Parenthood, Crime and Domestic Violence in Brazil

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Abstract

We investigate the effects of having a child on parents' criminal behavior in Brazil. Exploring rich administrative records, we find that first-time fathers are 18.5% more likely to be criminally prosecuted in the two years after childbirth. This is driven by economically motivated and violent crimes, while we observe a small decrease in crimes with no clear economic motivation. Fathers that increase their criminal activity are younger and are at the bottom part of the income distribution. Lastly, we show large increases in domestic violence, which are consistent with both effects of economic unrest in the household and increases in the time spent between partners.

Keywords: Crime, Parenthood, Turning Point.

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1 Introduction

Large life events such as getting married or becoming a parent might provoke significant changes in the criminal behavior of individuals. Sociologists, for instance, have long posited that having the first child is often a turning point in the life of parents, who become more responsible and thus reduce their illicit activity (Sampson and Laub, 1992). Recent empirical evidence has corroborated this idea, showing that the birth of the first child causes a reduction in the criminal behavior of parents (Dustmann et al., 2021; Massenkoff and Rose, 2020; Eichmeyer and Kent, 2022). However, childbirth might also increase illegal activity, as parents must bear with additional expenditures caused by pregnancy and the care of the newborn. This might be particularly relevant in contexts with underdeveloped social security networks and high poverty rates, where constraints to providing childcare are more likely to be binding.

In this paper, we study the effects of childbirth on parents' criminal behavior in Brazil. We explore a unique data environment that combines family records of millions of children with the universe of criminal cases in Brazil. To identify the causal effects of childbirth, we implement a quasi-experimental research design comparing first-time parents that experience childbirth a few years apart. Our identifying assumption is that absent of child conception, we would observe parallel trends for both groups in their criminal behavior.

We find that, relative to the pre-conception period, first-time fathers increase their criminal behavior by 5.3% during pregnancy and by 18.5% in the two years after childbirth. For mothers, we find a strong reduction in crime around the time of birth, but the probability of being criminally prosecuted catches up to baseline levels two years after the event.

The estimated effects of parenthood are largely concentrated on economically motivated and violent crimes. This indicates that fathers are changing their criminal behavior for financial motives or as a result of emotional distress caused by parenthood or by economic constraints. At the same time, we find a slight reduction in non-violent crimes without economic motivation, such as traffic-related crimes, or minor drug possessions.[1] For mothers, we find that the decrease in crime during pregnancy is driven by violent and non-economically motivated crimes, while economically

[1]The list of other crimes includes traffic-related, slandering, illegal gun possession, minor drug possession, failure to obey, damages to private property, environmental crime, conspiracy, lynching, racial offenses, and prejudice

motivated crimes are stable around pregnancy and childbirth.[2]

With our rich data environment we are able to characterize who are the first-time parents that are increasing their criminal activity due to child conception and birth. This allows us to both identify the groups there are more likely to change their criminal behavior because of childbirth, and to better understand the mechanisms driving the increase in criminal activity.

We start by documenting that increases in criminal behavior are concentrated among more economically vulnerable individuals. Dividing the sample of fathers by their formal earnings before conception, we find that those with no formal income or in the bottom part of the earnings distribution are the ones who increase their criminal behavior around childbirth. This is driven by economically motivated and violent crimes, and we find no effects on crimes with no economic motivation for this group. Among fathers on the top of the pre-pregnancy earnings distribution within our sample, we find zero effects of childbirth on the probability of being criminal prosecuted for violent or economically motivated crimes, but a substantial reduction on other crimes with no clear economic motivation.

Increases in the probability of being criminally prosecuted are the highest among fathers who were 22 or younger when the child was born. We present survey evidence that indicates that young parents are more likely to have unwanted children and to have more difficulties in providing for them. Additionally, we show that younger parents are also more likely to form a household because of the child. Thus, our effects on the criminal behavior of young parents are consistent with the idea that some fathers turn to criminal activities to accommodate the additional costs generated by child care. When we decompose the analysis by type of crime, our results are also consistent with this narrative. Young fathers show large increases in violent and economically motivated crimes, but no change in other crimes with no economic motivation. For older fathers, increases in violent and economically motivated crimes are significantly smaller. Meanwhile, we observe that for older fathers the probability of being prosecuted for crimes with no clear economic motivation reduces after childbirth.

We also find no difference in the effects on the criminal activity of fathers according to the gender of their children. This is different from what is found in Dustmann et al. (2021), who document larger reductions in criminal behavior by fathers of

[2]None of these three categories include domestic violence, which we discuss separately later.

boys relative to girls. Their findings are consistent with fathers changing their illicit behavior to become role models for their kids. In settings where the role model channel is dominated by an income necessity channel, we would expect no difference in criminal behavior according to the gender of the children.

In our last set of results, we focus on prosecutions for domestic violence. We find a substantial increase in the probability of being prosecuted for domestic violence for fathers. Effects are also driven by younger and more economically vulnerable fathers. Furthermore, the increase is also more pronounced among fathers who were not in the same household as the mother before pregnancy, suggesting that the pairing of increased contact among parents and an economically constrained setting can increase domestic violence. These results are consistent with findings in the same context reported in Bhalotra et al. (2021) and strengthen the idea that both economic unrest, and more time spent with the possible aggressor, increase domestic violence.

Observed increases in domestic violence numbers could be driven both by changes in the criminal behavior of fathers or by women changing their reporting behavior due to childbirth. Using third-party reported data about domestic violence, we observe that the increase in domestic violence prosecutions is not only due to changes in reporting, as we find an increase in the likelihood of first-time mothers being victims of aggression from partners or ex-partners after the child's conception. This increase is concentrated among young women, in line with our findings on the probability of being prosecuted for domestic violence of young fathers.

A major concern in papers that estimate the effects of parenthood in the criminal behavior of parents regards the existence of an underlying unobserved parameter that is associated with both pregnancy and risky behavior that leads to crime. In our setting, one could be concerned that a sudden change in unobserved preference for risk could be associated both with having unprotected sexual relations (thus increasing probability of conception) and crime. If that was the case, we would also expect to observe an increase in crimes with no economic motivation, which we do not see in our results. Furthermore, using survey data, we show that around 47% of first pregnancies in Brazil are unwanted. This share is particularly higher groups for whom we observe larger increases in criminal behavior. This corroborates the idea that costs of childcare are often unexpected and unplanned for in our setting.

We also address potential issues related to the recent two-way fixed effects literature that point to potential bias generated when there are multiple periods of treat-

ment (De Chaisemartin and d'Haultfoeuille, 2020; Callaway and Sant'Anna, 2021; Goodman-Bacon, 2021; Sun and Abraham, 2021). Our stacked difference in differences model is specifically designed to not fall into the problems described in these papers.[3] Additionally, we show that our main results are nearly identical when estimated using the methods proposed by De Chaisemartin and d'Haultfoeuille (2020). Lastly, we also create alternative control groups and show that our results are robust across them.

We contribute to the broad literature that investigates the determinants of crime. In particular, meaningful life events such as having your first child or getting married have been posited to increase the pro-social behavior of individuals. A large set of sociology and criminology papers have studied this topic through interviews or small scale quantitative exercises (Sampson and Laub, 1992; Edin and Kefalas, 2011; Edin and Nelson, 2013; Mitchell et al., 2018).[4] Recently, two large-scale efforts in the economic literature suggest that the birth of the first child caused pro-social changes in fathers' behavior. Dustmann et al. (2021) find that, in Denmark, men who father a boy reduce their criminal behavior to become role models for their children relative to those who father a girl. In turn, using an empirical strategy similar to ours, Massenkoff and Rose (2020) show that, in Washington State, first-time fathers reduce their criminal behavior by around 20%.

To our knowledge, our paper provides the first large-scale estimate of the effects of childbirth on criminal activity in a developing country. We shed light on important mechanisms determining the criminal behavior of men, indicating that the previous results in the literature might not hold in a context that is more economically constrained. Furthermore, we are able to identify the groups of first-time fathers that are more likely to increase their criminal activity and who should be targeted by social security policies.[5] Lastly, our evidence for older fathers and those in the top of the income distribution within our sample also allows us to reconcile our results to the findings in the literature in developed countries. For fathers in this group, which are

[3] Baker et al. (2022) describes the stacked differences in differences strategy as a solution for the problems described in this recent literature and through simulation exercises show results that this method obtains similar results to the other estimators.

[4] See Massenkoff and Rose (2020) for a complete description of papers' methods, sample size and results.

[5] With respect to women, our results are similar to what is found in Massenkoff and Rose (2020) and Eichmeyer and Kent (2022) who find significant reductions in criminal behavior of women during pregnancy and the first months after childbirth.

living in socioeconomic conditions more similar to those in developed countries, we find no increase in the probability of criminal prosecution, and a reduction in the probability of committing crimes with no clear economic motivation, suggesting a change towards more responsible behavior.

We also provide additional evidence on how economic unrest might provoke criminal behavior of individuals (see Draca and Machin (2015) for a review). A large literature has focused on the effects of job loss on crime (Rose, 2018; Dix-Carneiro et al., 2018). In Brazil, Britto et al. (2022) has shown that following job loss, individuals increase their criminal behavior significantly. Our results contribute to this literature, indicating that in developing country contexts, the costs of childcare create an additional financial burden to fathers who might have to turn to criminal activity to accommodate these expenses.

Lastly, we also contribute to the literature on determinants of domestic violence. Research has highlighted the effects of stress, economic unrest, and an increased time spent between partners as causes of domestic violence (Dugan et al., 2003; Card and Dahl, 2011; Aizer, 2010; Perova et al., 2021). In the Brazilian context, Bhalotra et al. (2021) show that domestic violence increases after a job loss, both because individuals are more economically constrained and because of an increase in the time spent between possible aggressors and victims. We contribute to this literature by showing that childbirth can also be a cause of increases in domestic violence. In particular, our unique third-party reported data allows us to state that increases are not only driven by changes in reporting but that there are actual changes in the probability of mothers being victims of violence by their partners or ex-partners.

2 Context

Brazil is the largest country in Latin America, with 212 million individuals. Despite progress in the early 2000s, poverty remains a prevalent issue. In 2009, when we start our analysis, 27% of the population lived below the 5.50US$ poverty line used by the world bank for middle-income countries. Furthermore, Brazil remains one of the most unequal countries in the world. In 2009, the Gini Index was 53.7.

2.1 Maternity Leave and Social Security Support for Children

Brazil's social security networks have historically been focused on individuals with formal employment ties. Formally employed mothers are entitled to 120 days of maternity leave, and their employers have to pay their full salary during the period.[6] In turn, mothers working in the informal sector who do not contribute to social security are not entitled to any kind of maternity leave provided by the government. This distinction between formal and informal sectors is particularly relevant in the Brazilian case. In 2009, among all women between 18 and 40, only 35% of them were formally employed or contributing to the social security network. Thus, around 65% of women would not be entitled to any kind of paid maternity leave.[7]

The only maternity benefit for women not contributing to social security network is the Conditional Cash Transfer *Bolsa Família*. At the time, for each child (up to 5 children), households received 32 Brazilian Reais (BRL) (around 10US$) per month through the program.

2.2 Unwanted Pregnancies and Providing for Children

A common feature in many economically disadvantaged environments, unwanted pregnancies are also prevalent in Brazil. We provide evidence on this by exploring the *Pesquisa Nacional Sobre Demografia e Saúde* (PNDS).[8] This survey was collected by the Brazilian Institute of Geography and Statistics (IBGE) in 2006 and is the most recent survey that asks detailed questions to women about their experiences with pregnancy and childcare. The survey is nationally representative and targets women between 15 and 49 years old at the time.

We find that only 60% of mothers wanted the child when they were born. This share drops to 51% if we only consider mothers that were 22 years old or less by the time of childbirth. Additionally, among women who are pregnant with their first child, only 53% declare that they wanted the child at that moment. Among pregnant women that were 22 or less at the time of the survey, this share is only 43%. We

[6] If the Mother is a registered Self-Employed worker, she is also entitled to 4 months of salaries, but they are paid directly by the Federal Government

[7] These numbers were calculated using the *Pesquisa Nacional por Amostra de Domicílios* (PNAD), which is a yearly, national representative, household survey collected by the Brazilian Institute of Geography and Statistics.

[8] The PNDS is the Brazilian arm of the *Demographic and Health Survey* (DHS) and was conducted through the IBGE with funding help from the USAID.

report detailed statistics in Table 1.

PNDS also surveys women on financial difficulties. We find that unwanted pregnancies are related to economic difficulties. Among mothers who reported wanting the kid at the moment of birth, 20% reported having struggled to obtain food for the household at the month of the survey. This number jumps to 27% among women who reported not wanting the kid at the moment.[9] Similar magnitude increases are observed for Pregnant women (13% vs. 21%).

Overall, PNDS shows us that unwanted pregnancies represent a substantial share of the amount of children born. Furthermore, the survey allows us to characterize differences across groups, as we find that younger and more economically vulnerable women are more likely to experience unwanted pregnancies. In Section 5, when we analyze the criminal behavior of first-time parents across groups, we show that individuals with similar characteristics to those in the group with a higher probability of unwanted pregnancies are the ones driving the increase in criminal behavior after childbirth.

2.3 Criminal Activity and Justice in Brazil

Brazil is one of the most violent countries in Latin America, which in turn is the most violent continent in the world. In 2017, Brazil had a homicide rate of 30.7 homicides per 100,000 people. This is the sixth highest in the world(UNODC, 2019), and bigger than Colombia or Mexico, countries in the region that are historically known for drug-related violence.[10]

Criminal law is set at the federal level, thus uniform across the country. State or municipality level governments have no legislative power concerning criminal law, but are the main responsible for policing and investigations. Investigations are conducted by the state-level judiciary police, by request from prosecutors, crime victims or their own initiative. Once an investigation is concluded by the police, the files are sent to the prosecutor office, which decides whether to press or drop the charges. In case the prosecutor does not press charges following the investigation, a judge still has to approve the decision, thus a new court case is also filled. Thus, all concluded investigations are registered as judicial cases.

[9]It is noteworthy that abortion in Brazil is illegal, and there is a possibility of both doctors and mothers being convicted to prison for it.

[10]Homicide rates are useful for cross-country comparisons as it is an statistic that is fully comparable across different judicial system.

The judicial system is composed by federal and state courts. The 27 state courts are responsible for around 90% of all criminal cases while the remaining part which consists of international drug trafficking of frauds against federal administration are in the competence of federal courts.

3 Data

In this section, we describe the three main data sources used in this paper. The first source is the ***Cadastro Único*** data from 2011 to 2020, provided by the Brazilian Ministry of Citizenship. It consists of individual-level administrative records from all individuals in households that benefit from the federal government's social programs. It is disclosed every year and started to be systematically organized in 2011 and provides demographic characteristics such as age, gender, education, and the position in the household of each individual. In addition, through the *Cadastro Único*, we can link children born between 2011 and 2018 to their parents, as it contains the full name of both parents for every individual registered in it.

The ***Cadastro Único*** collects data from a subset of individuals that is negatively selected in terms of socio-economic status. However, it is still broadly comprehensive of the Brazilian population as it tracks around 60% of all childbirths between 2011-2018.[11] Furthermore, as we show in the heterogeneity analysis in Section 5, although our sample is skewed on low income individuals, it also covers some high income people as well.

The second data source is the universe of criminal cases filed in all first-degree courts during the 2009-2020 period. These are build based on public case level information available on tribunals' websites and courts' daily diaries. For each case we observe its start and termination date, court location and one or more key words that tag the type of criminal activity being discussed. Furthermore, these records identify the defendant(s) and plaintiff(s) by their full name. This data was supplied to us by Kurier, one of the leading companies in providing information services to law firms all over the country.

The third main data set used is the ***Relação Anual de Informações Sociais*** (RAIS), a matched employer-employee dataset that covers the universe of formal

[11] We take the total value of childbirths in this period from the *Estatísticas do Registro Civil* that is collected by the IBGE.

employment in Brazil. It identifies workers by their full names and social security numbers. We use RAIS to track formal labor market employment and the earnings of individuals. In addition, we also use the full names of individuals to combine the family records with criminal records.

3.1 Combining Family and Crime Records

We use individual's full name to combine family and crime records. Brazilians usually have multiple surnames, as it is common to children be named with at least one surname from the father and one from the mother. To minimize matching errors, we restrict our analysis sample to individuals who have unique names in the country which is the case for about half of the adult population in Brazil. Using RAIS and *Cadastro Único* data, we create a registry of individuals that contains name and tax ID for 96% of the Brazilian adult population. This allows us to almost perfectly identify if names are repeated or not. We then restrict our sample to individuals who have a unique name in the registry and then merge it to court data by exact matching on names.

4 Criminal Behavior of First-Time Parents

In this section, we describe our analysis sample, then discuss our empirical strategy and identification assumptions, and present our main results along with several robustness exercises.

4.1 Empirical Strategy

To recover the effect of the first child on the criminal behavior of parents, we use a *stacked* difference in differences strategy that compares first-time parents who had children a few years apart.

We first define a treatment sample that comprises parents with unique names who had their first child between 2011 and 2013. This also includes children born in this period but who only appear in *Cadastro Único* between 2014 and 2020. We then use observable characteristics to match each individual in the treated sample with a first-time parent who had their first child between 2016-2018.[12]

[12]The pool of possible controls also includes children born between 2016 and 2018 but who only

We match treated and control parents using their year of birth, gender, gender of the child, municipality, and if they had at least one job contract in RAIS between 2002 and 2018. Our match is done with replacement; thus, one individual in the control group might be selected as a control for two treated ones. In this case, the control individual appears twice in the estimation sample. If more than one control is found for a treated individual, we randomize who is chosen for the control group.

Our sample selection yields 2.04 million individuals in the treated sample, 1.10 million mothers, and 941 thousand fathers. Our control sample comprises 1.34 million individuals, 630 thousand fathers, and 710 thousand mothers. In Table 2 we provide summary statistics of our sample, including their criminal behavior in the pre-conception period.

With the analysis sample described above, we estimate the following difference in differences equation:

$$Y_{it} = \gamma_i + \delta_t + \sum_{t=-8, t\neq -4}^{7} \beta_t \cdot D_{it} + \varepsilon_{it} \tag{1}$$

where γ_i are individual fixed effects, δ_t are time fixed effects and D_{it} is a dummy that takes value 1 in period t if individual i belongs to the treatment group. Our data is organized in quarters with Period 0 corresponding to the period the child is born and period - 4 corresponding to the quarter before the child was conceived. We organize the data such that the month of childbirth always corresponds to the first month of period 0. Consequently, period -4 corresponds to at least ten months before the child was born. The parameters $\beta_t, t \in \{-8, .., -5, -3, ...7\}$ correspond to the dynamic treatment effects of the first child relative to the pre-conception period.

To summarize the effects during pregnancy and after childbirth, we also estimate the following model:

$$Y_{it} = \gamma_i + \delta_t + \beta_1 \cdot \text{Pregnancy}_{it} + \beta_2 \cdot \text{Post Childbirth} + \varepsilon_{it} \tag{2}$$

where Pregnancy_{it} is an indicator variable that takes value one if the individual is in the treated sample during periods $t = \{-3, -2, -1, 0\}$ and Post Childbirth takes value one for treated individuals in periods $\{t = 1, 2, 3, 4, 5, 6, 7\}$. In this model, β_1 represents the average difference between treated and controls comparing the preg-

appear in *Cadastro Único* after 2018. We also do a series of robustness checks changing the time difference in the birth of the first child between treatment and control parents. They are discussed in detail at the end of this section.

nancy periods with pre-pregnancy periods, and β_2 summarizes the difference between treated and controls in the post childbirth period relative to the pre-pregnancy periods.

The identifying assumption of our model is that treated and control units would follow parallel trends in the absence of the treatment. For the assumption to hold, we need that control individuals function as a proxy of the changes in time that would have been observed for individuals in the treatment group. Throughout our analysis, we discuss our identification assumption and show results and robustness checks that corroborate with it.

4.2 Main Results

We estimate equations 1 and 2 separately for fathers and mothers. In Figure 1a, we show the dynamic treatment effects for fathers, using an indicator function that takes value one if the father was criminally prosecuted in period t. Coefficients are divided by the probability of criminal prosecution in the period $t = -4$, which is shown in the bottom of the figure. Thus, the values in the figure represent the percentage change relative to the baseline.

First, we find no differences in the probability of criminal prosecution before the period of conception. This supports our identification strategy that relies on a parallel trends assumption between treated and controls in the absence of conception and childbirth. Second, we find that the probability of criminal prosecution increases for first-time fathers in the quarter the child was conceived. The increase is more pronounced after childbirth and persistent up to two years after the child is born. In column (1) of Panel A of Table 3 we show our estimates for equation 2, using the same outcome. The results indicate that during pregnancy, the effects correspond to a 5.3% increase, and after childbirth, they represent a 18.5% increase in the probability of being criminally prosecuted relative to the period before child conception.

We find different effects for first-time mothers. In Figure 1b we show our estimates of β_t from equation 1. First, mothers are much less likely to be engaged in criminal activity than fathers, as we can see that their baseline probability in being criminally prosecuted is more than 6 times smaller than the one of fathers. Similar to fathers, we also observe no difference in the criminal behavior of mothers before conception, characterizing no differential trends prior to conception. However, differently from fathers, we observe that mothers decrease their criminal behavior during pregnancy

and the first periods after childbirth. One year after the child was born, the probability of criminal prosecution for first-time mothers goes back to pre-pregnancy levels. In column (1) of Panel B of Table 3 we show our estimates of $\{\beta_1, \beta_2\}$ from equation 2. On average, first-time mothers decrease their criminal behavior by 17.0% during pregnancy, and we find a negative effect of 14.5% when pooling all periods after childbirth.

We interpret these findings as being consistent with an incapacitation story. Mothers could be less likely to commit crimes around childbirth both because of increased in time spent in childcare, and also because of the physical constraints generated by pregnancy. After childbirth, mothers progressively go back to their initial level of criminal activity.

4.3 Types of Crime

Next, we investigate the effects of the first child on different criminal outcomes. Our case-level data allows us to disentangle between different crime types. In this subsection, we focus on three general types: economically motivated crimes, violent crimes, and a group we refer to other crimes, which mostly encompasses crimes with no clear economic motivation. None of these categories include domestic violence, which we discuss separately in Section 6.

In Figure 2a we show the dynamic treatment effects of the first child on the probability of being prosecuted for an economically motivated crime for fathers. In this category, we include cases flagged as drug trafficking, thefts, robberies, trade of stolen goods, fraud, corruption, tax evasion, and extortion. The estimates point to a similar pattern as observed before. Fathers increase their criminal behavior related to economic crimes during pregnancy, and this increase is larger and persistent after the child is born.

Similar patterns are observed in Panel B of Figure 2b, where we show the effects of having your first child on the probability of being prosecuted for violent crimes. Violent crimes encompass assaults, homicides, kidnappings, and threats. Some of these occurrences might also have been instrumental to others, economically motivated behavior, for example, a homicide committed during a robbery. In columns (2) and (3) of Panel A Table 3 we show that economic crimes have an increase of 20.6% after childbirth and violent ones increase by 25%.

In the last category, described as *Other Crimes*, we group occurrences with no

apparent economic motivation. These include traffic crimes, slandering, illegal gun possession, small drug possession, failure to obey, damages to private property, environmental crime, conspiracy, lynching, racial offenses, and prejudice. In Panel C of Figure 2c, we observe that other crimes do not increase during pregnancy or after childbirth. Our estimates in column (4) of Table 3 show a decrease of 10% in these crimes in the two years after childbirth, and we find no effects in such crimes during pregnancy.

Overall, our analysis of the criminal behavior of fathers according to crime types indicates that the necessity of income to accommodate the expenditures of childcare is the driving force of the criminal behavior of parents. One could have posited that an increase in risky behavior could have been a confounding effect correlated with illegal activity and unprotected sex. If that was the driver of the rise in criminal activity observed around childbirth, we would have expected an increase in the other crimes category as well.

For first-time mothers, we find that the probability of prosecution for violent crimes and other crimes with no apparent economic motivation decrease around the period of childbirth. Economically motivated crimes decrease slightly around childbirth, but less than the other types of crimes. We show our estimates of the dynamic treatment effects by types of crime for first-time mothers in Panels A through C of Figure A1. In Panel B of Table 3 we show our difference in differences estimate summarizing the effects during pregnancy and after childbirth. We can see that for economically motivated crimes, there is no statistically significant decrease after childbirth, whereas we observe a significant decrease for other crime types.

4.4 Robustness Checks

In this subsection we present some robustness checks to our results. First we discuss the implications of the recent advances of the two-way fixed effects literature on our setting, then we show estimates using different control groups that were created altering the time difference between treated individuals and the pool of potential controls. Lastly, we comment on the use of criminal prosecution as a measure of criminal activity, and present results on flagrant crimes.

4.4.A Discussion of the recent two-way fixed effects literature

Recent methodological developments on the estimation of difference in differences models have pointed to possible concerns when there is variation in the timing of the treatment and heterogeneous treatment effects on the observation unit (Callaway and Sant'Anna, 2021; Goodman-Bacon, 2021; Sun and Abraham, 2021; De Chaisemartin and d'Haultfoeuille, 2020). In these cases, the estimation of treatment effects might include negative weights for some units that enter with opposite signs in different periods. This problem is particularly relevant in cases where most or all observations eventually get treated in the analysis period.

Our empirical strategy is specifically designed to avoid these problems. We select a pool of possible controls such that none of the individuals would have had their children in the analysis period, which spans from January 2009 (8 quarters before January 2011, when the oldest child was born in our treated sample) and December 2015 (7 quarters after December 2013, when the youngest child was born in our treated). Thus, the inclusion of never treated in our analysis sample as control individuals, in addition to the *stacked* difference in differences strategy, allow us to avoid the possible issues pointed out by the recent methodological literature.[13]

Nevertheless, we estimate our dynamic treatment effects model using the methods proposed by De Chaisemartin and d'Haultfoeuille (2020) as a robustness check. We present our estimates in Figure A2. As expected given our empirical strategy, we find very similar results on the probability of being criminally prosecuted using the De Chaisemartin and d'Haultfoeuille (2020) estimator.

4.4.B Different Control Groups

The identification of our *stacked* difference in differences relies on the assumption that treated and control fathers would follow similar trends in the absence of conception and childbirth. Although we match groups on detailed characteristics, one could argue that time variant unobserved characteristics associated both with criminal activity

[13] Our empirical strategy is closely related to the one presented in Fadlon and Nielsen (2021). It is in similar spirit to the analysis of Cengiz et al. (2019) on the effects of minimum wage on employment. The main difference is that in our case, control group units were never treated in the analysis period, whereas in their case they restrict to units that were never treated in the event-window time span. In Baker et al. (2022) there is an extensive discussion of the *stacked* differences in difference model as a solution to the recent concerns raised by the recent two-way fixed effects literature and they find that the model closely approximates the other proposed estimators.

and child conception can bias the results. These characteristics could reflect why some parents are having kids earlier than others.

To address this concern we test our main results using different pools of potential controls for the same set of treated fathers. In particular, we vary the time difference in childbirth between treated and control parents. We do three alternative control groups, matching in the time difference between births at 1, 2 and 3 years. This comes at a cost, because as explained above, we do not want control observations to have been treated in the window we are observing their criminal activity. For the groups matched at exactly 1 and 2 years of difference, we cannot look at their outcomes up to two years after childbirth, as the control group child would already have been conceived and born in this period. Thus, for these two groups we restrict the analysis to 1 and 4 quarters after childbirth. In addition, for this robustness exercise we also drop from our analysis sample fathers for whom we do not find a control unit with the exact time difference.

We present our estimates of equation 1 in Figure A3. We can see that our estimates using the 3 control different groups mimic the ones we observe for the main analysis sample. Individuals increase their criminal activity during pregnancy, and after childbirth. We interpret this as strong evidence that the time difference between childbirth of treated and control units is not generating bias in our estimates.

4.4.C Criminal Prosecution as a measure of Crime

The use of criminal prosecutions as a measure of criminal activity might raise concerns. Criminal activity is often underreported, and in a significant number of cases the suspect is not identified, generating measurement error in the analysis of criminal activity (Soares, 2004). This would generate attenuation bias in our coefficient if the probability of being prosecuted conditional on having committed a crime is constant, but would not bias the effect relative to the baseline period.

Nevertheless, one might be concerned that the probability of being prosecuted conditional on having committed a crime might change with the treatment. In that case, what we are capturing would be the effect of being prosecuted and not a real effect on criminal activity. To address this concern, we conduct our analysis on the small subset of criminal prosecutions of flagrant crimes. In these cases there is less discretion by police or judiciary authorities on the decision to prosecute or not. We show our estimates of the effects of the first child on the probability of being

prosecuted for a flagrant crime in Table A1. Although flagrant crimes are almost 20 times less likely to be observed than regular criminal prosecutions, we observe a 13.5% increase in the probability of prosecution of fathers after childbirth. This is driven by younger fathers, who, as we will discuss in Section 5, also have a bigger increase in criminal prosecution. For mothers, we see a decrease in flagrant crimes during pregnancy, similar to what we observe for all types of criminal prosecution

5 Heterogeneity Analysis

In the previous section, we show that the first child increases the likelihood of criminal prosecution for fathers. We find that this is driven by economically motivated and violent crimes, while the probability of being prosecuted for other crimes with no apparent economic motivation slightly decreases.

These findings contradict results found in developed countries such as the U.S. or Denmark. In this section, we characterize the groups that are driving our results. By doing so, we can understand the differences between these contexts and have a better picture of the forces driving parents' criminal behavior in a developing country context.

We execute a series of heterogeneity analysis by estimating equations 1 and 2 using different sub-samples of our analysis sample. We focus on first-time fathers since our findings in Section 4 indicates that the criminal behavioral response of households during pregnancy and after childbirth is basically driven by fathers. Furthermore, men are responsible for the majority of criminal activity, as we can see from the fact that first-time fathers are more than 6 times more likely to be criminally prosecuted than first-time mothers in the baseline period. In the last subsection we present our results for mothers.

5.1 Pre-Pregnancy Employment and Labor Market Responses

In our first set of heterogeneity results we explore the effects on criminal activity of fathers according to their pre-pregnancy formal employment and income. If fathers increase their criminal behavior to accommodate expenditures caused by childcare, we would expect more economically constrained individuals to increase their illegal activity at higher rates. We use RAIS, the matched employer-employee data set on the universe of formal labor market contracts to recover a measure of employment

and labor market income income for first-time fathers and mothers.

We start by discussing effects on criminal activity by income group of fathers. We divide the main analysis sample into six different subgroups according to their total income in the five quarters before pregnancy (i.e., $t \in \{-8, -7, -6, -5, -4\}$ in our dynamic treatment effects design). We input 0 income if the individual did not have a formal labor market at a giver period. The first group encompasses all individuals with no formal income. Groups 2-6 are divided according to income percentiles in the same period. The percentiles chosen are 0-25th, 25th to 50th, 50th to 75th, 75th to 90th, and the last group includes all individuals with income above the 90th percentile.

The estimates of the dynamic treatment effects on the probability of being criminally prosecuted are presented in the different panels of Figure 3. In Panel A, we observe that for the sample of fathers that had no labor market income, criminal behavior increases during pregnancy and after childbirth. Similar patterns are observed in Panels B and C, where we plot the treatment effects for individuals in the lower parts of the formal labor market income distribution. For individuals between the 50th and the 75th percentile, we still observe some increase in the probability of being criminally prosecuted. In the two groups at the top of the income distribution, we find no change in criminal behavior during pregnancy or after childbirth.

In Table 4, we present the estimates of equation 2 for each income group. Among individuals with no formal income, the increase in criminal activity represents a 21% rise relative to the pre-pregnancy periods. Among those with at least some formal labor market income, we observe that coefficients are monotonically decreasing across income groups. In the bottom part of the table, we present the average monthly income in the pre-pregnancy period for the treated group. For the effect of comparison, the minimum wage in Brazil in 2011 was 545 BRL[14]. We can see that although the *Cadastro Único* sample is negatively selected in terms of income, it still encompasses individuals across a significant part of the income distribution, as the average earnings for those in the top decile are 5 times bigger than the minimum wage[15].

This monotonic relation between the increase in criminal activity and income

[14]We see that for the 25% of the formal income distribution, their average earnings was approximately 1/4 of the minimum wage. That is mostly because of periods outside the labor force during the pre-pregnancy periods.

[15]Using PNAD 2011, the 95th percentile of monthly earnings for men between 18 and 50 years old in the formal sector was 2700 BRL

groups also appears when we decompose prosecution by types of crime. We present these results in Table A2, where we observe that for economically motivated and violent crimes, the increases are concentrated in the lower part of the income distribution. For other crimes with no clear economic motivation, we observe a decrease in all parts of the distribution, but it is more pronounced among richer first-time fathers.

We find similar results for criminal activity of fathers dividing them by the employment status of mothers[16]. In Panel A of Figure 4 we present our estimates on the probability of criminal prosecution for first-time fathers for whom we see that the mother was employed in the formal sector in the baseline period. We find basically no change in the probability of criminal prosecution of fathers during pregnancy or after childbirth. On the other hand, in Panel B of the same figure, we observe that in the cases where the mother was not employed in the formal sector, we observe that first-time fathers increase their criminal activity during pregnancy and after childbirth[17].

In addition to using it for separating groups for heterogeneity analysis, we can also use RAIS to investigate if first-time fathers respond to conception and childbirth in formal labor market outcomes. We measure employment as a dummy indicating if the individual had at least one formal labor market contract at the quarter t. Earnings are the average monthly wage of individuals at the contracts they had during quarter t. We input zero income if individuals did not have a contract at the quarter.

We present the estimates of the dynamic treatment effects for the sample of fathers in Figure A5 and for mothers in Figure A6. We find a small response of 1% increase in employment after conception, but not sustained after childbirth. Earnings follow a similar pattern, indicating no intensive margin responses in the labor market[18]. This suggests that in this context, first-time fathers are not relying on formal labor markets to compensate for the expenditure costs generated by childcare. On the other hand, mothers are vastly penalized by their first-child in labor market outcomes. We observe that immediately after pregnancy the formal employment probability of

[16]In this exercise, we need to do an additional sample restriction, as we need fathers and mothers with unique names in the country, so that we can go from the *Cadastro Único* name of the mother to her employment status in *RAIS*.

[17]In Figure A4 we present similar results for criminal activity of fathers when both parents are employed and when both parents are unemployed.

[18]This is similar to what is found in Massenkoff and Rose (2020) who, with a restricted sample, find a peak in employment around childbirth.

mothers declines, reducing by almost half 3 quarters after childbirth. These results suggest that behavioral responses arising from the formal labor markets actually increase the constraints faced by first-time parents in our setting.

5.2 Age at Childbirth and Family Formation

In our second set of heterogeneity results, we divide the analysis sample between younger and older fathers. As we have shown in Table 1 and discussed in Section 2, younger parents are more likely to have given birth to unwanted children and also declare struggling more to obtain money and food for their household. In this subsection, we present results dividing the sample of fathers into two main groups: those who were 22 years old or younger at the time of childbirth and those who were 23 or older.

We find that the increase in criminal activity is bigger among younger fathers. Our estimates of the dynamic treatment effects are shown in Figure 5. In Figure 5a we observe a large and persistent increase in the probability of being criminally prosecuted for younger fathers during pregnancy and after childbirth. We observe a similar pattern for older fathers in Figure 5b, but the magnitude of effects are significantly smaller.

In column (1) of Table 5 we show that the estimates observed for younger fathers after childbirth corresponds to a 47% increase relative to pre-pregnancy periods. For fathers that were older than 22, we see in column (5) that the increase represented only a 10.7% rise relative to pre-pregnancy periods. In columns (2)-(4), we decompose older fathers across smaller age groups. We observe that the estimates are decreasing with the age of the father at childbirth within narrower groups as well[19].

In Table A3, we show different estimates by age groups using different types of crimes as the outcome. In both economically motivated and violent crimes, we see a bigger increase in criminal behavior after childbirth among younger individuals, and no change in their probability of being prosecuted for other crimes with no clear economic motivation. On the other hand, older fathers have smaller increases in violent and economically motivated crimes, but decrease their probability of being prosecuted by other crimes with no clear economic motivation.

Our heterogeneity analysis based on the father's age at childbirth is consistent with the idea that the increase in criminal behavior that we observed is caused by

[19]Our dynamic treatment effects estimates for the four different groups is presented in Figure A7

fathers needing to adapt to increases in household expenditures due to childcare. Besides being more economically constrained, as we have seen in Section 2 younger men are also more likely to have fathered unwanted children, who create unexpected childcare costs.

Younger individuals are also more likely to have their first child outside of a established household. We can use information from the *Cadastro Único* to show household formation patterns for a subset of our sample as in we observe the individuals' household position[20]. We create an indicator variable that takes value one if the individual is identified as the one responsible for a household or the partner of the responsible individual[21]. We then estimate our *stacked* difference in differences model, but with observations in the calendar year level. We show our findings for fathers and mothers in Figure A8. We can see that the probability increases sharply after childbirth for both fathers and mothers. In Figure A9 we observe that the increase is disproportionately bigger for those that are 22 or younger. This is particularly driven by these groups having a significantly smaller baseline probability of being identified as responsible of the household or their partner.

We also estimate the effects on the probability of criminal prosecution by household position in the calendar year prior to childbirth. We present these results in Figure A10. We can see that individuals identified as responsible or partners in a household start from a lower baseline level of criminal and have a smaller percentage change in criminal activity than those who were identified as the child of the responsible of the household.

5.3 Children's Gender

In our last heterogeneity analysis for fathers, we investigate if there are differences in the effects of first children in the criminal behavior of parents according to the gender of the child. There is a large body of evidence in both sociology and economics showing fathers respond to the gender of their children (Morgan et al., 1988; Dahl and Moretti, 2008; García et al., 2018). In particular, Dustmann et al. (2021) find

[20]For this analysis we restrict the sample for pairs of treated and control individuals that we can observe both at the *Cadastro Único* in the two calendar years before and after the first children (of the treated individual) is born.

[21]As in many household surveys, the position of the individual is defined relative to a person designated as responsible for the household. In the administrative records there are 11 positions, among which we observe child of parent of the responsible, partner or siblings.

that fathers who have a male child commit 19% fewer crimes than fathers whose first-born was female. They argue that individuals desist more from criminal activity and decide to act more responsibly, attempting to become role models when they father a child.

Expenditures in childcare should not differ much according to the gender of the first child. Thus, if the income necessity of economically vulnerable fathers is driving the increase in criminal behavior, we should not expect to observe a difference in the effects between fathers who had a girl and those who had a boy.

We estimate the dynamic treatment effects on the probability of being criminally prosecuted separately for fathers who had a boy and girls. We observe in Figure 6 that there are no differences in the effects between both samples. Men who fathered a boy have the same pattern as those who fathered a girl, increasing their criminal behavior during pregnancy and after childbirth[22].

5.4 Heterogeneity Results for Mothers

In Section 4 we show that first-time mothers reduce their criminal behavior during pregnancy and shortly after childbirth. As for first-time fathers, we also estimate the model for different groups of mothers according to income and age groups. In Table A4 we show that reductions in criminal activity are bigger among women with no formal income. With respect to age, we see in Table A6 that reductions are similar among younger and older first-time mothers[23].

6 Domestic Violence

In our last set of results, we focus on the effects of childbirth on domestic violence. We separate the analysis on domestic violence from other criminal prosecutions because the channels and motivations are potentially different from other criminal prosecutions, as there is no clear economic advantage of committing an act of domestic violence. Nevertheless, there is robust evidence that both financial distress and an

[22] In Figure A11 we show that this result also holds when we restrict the sample for younger fathers (22 and younger or 25 and younger), since the analysis in Dustmann et al. (2021) is focused on a sample of younger parents

[23] In Tables A5 and A7 we show the results for the effects of childbirth on crime for women according to type of crime.

increase in the time spent between partners can cause domestic violence (Bhalotra et al., 2021).

Both channels could be triggered by having your first child. The economic burden of childcare expenses can increase stress and conflict. At the same time, childcare also increases the time that potential aggressors spend together with potential victims, particularly in cases where both parents were not previously living in the same household.

6.1 Results

We use the same empirical strategy to investigate domestic violence outcomes. We begin by estimating equations 1 and 2 for our sample of first-time fathers and using the probability of being prosecuted for domestic violence as the outcome.

We present our estimates of the dynamic treatment effects in Figure 7. We find large increases in domestic violence after childbirth. One year after the event, the probability that a father is prosecuted for domestic violence increases by around 100%. Furthermore, we find no evidence of different trends between first-time fathers and controls before child conception. In Figure A12 we show that effects are similar when using different control groups as described in the robustness exercise in Section 4.

Similar to what we observe in non-domestic violence crimes, more economically vulnerable and younger individuals drive the increases. In Figure A13 we show heterogeneity analysis by pre-pregnancy formal labor market income groups. We observe that increases are particularly relevant for those with no formal labor market income or those at the bottom of the distribution. Fathers in the top 25% of the income distribution do not increase their domestic violence behavior after childbirth. The dynamic treatment effects are summarized in Table A8, where we can see the decrease in the treatment effect across the income distribution.

Dividing the sample by the age of the father at childbirth, we find that domestic violence behavior of young fathers is much more likely to increase than for older fathers. In Figure 8a we observe that fathers who were 22 or younger by the time their first child was born increase in almost 300% the probability of domestic violence one year after childbirth. We also estimate a significant increase for older parents presented in Figure 8b, but the magnitude is much smaller. We summarize our results in Table 6[24].

[24]In Figure A14 we show the dynamic treatment effects estimates on domestic violence decom-

A key difference in the heterogeneity analysis by age groups between domestic violence and other criminal prosecutions analyzed in Section 5 is the baseline levels of crime across groups. When analyzing criminal prosecution (Table 5), younger fathers have a similar likelihood of being criminally prosecuted as older fathers before child conception. Meanwhile, in Table 6, we see that older fathers are almost four times more likely to have been prosecuted for domestic violence at the baseline period. This is consistent with the fact that younger fathers are more likely to have their first child outside of an established household, which we discussed and shown evidence for in Section 5.

Given that young fathers are more likely to have unwanted children and less likely to be cohabiting, these results can be an indication that more time spent between couples in stressful situations leads to increases in domestic violence. Similar to what was discussed in Section 5, we can use a subset of parents in *Cadastro Único* data to observe what was the father's position in the household[25]. On one side, they can be flagged as husbands or responsible for the household, indicating they are cohabiting with the mother. However, these fathers can also be flagged as a child in a given household, indicating that they are still living with their parents, and childbirth would suggest an increase in the time spent between them and the mother of the child. We divide our analysis sample between fathers flagged as a child and those flagged as husbands and responsible for the household in the calendar year previous to the birth of their first child. In Figure A15 we see that increases in domestic violence are more prevalent among those who were flagged as a child in a given household before childbirth. We take this as evidence that the increase in the time spent between fathers and mothers is one of the mechanisms driving the increase in domestic violence.

6.2 Third-Party Reported Data on Domestic Violence

Another possible reason why we observe increases in domestic violence numbers is a change in reporting behavior of women due to childbearing. On the one hand, one could posit that women might be less likely to report domestic violence after childbirth since it could imply the father going to jail and being less likely to provide

posing older fathers in 3 groups. We find a similar monotonic decrease in the effects across age groups.

[25] In Section 4 we explain that our sample is constructed in a way such that fathers do not necessarily appear in *Cadastro Único* before the child was born.

for the child. On the other hand, having a child might increase domestic violence reporting if mothers fear for their children and their health more after the first child.

To evaluate if the effects we observe in domestic violence are all driven by changes in reporting behavior, we use data from the *Sistema de Informação de Agravos de Notificação* (SINAN). All public and private health units in Brazil must file a notification to the SINAN system when they find a patient that they suspect or know that has been a victim of domestic violence. This provides a measure of domestic violence that does not depend on the reporting behavior of the mothers and includes both mild and severe cases. Furthermore, the notifications are restricted to the health system. Thus there is no fear of retaliation from aggressors. SINAN data is available at the victim level but not identified by name or social security number. We match mothers in our sample to SINAN data by their date of birth and municipality. We restrict the analysis to cells with at most two mothers that share the same date of birth[26] and the municipality at which the children were born. Using SINAN data matched to our restricted sample of mothers, we create an outcome that indicates if the mother was the victim of aggression from a partner or ex-partner in a given period.

We find that the probability of being victim of aggression increases for young mothers after conception and childbirth. We present the estimates of the dynamic treatment effects in Figure 9a. We do not find increases in the probability of being a victim of aggression for older mothers as presented in Figure 9b[27]. In Table 7 we summarize our estimates of the effects of childbirth on being a victim of domestic aggression. We see that, after birth, young mothers have an increase of 33% in the probability of being a victim of aggression from partners or ex-partners.

7 Discussion

We leverage detail administrative records on family links, crime and labor market outcomes to show that, in Brazil, childbirth increases the criminal behavior of first-time fathers. This is driven by income necessity of fathers, who increase economically motivated criminal activity. Furthermore, we show that, both economic unrest and more time spent between parents due to childcare, increase the probability of domestic violence episodes, in particular for young fathers.

[26] This is the date of birth of mothers and not the date of childbirth.

[27] Estimates for the whole sample are shown in Figure A17, where we see an increase both after conception and childbirth.

Although we do not directly evaluate any specific policy, we believe our findings do bear important policy implications. The increases in criminal activity are mostly driven by economically vulnerable fathers, which are often excluded from a formal social security networks. We find, for example, that when the mother was formally employed prior to pregnancy, implying among other things that she would have access to maternity leave, fathers do not increase their criminal behavior. Attaching benefits to formal employment might be problematic in a setting with a large informal sector, as it excludes from the social security network the more vulnerable fathers. In light of recent evidence between social security coverage and criminal behavior (Deshpande and Mueller-Smith, 2022), there is room for research that precisely ties up the relation between parenthood, social security networks and criminal behavior of parents, specially in developing countries.

Finally, we also find a large overlap in the characteristics of fathers that increase their criminal behavior the most, and those who are more likely to father an unwanted child. This suggests large benefits of programs that reduce unwanted pregnancies targeted towards younger and economically vulnerable individuals. It is also important to highlight that there are no legal ways to terminate a pregnancy in Brazil. This institutional setting gives room to more unwanted childbirths that are associated with more criminal activity.

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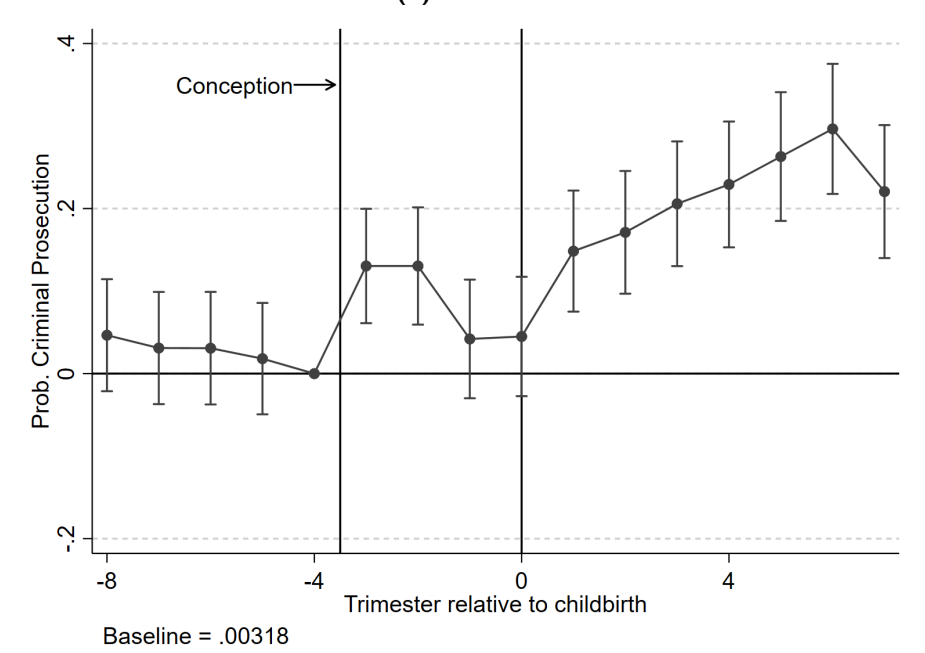
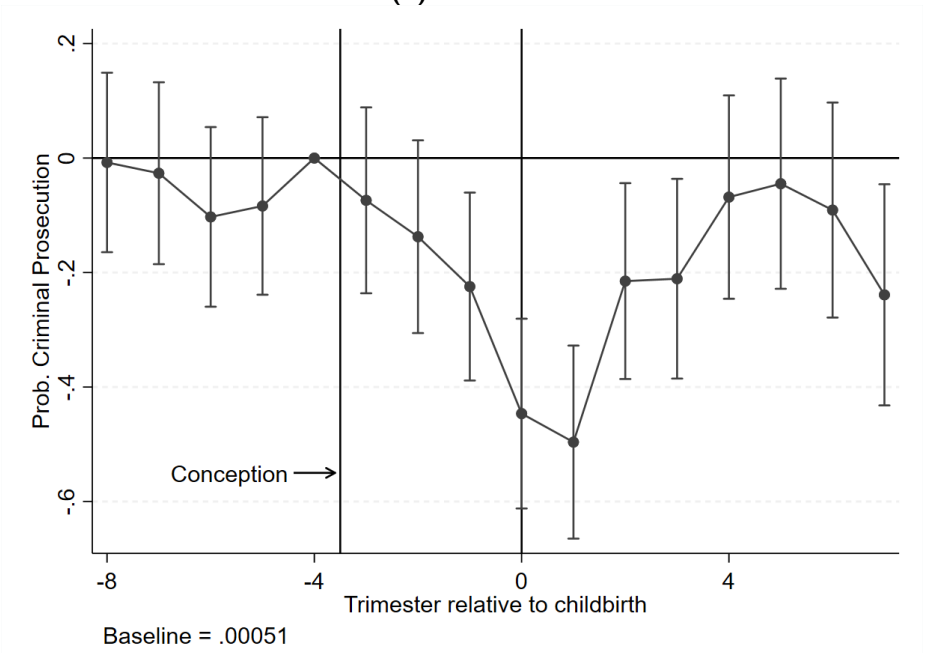
Figure 1: Effect of childbirth on criminal prosecution probabilities: fathers and mothers around first childbirth

(a) Fathers

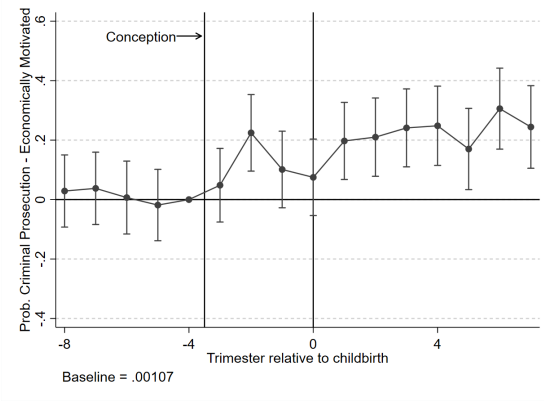


(b) Mothers

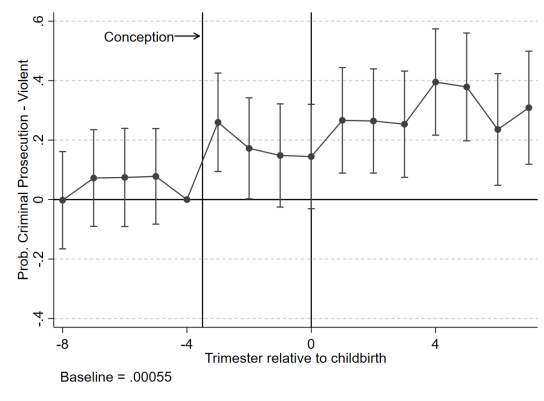


Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers and mothers in our main analysis sample. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

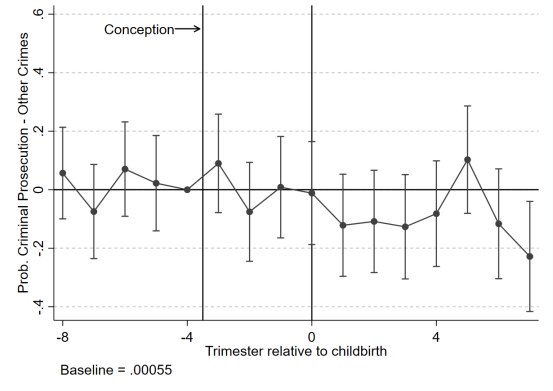
Figure 2: Effects on the Probability of Criminal Prosecution by Type of Crime



(a) Economically Motivated



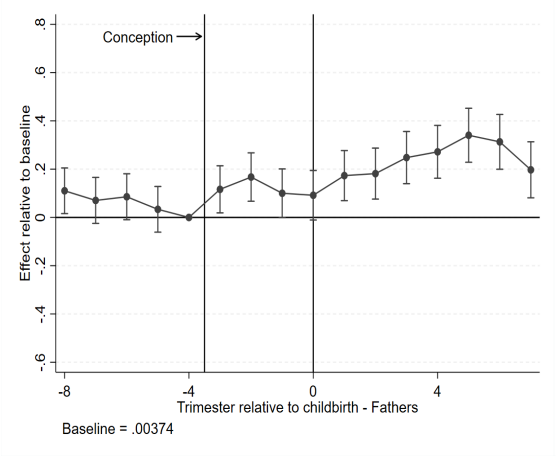
(b) Violent Crimes



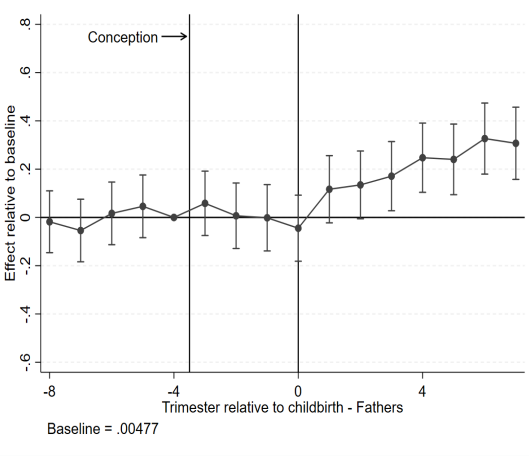
(c) Other Crimes with no Clear Economic Motivation

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our main analysis sample. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

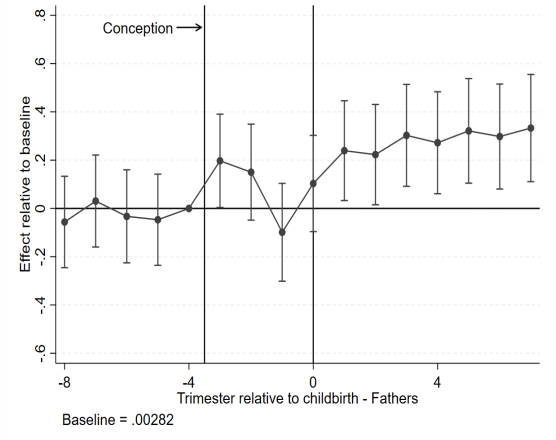
Figure 3: Effects on the Probability of Criminal Prosecution by Fathers' Formal Income Groups



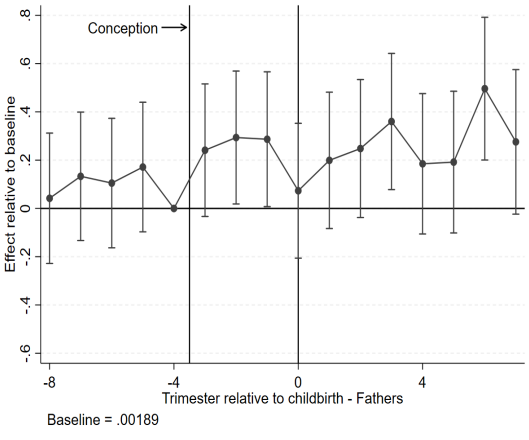
A: No Formal Income



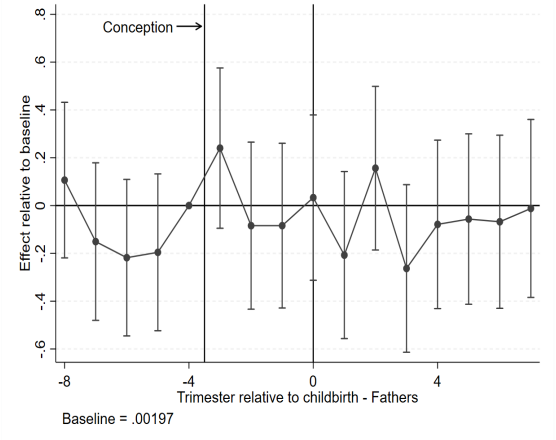
B: 0-25th Percentile



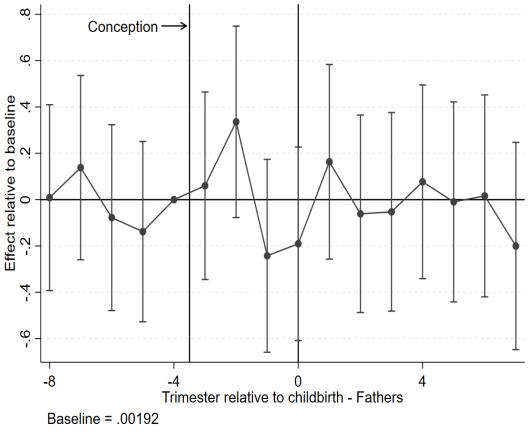
C: 25-50th percentile



D: 50-75th percentile



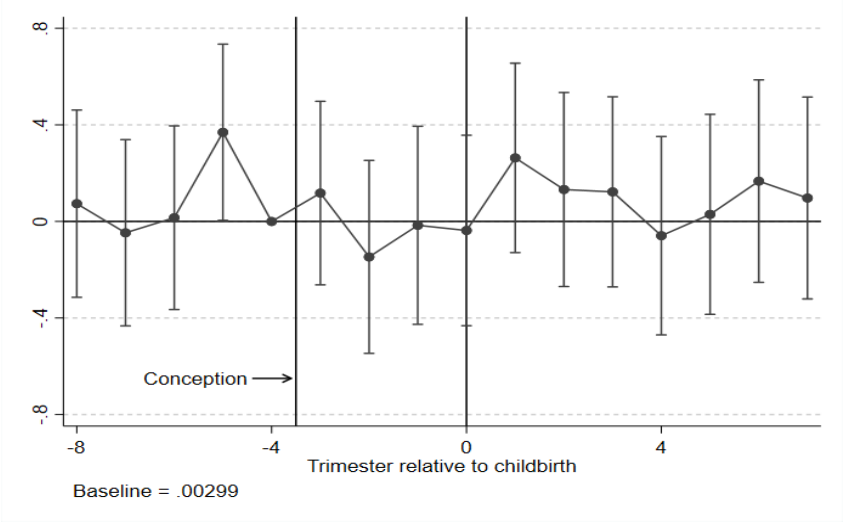
E: 75th-90th Percentile



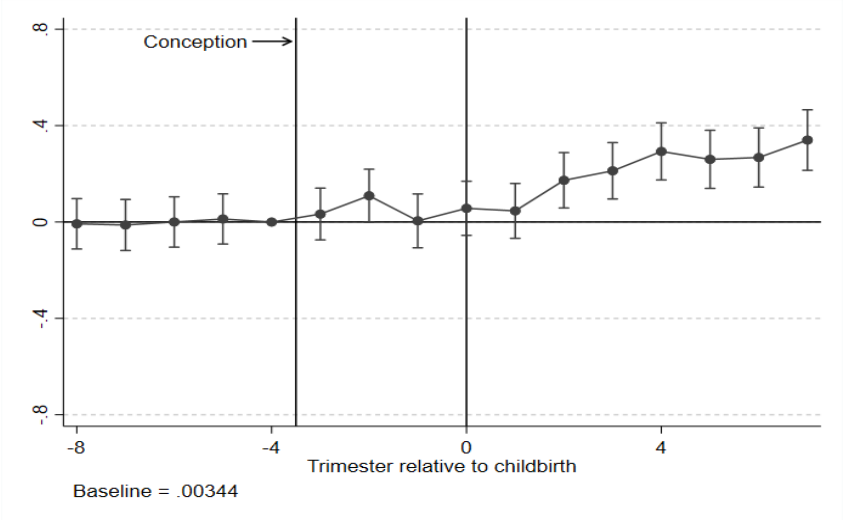
F: 90-100th percentile

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our analysis sample, divided according to the formal labor market income group referenced in the bottom of the figure. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure 4: Effects on the Probability of Criminal Prosecution of Fathers By Employment Status of Mothers



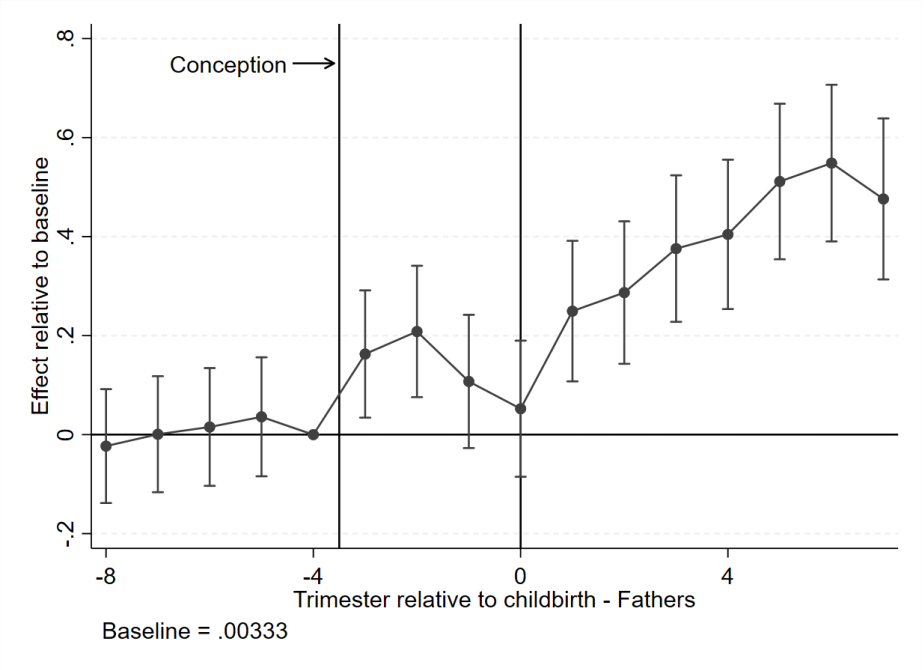
Panel A: Formally Employed at Pre-Conception Period



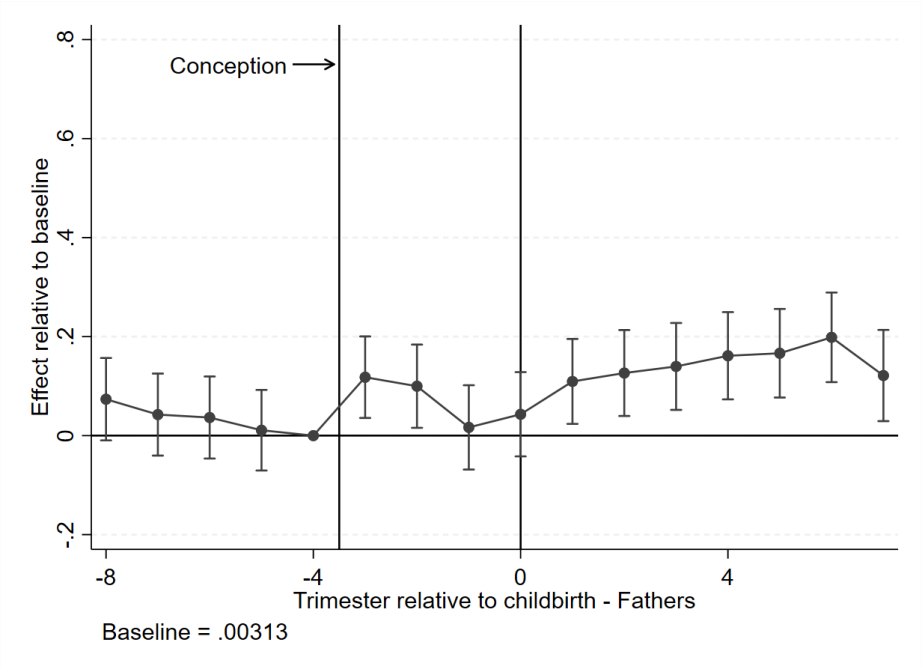
Panel B: Not Formally Employed at Pre-Conception Period

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our main analysis sample for whom we can match the social security number of mothers. In Panel A, equation is estimated to a sample restricted to fathers in cases the mother was working in the formal sector in the period t= - 4. In Panel A, equation is estimated to a sample restricted to fathers in cases the mother was not formally employed in the period t= - 4. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure 5: Probability of Criminal Prosecution - Age at Child Birth



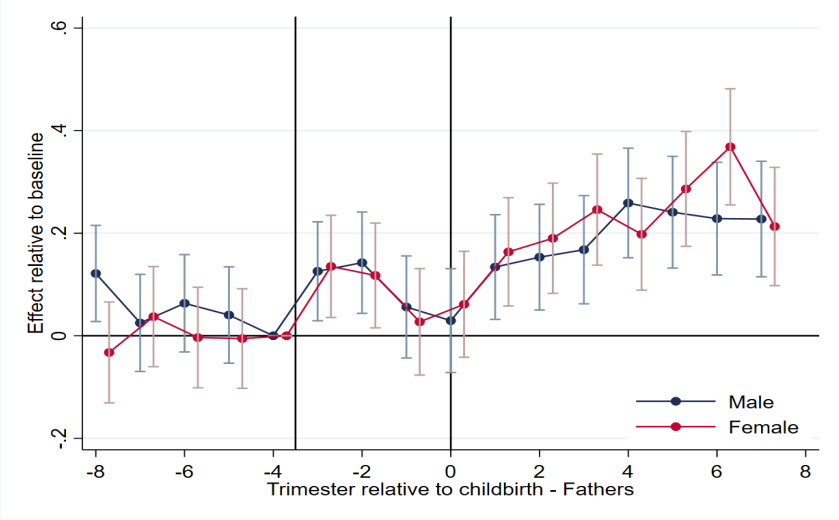
(a) 22 or younger



(b) More than 22 years old

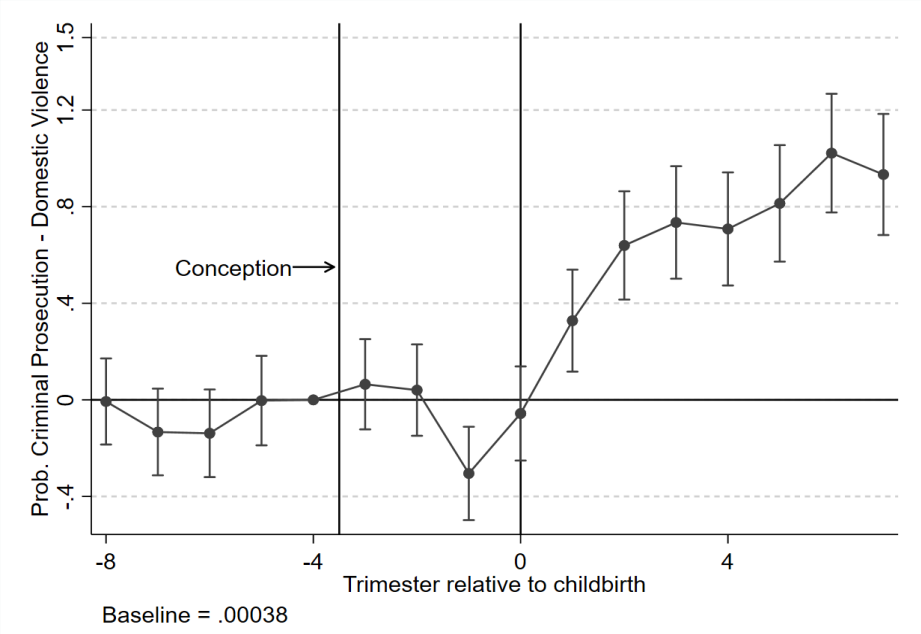
Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our analysis sample, divided according to the age group referenced in the bottom of the figure. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure 6: Probability of Criminal Prosecution - Child Gender



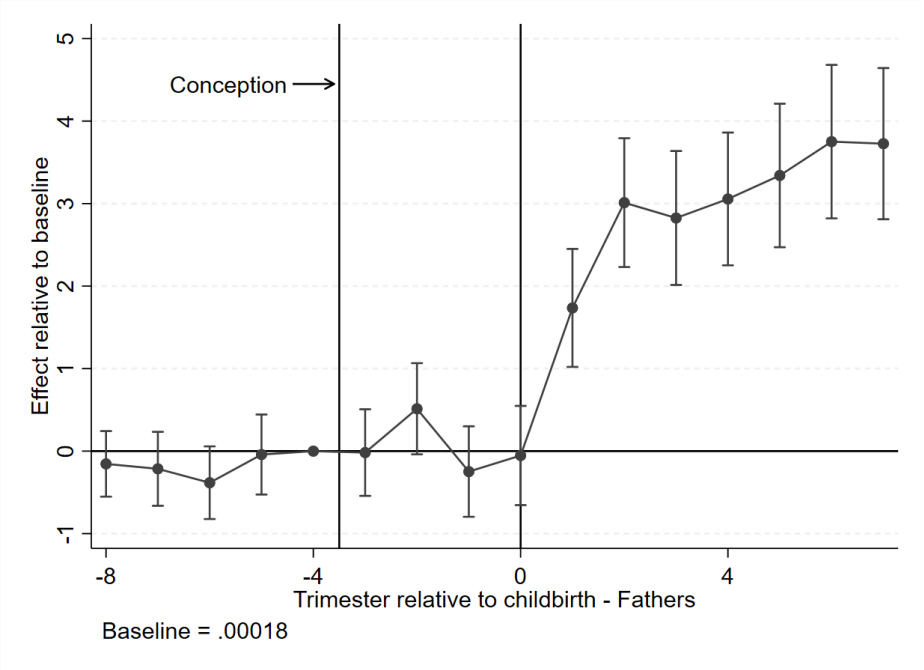
Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our analysis sample, divided according to the gender of their child referenced in the bottom of the figure. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure 7: Domestic Violence

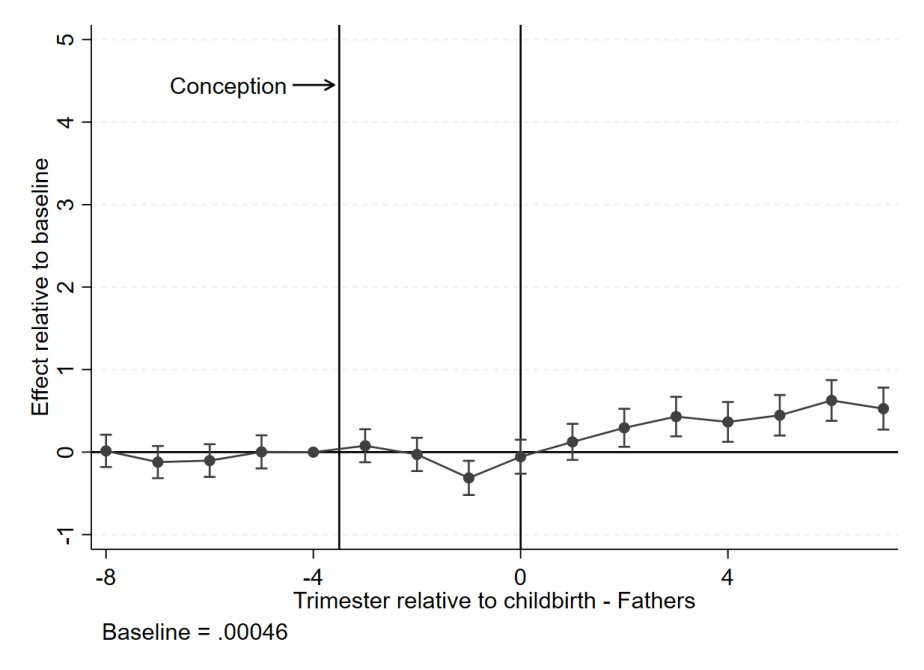


Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our analysis sample. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure 8: Probability of Prosecution for Domestic Violence - Age at Child Birth



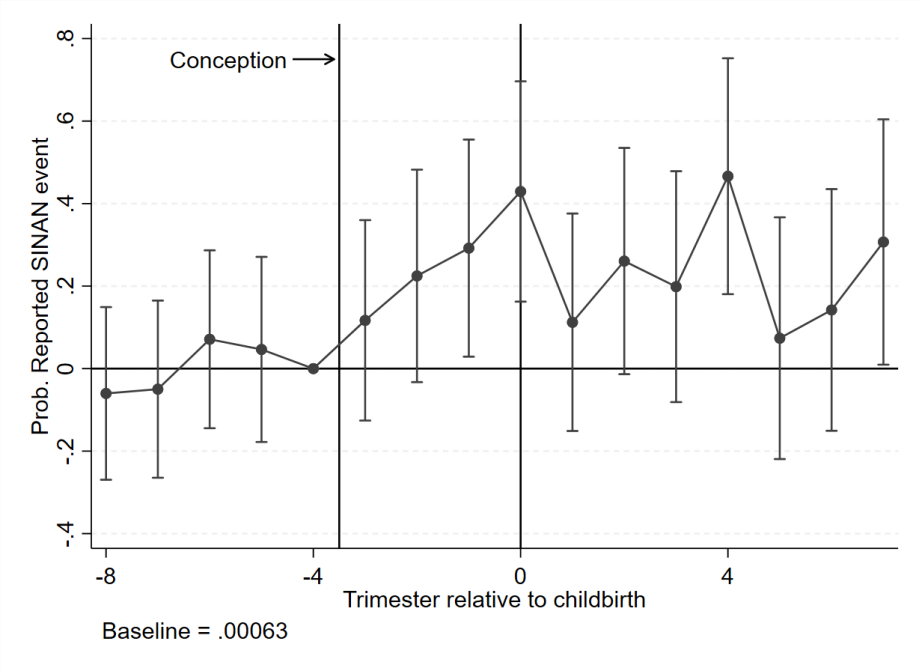
(a) 22 or younger



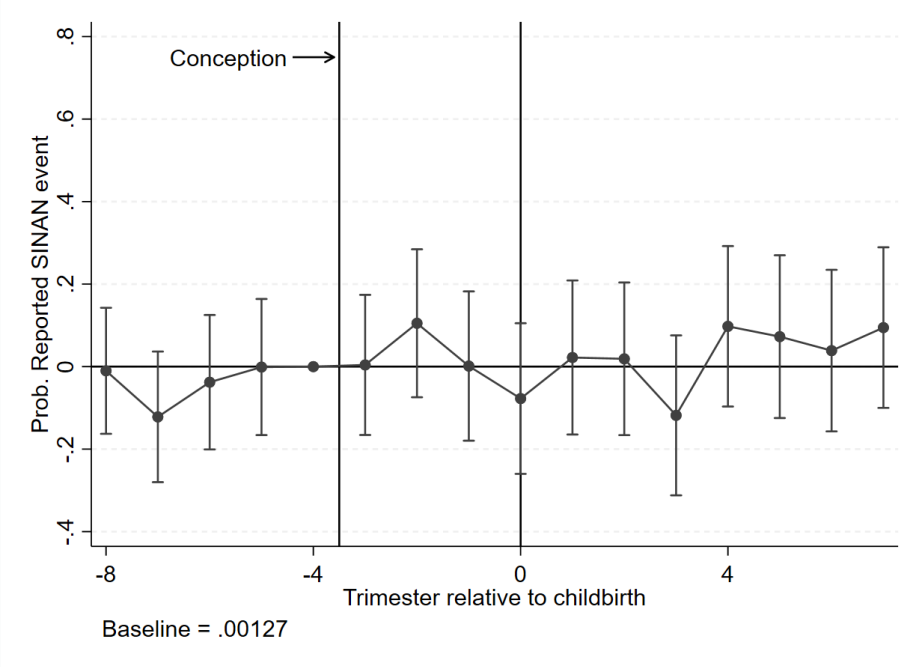
(b) More than 22 years old

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our analysis sample, divided according to the age group referenced in the bottom of the figure. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure 9: SINAN Event - Mother's Age at Child Birth



(a) 22 or younger



(b) More than 22 years old

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all mothers in our main analysis sample who are uniquely identified in a cell that consists of municipality and date of birth. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Table 1: PNDS - Survey Data on Mothers and Pregnant Women

	All Mothers					Pregnant Women (First Child)				
	All Mothers	Age at Birth		Wanted Child		All Pregnant	Age		Wanted Pregnancy	
		≤ 22	> 22	No	Yes		≤ 22	> 22	No	Yes
Wanted Child at that Moment	0.600	0.510	0.747			0.530	0.435	0.597		
Had Food Shortage	0.251	0.281	0.185	0.252	0.203	0.224	0.298	0.172	0.282	0.173
Struggled to Earn Money	0.349	0.391	0.255	0.354	0.291	0.309	0.344	0.285	0.369	0.256
Struggled to Find Food	0.258	0.291	0.184	0.272	0.205	0.170	0.176	0.167	0.215	0.131
Reported Hunger Last Month	0.0973	0.112	0.0644	0.0892	0.0625	0.0978	0.130	0.0753	0.107	0.0893
Observations	10374	7161	3213	930	1393	317	131	186	149	168

Notes: This Table provides summary statistics from the *Pesquisa Nacional de Demografia e Saúde*. In the sample of all mothers, the answer of the question *Did you want the child at that moment?* is restricted to the first child of that women. Furthermore, the question is only asked for those mothers who had their children in the five years before the survey was collected. The other questions are answered in relation to the month when the survey was collected.

Table 2: Summary Statistics of Analysis Sample

	Fathers			Mothers		
	All	Treated	Control	All	Treated	Control
At RAIS at least once between 2002-2019	0.915	0.920	0.907	0.621	0.625	0.614
Child - Girl	0.488	0.488	0.488	0.488	0.488	0.488
Avg. Years of Schooling	9.744	9.703	9.805	10.10	10.02	10.23
Avg. Age at Childbirth	26.39	26.86	25.67	23.16	23.64	22.42
Pre-Conception Period Criminal Activity						
Criminal Prosecution (x100)	0.306	0.319	0.287	0.0472	0.0508	0.0415
Prosecution - Economically Motivated Crime (x100)	0.107	0.107	0.108	0.0128	0.0125	0.0132
Prosecution - Violent Crime (x100)	0.0519	0.0557	0.0463	0.0157	0.0168	0.0138
Prosecution - Other Crimes (x100)	0.0528	0.0565	0.0472	0.00661	0.00779	0.00479
Prosecution - Flagrant Arrest (x100)	0.0169	0.0174	0.0162	0.000827	0.000634	0.00113
Prosecution - Domestic Violence (x100)	0.0333	0.0386	0.0252	0.00127	0.00181	0.000422
Observations	1572759	941962	630797	1814621	1104277	710344

Notes: This Table provides summary statistics of our analysis sample. Matching between treated and control parents is done with replacement, thus the number of unique individuals in the control group is smaller than the ones in the treated group.

Table 3: Effects of Childbirth on Different Crime Types

PANEL A: Fathers	(1)	(2)	(3)	(4)
	Dependent Variable x 100			
	Criminal Prosecution	Economically Motivated	Violent	Others
Treated x Post-Birth	0.059***	0.022***	0.014***	-0.0056***
	(0.005)	(0.003)	(0.002)	(0.002)
Treated x Pregnancy	0.017***	0.0097***	0.0071***	0.000050
	(0.006)	(0.003)	(0.002)	(0.002)
Pre-Conception Dep. Var Mean x 100	.319	.107	.056	.056
Individual F.E.	Yes	Yes	Yes	Yes
Unique Individuals	1572758	1572758	1572758	1572758
Observations	30720656	30720656	30720656	30720656
PANEL B: Mothers	(1)	(2)	(3)	(4)
	Dependent Variable x 100			
	Criminal Prosecution	Economically Motivated	Violent	Others
Treated x Post-Birth	-0.0074***	-0.0019*	-0.00072	-0.0020***
	(0.002)	(0.001)	(0.001)	(0.0007)
Treated x Pregnancy	-0.0087***	0.000067	-0.0045***	-0.0016**
	(0.002)	(0.001)	(0.001)	(0.0008)
Pre-Conception Dep. Var Mean x 100	.051	.013	.017	.008
Individual F.E.	Yes	Yes	Yes	Yes
Unique Individuals	1814620	1814620	1814620	1814620
Observations	36190432	36190432	36190432	36190432

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all fathers (Panel A) and mothers (Panel B) in our main analysis sample. Standard errors presented in parenthesis are clustered at the individual level.

Table 4: Effects of Childbirth on Criminal Prosecution - Income Groups

	(1)	(2)	(3)	(4)	(5)	(6)
	Prob. of Criminal Prosecution x 100					
		Formal Labor Income Percentiles				
	No Formal Income	(0-25)	[25,50)	[50,75)	[75,90)	[90,100]
Treated x Post-Birth	0.068***	0.10***	0.086***	0.035***	0.0024	-0.00028
	(0.009)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Treated x Pregnancy	0.021**	-0.00044	0.030**	0.025*	0.023	-0.00021
	(0.009)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
Pre-Conception Dep. Var Mean x 100	.374	.477	.283	.19	.198	.192
Avg. Monthly Income Pre-Period	0	154.001	453.967	776.172	1221.617	2642.098
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Unique Individuals	657250	289961	288325	285526	172617	112738
Observations	11442576	4820768	4820256	4819824	2890944	1926288

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all fathers in our main analysis sample divided by pre-conception formal labor income. Standard errors presented in parenthesis are clustered at the individual level.

Table 5: Estimates of the Effect of Childbirth on Criminal Prosecution - Age Groups

	(1)	(2)	(3)	(4)	(5)
	Prob. of Criminal Prosecution x 100				
	Age Groups				
	$\leq$ 22 years	23-26	27-32	>32	More than 22
Treated x Post-Birth	0.13***	0.054***	0.019*	0.024*	0.034***
	(0.01)	(0.01)	(0.010)	(0.01)	(0.006)
Treated x Pregnancy	0.037***	0.013	0.0025	0.020	0.010
	(0.01)	(0.01)	(0.01)	(0.01)	(0.006)
Pre-Conception Dep. Var Mean x 100	.334	.358	.294	.256	.313
Individual F.E.	Yes	Yes	Yes	Yes	Yes
Unique Individuals	487308	438864	434876	250036	1100950
Observations	8394816	8267664	8698608	5234112	22325840

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all fathers in our main analysis sample divided by age at the moment of birth group. Standard errors presented in parenthesis are clustered at the individual level.

Table 6: Probability of Domestic Violence by Age

	(1)	(2)	(3)	(4)	(5)
	Prob. of Prosecution for Domestic Violence x 100				
	Age Groups				
	$\leq$ 22 years	23-26	27-32	>32	More than 22
Treated x Post-Birth	0.056***	0.026***	0.012***	0.019***	0.019***
	(0.003)	(0.004)	(0.004)	(0.006)	(0.002)
Treated x Pregnancy	0.0016	-0.0069**	0.0012	-0.0035	-0.0029
	(0.002)	(0.003)	(0.004)	(0.005)	(0.002)
Pre-Conception Dep. Var Mean x 100	.018	.039	.039	.068	.046
Individual F.E.	Yes	Yes	Yes	Yes	Yes
Unique Individuals	487308	438864	434876	250036	1100950
Observations	8394816	8267664	8698608	5234112	22325840

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all fathers in our main analysis sample. Standard errors presented in parenthesis are clustered at the individual level.

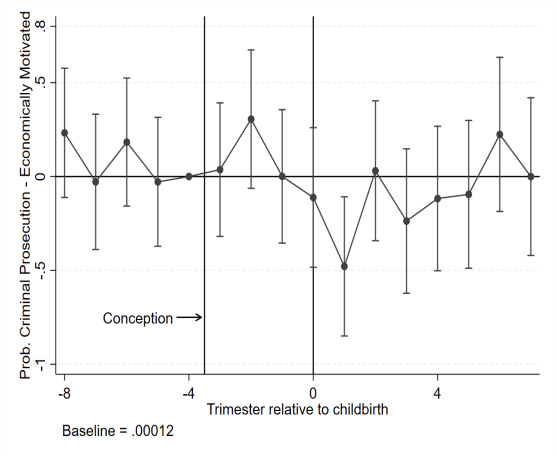
Table 7: Probability of Having an Event in SINAN

	(1)	(2)	(3)	(4)	(5)
	Having a report in SINAN of Partner Aggression				
	Age of the Mother at Childbirth				
	All Mothers	Less than 22	23-26	27-32	More than 32
Treated x Post-Birth	0.011***	0.013***	0.0022	0.0060	0.023
	(0.003)	(0.003)	(0.007)	(0.009)	(0.02)
Treated x Pregnancy	0.011***	0.016***	0.0025	0.0046	0.0059
	(0.003)	(0.004)	(0.007)	(0.009)	(0.02)
Pre-Conception Dep. Var Mean x 100	.096	.063	.105	.134	.174
Individual F.E.	Yes	Yes	Yes	Yes	Yes
Unique Individuals	1415115	764822	309770	267682	101119
Observations	26356928	13734400	5708864	5046000	1867664

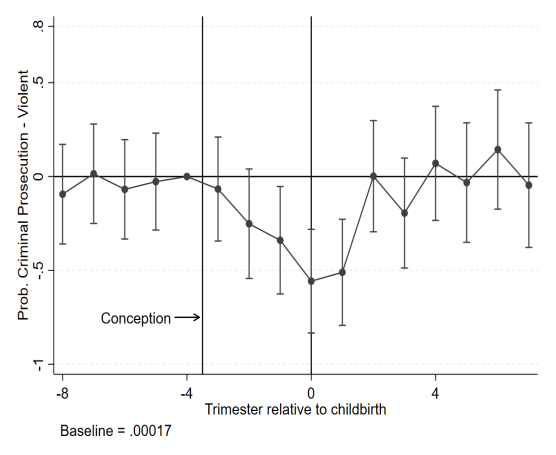
Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all mothers in our main analysis sample who are uniquely defined in a cell that consists of municipality and date of birth. Standard errors presented in parenthesis are clustered at the individual level.

Appendix - Figures

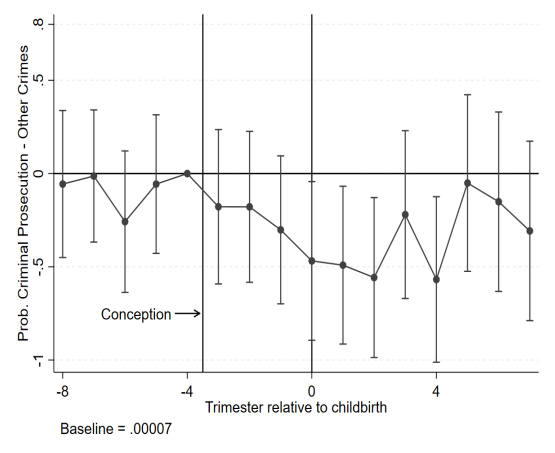
Figure A1: Different Crime Types - Mothers



A: Economic Motivation



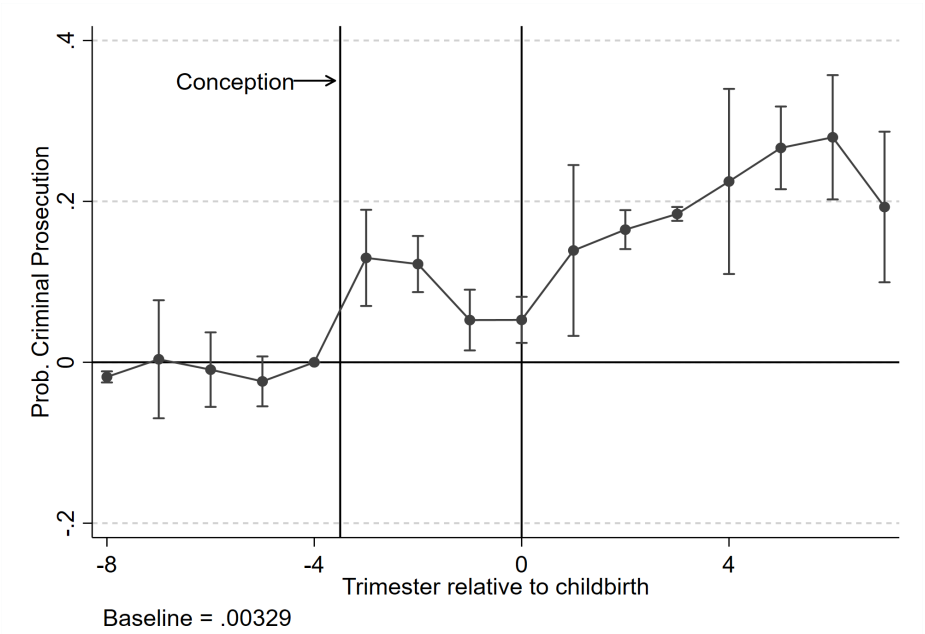
B: Violent Crime



C: Other Crimes

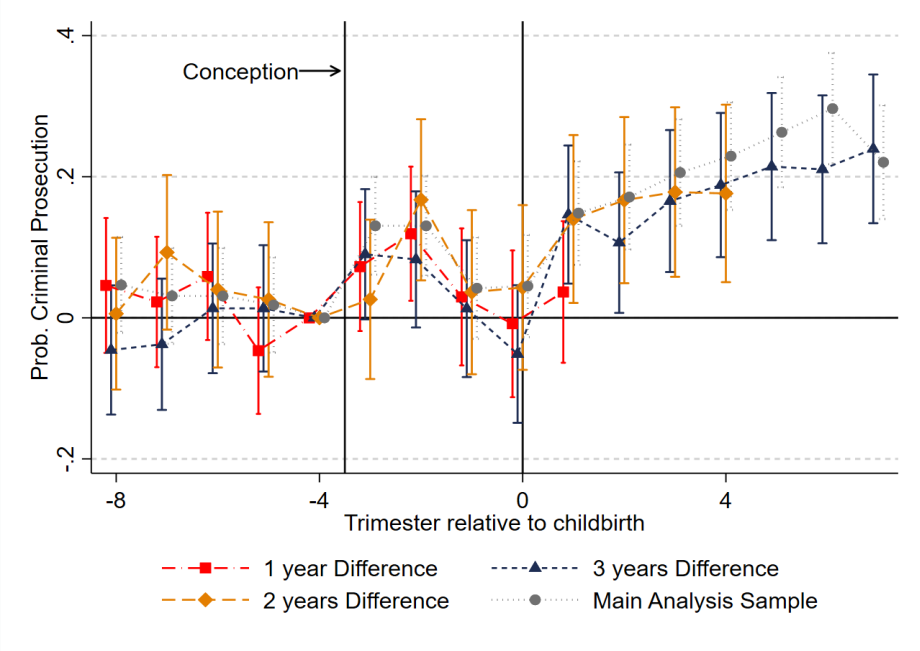
Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all mothers in our analysis sample. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable in the baseline period (t=-4).

Figure A2: Effects on the Probability of Criminal Prosecution - De Chaisemartin and d'Haultfoeuille (2020) Estimator



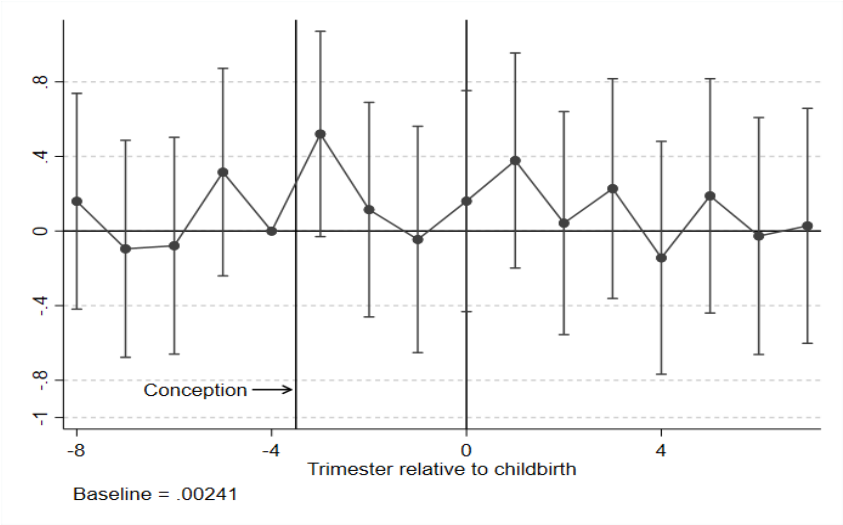
Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in the main analysis sample. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A3: Effects on the Probability of Criminal Prosecution - Different Control Groups

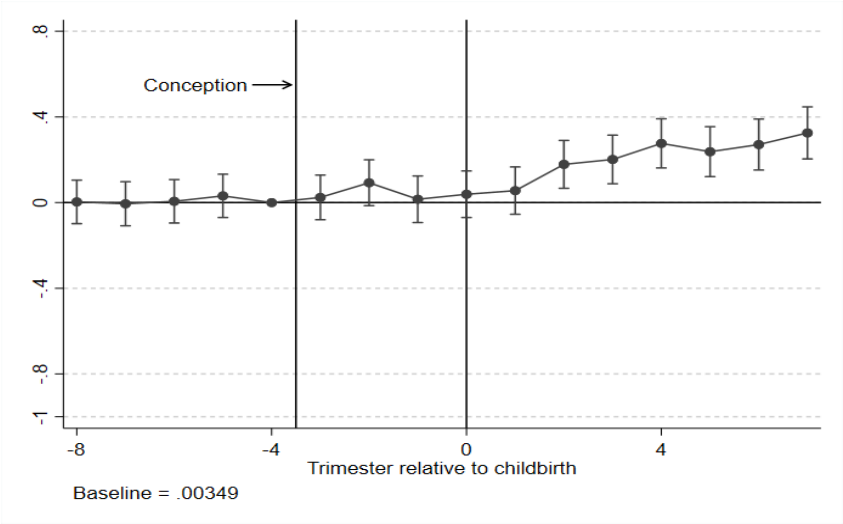


Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of fathers in different control samples that are defined by the number of years of difference in birth of the first child between treated and control individuals. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A4: Probability of Criminal Prosecution of Fathers By Employment Status of Both Mothers and Fathers



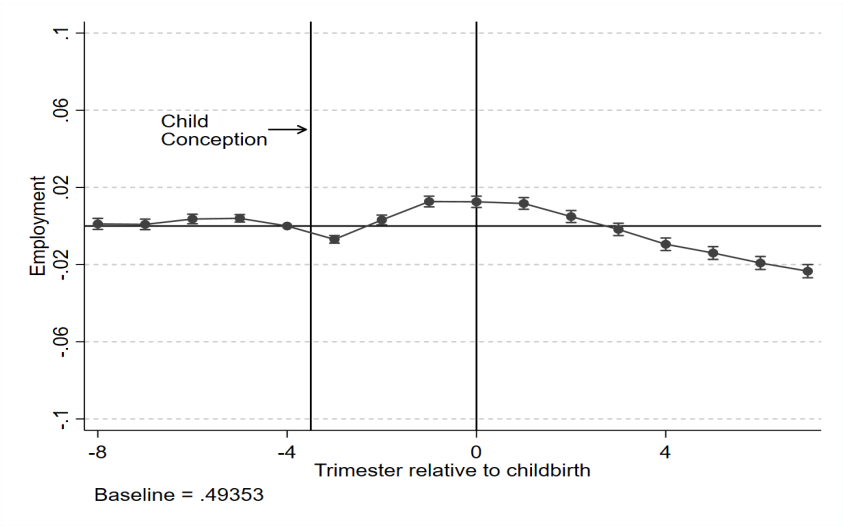
Panel A: Both Formally Employed at Pre-Conception Period



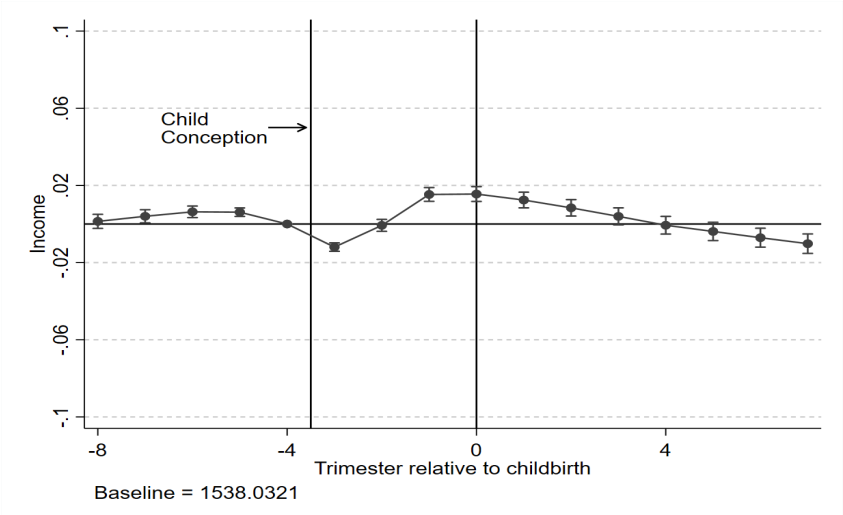
Panel B: Both Not Formally Employed at Pre-Conception Period

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our main analysis sample for whom we can match the social security number of mothers. In Panel A, equation is estimated to a sample restricted to fathers in cases both parents were working in the formal sector in the period t= - 4. In Panel A, equation is estimated to a sample restricted to fathers in cases both parents were not formally employed in the period t= - 4. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A5: Formal Labor Outcomes - Fathers



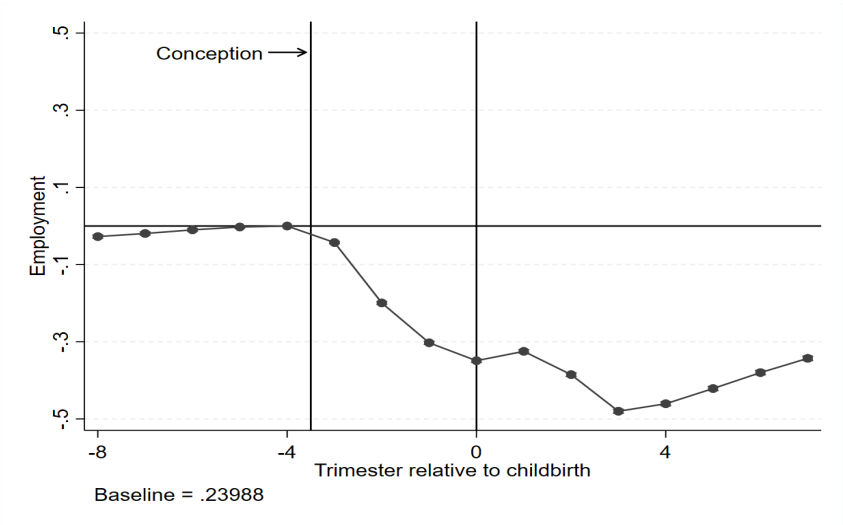
Panel A: Formal Employment



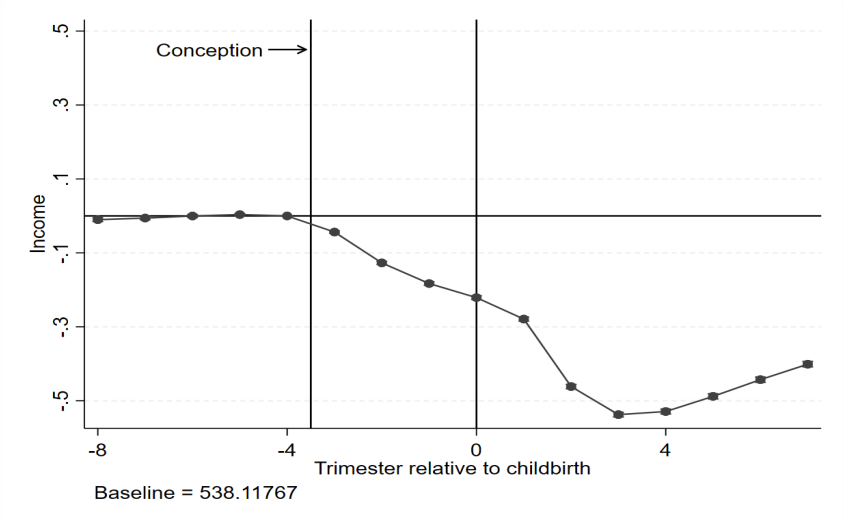
Panel B: Formal Earnings

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our analysis sample. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A6: Formal Labor Outcomes - Mothers



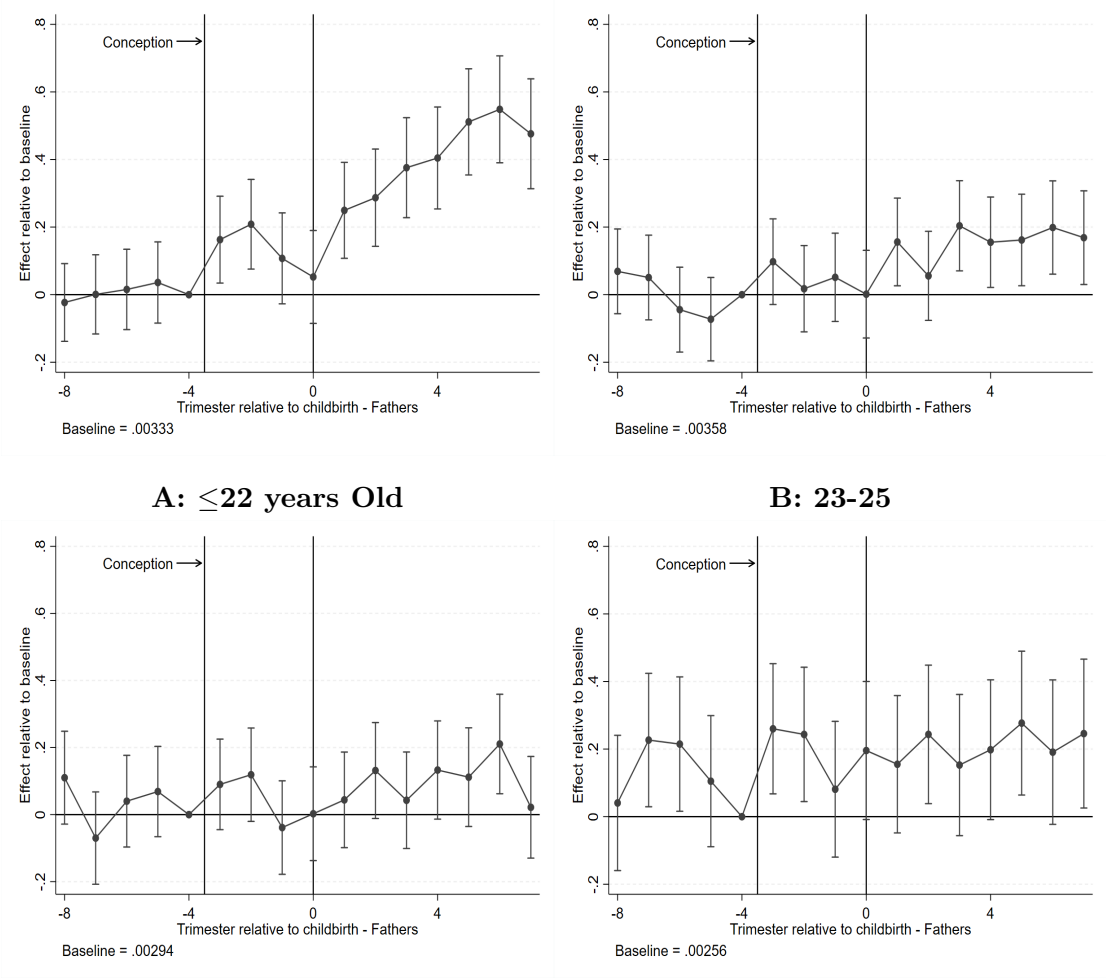
Panel A: Formal Employment



Panel B: Formal Earnings

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all mothers in our analysis sample. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A7: Probability of Criminal Prosecution - Different Age Groups

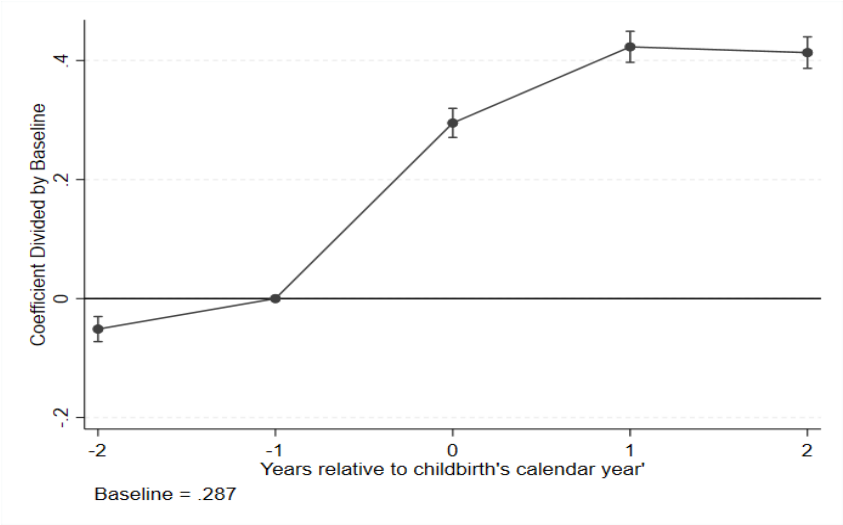


A: ≤22 years Old **B: 23-25**

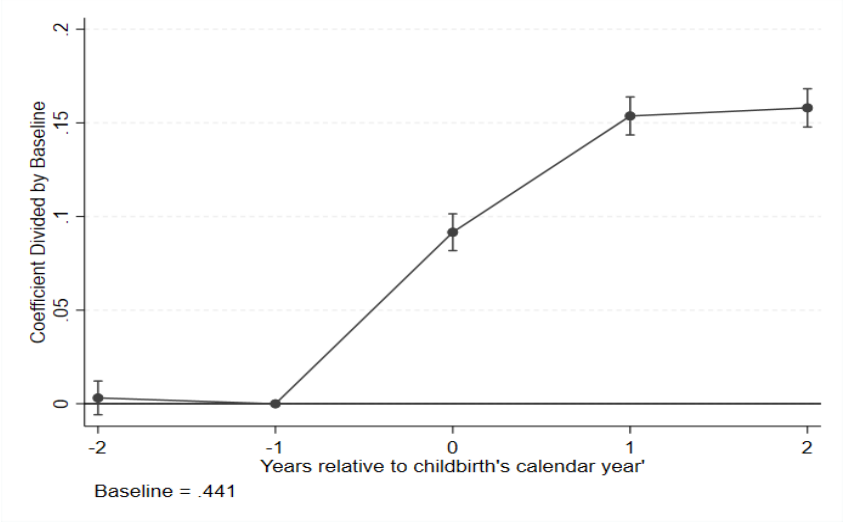
C: 27-31 **D: ≥32**

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of pairs of treated and control fathers and mothers in the main analysis sample that we can observe both at the *Cadastro Único* in the two calendar years before and after the first children (of the treated individual) is born. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A8: Effects on the Probability of Being Identified as Responsible for the Household or Partner



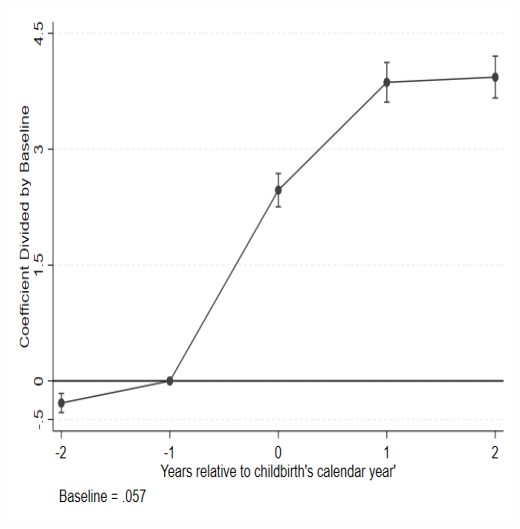
Panel A: Fathers



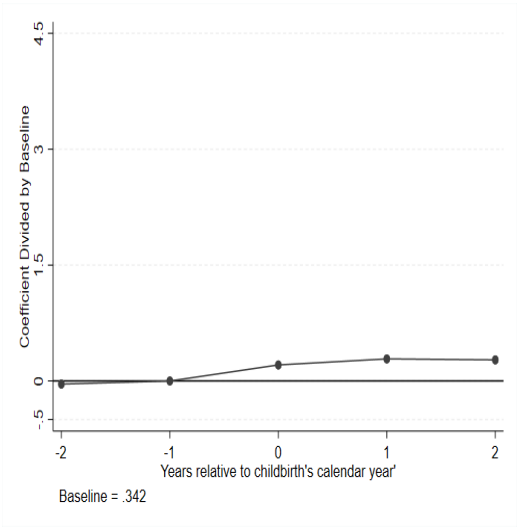
Panel B: Mothers

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of pairs of treated and control fathers and mothers in the main analysis sample that we can observe both at the *Cadastro Único* in the two calendar years before and after the first children (of the treated individual) is born. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the year prior to childbirth (t=-1).

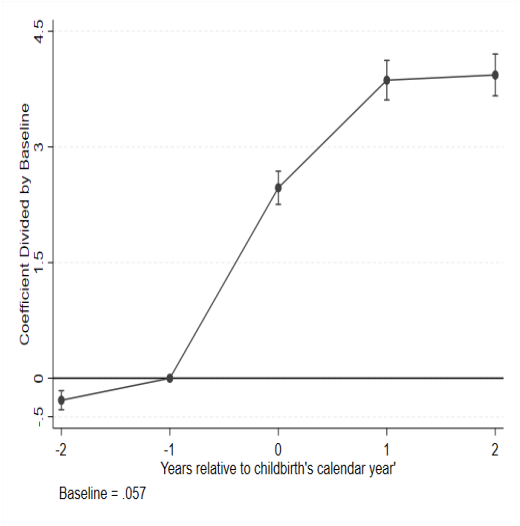
Figure A9: Effects on the Probability of Being Identified as Responsible for the Household or Partner by Age



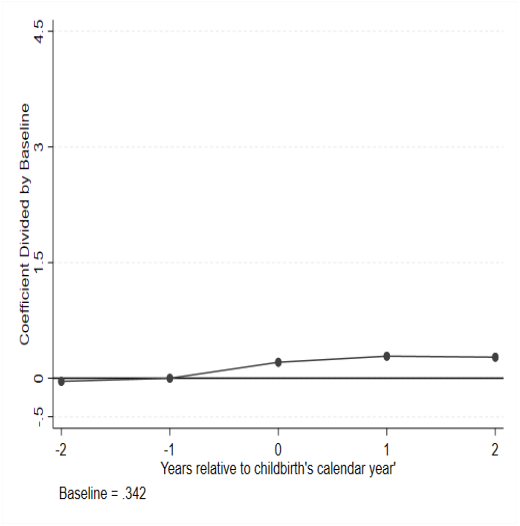
A: Fathers - 22 or less



B: Fathers - More than 22



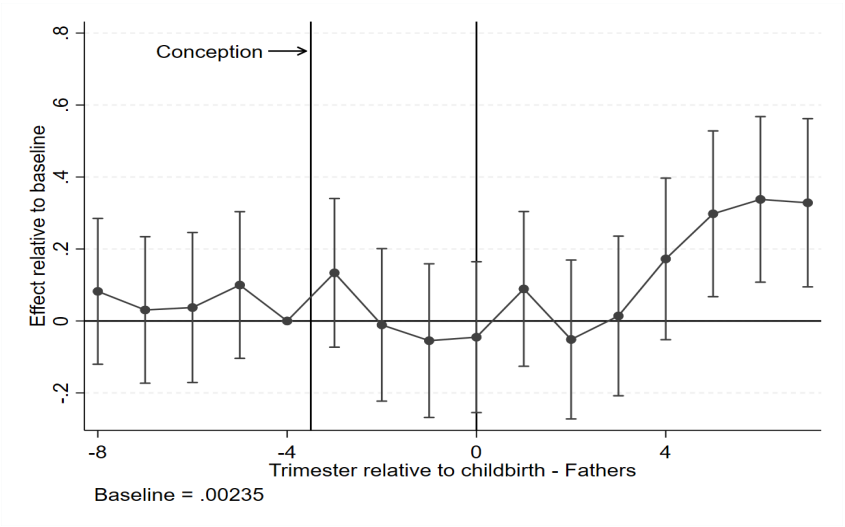
C: Mothers - 22 or less



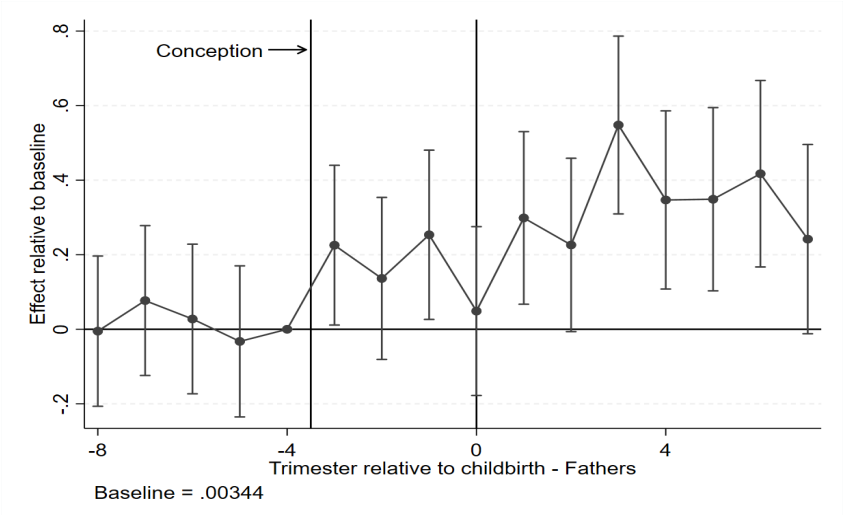
D: Mothers - More than 22

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in the main analysis sample divided by age group. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A10: Effects on the Probability of Criminal Prosecution by Household Position



Panel A: Responsible for the Household or their Partner

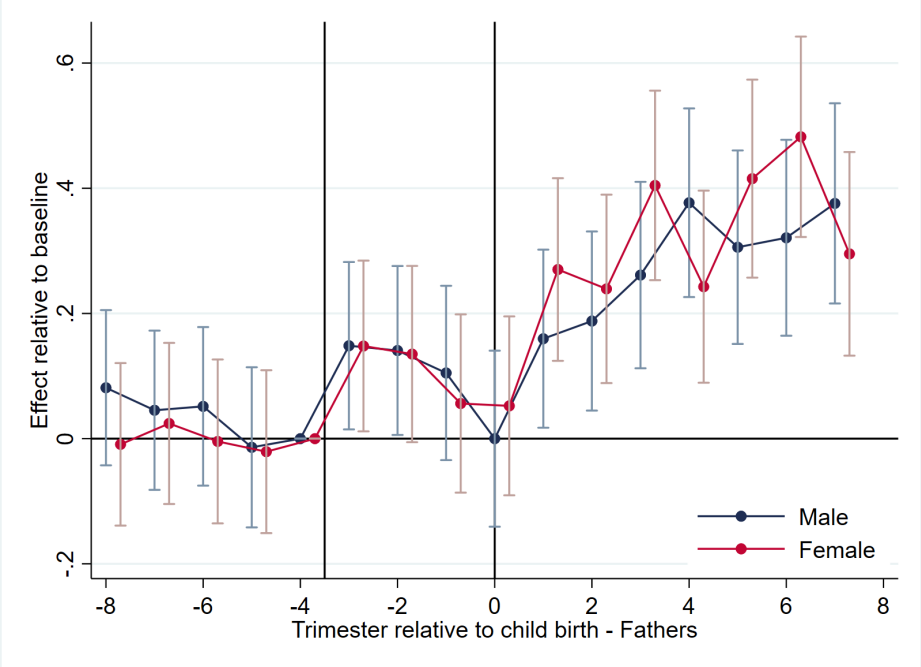


Panel B: Children of the Responsible for the Household

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of fathers in the main analysis sample that we can observe at the *Cadastro Único* in the calendar year before the child is born. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the year prior to childbirth (t=-1).

Figure A11: Probability of Criminal Prosecution - Child Gender among Young Fathers

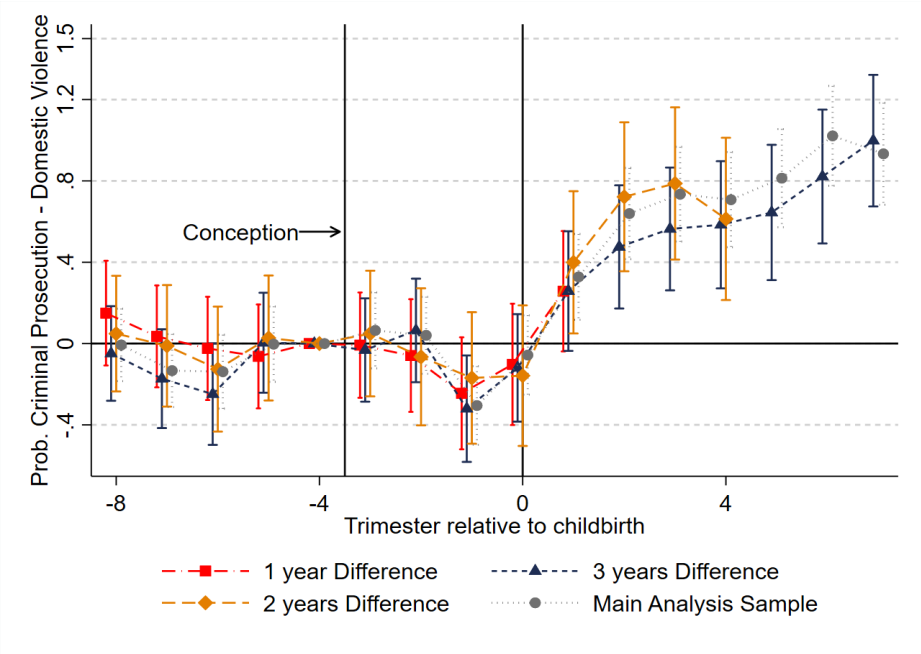
(a) 22 years old or less



(b) 25 years old or less

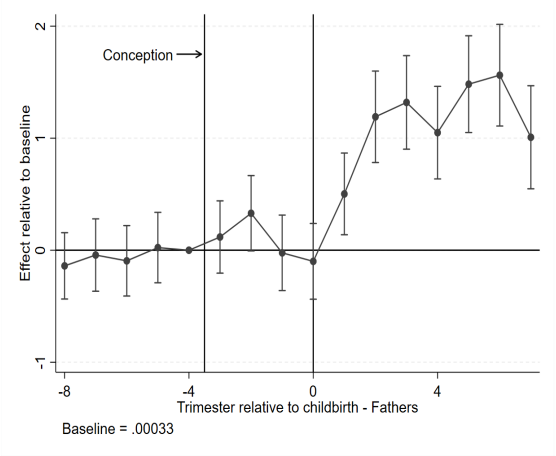
Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our analysis sample, divided according to the age group referenced in the bottom of the figure. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A12: Effects on the Probability of Prosecution for Domestic Violence - Different Control Groups

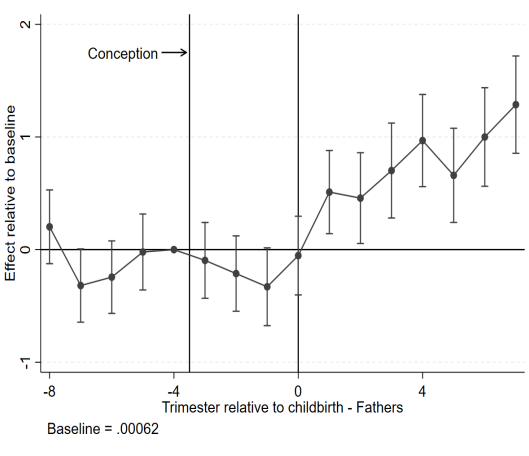


Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of fathers in different control samples that are defined by the number of years of difference in birth of the first child between treated and control individuals. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

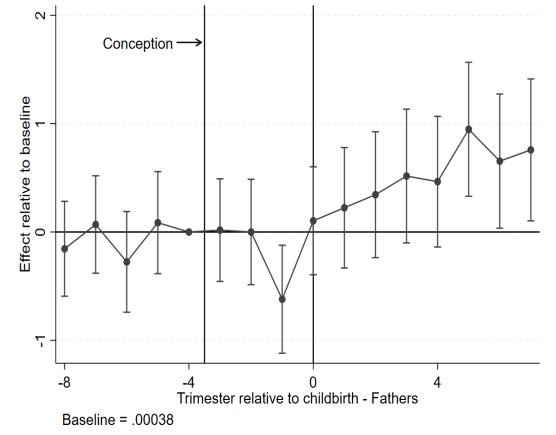
Figure A13: Probability of Criminal Prosecution for Domestic Violence - Different Income Groups



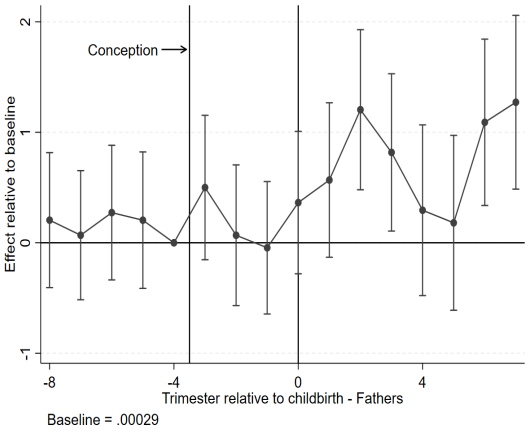
A: No Formal Income



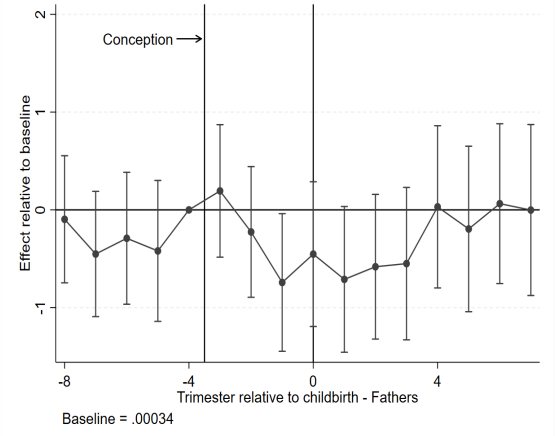
B: 0-25th Percentile



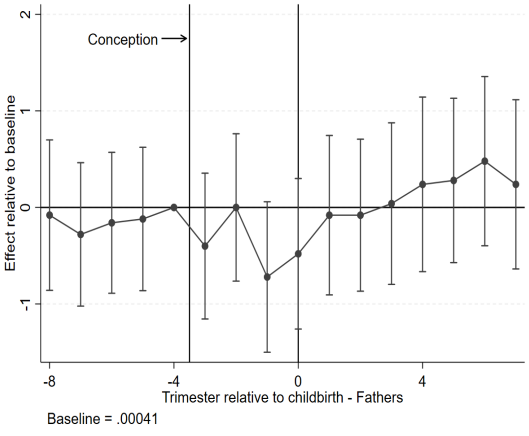
C: 25-50th percentile



D: 50-75th percentile



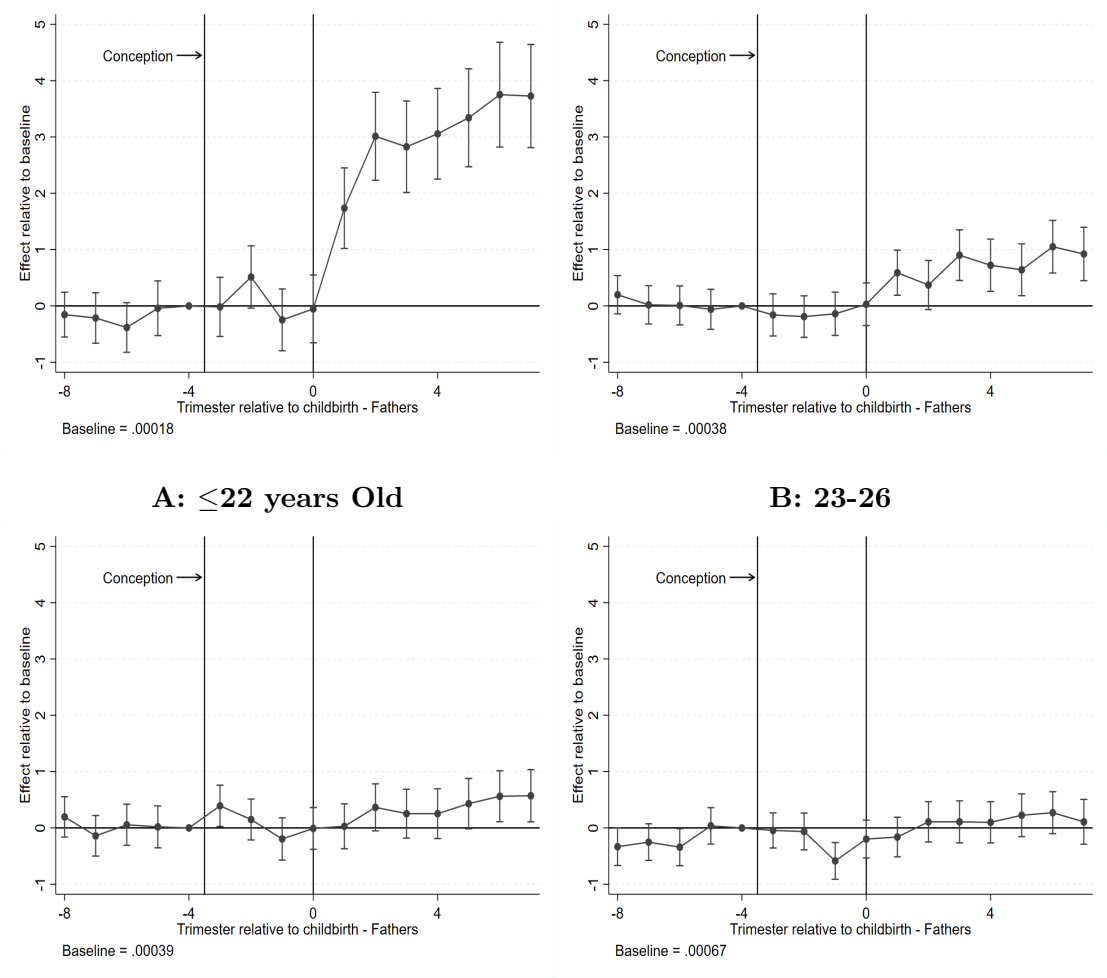
E: 75th-90th Percentile



F: 90-100th percentile

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our analysis sample, divided according to the formal labor market income group referenced in the bottom of the figure. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A14: Domestic Violence - Different Ages

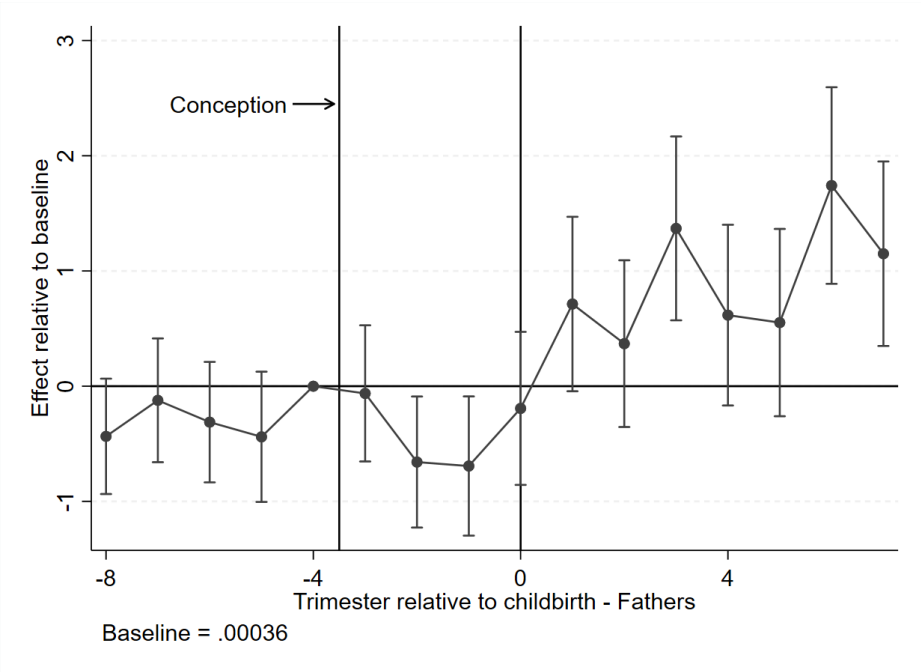


A: ≤22 years Old **B: 23-26**

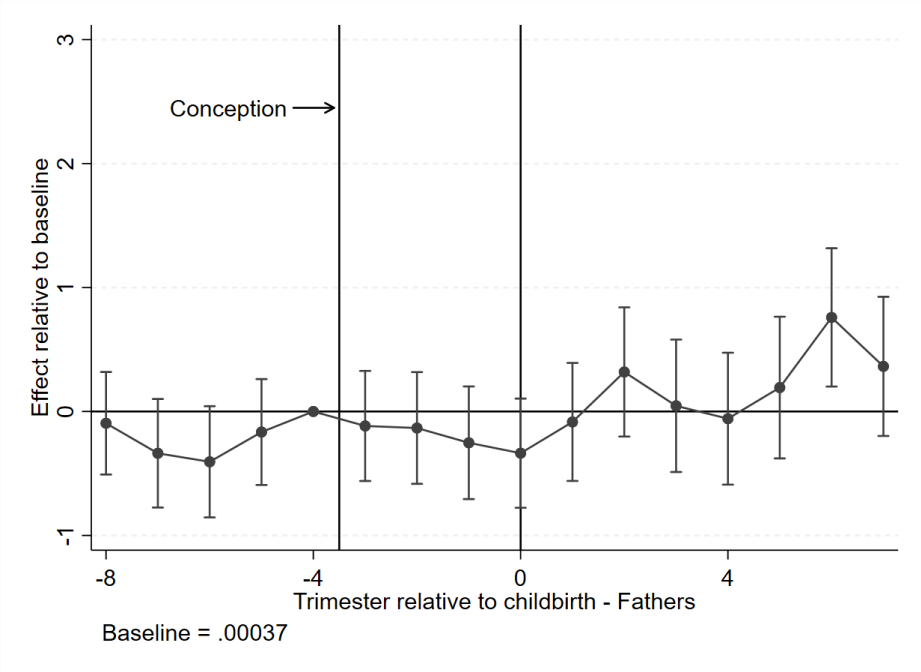
C: 27-31 **D: ≥32**

Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in the main analysis sample divided by age group. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A15: Probability of Prosecution for Domestic Violence - Household Position at Childbirth



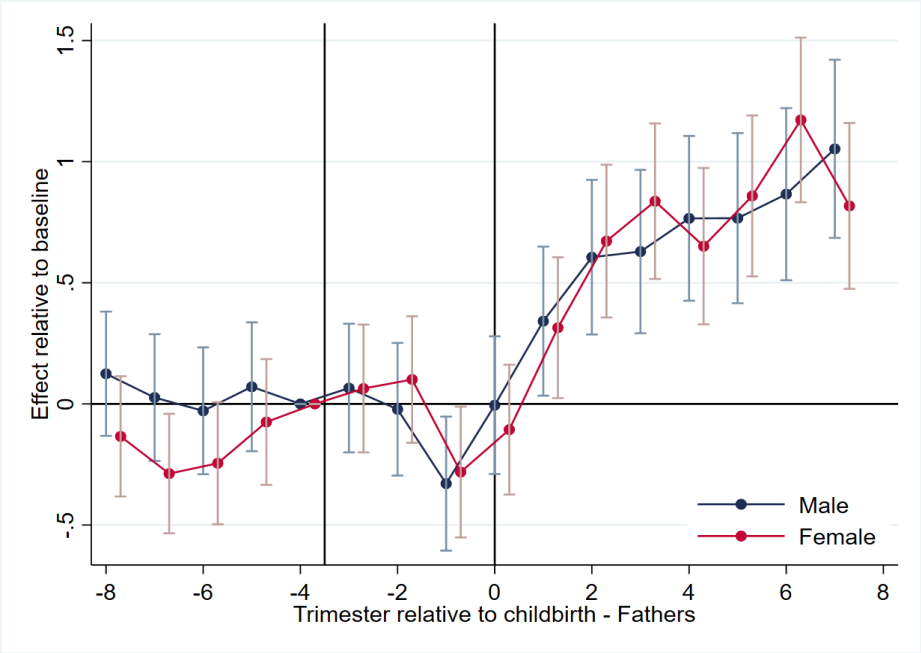
(a) Flagged as Child Before Childbirth



(b) Flagged as Husband Before Childbirth

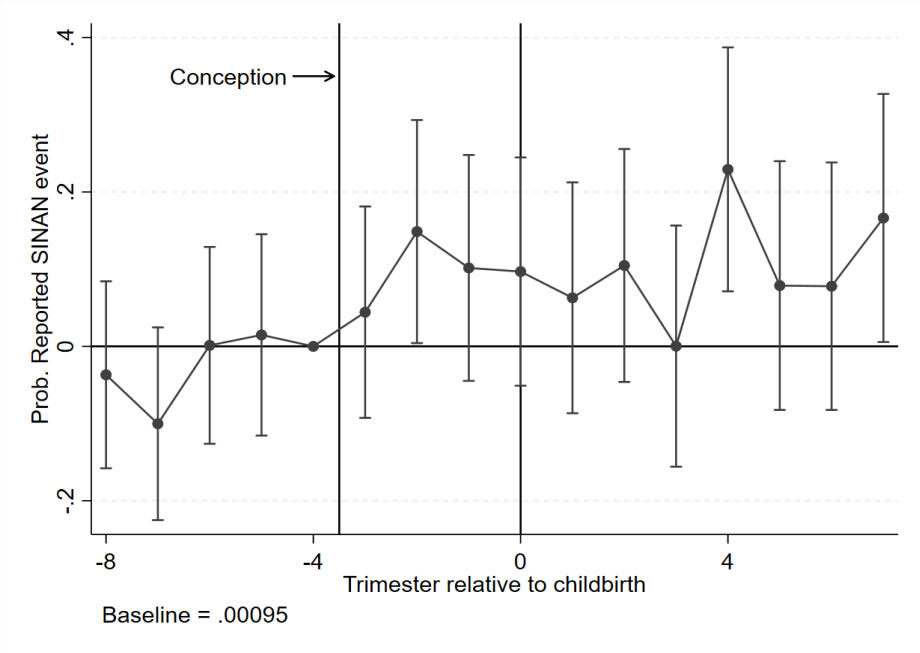
Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in our analysis sample, divided according to the age group referenced in the bottom of the figure. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Figure A16: Domestic Violence by Child Gender



Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all fathers in the main analysis sample divided by gender of the child. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable in the baseline period (t=-4).

Figure A17: SINAN EVENT



Notes. This figure plots our estimates of coefficients β_t from equation 1 and the 95% Confidence Interval. Sample comprises of all mothers in the main analysis sample. Standard errors are clustered at the individual level. Coefficients are re-scaled by the average of the outcome variable for treated individuals in the baseline period (t=-4).

Appendix - Tables

Table A1: Effects on the Probability of Criminal Prosecution for a Flagrant Crime

	(1)	(2)	(3)	(4)	(5)	(6)
	Prob. of Prosecution for Flagrant Crime x 100					
	Fathers			Mothers		
	All	22 or Less	More than 22	All	22 or Less	More than 22
Treated x Post-Birth	0.0023*	0.010***	-0.00050	-0.00059	-0.00075	-0.00079
	(0.001)	(0.003)	(0.001)	(0.0004)	(0.0006)	(0.0005)
Treated x Pregnancy	0.00085	0.0044	-0.000083	-0.0012***	-0.0016***	-0.0011**
	(0.001)	(0.003)	(0.001)	(0.0004)	(0.0006)	(0.0005)
Pre-Conception Dep. Var Mean x 100	.017	.023	.015	.001	.001	.001
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Unique Individuals	1572758	487308	1017383	1814620	958124	806868
Observations	30720656	8394816	20386528	36190432	17815120	16605712

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample comprises all fathers and mothers in our main analysis sample. Standard errors presented in parenthesis are clustered at the individual level.

Table A2: Income Heterogeneity - Crime Types

	(1)	(2)	(3)	(4)	(5)	(6)
	Prob. of Prosecution for Economically Motivated Crimes x 100					
		Formal Labor Income Percentiles				
	No Formal Income	(0-25)	[25,50)	[50,75)	[75,90)	[90,100]
Treated x Post-Birth	0.017***	0.033***	0.038***	0.026***	0.012	0.0088
	(0.006)	(0.009)	(0.008)	(0.007)	(0.008)	(0.008)
Treated x Pregnancy	0.0072	0.0080	0.027***	0.014*	-0.0022	0.0031
	(0.006)	(0.010)	(0.008)	(0.007)	(0.009)	(0.010)
Pre-Conception Dep. Var Mean x 100	.145	.185	.084	.043	.039	.013
Avg. Monthly Income Pre-Period	0	154.001	453.967	776.172	1221.617	2642.098
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Unique Individuals	657250	289961	288325	285526	172617	112738
Observations	11442576	4820768	4820256	4819824	2890944	1926288
	(1)	(2)	(3)	(4)	(5)	(6)
	Prob. of Prosecution for Violent Crimes x 100					
		Formal Labor Income Percentiles				
	No Formal Income	(0-25)	[25,50)	[50,75)	[75,90)	[90,100]
Treated x Post-Birth	0.017***	0.024***	0.013**	0.0086*	0.0073	-0.0011
	(0.003)	(0.006)	(0.005)	(0.005)	(0.006)	(0.007)
Treated x Pregnancy	0.0086**	0.0036	0.0021	0.0091	0.013*	0.0096
	(0.004)	(0.007)	(0.006)	(0.006)	(0.007)	(0.008)
Pre-Conception Dep. Var Mean x 100	.06	.081	.058	.036	.039	.035
Avg. Monthly Income Pre-Period	0	154.001	453.967	776.172	1221.617	2642.098
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Unique Individuals	657250	289961	288325	285526	172617	112738
Observations	11442576	4820768	4820256	4819824	2890944	1926288
	(1)	(2)	(3)	(4)	(5)	(6)
	Prob. of Prosecution for Other Crimes x 100					
		Formal Labor Income Percentiles				
	No Formal Income	(0-25)	[25,50)	[50,75)	[75,90)	[90,100]
Treated x Post-Birth	-0.0044	-0.0045	-0.00084	-0.010**	-0.011*	-0.014*
	(0.003)	(0.006)	(0.005)	(0.005)	(0.007)	(0.008)
Treated x Pregnancy	0.0010	-0.0058	-0.0069	0.0044	0.0034	0.0039
	(0.004)	(0.006)	(0.006)	(0.006)	(0.007)	(0.009)
Pre-Conception Dep. Var Mean x 100	.058	.076	.05	.042	.049	.053
Avg. Monthly Income Pre-Period	0	154.001	453.967	776.172	1221.617	2642.098
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Unique Individuals	657250	289961	288325	285526	172617	112738
Observations	11442576	4820768	4820256	4819824	2890944	1926288

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all fathers in our main analysis sample divided by pre-conception formal labor income. Standard errors presented in parenthesis are clustered at the individual level.

Table A3: Age Group Heterogeneity - Crime Types

PANEL A:	(1)	(2)	(3)	(4)	(5)
	Prob. of Prosecution for Economically Motivated Crimes x 100				
	Age Groups				
	$\leq$ 22 years	23-26	27-32	>32	More than 22
Treated x Post-Birth	0.043***	0.015**	0.011**	0.020***	0.015***
	(0.007)	(0.006)	(0.005)	(0.006)	(0.003)
Treated x Pregnancy	0.021***	0.0077	0.0021	0.011*	0.0057
	(0.007)	(0.007)	(0.006)	(0.006)	(0.004)
Pre-Conception Dep. Var Mean x 100	.144	.129	.088	.042	.094
Individual F.E.	Yes	Yes	Yes	Yes	Yes
Unique Individuals	487308	438864	434876	250036	1100950
Observations	8394816	8267664	8698608	5234112	22325840

PANEL B:	(1)	(2)	(3)	(4)	(5)
	Prob. of Prosecution for Violent Crimes x 100				
	Age Groups				
	$\leq$ 22 years	23-26	27-32	>32	More than 22
Treated x Post-Birth	0.023***	0.016***	0.0059	0.0084	0.010***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.003)
Treated x Pregnancy	0.0098**	0.0064	0.0016	0.012**	0.0061**
	(0.004)	(0.005)	(0.004)	(0.006)	(0.003)
Pre-Conception Dep. Var Mean x 100	.052	.064	.053	.048	.057
Individual F.E.	Yes	Yes	Yes	Yes	Yes
Unique Individuals	487308	438864	434876	250036	1100950
Observations	8394816	8267664	8698608	5234112	22325840

PANEL C:	(1)	(2)	(3)	(4)	(5)
	Prob. of Prosecution for Other Crimes x 100				
	Age Groups				
	$\leq$ 22 years	23-26	27-32	>32	More than 22
Treated x Post-Birth	0.0055	-0.0099**	-0.0087**	-0.0096*	-0.0095***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.002)
Treated x Pregnancy	0.0031	-0.00074	-0.0039	0.0037	-0.00090
	(0.004)	(0.005)	(0.004)	(0.005)	(0.003)
Pre-Conception Dep. Var Mean x 100	.055	.063	.057	.04	.056
Individual F.E.	Yes	Yes	Yes	Yes	Yes
Unique Individuals	487308	438864	434876	250036	1100950
Observations	8394816	8267664	8698608	5234112	22325840

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all fathers in our main analysis sample divided by age groups. Standard errors presented in parenthesis are clustered at the individual level.

Table A4: Effects of Childbirth on Criminal Prosecution for Mothers - Income Groups

	(1)	(2)	(3)	(4)	(5)	(6)
	Probability of Criminal Prosecution x 100					
		Formal Labor Income Percentiles				
	No Formal Income	(0-25)	[25,50)	[50,75)	[75,90)	[90,100]
Treated x Post-Birth	-0.0072***	-0.00055	-0.0032	-0.020***	-0.0087	-0.0022
	(0.002)	(0.008)	(0.008)	(0.007)	(0.009)	(0.01)
Treated x Pregnancy	-0.012***	-0.0085	-0.000042	-0.0051	0.0058	0.0036
	(0.002)	(0.009)	(0.008)	(0.008)	(0.010)	(0.01)
Pre-Conception Dep. Var Mean x 100	.046	.094	.061	.051	.041	.036
Avg. Monthly Income Pre-Period	0	93.34	302.865	571.43	829.936	1655.341
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Unique Individuals	1309843	171811	171174	169521	102834	67324
Observations	24743072	2861856	2861936	2861840	1717104	1144624

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all mothers in our main analysis sample divided by pre-conception formal labor income. Standard errors presented in parenthesis are clustered at the individual level.

Table A5: Income Heterogeneity - Crime Types for Mothers

	(1)	(2)	(3)	(4)	(5)	(6)
	Prob. of Prosecution for Economically Motivated Crimes x 100					
		Formal Labor Income Percentiles				
	No Formal Income	(0-25)	[25,50)	[50,75)	[75,90)	[90,100]
Treated x Post-Birth	-0.0031**	-0.0012	0.0057	-0.0037	-0.0014	0.0046
	(0.001)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
Treated x Pregnancy	-0.0025*	0.0056	0.0060	0.0048	0.0029	0.0065
	(0.001)	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)
Pre-Conception Dep. Var Mean x 100	.012	.022	.015	.007	.006	.008
Avg. Monthly Income Pre-Period	0	93.34	302.865	571.43	829.936	1655.341
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Unique Individuals	1309843	171811	171174	169521	102834	67324
Observations	24743072	2861856	2861936	2861840	1717104	1144624
	(1)	(2)	(3)	(4)	(5)	(6)
	Prob. of Prosecution for Violent Crimes x 100					
		Formal Labor Income Percentiles				
	No Formal Income	(0-25)	[25,50)	[50,75)	[75,90)	[90,100]
Treated x Post-Birth	0.00086	0.0017	-0.00038	-0.0092**	-0.0084	-0.0100*
	(0.001)	(0.005)	(0.004)	(0.004)	(0.005)	(0.006)
Treated x Pregnancy	-0.0040***	-0.011**	-0.0026	-0.0066	-0.0011	-0.0056
	(0.001)	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)
Pre-Conception Dep. Var Mean x 100	.014	.039	.02	.021	.017	.02
Avg. Monthly Income Pre-Period	0	93.34	302.865	571.43	829.936	1655.341
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Unique Individuals	1309843	171811	171174	169521	102834	67324
Observations	24743072	2861856	2861936	2861840	1717104	1144624
	(1)	(2)	(3)	(4)	(5)	(6)
	Prob. of Prosecution for Other Crimes x 100					
		Formal Labor Income Percentiles				
	No Formal Income	(0-25)	[25,50)	[50,75)	[75,90)	[90,100]
Treated x Post-Birth	-0.0024***	0.0021	-0.0017	-0.0025	0.00046	-0.0046
	(0.0008)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)
Treated x Pregnancy	-0.0020**	-0.00030	0.00042	-0.0029	0.0044	-0.0058
	(0.0009)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)
Pre-Conception Dep. Var Mean x 100	.008	.009	.009	.012	.006	.003
Avg. Monthly Income Pre-Period	0	93.34	302.865	571.43	829.936	1655.341
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Unique Individuals	1309843	171811	171174	169521	102834	67324
Observations	24743072	2861856	2861936	2861840	1717104	1144624

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all women in our main analysis sample divided by pre-conception formal labor income. Standard errors presented in parenthesis are clustered at the individual level.

Table A6: Estimates of the Effect of Childbirth on Criminal Prosecution for Mothers - Age Groups

	(1)	(2)	(3)	(4)	(5)
	Probability of Criminal Prosecution x 100				
	Age Groups				
	$\leq$ 22 years	23-26	27-32	>32	More than 22
Treated x Post-Birth	-0.0055**	-0.0091**	-0.0095**	-0.0083	-0.0091***
	(0.003)	(0.005)	(0.005)	(0.008)	(0.003)
Treated x Pregnancy	-0.0081***	-0.0059	-0.0089*	-0.020**	-0.0093***
	(0.002)	(0.005)	(0.005)	(0.009)	(0.003)
Pre-Conception Dep. Var Mean x 100	.035	.073	.058	.067	.066
Individual F.E.	Yes	Yes	Yes	Yes	Yes
Unique Individuals	958124	413861	358184	133833	879708
Observations	17815120	8075424	7323280	2976608	18375312

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all mothers in our main analysis sample divided by age at the moment of birth group. Standard errors presented in parenthesis are clustered at the individual level.

Table A7: Age Group Heterogeneity - Crime Types for Mothers

	(1)	(2)	(3)	(4)	(5)
	Prob. of Prosecution for Economically Motivated Crimes x 100				
	Age Groups				
	$\leq$ 22 years	23-26	27-32	¿32	More than 22
Treated x Post-Birth	-0.0029*	-0.0018	-0.0013	0.0028	-0.00082
	(0.001)	(0.002)	(0.002)	(0.004)	(0.002)
Treated x Pregnancy	-0.0014	0.00068	0.0019	0.0024	0.0015
	(0.001)	(0.003)	(0.002)	(0.004)	(0.002)
Pre-Conception Dep. Var Mean x 100	.01	.019	.013	.011	.015
Individual F.E.	Yes	Yes	Yes	Yes	Yes
Unique Individuals	958124	413861	358184	133833	879708
Observations	17815120	8075424	7323280	2976608	18375312

	(1)	(2)	(3)	(4)	(5)
	Prob. of Prosecution for Violent Crimes x 100				
	Age Groups				
	$\leq$ 22 years	23-26	27-32	¿32	More than 22
Treated x Post-Birth	0.0011	-0.0023	-0.00070	-0.0077	-0.0026
	(0.001)	(0.003)	(0.003)	(0.005)	(0.002)
Treated x Pregnancy	-0.0046***	-0.0047*	-0.0026	-0.0092*	-0.0046**
	(0.001)	(0.003)	(0.003)	(0.005)	(0.002)
Pre-Conception Dep. Var Mean x 100	.012	.025	.018	.024	.022
Individual F.E.	Yes	Yes	Yes	Yes	Yes
Unique Individuals	958124	413861	358184	133833	879708
Observations	17815120	8075424	7323280	2976608	18375312

	(1)	(2)	(3)	(4)	(5)
	Prob. of Prosecution for Other Crimes x 100				
	Age Groups				
	$\leq$ 22 years	23-26	27-32	¿32	More than 22
Treated x Post-Birth	-0.0016*	-0.0029*	-0.0030	0.000035	-0.0025**
	(0.0009)	(0.002)	(0.002)	(0.003)	(0.001)
Treated x Pregnancy	0.00049	-0.0022	-0.0037*	-0.0074**	-0.0036***
	(0.0009)	(0.002)	(0.002)	(0.004)	(0.001)
Pre-Conception Dep. Var Mean x 100	.004	.011	.011	.013	.011
Individual F.E.	Yes	Yes	Yes	Yes	Yes
Unique Individuals	958124	413861	358184	133833	879708
Observations	17815120	8075424	7323280	2976608	18375312

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all women in our main analysis sample divided by pre-conception formal labor income. Standard errors presented in parenthesis are clustered at the individual level.

Table A8: Probability of Domestic Violence by Income Group

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent Variable x 100					
	Formal Labor Income Percentiles					
	No Formal Income	(0-25)	[25,50)	[50,75)	[75,90)	[90,100]
Treated x Post-Birth	0.039***	0.053***	0.024***	0.018***	-0.00087	0.012*
	(0.003)	(0.005)	(0.005)	(0.005)	(0.006)	(0.007)
Treated x Pregnancy	0.0034	-0.0071	-0.0025	0.0016	-0.0019	-0.011
	(0.003)	(0.005)	(0.005)	(0.005)	(0.006)	(0.007)
Pre-Conception Dep. Var Mean x 100	.033	.062	.038	.029	.034	.041
Avg. Monthly Income Pre-Period	0	154.001	453.967	776.172	1221.617	2642.098
Individual F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Unique Individuals	657250	289961	288325	285526	172617	112738
Observations	11442576	4820768	4820256	4819824	2890944	1926288

Notes: This Table shows our estimates of coefficients β_1 and β_2 in equation 2. Sample Comprises of all fathers in our main analysis sample divided by pre-conception formal labor income. Standard errors presented in parenthesis are clustered at the individual level.