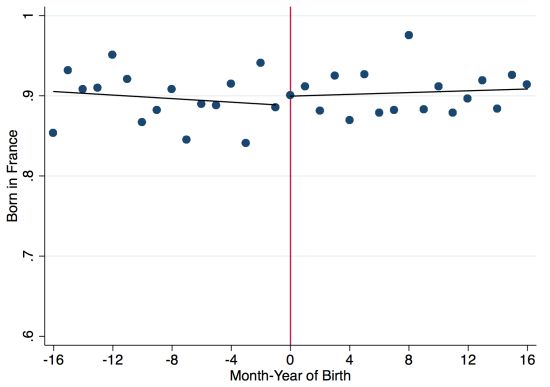
(a) Second child is male



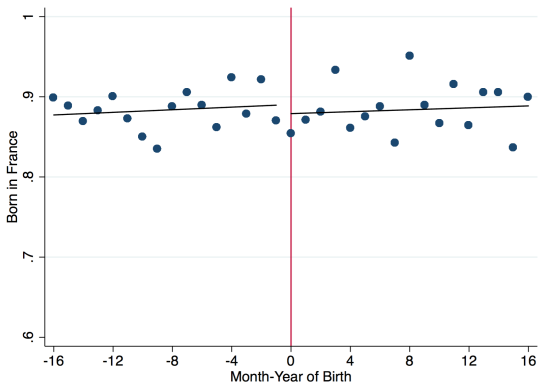
(b) Mother's age at second child's birth



(c) Father's age at second child's birth

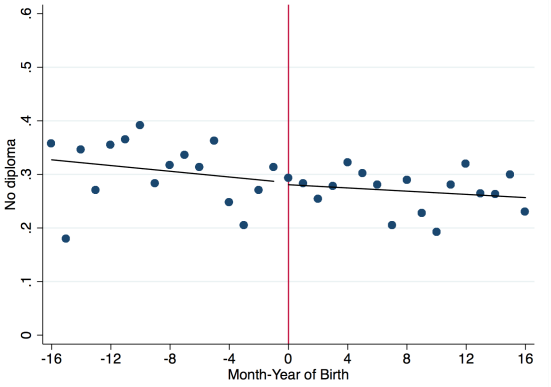


(d) Mother born in France

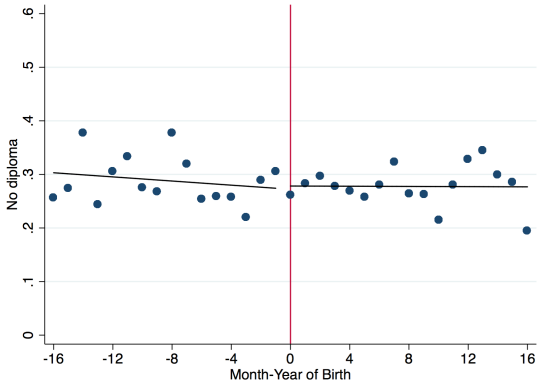


(e) Father born in France

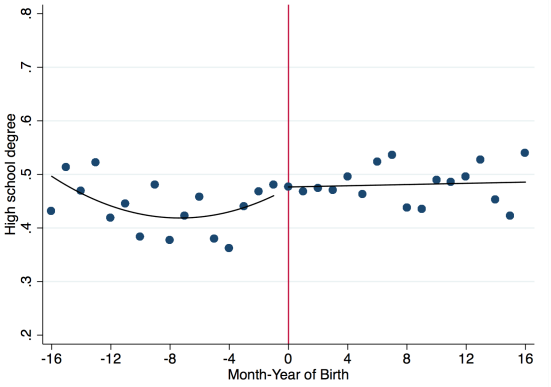
Figure A2: Parents' Educational Level



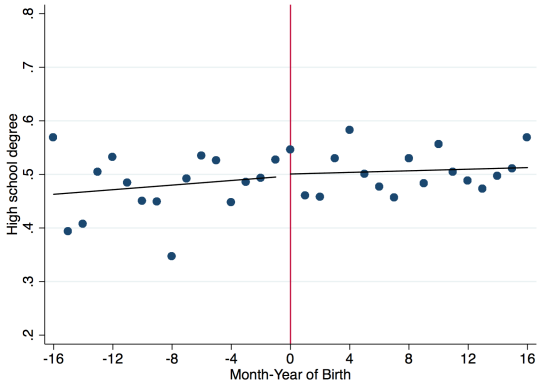
(a) Mother has no diploma



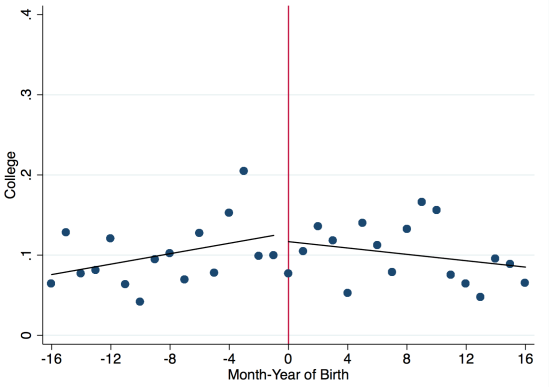
(b) Father has no diploma



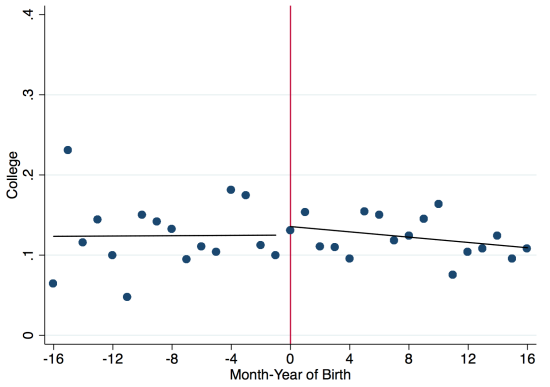
(c) Mother has high school degree



(d) Father has high school degree

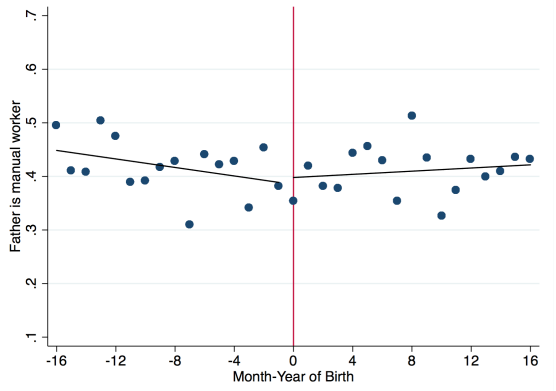


(e) Mother has college degree

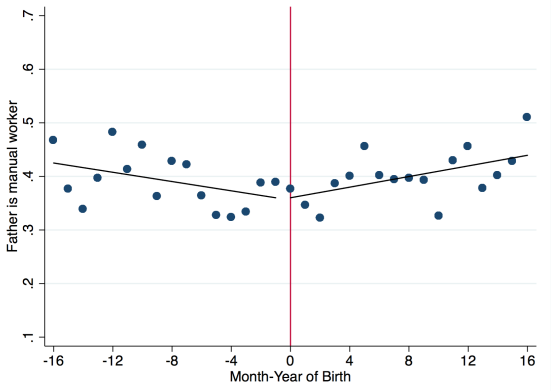


(f) Father has college degree

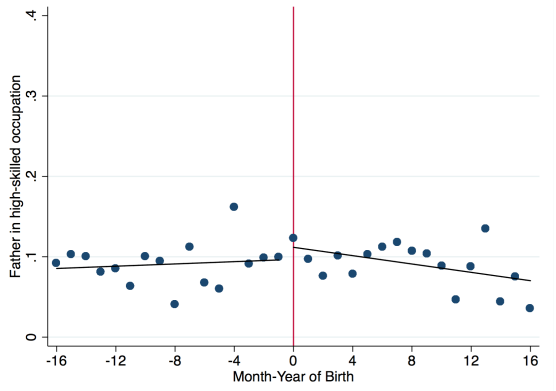
Figure A3: Parents' Socioeconomic Background



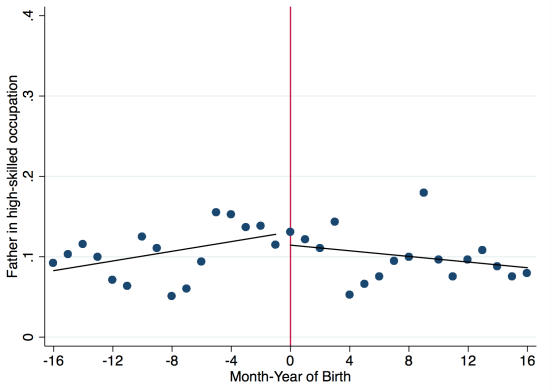
(a) Mother's father is manual worker



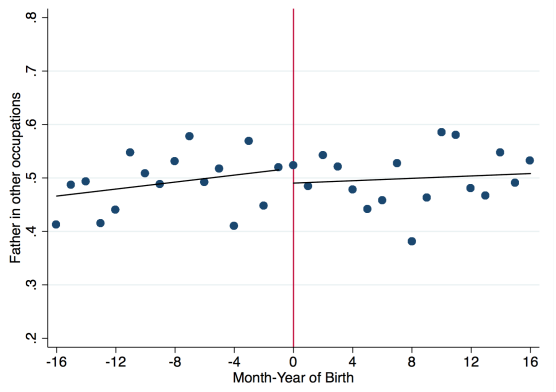
(b) Father's father is manual worker



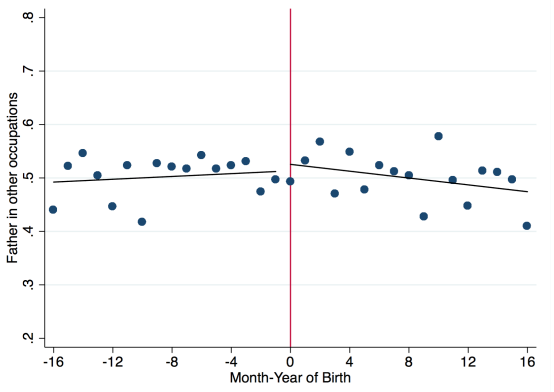
(c) Mother's father in high-skilled occupation



(d) Father's father in high-skilled occupation

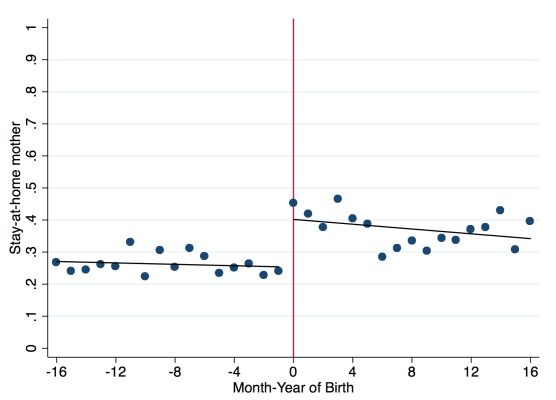


(e) Mother's father in other occupations

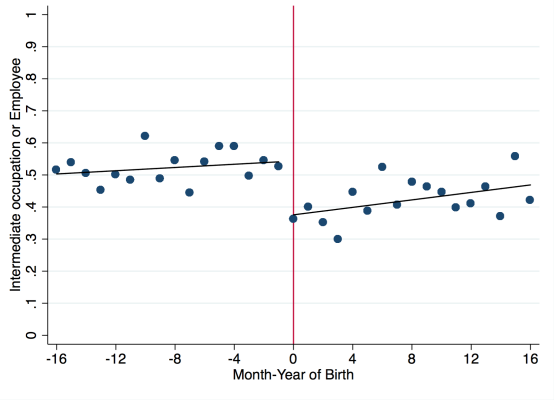


(f) Father's father in other occupations

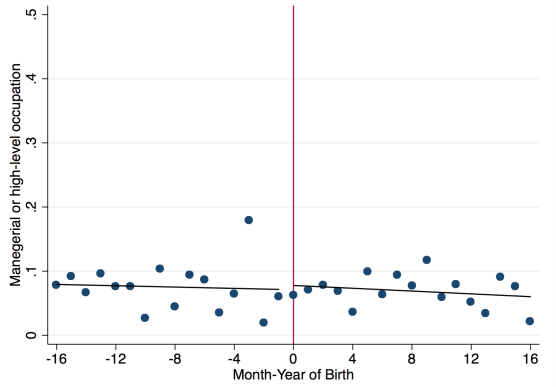
Figure A4: Additional Results for Mothers' Labor Market Outcomes in Second through Fourth Years After Birth



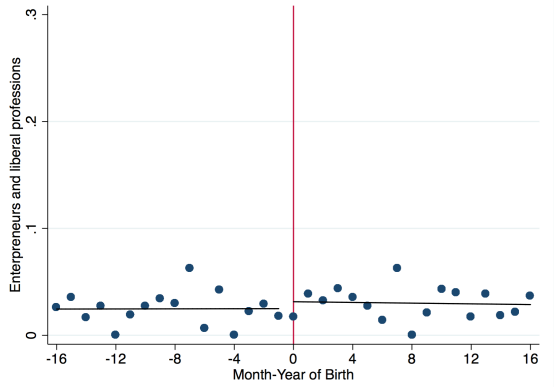
(a) Probability of being a stay-at-home mother



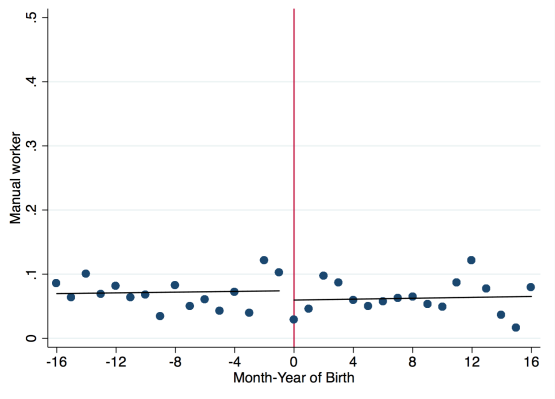
(b) Probability of working in intermediate occupation



(c) Probability of being in managerial or high-level occupation

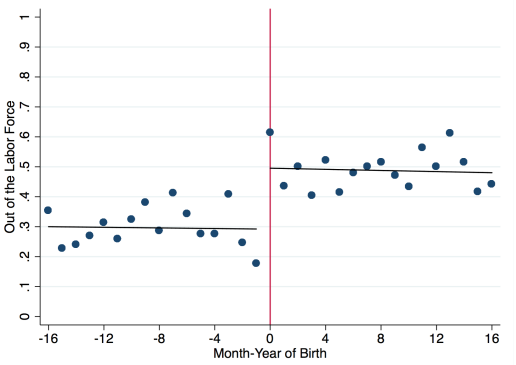


(d) Probability of being in liberal profession or an entrepreneur

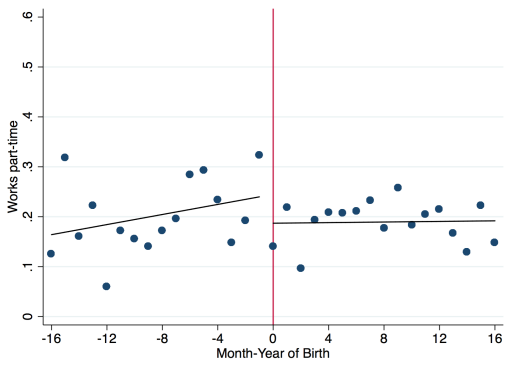


(e) Probability of being a manual worker

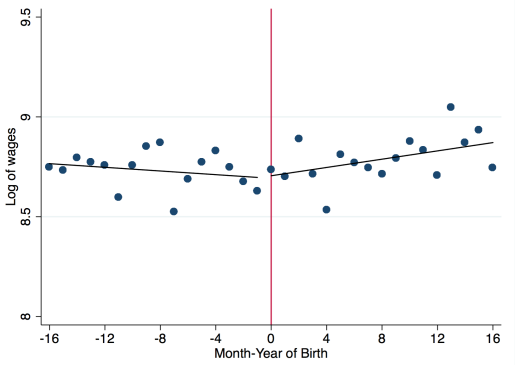
Figure A5: Effect of APE on Mothers' Labor Market Outcomes in First Year After Birth



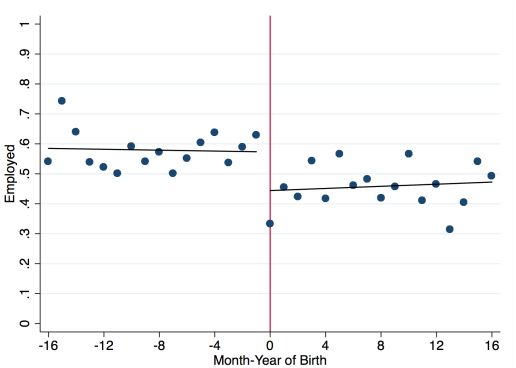
(a) Probability of being out of the labor force



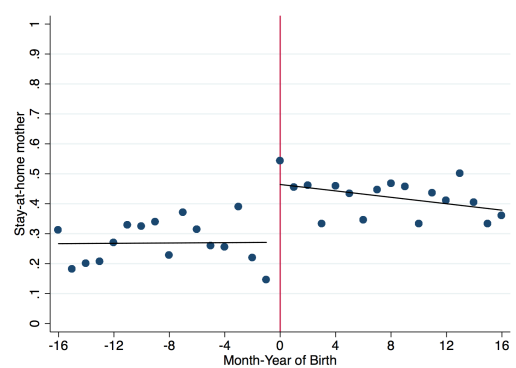
(b) Probability of working part-time



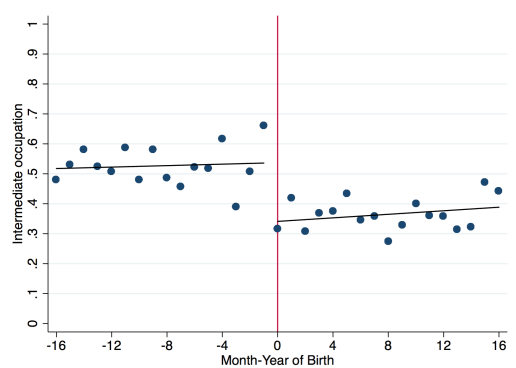
(c) Natural log of wages



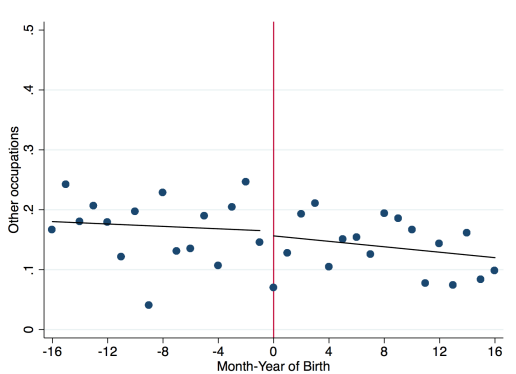
(d) Probability of being employed



(e) Probability of being a stay-at-home mother

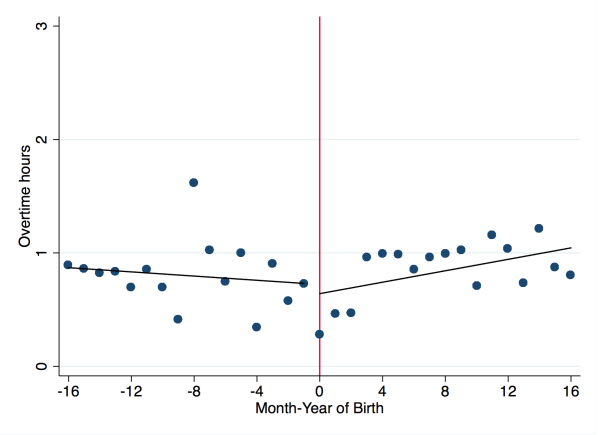


(f) Probability of working in intermediate occupation

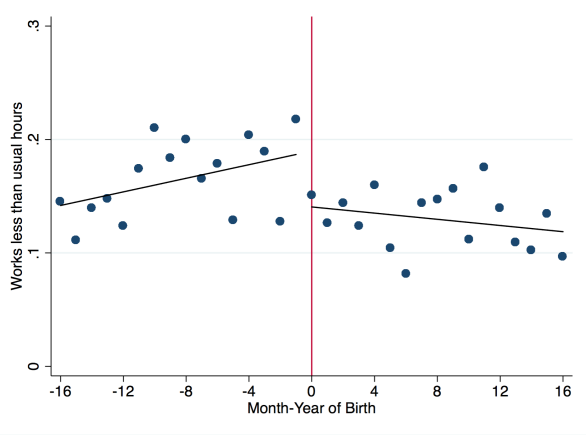


(g) Probability of working in other occupations

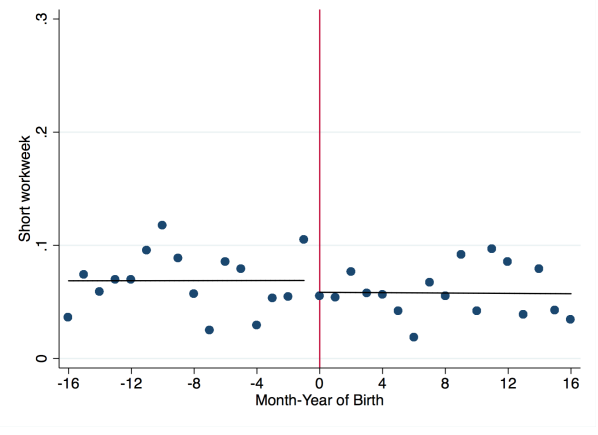
Figure A6: Additional Results for Fathers' Labor Market Outcomes in Second through Fourth Years After Birth



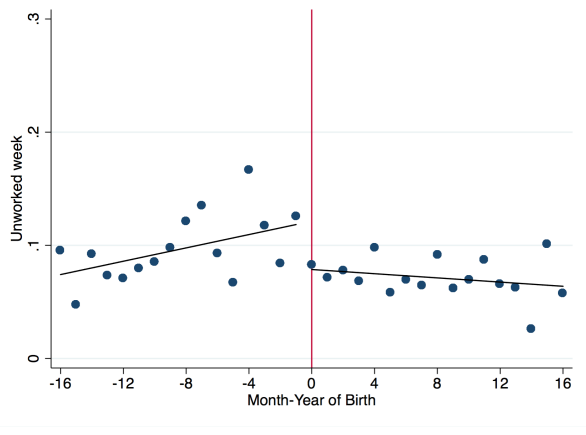
(a) Overtime hours



(b) Works less than usual hours

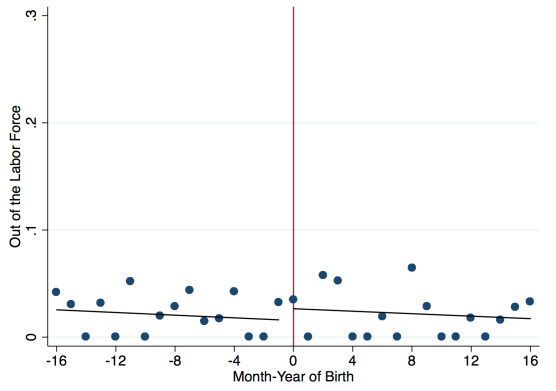


(c) Probability of short workweek

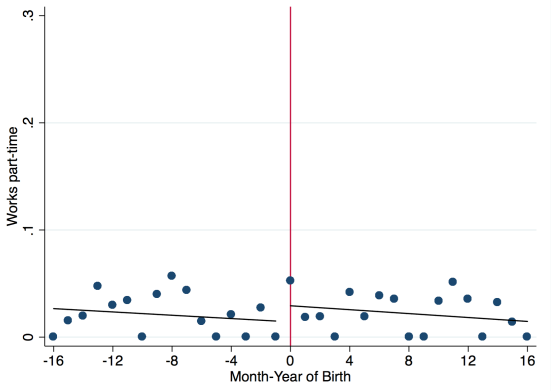


(d) Probability of unworked week

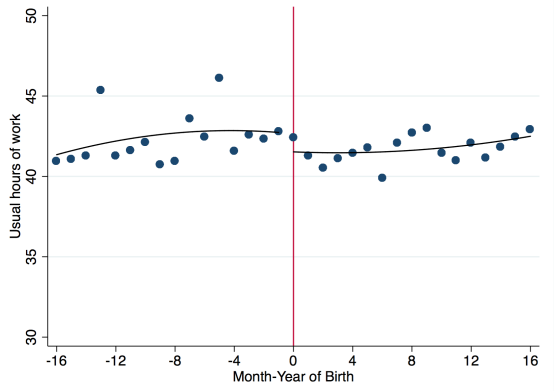
Figure A7: Effect of APE on Fathers' Labor Market Outcomes in First Year After Birth



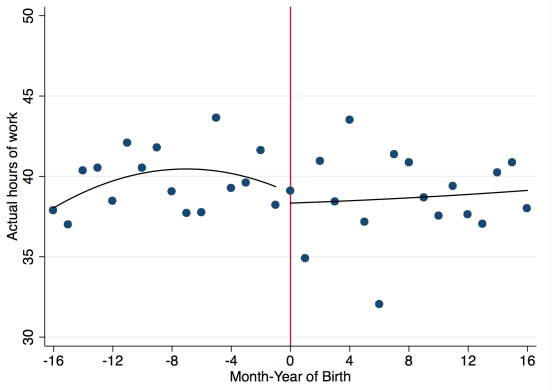
(a) Probability of being out of the labor force



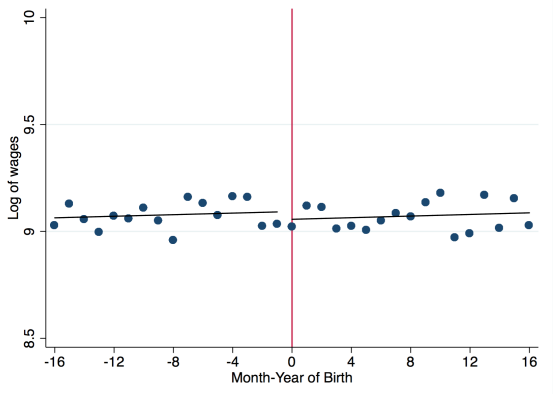
(b) Probability of working part-time



(c) Usual hours of work



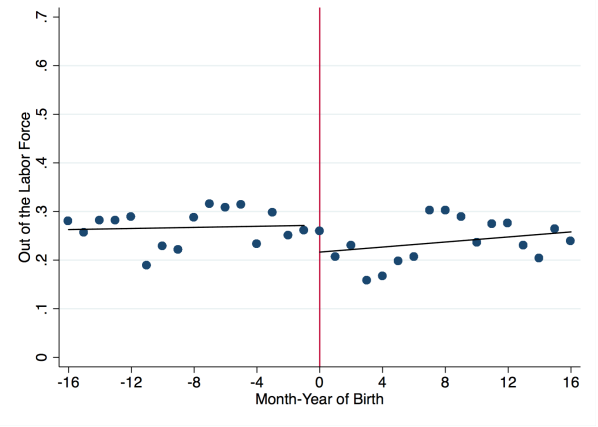
(d) Actual hours of work



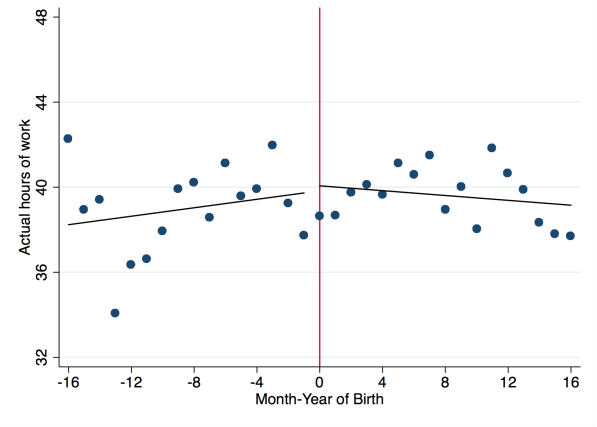
(e) Natural log of wages

Figure A8: Placebo Tests

Cutoff is July 1992

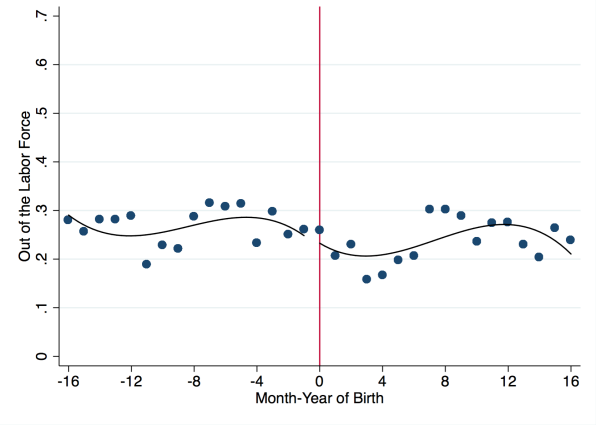


(a) Mothers out of the labor force

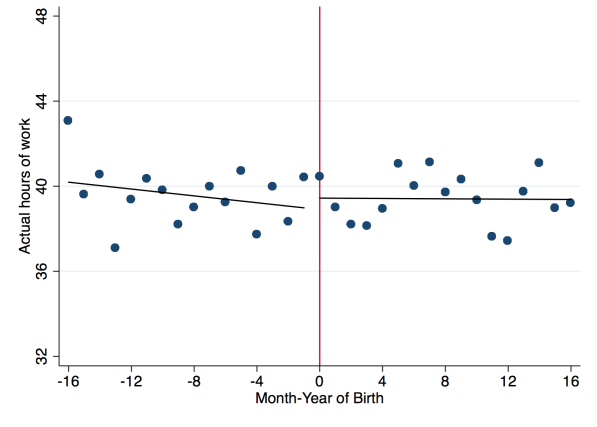


(b) Fathers' actual hours of work

Running variable is month-year of birth of first child



(c) Mothers out of the labor force



(d) Fathers' actual hours of work

Table A1: Regression Estimates for Baseline Covariates Using Different Bandwidths

Bandwidth	4 months	13 months	16 months	19 months	22 months	28 months
	(1)	(2)	(3)	(4)	(5)	(6)
Second child is male	– 0.025	– 0.021	– 0.010	– 0.018	– 0.020	– 0.025
	(0.020)	(0.025)	(0.025)	(0.022)	(0.021)	(.026)
Mother's age	0.281	0.220	0.130	0.054	0.078	0.131
	(0.293)	(0.288)	(0.288)	(0.263)	(0.245)	(0.299)
Father's age	0.017	0.188	0.006	0.002	0.038	0.092
	(0.245)	(0.249)	(0.245)	(0.219)	(0.218)	(0.253)
Mother born in France	0.008	0.020	0.013	0.011	0.013	0.024
	(0.023)	(0.024)	(0.022)	(0.020)	(0.018)	(0.024)
Father born in France	– 0.014	– 0.020	– 0.010	– 0.014	– 0.009	– 0.027
	(0.020)	(0.019)	(0.019)	(0.017)	(0.017)	(0.020)
Mother no diploma	0.017	0.019	–0.007	–0.001	–0.008	0.030
	(0.022)	(0.031)	(0.030)	(0.026)	(0.024)	(0.031)
Father no diploma	0.010	0.003	–0.005	0.009	0.024	0.027
	(0.019)	(0.023)	(0.021)	(0.019)	(0.020)	(0.028)
Mother high school	0.030	0.044	– 0.008	0.028	0.025	0.040
	(0.022)	(0.027)	(0.026)	(0.028)	(0.028)	(0.026)
Father high school	0.009	0.011	0.011	0.021	0.009	0.003
	(0.026)	(0.028)	(0.029)	(0.026)	(0.025)	(0.030)
Mother college	– 0.029	– 0.030	– 0.014	– 0.013	– 0.013	– 0.029
	(0.027)	(0.030)	(0.027)	(0.024)	(0.022)	(0.030)
Father college	– 0.012	0.000	0.010	0.001	– 0.003	– 0.002
	(0.021)	(0.023)	(0.022)	(0.019)	(0.017)	(0.024)
Polynomial	Zero	One	One	One	One	Two
Observations	1011	3202	3990	4738	5481	7010

Notes: Each cell reports the reduced form estimate of the effect of the APE on a baseline covariate, using bandwidths that are within 3, 6 and 12 months from the preferred bandwidth (i.e. 16 months). For the variable "Mother has a high school degree", estimates for bandwidths $\geq$ 16 months are taken from regressions with a polynomial of degree 2 in the running variable. Standard errors are clustered by month-year of birth of the second child and are reported in parentheses. (*** p $<$ 0.01 ** p $<$0.05 * p $<$0.1).

Table A2: Regression Estimates for Parents' Socioeconomic Background Using Different Bandwidths

Bandwidth	4 months	13 months	16 months	19 months	22 months	28 months
	(1)	(2)	(3)	(4)	(5)	(6)
Mother's father is manual worker	– 0.019	0.017	0.014	0.013	0.012	0.030
	(0.028)	(0.034)	(0.030)	(0.028)	(0.027)	(0.034)
Father's father is manual worker	– 0.003	0.023	0.014	0.011	0.009	0.017
	(0.021)	(0.028)	(0.024)	(0.023)	(0.021)	(0.028)
Mother's father is in high-skilled occupation	– 0.010	0.002	0.011	0.011	0.000	0.005
	(0.016)	(0.015)	(0.015)	(0.015)	(0.013)	(0.016)
Father's father is in high-skilled occupation	– 0.008	– 0.030	– 0.017	– 0.012	– 0.010	– 0.025
	(0.009)	(0.018)	(0.017)	(0.018)	(0.017)	(0.019)
Mother's father is in other occupations	0.029	– 0.020	– 0.025	– 0.024	– 0.012	– 0.035
	(0.033)	(0.037)	(0.033)	(0.031)	(0.029)	(0.037)
Father's father is in other occupations	0.011	0.007	0.004	0.001	0.002	0.008
	(0.023)	(0.025)	(0.022)	(0.022)	(0.021)	(0.025)
Polynomial	Zero	One	One	One	One	Two
Observations	1011	3202	3990	4738	5481	7010

Notes: Each cell reports the reduced form estimate of the effect of the APE on a baseline covariate, using bandwidths that are within 3, 6 and 12 months from the preferred bandwidth (i.e. 16 months). Standard errors are clustered by month-year of birth of the second child and are reported in parentheses (*** p < 0.01 ** p <0.05 * p <0.1).

Table A3: Regression Estimates for Mothers' Labor Market Outcomes in Second through Fourth Years after Birth Using Different Bandwidths

Bandwidth	4 months	13 months	16 months	19 months	22 months	28 months
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Out of the labor force						
No controls	0.194***	0.200***	0.167***	0.140***	0.139***	0.176***
	(0.022)	(0.022)	(0.025)	(0.026)	(0.025)	(0.028)
With controls	0.190***	0.205***	0.150***	0.126***	0.121***	0.145***
	(0.020)	(0.020)	(0.025)	(0.023)	(0.023)	(0.035)
Panel B: Works part-time						
No controls	– 0.038**	– 0.026	0.002	0.004	– 0.002	0.002
	(0.014)	(0.022)	(0.024)	(0.020)	(0.019)	(0.024)
With controls	– 0.033**	0.017	0.028	0.027	0.031*	0.027
	(0.013)	(0.029)	(0.020)	(0.019)	(0.018)	(0.028)
Panel C: Natural log of wages						
No controls	0.005	0.026	– 0.019	– 0.022	– 0.024	– 0.021
	(0.070)	(0.067)	(0.062)	(0.055)	(0.050)	(0.069)
With controls	– 0.009	0.053	– 0.029	– 0.024	– 0.025	– 0.018
	(0.044)	(0.040)	(0.037)	(0.035)	(0.033)	(0.043)
Panel D: Employed						
No controls	– 0.159***	– 0.162***	– 0.137***	– 0.118***	– 0.128***	– 0.138***
	(0.019)	(0.025)	(0.023)	(0.022)	(0.021)	(0.027)
With controls	– 0.155***	– 0.139***	– 0.115***	– 0.101***	– 0.101***	– 0.102***
	(0.015)	(0.018)	(0.020)	(0.020)	(0.020)	(0.028)
Polynomial	Zero	One	One	One	One	Two
Obs. (Panels A,B,D)	1,339	4,224	5,255	6,254	7,239	9,264
Obs. (Panel C)	655	2,112	2,638	3,177	3,677	4,717

Notes: Each cell reports the reduced form estimate of the effect of the APE on the corresponding outcome, using bandwidths that are within 3, 6 and 12 months from the preferred bandwidth (i.e. 16 months). Results are shown both with and without controls. Controls include second child's month of birth fixed effects (except for the bandwidth of 4 months), dummy variables for whether the second child is male, whether the second child is French, whether parents were born in France, parents' age at the birth of the second child, and fixed effects for parents' socioeconomic background and parents' highest diploma. Standard errors are clustered by month-year of birth of the second child and are reported in parentheses (*** p < 0.01 ** p <0.05 * p <0.1).

Table A4: Additional Results for Mothers' Labor Market Outcomes in Second through Fourth Years after Birth

Bandwidth	4 months	13 months	16 months	19 months	22 months	28 months
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Stay-at-home mother						
No controls	0.185***	0.185***	0.156***	0.137***	0.135***	0.168***
	(0.020)	(0.022)	(0.024)	(0.025)	(0.024)	(0.027)
With controls	0.180***	0.169***	0.135***	0.122***	0.116***	0.143***
	(0.024)	(0.023)	(0.023)	(0.022)	(0.022)	(0.035)
Panel B: Intermediate occupation						
No controls	– 0.185***	– 0.182***	– 0.174***	– 0.149***	– 0.152***	– 0.174***
	(0.025)	(0.030)	(0.030)	(0.028)	(0.027)	(0.032)
With controls	– 0.188***	– 0.188***	– 0.174***	– 0.150***	– 0.143***	– 0.159***
	(0.021)	(0.028)	(0.030)	(0.029)	(0.029)	(0.036)
Panel C: Managerial or high-level occupation						
No controls	– 0.010	– 0.002	0.001	0.004	– 0.006	0.001
	(0.034)	(0.033)	(0.029)	(0.027)	(0.025)	(0.034)
With controls	0.005	0.008	0.006	0.009	0.003	0.018
	(0.022)	(0.011)	(0.013)	(0.011)	(0.010)	(0.016)
Panel D: Liberal profession or entrepreneur						
No controls	0.014	0.006	0.008	0.012	0.012	0.007
	(0.008)	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)
With controls	0.010	0.003	0.012*	0.014**	0.012*	0.003
	(0.008)	(0.005)	(0.006)	(0.006)	(0.007)	(0.008)
Panel E: Manual worker						
No controls	– 0.022	– 0.034	– 0.013	– 0.019	– 0.007	– 0.007
	(0.024)	(0.023)	(0.022)	(0.019)	(0.018)	(0.025)
With controls	– 0.017	– 0.033	0.004	– 0.001	0.004	– 0.007
	(0.024)	(0.023)	(0.018)	(0.018)	(0.015)	(0.023)
Polynomial	Zero	One	One	One	One	Two
Observations	1,339	4,224	5,255	6,254	7,239	9,264

Notes: Each cell reports the reduced form estimate of the effect of the APE on the corresponding outcome, using bandwidths that are within 3, 6 and 12 months from the preferred bandwidth (i.e. 16 months). Results are shown both with and without controls. Controls include second child's month of birth fixed effects (except for the bandwidth of 4 months), dummy variables for whether the second child is male, whether the second child is French, whether parents were born in France, parents' age at the birth of the second child, and fixed effects for parents' socioeconomic background and parents' highest diploma. Standard errors are clustered by month-year of birth of the second child and are reported in parentheses (*** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$).

Table A5: Regression Estimates for Mothers' Labor Market Outcomes in First Year after Birth

Bandwidth	4 months (1)	13 months (2)	16 months (3)	19 months (4)	22 months (5)	28 months (6)
Panel A: Out of the labor force						
No controls	0.218***	0.216***	0.199***	0.204***	0.218***	0.228***
	(0.062)	(0.063)	(0.057)	(0.050)	(0.043)	(0.063)
With controls	0.203**	0.214***	0.150***	0.169***	0.184***	0.190***
	(0.067)	(0.052)	(0.044)	(0.040)	(0.038)	(0.068)
Panel B: Works part-time						
No controls	– 0.062	– 0.104**	– 0.064	– 0.050	– 0.046	– 0.083
	(0.043)	(0.046)	(0.043)	(0.038)	(0.035)	(0.047)
With controls	– 0.049	– 0.084**	– 0.024	– 0.013	– 0.000	– 0.045
	(0.049)	(0.034)	(0.034)	(0.030)	(0.030)	(0.045)
Panel C: Natural log of wages						
No controls	0.042	0.034	– 0.007	0.019	0.040	0.019
	(0.055)	(0.058)	(0.054)	(0.052)	(0.053)	(0.062)
With controls	0.046	0.074	0.025	0.003	0.020	0.019
	(0.056)	(0.056)	(0.050)	(0.049)	(0.050)	(0.068)
Panel D: Employed						
No controls	– 0.159**	– 0.177***	– 0.126**	– 0.118***	– 0.134***	– 0.138***
	(0.046)	(0.042)	(0.047)	(0.040)	(0.035)	(0.049)
With controls	– 0.146**	– 0.177***	– 0.069*	– 0.077**	– 0.090***	– 0.081
	(0.049)	(0.036)	(0.040)	(0.036)	(0.033)	(0.057)
Panel E: Stay-at-home-mother						
No controls	0.202**	0.213***	0.191***	0.183***	0.185***	0.219***
	(0.062)	(0.059)	(0.055)	(0.051)	(0.044)	(0.061)
With controls	0.193**	0.184***	0.131***	0.137***	0.146***	0.189***
	(0.071)	(0.048)	(0.040)	(0.039)	(0.036)	(0.064)
Panel F: Intermediate Occupation						
No controls	– 0.189**	– 0.182***	– 0.189***	– 0.190***	– 0.210***	– 0.209***
	(0.059)	(0.058)	(0.053)	(0.047)	(0.043)	(0.063)
With controls	– 0.188**	– 0.218***	– 0.172***	– 0.176***	– 0.202***	– 0.204***
	(0.055)	(0.037)	(0.040)	(0.035)	(0.035)	(0.063)
Panel G: Other Occupation						
No controls	– 0.033	– 0.038	– 0.011	– 0.016	– 0.013	– 0.019
	(0.042)	(0.041)	(0.039)	(0.035)	(0.032)	(0.045)
With controls	– 0.024	0.003	0.020	0.006	0.014	0.015
	(0.044)	(0.037)	(0.032)	(0.030)	(0.027)	(0.038)
Polynomial	Zero	One	One	One	One	One
Obs. (Panels A,B,D, E, F, G)	457	1,468	1,820	2,159	2,464	3,119
Obs. (Panel C)	212	678	856	1,031	1,169	1,464

Notes: Each cell reports the reduced form estimate of the effect of the APE on the corresponding outcome, using bandwidths that are within 3, 6 and 12 months from the preferred bandwidth (i.e. 16 months). Results are shown both with and without controls. Controls include second child's month of birth fixed effects (except for the bandwidth of 4 months), dummy variables for whether the second child is male, whether the second child is French, whether parents were born in France, parents' age at the birth of the second child, and fixed effects for parents' socioeconomic background and parents' highest diploma. Standard errors are clustered by month-year of birth of the second child and are reported in parentheses (*** p < 0.01 ** p <0.05 * p <0.1).

Table A6: Regression Estimates for Fathers' Labor Market Outcomes in Second through Fourth Years after Birth Using Different Bandwidths

Bandwidth	4 months	13 months	16 months	19 months	22 months	28 months
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Out of the labor force						
No controls	0.007	0.007	0.008	0.004	0.004	0.009
	(0.010)	(0.008)	(0.008)	(0.007)	(0.007)	(0.009)
With controls	0.008	–0.009	0.008	0.003	0.002	0.003
	(0.010)	(0.006)	(0.008)	(0.007)	(0.007)	(0.010)
Observations	1,339	4,224	5,255	6,254	7,239	9,264
Panel B: Works part-time						
No controls	0.006	0.009	0.004	0.013	0.011	0.011
	(0.007)	(0.009)	(0.008)	(0.009)	(0.008)	(0.009)
With controls	0.006	0.023**	0.003	0.008	0.007	0.007
	(0.008)	(0.011)	(0.011)	(0.010)	(0.010)	(0.013)
Observations	1,339	4,224	5,255	6,254	7,239	9,264
Panel C: Usual hours of work						
No controls	1.261	1.095	0.753	1.127	1.561**	1.475*
	(0.881)	(0.819)	(0.754)	(0.747)	(0.684)	(0.825)
With controls	1.437	0.991**	0.600	0.954*	1.428**	0.849
	(0.930)	(0.423)	(0.529)	(0.559)	(0.596)	(0.766)
Observations	1,024	3,238	4,019	4,764	5,518	7,101
Panel D: Actual hours of work						
No controls	2.693**	2.872***	2.583***	2.678***	2.916***	2.942***
	(0.820)	(0.946)	(0.893)	(0.867)	(0.803)	(0.975)
With controls	2.483***	3.741***	2.511***	2.405***	2.709***	2.772***
	(0.638)	(0.806)	(0.772)	(0.811)	(0.757)	(0.973)
Observations	1,213	3,857	4,807	5,716	6,615	8,480
Panel E: Natural log of wages						
No controls	– 0.055	– 0.049	– 0.033	– 0.044	– 0.049	– 0.059
	(0.042)	(0.052)	(0.048)	(0.043)	(0.040)	(0.055)
With controls	– 0.019	– 0.016	– 0.012	– 0.014	– 0.009	– 0.018
	(0.022)	(0.017)	(0.018)	(0.020)	(0.019)	(0.027)
Observations	1,032	3,305	4,114	4,869	5,668	7,276
Polynomial	Zero	One	One	One	One	Two

Notes: Each cell reports the reduced form estimate of the effect of the APE on the corresponding outcome, using bandwidths that are within 3, 6 and 12 months from the preferred bandwidth (i.e. 16 months). Results are shown both with and without controls. Controls include second child's month of birth fixed effects (except for the bandwidth of 4 months), dummy variables for whether the second child is male, whether the second child is French, whether parents were born in France, parents' age at the birth of the second child, and fixed effects for parents' socioeconomic background and parents' highest diploma. Standard errors are clustered by month-year of birth of the second child and are reported in parentheses (*** p < 0.01 ** p <0.05 * p <0.1).

Table A7: Additional Results for Fathers' Labor Market Outcomes in Second through Fourth Years after Birth

Bandwidth	4 months (1)	13 months (2)	16 months (3)	19 months (4)	22 months (5)	28 months (6)
Panel A: Overtime hours						
No controls	– 0.119	– 0.151	– 0.071	– 0.071	– 0.047	– 0.182
	(0.170)	(0.164)	(0.175)	(0.178)	(0.182)	(0.199)
With controls	– 0.125	– 0.370***	– 0.139	– 0.095	– 0.112	– 0.144
	(0.172)	(0.113)	(0.138)	(0.145)	(0.150)	(0.173)
Panel B: Works less than usual hours						
No controls	– 0.042*	– 0.051*	– 0.052**	– 0.043*	– 0.045**	– 0.049*
	(0.022)	(0.025)	(0.022)	(0.021)	(0.020)	(0.026)
With controls	– 0.033	– 0.073***	– 0.053***	– 0.038**	– 0.040**	– 0.049**
	(0.022)	(0.023)	(0.015)	(0.018)	(0.016)	(0.023)
Panel C: Short workweek						
No controls	– 0.001	– 0.012	– 0.014	– 0.006	– 0.009	– 0.002
	(0.014)	(0.017)	(0.015)	(0.014)	(0.014)	(0.018)
With controls	0.002	– 0.044***	– 0.014	– 0.010	– 0.014	– 0.006
	(0.015)	(0.012)	(0.011)	(0.011)	(0.011)	(0.014)
Panel D: Unworked week						
No controls	– 0.043**	– 0.046***	– 0.044**	– 0.042***	– 0.037***	– 0.048***
	(0.016)	(0.016)	(0.016)	(0.014)	(0.014)	(0.017)
With controls	– 0.040**	– 0.048***	– 0.045***	– 0.036***	– 0.032**	– 0.050***
	(0.016)	(0.013)	(0.013)	(0.013)	(0.012)	(0.018)
Polynomial	Zero	One	One	One	One	Two
Obs. (Panels A-C)	1,020	3,221	3,999	4,739	5,489	7,063
Obs. (Panel D)	1,213	3,857	4,807	5,716	6,615	8,480

Notes: Each cell reports the reduced form estimate of the effect of the APE on the corresponding outcome, using bandwidths that are within 3, 6 and 12 months from the preferred bandwidth (i.e. 16 months). Results are shown both with and without controls. Controls include second child's month of birth fixed effects (except for the bandwidth of 4 months), dummy variables for whether the second child is male, whether the second child is French, whether parents were born in France, parents' age at the birth of the second child, and fixed effects for parents' socioeconomic background and parents' highest diploma. Standard errors are clustered by month-year of birth of the second child and are reported in parentheses (*** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$).

Table A8: Regression Estimates for Fathers' Labor Market Outcomes in First Year after Birth

Bandwidth	4 months	13 months	16 months	19 months	22 months	28 months
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Out of the labor force						
No controls	0.019	0.014	0.013	0.009	0.006	0.016
	(0.015)	(0.015)	(0.014)	(0.013)	(0.012)	(0.016)
With controls	0.026	0.008	0.010	0.005	0.005	0.016
	(0.016)	(0.014)	(0.012)	(0.012)	(0.012)	(0.014)
Observations	457	1,468	1,820	2,159	2,464	3,119
Panel B: Works part-time						
No controls	0.010	0.020	0.013	0.021*	0.013	0.026*
	(0.013)	(0.013)	(0.012)	(0.011)	(0.011)	(0.013)
With controls	0.013	0.025**	0.014	0.025**	0.017	0.024*
	(0.014)	(0.011)	(0.010)	(0.010)	(0.010)	(0.013)
Observations	457	1,468	1,820	2,159	2,464	3,119
Panel C: Usual hours of work						
No controls	– 1.017**	– 1.407	– 1.211*	– 1.396	– 0.582	– 1.525
	(0.418)	(0.848)	(0.702)	(0.857)	(0.842)	(0.927)
With controls	– 1.155*	0.542	2.251	– 0.038	2.370	– 0.729
	(.525)	(.979)	(1.446)	(1.135)	(1.635)	(1.231)
Observations	357	1,164	1,429	1,696	1,927	2,433
Panel D: Actual hours of work						
No controls	– 1.553	– 1.327	– 0.425	– 0.591	– 0.117	– 0.819
	(1.414)	(1.735)	(1.964)	(1.856)	(2.228)	(2.011)
With controls	– 1.785*	– 0.813	1.181	0.731	0.268	– 1.427
	(.895)	(1.125)	(1.963)	(1.361)	(2.223)	(1.773)
Observations	421	1,341	1,659	1,968	2,241	2,854
Panel E: Natural log of wages						
No controls	– 0.022	– 0.039	– 0.044	– 0.050	– 0.042	– 0.074
	(0.044)	(0.048)	(0.041)	(0.038)	(0.035)	(0.052)
With controls	0.001	0.027	– 0.022	– 0.040*	– 0.025	– 0.034
	(0.018)	(0.031)	(0.022)	(0.020)	(0.022)	(0.027)
Observations	372	1,156	1,426	1,695	1,931	2,463
Polynomial (Panels A,B,E)	Zero	One	One	One	One	Two
Polynomial (Panels C,D)	Zero	One	Two	Two	Three	Three

Notes: Each cell reports the reduced form estimate of the effect of the APE on the corresponding outcome, using bandwidths that are within 3, 6 and 12 months from the preferred bandwidth (i.e. 16 months). Results are shown both with and without controls. Controls include second child's month of birth fixed effects (except for the bandwidth of 4 months), dummy variables for whether the second child is male, whether the second child is French, whether parents were born in France, parents' age at the birth of the second child, and fixed effects for parents' socioeconomic background and parents' highest diploma. Standard errors are clustered by month-year of birth of the second child and are reported in parentheses (*** p < 0.01 ** p <0.05 * p <0.1).

Table A9: Placebo Tests Using Different Cutoffs

Eligibility cutoff shifted by	– 24 months (1)	– 18 months (2)	0 months (3)	18 months (4)	24 months (5)
Panel A: Mother out of labor force					
No controls	– 0.004	0.002	0.167***	– 0.002	– 0.009
	(0.034)	(0.035)	(0.057)	(0.036)	(0.043)
With controls	– 0.043	– 0.000	0.150***	0.049	– 0.009
	(0.026)	(0.022)	(0.025)	(0.034)	(0.033)
Observations	5,291	5,134	5,255	5,403	5,459
Panel B: Mother employed					
No controls	0.009	– 0.005	– 0.137***	– 0.003	0.022
	(0.030)	(0.032)	(0.023)	(0.035)	(0.045)
With controls	0.055**	– 0.000	– 0.115***	– 0.055	0.036
	(0.024)	(0.020)	(0.020)	(0.035)	(0.032)
Observations	5,291	5,134	5,255	5,403	5,459
Panel C: Father out of labor force					
No controls	0.011	0.001	0.008	0.001	0.000
	(0.007)	(0.007)	(0.008)	(0.010)	(0.008)
With controls	0.005	0.007	0.008	0.007	0.000
	(0.005)	(0.007)	(0.008)	(0.008)	(0.006)
Observations	5,291	5,134	5,255	5,403	5,459
Panel D: Father's actual hours					
No controls	– 0.417	0.573	2.583***	0.177	1.338
	(0.930)	(0.720)	(0.893)	(1.836)	(1.231)
With controls	– 0.197	– 0.500	2.511**	2.011	– 1.024
	(0.789)	(0.724)	(0.772)	(2.247)	(2.014)
Observations	4,883	4,680	4,807	4,981	5,034
Polynomial	1	1	1	2	2
Panel E: Father's usual hours					
No controls	0.840	– 0.676	0.753	– 1.079	0.302
	(0.592)	(0.814)	(0.754)	(0.819)	(0.696)
With controls	0.583	– 1.234*	0.600	0.169	0.154
	(0.634)	(0.692)	(0.529)	(1.089)	(0.610)
Observations	4,105	3,938	4,019	4,149	4,219

Table A10: Placebo Test Using First Children

	Mother out of labor force	Mother employed	Father out of labor force	Father's actual hours of work	Father's usual hours
	(1)	(2)	(3)	(4)	(5)
Month-year of birth of first child					
No Controls	0.019	0.032	– 0.013	0.518	0.185
	(0.030)	(0.020)	(0.015)	(0.837)	(0.326)
With Controls	0.041	0.009	– 0.003	0.225	– 0.064
	(0.039)	(0.017)	(0.012)	(0.957)	(0.424)
Polynomial	Three	One	Two	One	One
Observations	5,922	5,922	5,922	5,471	4,643

*** p < 0.01 ** p <0.05 * p <0.1