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ABSTRACT

This paper uses the severe economic crisis in Turkey in 2008-2009 as a quasi-experiment to evaluate the impact of worsening economic conditions during pregnancy on birthweight. Using birth history data from the 2008 and 2013 waves of the Demographic Health Surveys, we find that the economic crisis resulted in decreased birthweight in Turkey, especially impacting infants born to mothers with lower educational levels. Furthermore, a procyclical relationship exists between provincial income levels and the birthweight of infants born to mothers with lower levels of education. However, this relationship is only statistically significant during the crisis period. These results highlight how economic constraints on mothers with lower socio-economic status during economic crises can negatively affect birth outcomes. Furthermore, we examine shifts in fertility behavior and find a decrease in childbirth rates during the crisis, particularly in economically disadvantaged provinces. In line with this decrease in fertility, we also observe a reduced propensity to seek an abortion during the crisis period. Overall, these findings underscore the importance of understanding how economic crises affect infant health and the need for targeted interventions to support vulnerable populations, as well as addressing underlying socio-economic disparities to mitigate their impact on infant well-being.

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1 Introduction

Economic recessions pose significant challenges with far-reaching and long-lasting effects, particularly on vulnerable populations. Among these groups, infants born in emerging and developing countries are especially susceptible to the consequences of economic turmoil. This vulnerability is often compounded by limited access to healthcare and weaker welfare safety net systems, which can exacerbate their susceptibility. The stress and anxiety resulting from financial insecurity and uncertainty can also have detrimental effects on maternal and infant health. Furthermore, recessions often precipitate an increase in poverty, which, in turn, is associated with a range of negative health outcomes for pregnant women and infants. These consequences encompass malnutrition and an elevated susceptibility to infectious diseases (Pongou et al., 2006; Suhrcke et al., 2011). The myriad of challenges faced by vulnerable populations underscore the need for a comprehensive understanding of the effects of economic crises. Such understanding is critical as it would serve as a basis for informed and effective policy-making, aimed at protecting the well-being and future prospects of some of society's most vulnerable members in times of economic turmoil.

In this paper, we examine the effect of a major economic crisis in Turkey on birthweight, using data from the 2008 and 2013 waves of Demographic Health Surveys (DHS). Like many other countries, both developed and developing, Turkey was severely impacted by the 2008-2009 global economic recession. This crisis resulted in a 4.8% decline in GDP, an unemployment rate of 14%, and a significant reduction in real wages and purchasing power in Turkey. The severe economic crisis significantly worsened the prenatal conditions for children born during these times and was not caused by individual or household behavior, creating a unique opportunity to examine the causal relationship between difficult economic conditions during pregnancy and infant birth outcomes. Our identification strategy relies on temporal and spatial variations of the severity of the economic crisis captured by the provincial GDP in a difference-in-differences framework. More specifically, we compare the birth outcomes of children in the more and less severely affected provinces who are exposed to economic downturn during the gestational period to those of children who were not affected by the crisis. In

a supplementary analysis, we perform a mother-fixed effects analysis to further account for unobservable determinants in the composition of newborns and unobserved heterogeneity in general. More specifically, we compare the birth outcomes of the siblings who were in-utero during the economic crisis with those whose gestational period falls outside the crisis period. Mother-fixed effects models further allow us to control for possible time-invariant behavioral and physiological characteristics of the mothers and possibly fathers. We also explore heterogeneity in the estimated relationship with respect to the mother's education and differential prenatal care in an effort to provide insights into the roles of credit constraints and prenatal care as potential mechanisms. In addition to our main analysis, we conduct an investigation to determine if selective fertility and abortion are influencing the results of our analysis on birthweight.

We focus on birthweight because it is an outcome of significant social and economic importance due to its impact on a person's health, education, and employment outcomes throughout the life course. For example, babies with low birthweight (weighing less than 2500 grams) have a higher one-year mortality risk compared to babies who are heavier at birth (Morris et al., 1998; Almond et al., 2005). Furthermore, the surviving children are more likely to have impaired motor and neurological development and chronic illnesses (Strauss and Thomas, 1998; Adair, 1989; De Boo and Harding, 2006). Low birthweight babies are also more likely to have a lower cognitive ability, achieve lower levels of education, and experience poorer outcomes in the labor market compared to babies who are born at a higher weight (Currie and Hyson, 1998; Case et al., 2005; Behrman and Rosenzweig, 2004; Black, Devereux and Salvanes, 2007), contributing to long-term inequality in socio-economic indicators. Therefore, causal evidence aiding our understanding of the determinants of birthweight is of extreme importance for economic and public policy in developing and developed countries alike.

There are several ways in which economic shocks can affect birthweight. If households experience a negative income shock, they may need to cut back on health spending and may not have the means to consistently obtain nutritious food. This can subsequently lead to negative impacts on pregnancy and birth outcomes. Malnutrition, especially during the

critical months of the gestational period, leads to poor birth outcomes (Stephenson and Symonds, 2002; Lumey, 1998; Almond and Mazumder, 2011). This may particularly be an important channel in the context of Turkey as food expenditures were the main adjustment mechanism for Turkish households, especially for low-income households, against the income shocks faced during the 2008 financial crisis (Aran, 2013). In addition to potentially causing negative birth outcomes through reduced access to food, economic shocks may also raise mothers' stress levels, leading to low birthweight (Aizer et al., 2016; Currie et al., 2023). Stress during pregnancy has been shown to be associated with low birthweight (e.g., Beydoun and Saftlas, 2008; Paarlberg et al., 1995; Mulder et al., 2002; Wadhwa et al., 1993). Moreover, economic downturns can result in a rise in risky behaviors, such as substance abuse, further worsening the health and well-being of infants (Tekin et al., 2018; Hiilamo et al., 2021). Finally, limited access to prenatal care has been associated with low birthweight and other complications (e.g., Grossman and Joyce, 1990; Reichman and Teitler, 2003; Rous et al, 2004; Jewell and Triunfo, 2006; Wehby et al., 2009).

While there is a large literature examining the health effects of recessions, the majority of the studies focus on adult health or use data from the pre-2000 period (Belles-Obrero et al., 2016; Palmer et al., 2016). One notable exception is Bozzoli and Quintana-Domeque (2014), which examines the consequences of the Argentine economic crisis in 2001 on newborns and shows that birthweight is pro-cyclical with respect to the first and third trimesters of pregnancy. Olafsson (2016) examines the collapse of the Icelandic economy in 2008 and finds that first-trimester exposure to the crisis resulted in a significant reduction in birthweight among the affected cohorts of newborns. Wehby et al. (2017) provide similar evidence by examining the effects of business cycles in Argentina and demonstrate that higher unemployment reduces fetal growth rate, particularly among highly educated parents, and increases maternal poverty-related infectious diseases.[1]

Our paper makes several contributions to the literature. First, to our knowledge, this is the first study to investigate the effects of financial crises on birth outcomes in both Turkey

[1]See also Paxson and Schady (2005), Dehejia and Lleras-Muney (2004), Ferreira and Schady (2009), Baird and Schady (2011) and Mary (2018) for further evidence on the effects of financial and macroeconomic crises on children outcomes.

and the Middle East region, which has a history of economic and political instability. As children and young people are among the most vulnerable members of this region, which has a large young population, birthweight is an important predictor of future socioeconomic success and warrants the attention of researchers and policymakers. Second, we build upon previous research by providing evidence of selective fertility and abortion during an economic crisis in the context of a developing country, adding to Dehejia and Lleras-Muney (2004), which have already documented such findings in the United States. Lastly, we examine the possible roles of maternal education and prenatal care as potential contributing factors. This is important because the ability of governments to develop effective policies to protect vulnerable populations from the harmful effects of economic downturns requires an understanding of the mechanisms behind these negative effects.

Using data from the Demographic Health Surveys (DHS) in 2008 and 2013, we find a sizeable decline in birthweight during the economic crisis in Turkey. This decline is particularly pronounced among infants born to mothers with lower educational levels, underscoring the detrimental impact of economic constraints on mothers with lower socioeconomic status during such crises. Furthermore, there is a procyclical relationship between provincial income levels and birthweight of infants born to low-educated mothers, but this relationship is only significant during crisis periods, with no noticeable relationship observed in other time periods. Additionally, we investigate changes in fertility behavior and uncover a decrease in childbirth rates during the crisis, especially in economically disadvantaged provinces. This reduction in fertility is accompanied by a decreased likelihood of having an abortion. These findings emphasize the significance of comprehending the effects of economic crises on infant health and the imperative need for targeted interventions to support vulnerable populations. Furthermore, addressing underlying socio-economic disparities is crucial to mitigate the adverse consequences of economic crises on infant well-being.

Our paper is organized as follows: In Section 2, we describe the economic turmoil in Turkey from the Late 1990s to the 2008-2009 financial crisis. Section 3 presents the data and highlights key descriptive statistics. The methodology used in our analysis is outlined

in Section 4. The estimation results are presented in Section 5, followed by a discussion and conclusion in Section 6.

2 Background of the Turkish Economy and the Economic Crisis

In the late 1990s, the Turkish government faced several economic challenges, including high inflation, high real interest rates, and a growing budget deficit. To address these issues, the government embarked on a disinflation program under the guidance and technical assistance of the International Monetary Fund (IMF). This program aimed to reduce inflation through exchange rate adjustments and improve the financial stability of the public sector. However, as the 2000s began, the vulnerabilities inherent in the Turkish economy became increasingly evident. Specifically, a weak banking sector, characterized by poor regulation and heavy foreign currency borrowing, coupled with large public sector deficits, worsened the already fragile economic structure. This fragility left Turkey highly susceptible to sudden capital outflows and the devaluation of its currency.

In early 2001, these vulnerabilities plunged the Turkish economy into another crisis, which resulted from a combination of domestic and external factors. Once again, the core issues included persistent challenges such as high inflation, a substantial public deficit, and an overvalued currency. The crisis reached its peak in February 2001 when the Turkish lira experienced a sharp devaluation, triggering a stock market crash and skyrocketing interest rates. This financial turbulence led to a significant loss of investor and public confidence, resulting in widespread capital flight.

In response to this crisis, the Turkish government, again with the support of the IMF, launched a series of rigorous economic reforms in May 2001. These reforms focused on overhauling the banking sector, restoring fiscal discipline, and targeting inflation reduction. Gradually, these measures began to stabilize the economy. By the mid-2000s, Turkey saw a decrease in inflation, a resurgence in economic growth, and a strengthening of its banking sector. This period of reform also bolstered Turkey's aspirations to join the European Union, further incentivizing economic and political reforms.

From 2002 to 2008, Turkey's economy was fairly stable and relatively strong, marked by decreasing inflation, improved fiscal discipline, and political stability. However, these positive trends were reversed with the 2008 global financial crisis, which had a ripple effect on the Turkish economy. As a result, the value of the Turkish lira plummeted and inflation rose significantly, resulting in a sharp contraction in GDP, a rise in unemployment, and a decline in foreign direct investment. To stabilize the economy, the government implemented several measures such as austerity measures and obtaining loans from international organizations.

Figures 1 to 3 illustrate the severe deterioration in economic indicators and the prolonged impact of the global economic crisis on industrial production and economic growth in Turkey. It is important to note that the data presented in these figures are highly correlated, suggesting that the financial sector crisis was transmitted to the rest of the economy. As shown in Figure 1, economic growth was consistently negative from the final quarter of 2008 until the end of 2009. During this period, GDP fell by 4.8%, the unemployment rate rose to 14%, and real wages significantly declined as a result. As depicted in Figure 2, there was also a significant decrease in industrial production during the same period. The OECD report on the 2008 financial crisis further documents a substantial contraction in the domestic demand in the Turkish economy as well as in the capital inflows into Turkey during these episodes. According to these figures, total domestic demand in 2009 fell by 6.5 percentage points alone. The capital flows also contracted by 6.2 and 19.2 percentage points in 2008 and 2009, respectively. Lastly, we plot the average GDP per capita at the provincial level during our analysis period in Figure 3. As shown in the figure, the upward trend observed in provincial GDP got disrupted during the crisis period. For example, the provincial GDP per capita decreased by 17.9 percent in 2009.

3 Data and Descriptive Statistics

We conduct our empirical analysis using the 2008 and 2013 waves of the Turkish DHS, which contain detailed information on the socio-demographic characteristics of women, men, and children. Essential to the purpose of our analysis, the DHS reports women's birth

histories for the five years preceding the survey, including each child's date of birth, gender, birthweight, and prenatal care, allowing us to explore the causal association between economic conditions and birth outcomes.[2] Birth histories further enable us to identify siblings and compare the birth outcomes of children born to the same mother during different episodes of economic conditions. It is important to note that we have been granted access to special calendar data from DHS that provide detailed information on the actual length of pregnancy, allowing us to accurately determine the gestational duration for each birth. These detailed data are key to correctly assigning the pregnancy duration and precisely identifying the children who are in-utero during economic downturn.

The DHS calendar data also provide information on abortions, which help us disentangle the potential sources of heterogeneity in the estimated effects. Since we explore both the spatial and temporal variations in the exposure to economic downturns during pregnancy across 81 Turkish provinces, it is also important to correctly assign children to their birth province. To do this, we use migration histories from DHS and carefully match each child's residence at the time of their birth. We explore provincial differences in output levels by using provincial GDP per capita data provided by the Turkish Statistical Institute. Since the data on provincial per capita GDP start in 2004, we cannot include the 2001 economic crisis, therefore, we only focus on the 2008-2009 crisis in our analysis. Note that a commonly used measure to capture the effects of economic crises in the literature is the unemployment rate. In the context of Turkey, official data on the unemployment rate are only released at the regional level.[3] Guided by the economic indicators shown in Figures 1 and 3, we define the crisis as the period between October 2008 and September 2009.[4]

In our analysis, we focus exclusively on the birth outcomes of single births that had a gestational period exceeding seven months. This approach is taken because multiple births and premature infants are predisposed to low birthweight irrespective of economic circum-

[2]In fact, DHS provides a full birth history of all children the woman has ever given birth to including their date of birth, sex, survival status, age (if alive), and age at death (if died). However, information on birthweight is only available for the five years preceding the survey.

[3]Although Turkey has 81 provinces, there are only 26 regions. Conducting the analysis at the regional level would have significantly reduced the identifying variation.

[4]We further test the sensitivity of our results by using alternative definitions of crises taken from Cosar and Sahinoz (2018) and Aruoba and Sarikaya (2013). Our results remain robust to these alternative definitions.

stances.[5] We also exclusively focus on children who were born inside Turkey. Table 1 reports the summary statistics of the main variables of interest and the provincial GDP per capita. The average weight of children at birth in our sample is 3,244 grams. About 13 percent of these children had low birthweight, which is defined as having a birthweight of 2500 grams or less. On average, mothers have 6.5 years of schooling, while the average years of education is 8.2 years among fathers. The mothers' average age at childbirth is approximately 27, while their age at first birth is 22. The number of children ever born to the mothers in our sample is 2.5 children, and more than half of these children were born within the last five years. Finally, the average provincial GDP per capita was $7,252 between 2004 and 2013.

Before describing our empirical strategy, we provide an overview of how birthweight evolved during the period under investigation in Turkey. As depicted in Figure 4, before the onset of the economic crisis, birthweight exhibited a relatively stable pattern, fluctuating around a little over 3,200 grams. However, with the beginning of the crisis, a noticeable downward shift in birthweight trends became evident. Specifically, the average birthweight began to decline in the crisis year, and this decline continued to accelerate throughout 2009. Only in 2010 did it show signs of recovery. Next, we illustrate the average raw birthweight over time in provinces that fall within the top and bottom 25 percent of per capita GDP distribution. As demonstrated in Figure 5, a striking difference in birthweight between these two categories of provinces emerges during the crisis period. These unadjusted disparities also serve as a basis for our causal analysis, which is outlined in the following section.

4 Empirical Strategy

Our analytical approach is a difference-in-differences strategy, in which we use the temporal and spatial variations of the economic crisis measured by the provincial GDP.[6] In addition to assessing the difference in birthweight between the crisis period and other time frames, we exploit the spatial variation across provinces by exploring the birthweight of infants who

[5] However, we note that our results remain similar when we include these groups in our analysis sample.

[6] The standard difference–in–differences estimator can produce biased results in the presence of staggered treatment (Goodman–Bacon, 2021). However, this problem does not apply in our context since the treatment assignment does not vary over time.

were exposed to the Turkish economic crisis during the gestational period in heavily affected provinces to those of children who were in utero during this period in relatively less affected provinces. Our empirical approach can be formulated using the following equation:

$$Birthweight_{impt} = \alpha + \beta Crisis_{imt} x GDP_{pt} + \omega Crisis_{imt} + \theta GDP_{pt} + \delta_p + \phi_t + \tau_{pt} + \omega X_{imt} + \epsilon_{ipmt} \quad (1)$$

where $Birthweight_{impt}$ is the birthweight in grams of child i born to mother m in province p and in year t. $Crisis_{imt}$ is a dummy variable indicating whether a child was in-utero during the economic crisis period between October 2008 and September 2009. GDP_{pt} is the provincial GDP spanning the period of 2004-2013. δ_p denotes birth province fixed effects, controlling for permanent differences across provinces. ϕ_t is the child's year of birth fixed effects, controlling for likely secular changes in birth outcomes over time. τ_{pt} controls for unobserved provincial trends in economic and health-related conditions that might be correlated with birth outcomes. X_{imt} includes a vector of controls for a mother's age at birth dummies, mother's and father's educational attainment dummies, gender and birth order of the child, mother's marital status, household wealth index, and urban/rural residence. ϵ_{ipmt} is a random, idiosyncratic error term. The standard errors are clustered at birth province to account for correlations in outcomes between children born in the same province over time.

We perform a series of additional analyses to assess whether our results from the baseline model are sensitive to different specifications and potential confounding factors. As mentioned earlier, the calendar data in the DHS cover the entire reproductive history of the women in our sample, enabling us to directly measure if the severe economic downturn elevated the incidence of abortions, thereby contributing to the unobserved heterogeneity in birth outcomes. Additionally, we also investigate whether there was a fertility response to the crisis by estimating a model using the province-level birth rate as the outcome measure. We also examine whether the crisis had an impact on women's likelihood to seek an abortion as a means of terminating their pregnancy.

In our supplementary analysis, we estimate a specification with mother-fixed effects in

an attempt to more directly account for unobserved heterogeneity. More specifically, we re-estimate equation (1) including mother-fixed effects for the sample of mothers with multiple births during the time period covered. In this empirical setting, we leverage the variation in birthweight of the siblings who were in-utero during the economic crisis to those whose fetal development occurred outside the period of the crisis. The mother fixed effects analysis enables us to account for possible time-invariant behavioral and physiological characteristics of the mothers by exploiting the variation between siblings.

5 Estimation Results

The results from the estimation of the model specified in equation (1) are presented in Table 2. The outcome of interest in this model is birthweight in grams. Column (1) shows the analysis results obtained from the full sample. We allow for heterogeneous effects in columns (2) and (3) by the mother's education. Specifically, column (2) presents the estimates for the sample of children born to mothers with secondary school education or less, while we focus on children whose mothers have more than secondary school education in column (3). All regressions control for a set of the child, mother, and father characteristics, including the child's gender and birth order, the mother's age at birth dummies, the mother's and father's educational attainment dummies, the mother's marital status, household wealth dummies, and urban/rural residence in addition to the yearly provincial GDP per capita, province of birth, birth year fixed effects and province-specific time trends.

Table 2 also presents the estimates for the relationship between our control variables and birthweight as a way to offer perspective for our findings. We find that a child's gender is an important determinant of birthweight, with girls weighing an average of 137 grams less at birth. Similarly, the birth order of a child does seem to matter for the birthweight, as our results show that higher birth order children are heavier on average. This positive effect of birth order on birthweight is significantly stronger for children born to mothers with higher levels of education. We also observe in Table 2 that an infant's birthweight increases, almost monotonically, with maternal education, with mothers with the highest educational attain-

ment having babies 78 grams heavier than mothers with no formal education. Household income also significantly contributes to birthweight. However, the income gradient in birthweight appears to matter primarily for low-educated mothers as income indicators are both larger in magnitude and only statistically significant for low-educated mothers. Moreover, Table 2 reveals that the mother's marital status is also important for a child's birth outcomes, especially for more educated mothers, as illustrated in column (3).

Moving to the central results presented in Table 2, we focus on the effects of the economic crisis on birthweight. The coefficient for the crisis indicator shows that children in-utero during the crisis period (from October 2008 to September 2009) were born, on average, 95 grams lighter compared to those born during other times, although the estimate is not statistically significant at conventional levels (p=0.11). This represents a 2.9 percent decrease in birthweight. However, the coefficient on the interaction term between the crisis indicator and per capita GDP at the province level suggests that the impact of the crisis varies with the level of economic prosperity of the province. For instance, the crisis resulted in a modest 15-gram (-95.1+0.011*7,252) reduction in birthweight in a province with average GDP per capita. The results indicate that birthweight was pro-cyclical with respect to GDP during the crisis period. To illustrate, a child exposed to the crisis in an economically less affluent province (at the 10th percentile of per capita GDP distribution with $4,072) is predicted to have a birthweight that is 82 grams less than one exposed in a province at the 90th percentile of the per capita GDP distribution ($11,568). Additionally, provincial GDP per capita appears to matter for birthweight only during the crisis period and not significantly in other time periods. Based on the point estimates, for every 1000-dollar decrease in the average provincial GDP per capita during the crisis period, the average birthweight was reduced by approximately 11 grams.

Table 2 further demonstrates that our results are primarily driven by mothers with relatively lower levels of educational attainment. As illustrated in columns (2) and (3), the estimates for low-educated mothers are not only larger in magnitude, but they are also more precisely estimated, when compared to their counterparts with higher levels of education.

According to the point estimates, the financial crisis resulted in a notable reduction in birthweight by 137 grams, representing a 4.2 percent decrease, while keeping all other factors constant, including provincial GDP per capita. Consistent with the pattern observed in column (1), the impact of the crisis seems to differ depending on the level of economic prosperity among provinces. For example, there is a 120-gram (0.016*(11,568-4,072)) difference in birthweight between a province situated at the 10th percentile of the per capita GDP distribution and another province positioned at the 90th percentile. In contrast to periods outside the economic crisis, the provincial GDP had a statistically significant positive impact on birthweight during the crisis itself. This suggests that the influence of economic hardship on birthweight was more pronounced during the crisis period than in other years, particularly among mothers with lower educational attainment. To put it into perspective, a one-standard-deviation increase in the average provincial GDP per capita led to an additional decrease of 50 grams (3,148*0.016) in birthweight during the crisis period. Again, this pattern is only observed among children born to mothers with relatively low levels of education. In contrast, children with more educated mothers appear to have survived the economic crisis without any noticeable impact on their birthweight.

These findings align with the notion that credit constraints and limited resources disproportionately affected women, who are less educated and likely to be in lower-income brackets. The heterogeneity by maternal education could be attributable to several channels. For instance, it is possible that more educated and therefore relatively wealthier parents had means to better cope with the potential financial hardship during the economic crisis; thereby having better access to health care and nutrition during economic hardship. We investigate this idea further by assessing if there were any measurable changes in the utilization of prenatal care among pregnant women during the economic downturn. We do this by examining the probability of receiving prenatal care as an outcome of interest in Appendix Table A1. Our findings suggest that women with higher levels of education actually increased their utilization of prenatal care during the crisis period in comparison to non-crisis times, irrespective of other factors including provincial GDP per capita. For example, according to the point

estimates, the crisis increased a women's propensity to use prenatal care by 6 percentage points (0.105-0.062*0.7252) in a province with an average per capita GDP. Furthermore, the relatively more educated women living in economically less affluent provinces appear to have raised their use of prenatal care more than those in less prosperous provinces. To illustrate, women living in a province at the bottom 10th percentile of the per capita GDP distribution experienced an 8 percentage point rise in their likelihood of using prenatal care while those women in the top 90th percentile of the distribution had their propensity to use prenatal care increase only by 3.3 percentage points. One plausible explanation for this phenomenon could be that while educated women in the most affluent provinces likely have consistent access to prenatal care regardless of economic fluctuations, their equally educated peers in the poorest provinces might be more proactive in securing prenatal care during economic hardship to protect their unborn children from potential negative impacts of the crisis.

Next, we subject our analysis to additional scrutiny to assess the validity of our results presented in Table 2. First, we perform a non-parametric analysis in which we trace out the estimates on the treatment indicator throughout the entire 118-month analysis period. As illustrated in Figure 6, among the 118 trials, the binary crisis indicator is consistently negative and statistically significant primarily during the economic recession period. This aligns with the period in which we also observe the lowest birthweight estimates. In contrast, during other periods, the crisis indicator tends to be statistically insignificant and of smaller magnitude. The only exception to this pattern is the period from early 2005 to mid-2006, during which birthweight displays a positive trend. It is important to note that this period coincides with the initial implementation of the Turkish Family Medicine Program, which offered comprehensive free primary healthcare services to all citizens. Research has shown that this program had positive effects on child health (Cesur et al., 2017). Notably, Figure 6 also indicates a rebound in birthweight shortly after the end of the crisis period, suggesting the possibility that fertility decisions may have been influenced during the crisis, causing some women to delay their childbearing plans until after the crisis had subsided. In Figure 7, we present the estimates on the interaction term between the crisis indicator and provincial

GDP per capita over the entire 118-month period. The overall picture observed in this figure is reminiscent of a mirror image of the trends depicted in Figure 6. This suggests that higher GDP per capita levels acted as a mitigating factor against the adverse impacts of the economic crisis on birthweight. Specifically, provinces with a higher GDP per capita tended to experience smaller declines in birthweight during this period. We further note that we include in our models provincial time trends to control for unobserved trends in economic and health-related conditions that might be correlated with birth outcomes.

We also conduct a falsification exercise to further validate our primary findings, wherein we replicate our analysis exclusively focusing on infants born during non-crisis periods. Then we randomly assign the period that the crisis occurred and then evaluate whether these simulated estimates are statistically and economically significant. Specifically, we test whether the birthweight of children born 10, 20, and 30 months before and after the actual crisis period differ by the provincial GDP. Results from this falsification test are shown in Table 3. The point estimates from this exercise are statistically and economically insignificant, suggesting that our estimates are unlikely to be driven by pre-existing province-cohort trends. Consistent with Figure 6, the only exception is the positive and statistically significant impact observed in the binary crisis indicator for the 10 months after the crisis period. This finding can likely be attributed to a rebounding effect primarily among some women, who might have postponed their fertility decisions during the crisis itself. In summary, the absence of differential trends during non-crisis years provides reassurance that our results primarily reflect the health consequences of the economic crisis, rather than pre-existing patterns in birth outcomes among provinces or siblings.

In addition to examining the overall impact of the economic crisis on infant health, we also break down the effects by trimester of pregnancy to identify the periods of increased vulnerability to economic shocks for mothers and newborns. Following the literature, we categorize the duration of the pregnancy into three trimesters. In the trimester analysis, we use unique calendar data from the DHS, which provides specific details on the actual duration of pregnancy. This enables us to accurately determine the trimester(s) during

which the mother was affected by the crisis. As previously mentioned in the data section, the duration of the economic crisis was taken into account when determining the mother's exposure to the economic crisis in each trimester. Since the economic crisis lasted for several quarters, none of the mothers were only exposed during the second trimester. As shown in Table 4, mothers experienced the economic downturn during one of the following trimesters: the first or third trimester only, both the first and second trimesters, both the second and third trimesters, or all three trimesters. In our sample, 161 children were exposed in the first trimester, 146 children were exposed in the first and second trimesters, 151 children were exposed in the second and third trimesters, 128 children were exposed only in the third trimester, and 449 children were exposed in all three trimesters.

Based on the results presented in Table 4, it is evident that the severe financial crisis in Turkey had a more pronounced impact on reducing birthweight when infants were exposed during the first trimester of pregnancy. In contrast, the effects on babies exposed during the second and third trimesters were much more limited. This pattern of trimester-specific effects aligns with the research findings of Bozzoli and Quintana-Domeque (2014) and Olafsson (2016). Furthermore, our analysis continues to underscore the significance of mothers with lower socio-economic backgrounds in driving the observed birthweight patterns, as previously discussed in Table 2. For instance, according to the estimates presented in the second column of Table 4, infants born to mothers with relatively low levels of education during the crisis period exhibited a striking 381-gram reduction (equivalent to 12 percent) in birthweight when compared to infants conceived during non-crisis periods. Furthermore, this estimate is statistically significant at the one percent level. This effect size is noteworthy both in terms of its economic and statistical significance.

Moreover, the interaction coefficient between the crisis indicator and provincial GDP per capita is positive and significant, revealing that a $1,000 decrease in average income at the provincial level during the crisis corresponds to an additional 43 grams decrease in birthweight among children born to mothers with low levels of education. However, for the subsample of mothers with relatively high levels of education, the estimates in column (3) are much

smaller in magnitude, and none of them attain statistical significance. Collectively, these results emphasize that the children born to mothers with lower socio-economic backgrounds disproportionately experience the adverse effects of the financial collapse in relation to birthweight.[7]

In summary, these findings illustrate that adverse economic conditions have detrimental impacts on birth outcomes, particularly when encountered during the initial trimester, and these negative consequences tend to be more pronounced among children born to mothers with lower levels of education. These households likely experience greater economic insecurity and credit constraints and have limited access to prenatal care during times of economic turmoil, leaving them more vulnerable in the presence of weak institutions and limited welfare support.

5.1 Selective Fertility and Abortions

Previous research on the effect of economic downturns on infant health that uses spatial variation rarely investigates the potential influence of selective fertility and the changes in the composition of babies born through practices such as abortion. These studies often argue that the unobserved heterogeneity driven by these potential changes in fertility behavior has minimal impact on their findings if any. A notable exception is Dehejia and Lleras-Muney (2004) which demonstrates that fertility responses to temporary shocks in income vary significantly by socioeconomic status and race. It also shows that better birth outcomes during periods of high unemployment are due to selection (changes in the types of mothers who conceive during recessions) and improvements in health behavior (such as decreased smoking and drinking) during recessions. During economic crises, credit constraints and psychological stress may lead people to postpone having children until the economy recovers. On the one hand, the use of contraception among more educated and economically advantaged

[7] We also investigated the impact of the Turkish economic crisis on two related outcomes: a binary indicator for low birthweight (defined as birthweight $\leq$ 2,500 grams) and a binary indicator for premature birth (defined as gestational length $\leq$ 37 weeks). Our findings suggest that the economic crisis led to a 16 percent increase in the likelihood of low birthweight although this coefficient lacks statistical significance at conventional levels. Surprisingly, in the case of premature birth, the results indicate a slight reduction in the likelihood during the crisis, yet this effect is also imprecisely estimated. Additionally, the estimates for provincial GDP per capita and the interaction term between the crisis indicator and provincial GDP per capita are all small and statistically insignificant.

parents may amplify this effect, as they are more likely to have access to and utilize it. On the other hand, the makeup of newborns may change during economic hardships through an increase in abortions during the first trimester or stillbirths.

In light of this context, we investigate whether there was a noticeable shift in fertility behavior during the crisis period that altered the number of births and the composition of babies born during an economic downturn. To pursue this inquiry, we compute the number of live births per 1000 women by month, year, and province and exclusively focus on this indicator as our outcome of interest. As illustrated in column (1) of Table 5, our findings indicate a decline in fertility during the crisis period compared to other time frames, regardless of the level of the provincial GDP per capita. The point estimates reveal a decrease of 1.9 infants per 1,000 women during the economic recession in a province with the average per capita GDP (-3.186+1.75*0.7252), implying that some women may have postponed their fertility decisions amidst the economic downturn.[8] Calculated at the sample mean, this effect size translates into about a quarter reduction in fertility behavior (1.9/7.807). The estimate pertaining to the interaction between the crisis indicator and provincial GDP per capita indicates a steeper decline in fertility among women in economically disadvantaged provinces, consistent with the credit constraint channel. However, the fertility impact appears to have been negative even in the wealthiest provinces. For example, the effect on fertility is -1.2 children per 1,000 women in a province with per capita GDP at the 90th percentile of the distribution ($11,568). In contrast, a province at the bottom 10th percentile of the per capita GDP distribution ($4,079) experienced a fertility decline of 2.5 children per 1,000 women.

To gain further insights into potential heterogeneity based on socioeconomic factors in the relationship between the economic crisis and fertility patterns, we present estimates separately for women with secondary school education or less and those with more than secondary school education. As illustrated in columns (2) and (3) of Table 5 and in alignment with previous results, the coefficients are estimated precisely at conventional levels only for

[8]Note that the provincial GDP per capita is included in the fertility analysis after being divided by 10,000.

mothers with relatively low levels of education. Focusing on the estimates in column (2), the crisis is associated with 1.9 fewer babies per 1,000 women in a province with an average GDP per capita among low-educated women, corresponding to a 26 percent (1.9/7.318) decrease in childbearing. It is noteworthy that these effect sizes are identical to those obtained from the full sample shown in column (1), implying that the change in fertility behavior predominantly occurred among less educated women. Taken together, the results shown in Table 5 suggest that selective fertility, and more generally, changes in the composition of the newborns are indeed present during economic crises and should be considered in the estimation of infant health costs during economic recessions as a potential source of unobserved heterogeneity.

Next, we investigate whether there was a noticeable change in the incidences of abortion during the economic crises in Table 6. Abortion may represent an alternative birth control method used to defer conception during times of crisis. As we had access to unique calendar data in the DHS on the complete conception history, we were able to accurately identify incidences of abortion in our data. Using this information, we generated a binary indicator for whether the pregnancy was terminated through abortion or completed to full term and estimated our model using this indicator as the outcome.[9] As shown in Table 6, the period of economic crisis is associated with a 9.7 percentage point decrease in the likelihood of terminating a pregnancy through abortion in a province with an average per capita GDP.[10] This result is consistent with the notion that women might have decreased their fertility behavior. In other words, it is plausible that the decline in abortion rates could be attributed to these women deciding not to become pregnant in the first place. The interaction term suggests that the decrease in abortion during the crisis period was stronger in economically more affluent provinces as measured by per capita GDP. As an illustration, in a province ranking at the 75th percentile of the per capita GDP distribution ($9,052), the crisis reduced the likelihood of terminating a pregnancy by abortion by 11 percentage points, whereas, in a province at the 25th percentile of the distribution, the reduction was 9 percentage

[9]The abortion information is based on self-reports and there may be considerable reporting error in this variable. Therefore, we caution the reader to keep this in mind when interpreting the results in Table 6.

[10]This is calculated as -0.059-(0.053*0.7252). Note that provincial GDP per capita is entered into the regression after being divided by 10,000.

points. This result could be attributed to more readily available access to abortion services in economically affluent provinces, even during the economic crisis.

Lastly, we present estimates obtained from a model with mother-fixed effects in Table 7. On the one hand, this specification allows us to further guard against bias due to potential unobserved heterogeneity by accounting for possible time-invariant behavioral and physiological characteristics of the mothers and households. As described in the empirical strategy section, mother fixed effects models compare the birth outcomes of the siblings who were in-utero during a deep recession and those whose gestational period falls in non-recession years. On the other hand, the mothers in this subset may potentially exhibit significant differences from the entire sample, which could influence the representativeness of the results obtained in this analysis for the entire dataset. It is important to note that this subset includes mothers who made the decision to have a child during the crisis period. The results from the analysis utilizing mother-fixed effects are presented in Table 7. In general, the overall trend in the table aligns with the finding that birthweight decreased during the crisis, and the decline was more pronounced in provinces with lower GDP per capita. However, none of these estimates reach statistical significance. Perhaps, the absence of statistical significance is not surprising given the substantial reduction in sample size. Moreover, the potential impact of measurement error is exacerbated in a fixed effects model, which may also contribute to less precise estimates.

6 Conclusions

In this paper, we use the economic crisis that occurred in Turkey in 2008-2009 as a natural experiment to examine the effect of challenging economic conditions on birth outcomes. Our identification strategy exploits the temporal and spatial variations of the economic crisis measured by provincial GDP. Using data from two waves of the Turkish DHS, we find that the economic crisis had a negative effect on birthweight. Furthermore, children born to mothers with low socio-economic status as captured by low levels of education are more sensitive to economic conditions than other children. This suggests that the negative impact

of the crisis on birth outcomes may be driven by credit constraints faced by low SES mothers during times of financial hardship. We also examine whether mothers alter their fertility and abortion behavior in response to economic difficulties and whether these responses vary by maternal background. We document evidence that selective fertility might play an important role in the relationship between the economic crisis and birthweight. Specifically, we find that childbearing declined during the crisis with economically less prosperous provinces being affected more severely. We also find declines in the propensity to have an abortion during this period, which we interpret as consistent with a decline in fertility behavior.

The findings of this paper have important policy implications, as poor infant health can have long-lasting consequences, including developmental delays, increased morbidity, and mortality, and reduced productivity in adulthood. It is therefore of great policy significance to understand the factors that contribute to poor infant health and to develop interventions that can mitigate these risks. In order to promote the well-being of vulnerable populations and mitigate potential future income inequalities, it is crucial for policymakers to consider the impact of economic crises on infant health and develop targeted interventions to support families from low socio-economic backgrounds during times of financial hardship. Our findings also highlight the need to address the underlying socio-economic inequalities that contribute to poor infant health, as addressing these inequalities may be an important way to reduce the impact of economic crises on infant health.

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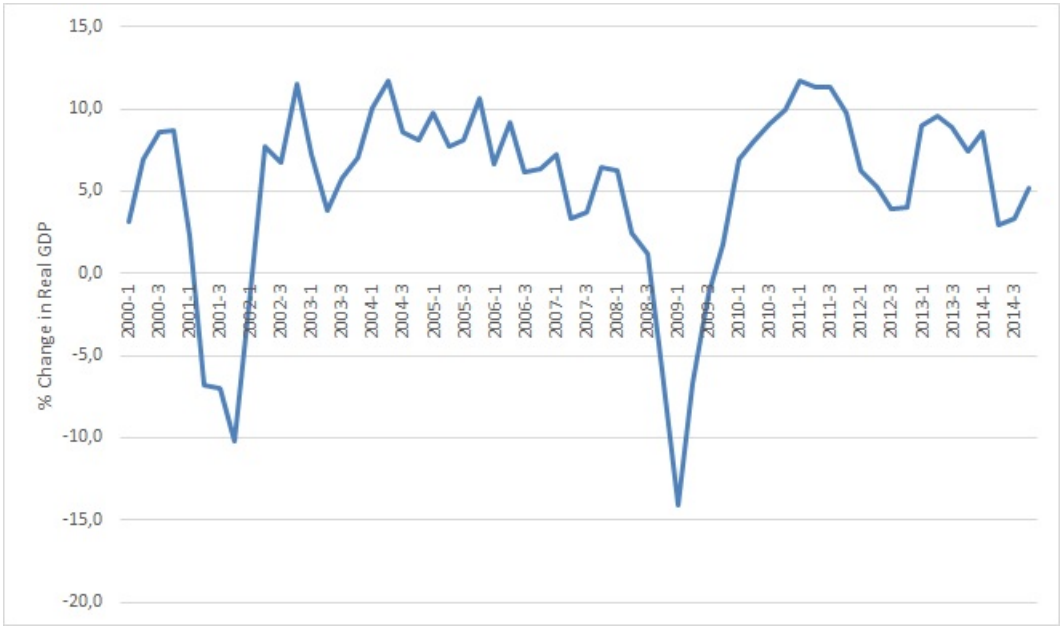
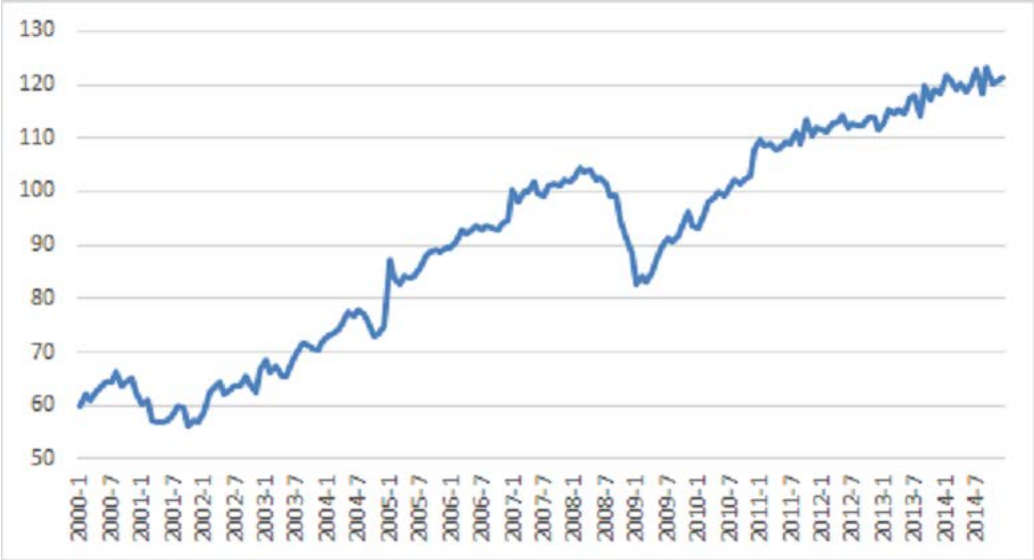
Figure 1: Quarterly Economic Growth Rates of Turkey between 2001 and 2014



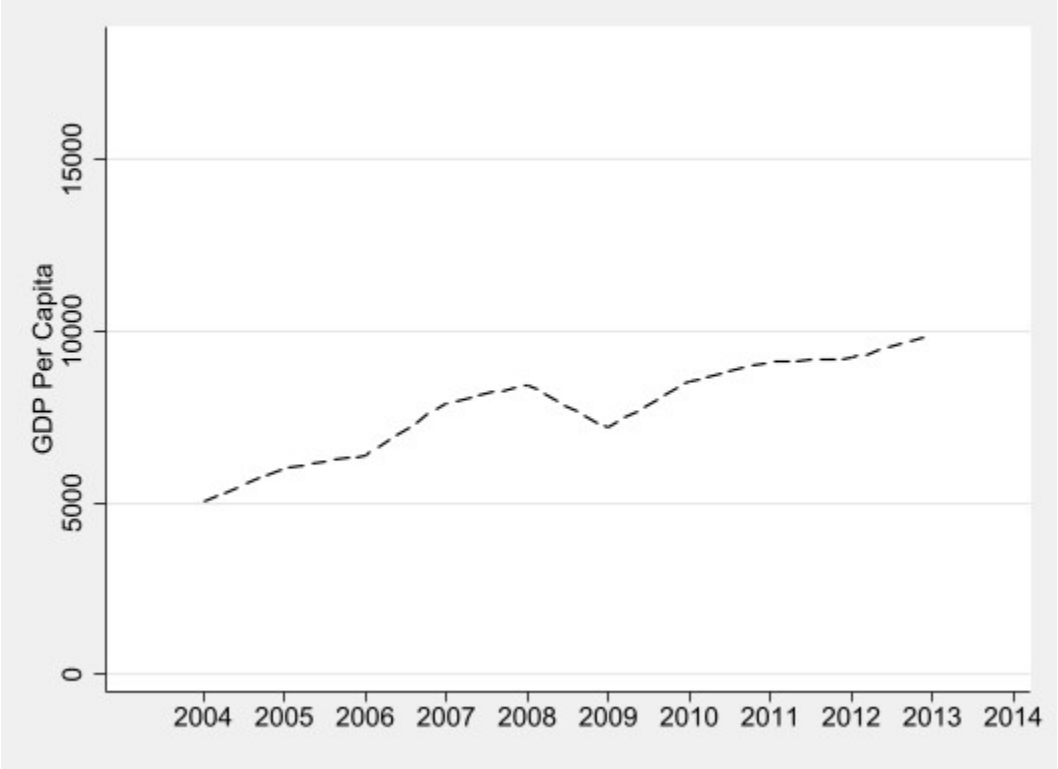
Notes: The figure displays the percentage change in real GDP. Data are sourced from the Turkish Statistical Institute.

Figure 2: Industrial Production Index between 2001 and 2014



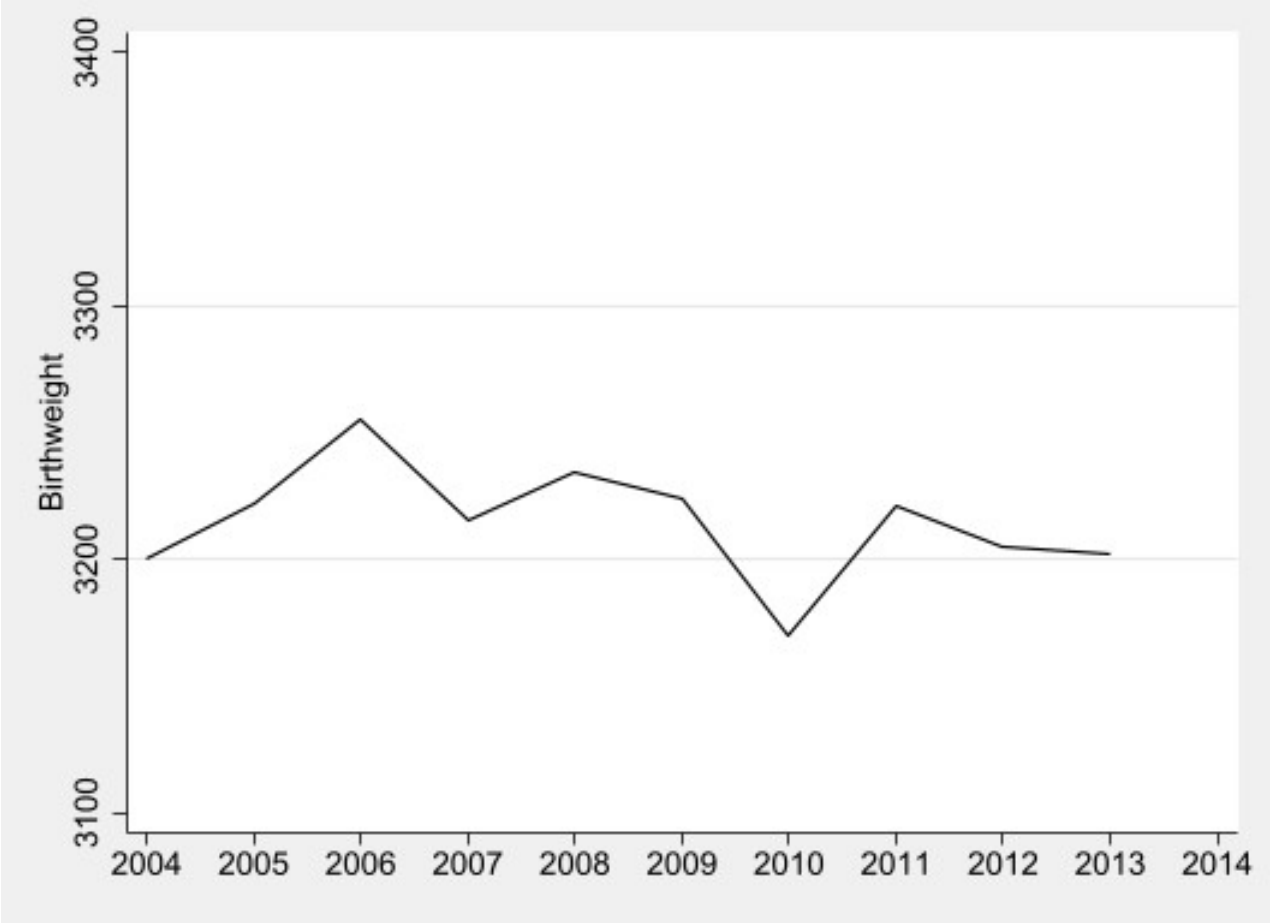
Notes: The industrial production index, set against a specific reference period, tracks changes in the volume of industrial output. Industrial production refers to the output of 5067 industrial establishments and covers sectors such as mining, manufacturing, electricity, gas, steam, and air-conditioning. Data are sourced from the Turkish Statistical Institute.

Figure 3: GDP per capita



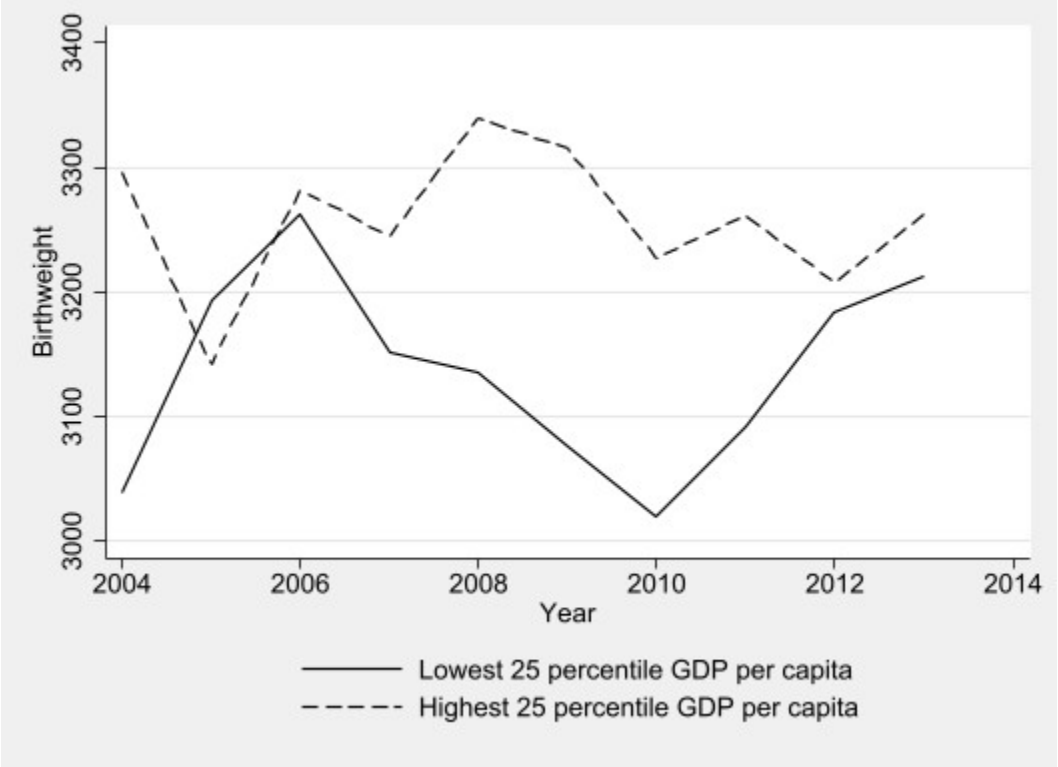
Notes: The figure displays the real GDP per capita in dollars with = 2009 as the base year. Data are sourced from the Turkish Statistical Institute.

Figure 4: Child Birthweight



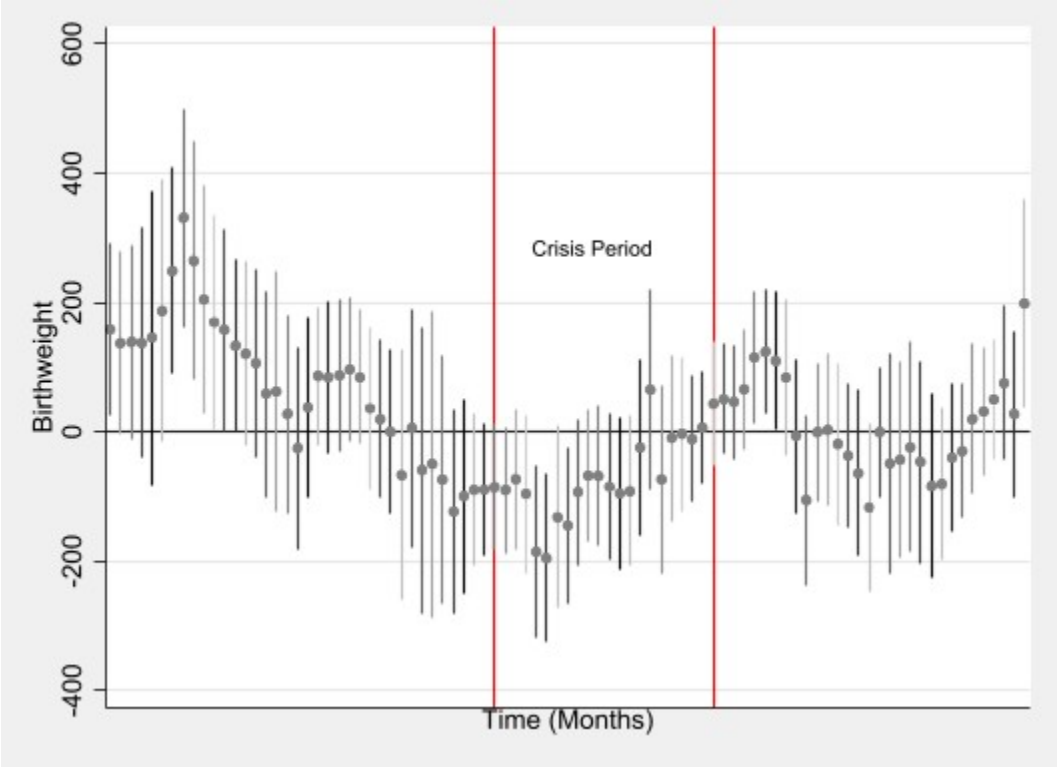
Note: The Turkish Demographic and Health Survey is used for the analysis. Birthweight is measured in grams.

Figure 5: Birthweight Across Provinces



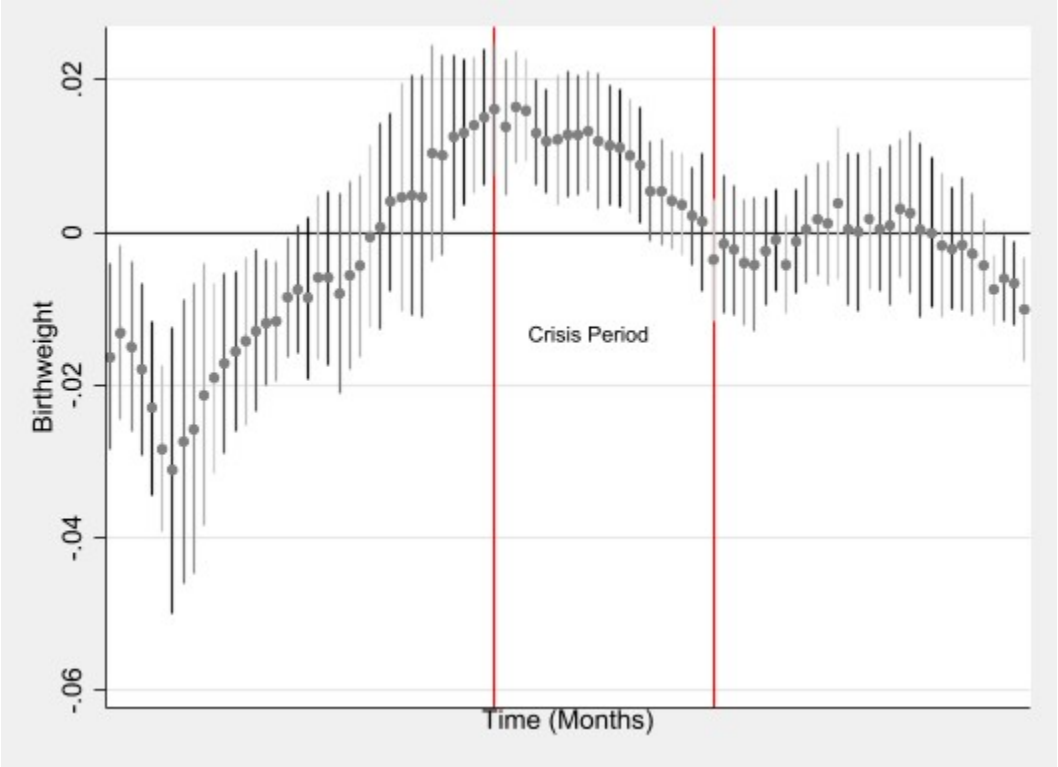
Note: The figure illustrates the average birthweight for provinces falling within the highest and lowest quartiles of the GDP distribution.

Figure 6: Birthweight Differential Across Provinces: Crisis Effect



Note: The figure displays the point estimates and 95% confidence intervals.

Figure 7: Birthweight Differential Across Provinces: Interaction Effect



Note: The figure displays the point estimates and 95% confidence intervals.

Table 1: Descriptive Statistics

	N	Mean	Standard Deviation	Min	Max
Child Birthweight (grams)	5,915	3244	640	600	6500
Low Birthweight (2,500 gr or less)	5,915	0.131	0.337	0	1
Pregnancy Duration (months)	5,915	8.92	0.286	8	10
Mother's Years of Schooling	5,915	6.5	4.1	0	21
Partner's Years of Schooling	5,915	8.2	3.8	0	21
Mother's Age at Child Birth	5,915	27.1	5.565	14	47
Mother's Age at First Birth	5,915	22.5	4.2	12	44
Number of Children Ever Born	5,915	2.49	1.594	1	13
Number of Births in Last 5 Years	5,915	1.39	0.585	1	5
Number of Births Last Year	5,915	0.315	0.468	0	2
Provincial GDP per capita (USD)	810	7252	3148	1931	20726

Source: The 2008 and 2013 waves of Turkey Demographic Health Surveys (DHS). The data on provincial GDP are obtained from the Turkish Statistical Institute.

Table 2: Effect of Financial Crisis on Birthweight

	(1)	(2)	(3)
	All Children	Low Educated Mothers	High Educated Mothers
	Dependent Variable: Birthweight (grams)		
Crisis × Provincial GDP per capita	0.011***	0.016***	-0.001
	(0.004)	(0.005)	(0.008)
Provincial GDP per capita	-0.012	-0.015	-0.007
	(0.014)	(0.017)	(0.036)
Crisis	-95.107	-136.793**	92.844
	(59.535)	(63.353)	(146.355)
Birth Order	18.013*	13.845	63.656**
	(10.031)	(10.594)	(29.617)
Father-Primary Education	33.511	53.820	-117.344**
	(62.050)	(66.253)	(49.551)
Father-Secondary Education	63.404	93.883	-46.895
	(64.856)	(72.643)	(33.196)
Father-Higher Education	37.643	31.565	84.644
	(67.633)	(71.636)	(156.438)
Mother-Primary Education	14.000		
	(42.161)		
Mother-Secondary Education	16.815		
	(44.796)		
Mother-Higher Education	77.969*		
	(42.726)		
Poorer	149.589***	142.107***	85.105
	(28.653)	(33.398)	(98.630)
Middle	189.832***	197.889***	78.796
	(45.601)	(43.545)	(119.851)
Richer	208.032***	200.880***	131.279
	(28.506)	(33.634)	(110.839)
Richest	183.578***	169.134***	93.611
	(33.117)	(42.452)	(111.186)
Rural	2.988	-12.352	77.160
	(26.800)	(30.509)	(58.020)
Girl	-137.105***	-142.395***	-151.749***
	(19.006)	(25.580)	(23.216)
Married	179.220**	59.765	449.240***
	(77.530)	(153.706)	(112.600)
Sample Mean	3243	3218	3328
Observations	5,915	4,534	1,381
R^2	0.091	0.101	0.190

Notes: In all regressions, the dependent variable is the child's weight in grams at birth. Regressions do not include preterm babies (born before 8 months of pregnancy) and multiple births. Column (1) includes all children, column (2) includes the children of mothers with secondary school education or less, and column (3) includes the children of mothers with more than secondary school education. All regressions include controls for birth order, gender, dummies of the mother's age at birth, mother's education, father's education, urban/rural residence, marital status, wealth index (richest, richer, middle, poorer, poorest), child's province of birth fixed effects, provincial GDP per capita, birth year fixed effects and province-specific time trends. Omitted categories are: Father-No Education, Mother-No Education, Formerly Married, Poorest, Urban, Boy, Province No 1: Adana. Standard errors that are clustered at the province of birth level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Results from Falsification Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	30 months before	20 months before	10 months before	Actual Crisis	10 months after	20 months after	30 months after
	Dependent Variable: Birthweight (grams)						
(Fake) Crisis x Provincial GDP per capita	-0.009	0.005	0.005	**0.011*** **	-0.001	0.001	-0.000
	(0.005)	(0.008)	(0.006)	**(0.004)**	(0.003)	(0.004)	(0.005)
Provincial GDP per capita	-0.007	-0.034	-0.032	-0.012	-0.019	-0.018	-0.019
	(0.014)	(0.030)	(0.022)	(0.014)	(0.014)	(0.014)	(0.015)
(Fake) Crisis	37.888	5.557	-56.422	-95.107	110.354**	2.345	-84.336
	(71.319)	(94.350)	(87.631)	(59.535)	(54.628)	(59.962)	(72.892)
Observations	5,915	5,915	5,915	5,915	5,915	5,915	5,915
R^2	0.090	0.090	0.090	0.091	0.090	0.090	0.090

Notes: In all regressions, the dependent variable is the child's birthweight in grams. Regressions do not include preterm babies (born before 8 months of pregnancy) and multiple births. All regressions include controls for birth order, gender, dummies of the mother's age at birth, mother's education, father's education, urban/rural residence, marital status, wealth index (richest, richer, middle, poorer, poorest), child's province of birth fixed effects, provincial GDP per capita, birth year fixed effects and province-specific time trends. Omitted categories are: Father-No Education, Mother-No Education, Formerly Married, Poorest, Urban, Boy, Province No 1: Adana. Standard errors that are clustered at the province of birth level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Effect of Financial Crisis on Birthweight by Trimester

	(1)	(2)	(3)
	All Children	Low Educated Mothers	High Educated Mothers
	Dependent Variable: Birthweight (grams)		
Exposed only in 1st Trimester x GDP	0.025***	0.043***	0.006
	(0.006)	(0.011)	(0.016)
Exposed only in 3rd Trimester x GDP	-0.011	-0.004	-0.009
	(0.008)	(0.011)	(0.012)
Exposed in 2nd and 3rd Trimesters x GDP	0.013	0.010	0.010
	(0.009)	(0.008)	(0.017)
Exposed in 1st and 2nd Trimesters x GDP	0.019**	0.019**	0.034
	(0.009)	(0.009)	(0.031)
Exposed in All 3 Trimesters x GDP	0.019***	0.020**	0.003
	(0.007)	(0.008)	(0.009)
Provincial GDP per capita	-0.013	-0.020	-0.007
	(0.015)	(0.017)	(0.035)
Exposed only in 1st Trimester	-242.154**	-381.108***	85.437
	(97.980)	(121.012)	(254.054)
Exposed only in 3rd Trimester	111.084	39.160	142.734
	(102.549)	(118.331)	(175.468)
Exposed in 2nd and 3rd Trimesters	-0.906	-7.544	-174.946
	(109.281)	(110.697)	(358.318)
Exposed in 1st and 2nd Trimesters	-14.292	-42.343	12.586
	(126.640)	(133.666)	(268.660)
Exposed in All 3 Trimesters	-54.910	-127.099	209.045
	(114.570)	(122.466)	(235.038)
Observations	5,915	4,534	1,381
R^2	0.093	0.103	0.195

Notes: In all regressions, the dependent variable is the child's birthweight in grams. Regressions do not include preterm babies (born before 8 months of pregnancy) and multiple births. Column (1) includes all children, column (2) includes the children of mothers with secondary school education or less, and column (3) includes the children of mothers with more than secondary school education. All regressions include controls for birth order, gender, dummies of the mother's age at birth, mother's education, father's education, urban/rural residence, marital status, wealth index (richest, richer, middle, poorer, poorest), child's province of birth fixed effects, provincial GDP per capita, birth year fixed effects and province-specific time trends. Omitted categories are: Father-No Education, Mother-No Education, Formerly Married, Poorest, Urban, Boy, Province No 1: Adana. Standard errors that are clustered at the province of birth level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Effect of Financial Crisis on Fertility

	(1)	(2)	(3)
	All Mothers	Low Educated Mothers	High Educated Mothers
	Dependent Variable: Number of live births per 1000 women		
Crisis × Provincial GDP per capita	1.750**	2.110**	-4.366
	(0.854)	(0.996)	(4.214)
Provincial GDP per capita	1.081	0.254	0.479
	(2.877)	(3.044)	(9.788)
Crisis	-3.186***	-3.427***	2.693
	(0.889)	(0.971)	(4.053)
Observations	9,639	9,639	8,932
R^2	0.189	0.185	0.043

Notes: The dependent variable is the number of live births per 1000 women by month by province by year. Column (1) displays results for all women, column (2) displays results for women with secondary school education or less, and column 3 includes women with more than secondary school education. Regressions control for birth year and province of birth fixed effects, provincial averages for mother's education, father's education, wealth, GDP per capita at child's birthplace, urban/rural residence, and province-specific time trends. Provincial GDP per capita is divided by 10,000. Standard errors that are clustered at the province level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Effect of Financial Crisis on Abortion

	(1)	(2)	(3)
	All Mothers	Low Educated Mothers	High Educated Mothers
	Dependent Variable: Had an Abortion		
Crisis × Provincial GDP per capita	-0.053***	-0.055***	-0.092***
	(0.013)	(0.016)	(0.029)
Provincial GDP per capita	0.107	-0.009	0.332**
	(0.075)	(0.082)	(0.150)
Crisis	-0.059***	-0.045***	-0.072
	(0.016)	(0.017)	(0.048)
Observations	6,615	5,068	1,547
R^2	0.166	0.170	0.263

Notes: The dependent variable is a dummy variable indicating whether the pregnancy was terminated through abortion or completed to full term. Column (1) includes all children, column (2) includes the children of mothers with secondary school education or less, and column (3) includes the children of mothers with more than secondary school education. All regressions include controls for dummies of the mother's age at birth/abortion, mother's education, father's education, urban/rural residence, marital status, wealth index (richest, richer, middle, poorer, poorest), province of birth fixed effects, provincial GDP per capita, year fixed effects and province-specific time trends. Omitted categories are: Father-No Education, Mother-No Education, Formerly Married, Poorest, Urban, Province No 1: Adana. Provincial GDP per capita is divided by 10,000. Standard errors that are clustered at the province level are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 7: Effect of Financial Crisis on Birthweight: Mother Fixed Effects Models

	(1)	(2)	(3)
	All Children	Low Educated Mothers	High Educated Mothers
	Dependent Variable: Birthweight (grams)		
Crisis x Provincial GDP per capita	0.019	0.020	0.017
	(0.039)	(0.038)	(0.169)
Provincial GDP per capita	0.018	0.027	-0.122
	(0.108)	(0.118)	(0.430)
Crisis	-125.695	-144.394	-159.735
	(411.396)	(428.992)	(1,847.726)
Observations	5,915	4,534	1,381
R^2	0.905	0.903	0.958

Notes: In all regressions, the dependent variable is the child's birthweight in grams. Regressions do not include preterm babies (born before 8 months of pregnancy) and multiple births. Column (1) includes all children, column (2) includes the children of mothers with secondary school education or less, and column (3) includes the children of mothers with more than secondary school education. All regressions include controls for birth order, gender, dummies for mother's age at birth, mother fixed effects and birth province fixed effects and provincial GDP per capita at child's birthplace, and province-specific time trends. Omitted categories are: Boy, Province No 1: Adana. Standard errors that are clustered at the province of birth level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A1: Effect of Financial Crisis on Prenatal Care

	(1)	(2)	(3)
	All Children	Low Educated Mothers	High Educated Mothers
	Dependent Variable: Had Prenatal Doctor Care		
Crisis × Provincial GDP per capita	-0.013	-0.003	-0.062***
	(0.015)	(0.022)	(0.021)
Provincial GDP per capita	-0.129**	-0.125*	-0.240***
	(0.057)	(0.076)	(0.071)
Crisis	0.024	0.009	0.105***
	(0.023)	(0.028)	(0.034)
Observations	4,895	3,676	1,219
R^2	0.126	0.141	0.163

Notes: In all regressions, the dependent variable is a binary indicator for the mother's prenatal care utilization during pregnancy. Regressions do not include preterm babies (born before 8 months of pregnancy) and multiple births. Column (1) includes all children, column (2) includes the children of mothers with secondary school education or less, and column (3) includes the children of mothers with more than secondary school education. All regressions include controls for birth order, gender, dummies of mother's age at birth, mother's education, father's education, urban/rural residence, marital status, wealth index (richest, richer, middle, poorer, poorest), child's province of birth fixed effects, provincial GDP per capita, birth year fixed effects and province-specific time trends. Omitted categories are: Father-No Education, Mother-No Education, Formerly Married, Poorest, Urban, Boy, Province No 1: Adana. Provincial GDP per capita is divided by 10,000. Standard errors that are clustered at the province of birth level are in parentheses. p<0.01, ** p<0.05, * p<0.1.