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ABSTRACT

Son Targeting Fertility Behavior in Albania

The collapse of communism led to highly skewed sex-ratios in Albania, which had a long patriarchal tradition before the advent of communism. While the use of sex-selective abortions in the region is well-known, little is known about other forms taken by revealed son preference, such as differential stopping behavior and birth spacing. Using data from the Demographic Health Surveys in 2008-2009 and 2017-2018, we find evidence of a higher proportion of boys being born at the last parity, indicating that parents practice differential stopping behaviour. Using Cox Proportional Hazard model and logit; we also show that in son-less households parents shorten the birth intervals significantly, endangering mothers' and children's health. We conclude that differential stopping behaviour and short birth spacing are prevalent in all regions and across the socio-economic spectrum.

JEL Classification: J13, J16

Keywords: Albania, birth spacing, differential stopping behaviour, fertility behaviours, son preference

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1 Introduction

Albania has seen dramatic changes in its social, economic and political environment over the 20th century. Before the advent of communism, Albania was a feudal society with a strong patriarchal structure. In 1947, the new communist government launched a continued effort to modernize the economy and society by, notably, promoting gender equality and empowering women, such as policies encouraging female labour force participation in all domains, educational attainment and the opening of childcare centers (Xheraj, 2016). With the collapse of communism in 1991, Albania entered a new era in which traditional patriarchal norms could re-emerge freely (Young, 1999). One of the first policies of the newly elected government was to legalize abortion in 1991, at a time when ultrasound technology was already available[1] and able to detect fetuses' sex. The re-emergence of patriarchy, the changes brought by the transition to a market economy, and the technology to engineer the sex-ratio built the path for sex-selection to take place on a large scale.

While sex-selective abortion is the most infamous technique to implement son preference, preference for sons can be revealed in multiple ways, notably, in fertility decisions and the allocation of resources. In this paper, we focus on differential stopping behaviours and birth intervals. While the literature has already well established that sex-selective abortions are common in Albania (Guilmoto et al., 2012, 2018), evidence is missing about the other consequences of son preference, with the notable exception of some preliminary work on parity progression, health, nutrition, education, employment and gender roles in Grogan (2018).

Differential stopping behaviour takes place when parents continue childbirth until the desired number of sons is being born. As a result, the average girl is born in larger families than the average boy. Thus, even if parents do not discriminate among their children, girls receive fewer resources on average than boys due to the famous quantity-quality trade-off (Becker, 1960). Differential stopping behaviour has been found to be prevalent in many countries with strong son preference, such as India (Clark, 2000; Barcellos et al., 2014) and Taiwan (Chen et al., 2019), but also in countries where sex preference is not salient such as the USA (Dahl & Moretti, 2008; Blau et al., 2020). The only research on differential stopping behaviour in Albania is an unpublished work, Grogan (2018), that analyzes how a firstborn son affects the probability of a second male birth, and in separate regressions, the probability of a male birth at third parity and of a male birth at fourth parity. By doing so, two different research questions are jointly analyzed, namely the use of sex-selective abortions that increase the probability of giving birth to a son, and the progression to the next parity. It is thus unclear how the results should be interpreted.

In addition to differential stopping behaviour, we also study birth intervals that we define as the time elapsed between subsequent births. While the literature has well-established the prevalence of this strategic fertility behaviour in a wide range of countries, it has never been done for Albania. In countries with strong son preference, the literature has found that parents shorten birth intervals after the birth of a daughter, in the quest for a son (Arnold, 1997; Rahman & DaVanzon, 1993), as well as in countries with no other indications of son preference, such as Senegal (Lambert & Rossi, 2016). While seemingly benign, such behaviours can significantly increase health risks for both mother and children. The medical literature clearly shows that birth intervals of less than 33 months from birth to birth (equivalent to 24 months interval between birth and conception) have a detrimental effect on the mother, the previous child and the subsequent child (Molitoris et al., 2019). The risks increase sharply as the birth interval is reduced. Birth intervals of less than 15 months from birth to birth increase notably the risk of maternal morbidity, child mortality, small size for gestational age, miscarriages and stillbirth (World Health Organization, 2005). The consequences on the previous child are mostly via shorter breastfeeding period, which is known to have tremendous negative effects on child health (Victora & Rollins, 2016).

In this paper, we test, for the first time for Albania, the presence of birth spacing and re-visit more carefully differential stopping behaviour by using two waves of the Demographic and Health Surveys (DHS). This data set is nationally representative and contains a detailed birth history that is fundamental for this analysis. To analyze differential stopping behaviour we present a cross-tabulation of the proportion of sons born by parity and number of children born in a family, and compare these to the natural sex ratio at birth. To analyze birth spacing, we use a Cox Proportional Hazard model and a logit model to understand how birth intervals are affected by the sex composition of previously born children. While the former tells us whether parents are speeding in the quest for a son, the latter speaks to whether this poses elevated health risks.

As expected, we find evidence that differential stopping behaviour and short birth spacing in the quest for a son are common in Albania. There is thus evidence that Albanian parents' preference for sons is taking more forms than just sex-selective abortions. More surprisingly, despite stark regional differences and breathtaking socio-economic changes, we find evidence that differential stopping behaviour and short birth spacing are prevalent in all Albanian regions, in urban and rural areas and across the different education levels. That result is surprising and worrying, given that usually, the elites (the most educated, in urban areas) would be the first to transition to more gender-equal preferences before the norms in rural areas start changing. Given the similarities across all socio-economic groups, we can speculate that we will not see a switch to more gender-equal preference in the near future in Albania.

The remaining of this paper is organized as follows. In section 2, son preference in Albania is discussed, followed by the data and estimation strategy in section 3. Section 4 presents the results for differential stopping behaviour and birth spacing. Finally, section 5 concludes.

2 The Albanian Context

Albania became a communist country in 1944 and the totalitarian regime that governed for half a century was unique in many aspects (Barr et al., 2014). The country was a closed economy and isolated from other countries, except for the former USSR and China for a limited period of time.

Albania emerged from communism in 1991, followed by a long transition period. In 2020, Albania was still one of the countries with the lowest GDP per capita in the region (USD 5,246, see Figure 1 and World Bank (2021a)). Despite nearly universal literacy rate (INSTAT, 2021), about half of the prime-aged population have at most a lower secondary education. The quality of education, as measured by PISA scores, also remains below the OECD average (OECD, 2018).

Located in the Balkans, a region that has historically been prone to conflict, Albanians have a strong patriotic identity. Family ties are important and men play the predominant role in society. Sons are often considered more desirable than daughters (Murzaku & Dervishi, 2003). For example, the first wish made to a woman in Albania when one learns of the pregnancy is "God bless you with a baby boy!".

Together with the fall of the communist regime in 1991, one of the most important socio-economic changes that happened in Albania in the second half of the 20th century was internal and international migration, both prohibited by law during communism.[2] Internal migration was massive and is described as a rural exodus. In Figure 1 we plot the share of the urban population in relation to the rural population over time. Unlike other migration trajectories, Albanian internal migrants typically bypassed secondary cities. Their destination was the capital city that also served as a transition point to migrating abroad (Lerch, 2016). Albanian international migration started off as highly gendered during the 1990s (King & Vullnetari, 2009) and mostly originated from the rural areas of Albania (Lerch, 2016; Seidu et al., 2019). A common pattern is for men to emigrate first and, after a few years, bring their families to the host country through family reunions. However, even more common is for men (the father and his adult sons) to emigrate and send remittances to their families back in Albania. With remittances equivalent to 20% of GDP during those years (Lerch, 2013) and over one million emigrants to the top five destinations for a population of slightly over 3 million in 2015 (Seidu et al., 2019; UNICEF, n.d.), the role of emigration in the Albanian economy cannot be understated. The gendered immigration pattern reinforces the breadwinner role of men in society and thus son preference.

[Figure 1 about here]

In the early transition years when the rule of law was weak, gendered emigration lead to a new struggle for women. Indeed, in Albania, a father is considered the main protective figure in the family followed by older brothers. As fathers and, often, older brothers depart to find employment abroad, women are left unprotected, especially in rural areas. The kidnapping of young women for the purpose of sexual exploitation became endemic. Albania was one of the main sources of prostitutes in Europe (Arsovska, 2013), with Albanian prostitutes in the EU estimated to be roughly equal to one percent of the Albanian population (ABC News, 2006). To lure victims, promises of a false marriage (Hook et al., 2006) or employment were often made (UN Women, 2016). Upon return to Albania, the trafficked victims usually have no chance of a normal life. Indeed, it is common for their families and communities to view trafficked victims as women of low moral values (Hook et al., 2006; Ramaj, 2021). The stigma attached to human trafficking also tarnishes the victims' family reputation, with notably sisters considered unmarriageable. The risk of human trafficking is thus another reason for Albanians to avert the birth of a daughter.

Albania is a patriarchal and patrilocal society. Upon marriage, the bride moves in with her in-laws. While older brothers will usually eventually move out to set up an independent household, the youngest son and his wife will continue to cohabit with elderly parents even if they are at a relatively young age with no health or physical limitations. Until the 2000s, this was the norm, even in the cases of wealthy families that could easily afford to buy or rent a separate dwelling for the young couple. Cohabiting with the husband's parents used to be perceived as a compulsory cultural honor and respect for the parents. However, cohabiting with the wife's parents is, to this day, perceived as a disgrace, even for sonless elderlies. This custom is nowadays less prominent in Tirana but remains the norm outside of the capital. It is important to note that a daughter supporting her parents in old age is not frowned upon, as is for example the case in India. But, while looking after her in-laws is considered a duty, looking after her own parents is simply an expected behaviour.

Cohabitation before marriage was considered a criminal offence during communism years (Kadi, 2014) and was frowned upon during the early post-communism years (Murzaku & Dervishi, 2003). Therefore, to this day, cohabitation before marriage remains uncommon in Albania (5% cohabit in 2014 (Hagen, 2016)). Weddings are a big celebration and involve both families. The bride's trousseau includes mainly the bride's own clothes, some household linen and embellishments. It also may include small gifts (e.g. cloth napkins, socks, etc.) to the groom and his family. According to an old custom that is no longer followed since the 2000s, the trousseau was normally displayed to all the guests. The trousseau is a small expense compared to the gifts and expenses that the groom's family undergo to marry their son and, usually, equip and furnish the "bride's room" in their household. Unlike the bride prize (observed during pre-communism years in rural areas), dowry has never been part of Albanian traditions and is thus not a reason to avert a daughter's birth.

It is important to note that just like dowry, religion, another common factor known to intensify son-preference and fertility, does not apply to the Albanian case. Albania has a very tolerant religious climate. Today, 65% of Albanians declare to be Muslim, 20% Christian Orthodox and 15% Catholic (Schwartz, 2009). The communist regime abolished religion and prohibited by law religious practices in 1945. In 1979, Albania was declared the first atheist country in the world (Balkan Insight, 2019). Across centuries, the Albanians have also been obliged to change religious affiliation from Catholicism to Islam during the Ottoman Empire invasion, and as a result, learnt to switch or follow more than one religious affiliation (one imposed and one preferred). The repeated coercion lead to a faded role of religion in the life of Albanian people, and also lead Albanians to give importance to spiritual faith over belonging to a particular religious denomination (Durham, 1910; Young, 1999).

In Albania, the married woman adopts her husband's last name by default, and so do her children. Traditionally, the youngest son cohabiting with the parents inherits the family home. Mandro-Balili (2016) reports that, in wills, daughters are usually excluded or receive a smaller share of inheritance than sons. In addition, when a couple cohabits with the husband's parents, a common practice, in the event of the husband's death, the wife does not inherit, as the wealth accumulated during marriage is usually registered under the name of her parents-in-law. Having at least a son is still considered important so that the family name lives on, the bloodline continues, and the wealth stays within the family. Indeed, wealth inherited by daughters is considered as moving to a different family as the married daughter is considered part of her affinal family tree.

Hook et al. (2000) documents a high rate of domestic violence, with an average of one-third of Albanian women reporting domestic violence. In rural areas, this share increases to half. Burazeri et al. (2005) estimate that 37% of women in Tirana experience domestic violence from their intimate partner. The risk of violence increases if women are more educated than men and if men are of rural origin and spent their childhood upbringing years in rural areas (Burazeri et al., 2005). This is, in particular, true for the northern part of Albania, where Kanun, an old customary law (MAHR, 1996; Murzaku & Dervishi, 2003), gives the right to fathers, brothers and husbands to mistreat women if they "misbehave." Even nowadays, talking publicly about domestic problems is taboo and, as a result, women remain silent about domestic violence (INSTAT, 2021, p.128). However, as shown in Hook et al. (2000), women do not want their daughters to suffer violence as they do, giving another reason for women to prefer sons.

As nicely put by Duthe et al. (2012), for sex-selection to take place, parents need "the *desire* to have a son, the *need* to act, and the *means* of action". While we have just discussed the *desire*, we still need to show the *need* and the *means*, to which we turn next.

Starting with the *need*, the fertility rate in Albania decreased tremendously over the last few decades. Indeed, at the end of World War II, the fertility rate was six children per woman (Falkingham & Gjonca, 2001). But, following a series of policies implemented in the early 1950s to increase the labor force participation of women by improving their educational attainment and status in society[3], the fertility rate dropped to around 3 children per woman. Fertility decreased further to 1.7 children per woman by 2005 (Gjonca et al., 2008; Guilmoto & Duthe, 2013), and the most recent statistics are for 2020 with a mere 1.34 children per woman (INSTAT, 2021). Doubtless, one contributing factor is an increasing trend in the average age of women at first marriage and birth of their first child (see Figure 2). The dramatic decrease in fertility has reduced the probability of not having at least one son from slightly over 1% (assuming a sex ratio at birth of 105 boys per 100 girls and parity of six) to a probability of 24% (assuming a parity of two). The *need* to engineer the sex-ratio was thus set.

Finally, the *mean* of sex-selection was greatly enhanced in 1991. Indeed, until the advent of sex-selective abortions parents had only folk methods to try to engineer, unsuccessfully, the sex-ratio among their offspring. For example, it is a common practice to bring a boy along the day the groom comes to pick up his bride at her parents' home. On the same day, when the bride comes to her in-law's home, it is common to throw the same boy on the couple's bed as good luck for bearing male offspring.

The decreasing trend in fertility, combined with the legalization of abortion in 1991, the availability of fetus' sex revealing technology in a society with strong underlying son preference put in place the necessary conditions for an increase in revealed son preference.

As a result, the male-to-female sex ratio at birth quickly increased after the collapse of communism. Figure 3 plots the trajectory that the sex-ratio at birth has followed in the past three decades. The sex-ratio at birth reached a peak in 2007, at 112 boys per 100 girls, far above the natural sex-ratio at birth of 104 to 107 boys per 100 girls (Chahnazarian, 1988). In 2019, the latest year for which data are available, the sex-ratio at birth in Albania was 108.4 boys per 100 girls, still well above the natural upper bound. There is thus no doubt that sex-selective abortions are prevalent in Albania.

[Figure 3 about here]

There is also evidence that differential stopping behaviour is practised. Using the 2001 Albanian Census data, Guilmoto et al. (2012) show that based on parity progression ratios, women that had two daughters or more were twice as likely to have another child as women that had at least a son. For children born after at least two sisters, the sex-ratio at birth increased from 105 to 115 between 1994–2001 and is positively related to income. Grogan (2018) shows that for women with primary education having a firstborn son decreases their probability of having another birth by 3%. In this paper, we present more evidence of differential stopping behaviour by calculating the percentage of sons by parity for different socio-economic groups, regions and time periods, before studying the practice of shortening birth spacing in the quest for a son.

3 Data and Estimation Strategy

We use data from all the Demographic and Health surveys currently available, namely, the 2008–2009 wave and the 2017–2018 wave. The Demographic and Health surveys are nationally representative surveys comprising of 7,584 women aged 15 to 49 years old in the first wave and 15,000 women aged 15 to 49 years old in the second wave. The sample was selected using a weighted, multi-stage, stratified cluster sampling method, common to all Demographic and Health Surveys.

The Demographic and Health Survey contains a detailed birth history for each woman, with multiple prompts used to ensure that all events are recorded (including the time of child death, if any). We are thus able to reconstruct the family composition at the time of conception for each child. After cleaning the data, we have over 14,000 births having taken place over the period 1976 to 2018 from slightly over 11,000 women having given birth at least once.

To assess if differential stopping behavior is prevalent in Albania, we calculate the percentage of sons born at each parity for women with a given number of children. If the percentage of sons is elevated at the last parity, it indicates that differential stopping behaviour is practised.

As for birth spacing, we follow the estimation strategy commonly used in the literature, namely, Cox Proportional Hazard Model and Logit (Finnäs et al., 2018; Rossi & Rouanet, 2015).

The Cox Proportional Hazard Model estimates the hazard that a woman will give birth to a child, controlling for the sex of her previous children and basic socio-demographic characteristics. Specifically, we estimate the following model:

$$h(t) = h_0(t) \exp(\mathbf{E}\beta + \mathbf{X}\gamma + \mathbf{P}\delta + \epsilon_i) \tag{1}$$

with: $h(t)$, the instantaneous rate (hazard) of having another child for respondent i at time t; $\mathbf{E}$, a vector of sex compositions of older siblings' variables; $\mathbf{X}$, a vector of socio-economic characteristics; $\mathbf{P}$ a set of regional fixed effects; and, ϵ, the error term. β, γ

and δ are vectors of coefficients to be estimated.

Starting with the vector **E**: As it is not clear if what matters is the sex of all previous children or only the sex of the previous child, we estimate the model with two different definitions of the sex of previous children. In the first specification, we assume that what matters is the sex of all older siblings alive at the time of conception. We thus distinguish between women at different parity levels (1, 2 or 3) who have only sons (S), only daughters (D) or mixed sexes children (M). In the second specification, we assume that what matters is the sex of the previous child still alive at the time of conception. Indeed, if the parents were hoping the previous child to be a son, they are more likely to continue to the next parity. We thus control for a set of dummy variables, differentiating between women at different parity (1, 2 or 3) who had a boy (B) or a girl (G) at the previous parity. So for example, a woman who has two children and whose last child was a girl will be denoted as 2G.

As for the socio-economic variables, **X**, we control for the mother's age at first birth (in level and squared), the mother's highest level of education (no education, primary education – the reference category, secondary education and higher education), the father's highest level of education (no education, primary education – the reference category, secondary education and higher education) and the place of residence (urban and rural – the reference category).

Finally, vector **P** controls for region fixed effects, namely, Coastal region, Central region, Mountains region and urban Tirana (the reference category). The standard errors are corrected for clusters at the primary sampling unit.

Hazard ratios are presented in the regression tables. The hazard ratio is defined as the ratio of the hazard[4] of a person with a set of characteristics to the hazard of a person with the base characteristics over time. A hazard ratio above 1 indicates that the variable increases the hazard. For example, if the hazard ratio for a sibling group A is 1.1, this means the hazard for that sibling group is 10% higher than for the reference category. A ratio below 1 indicates that the variable reduced the hazard. Thus, if the hazard ratio for the sibling group B is 0.8, this means the hazard for that sibling group is 0.8 times lower than the hazard faced by the reference category.

While the Cox Proportional Hazard model can tell us if parents speed up in the quest for a son it, however, cannot tell us if mothers and children are at higher health risk as a result. Two logit models are thus estimated with the same explanatory variables as before. In the first model, the dependent variable, $\mathbf{Y}$, takes the value of 1 if the birth interval (birth to birth) is 15 months or less (5% of preceding birth intervals in our sample [weighted]), and 0 otherwise. In the second model, the dependent variable takes the value of 1 if the birth interval is 33 months or less (39% of the preceding birth intervals in our sample [weighted]), and 0 otherwise in an alternative specification. Remember that the World Health Organization particularly warns against birth intervals of less than 15 months as such intervals result in a significantly higher risk of miscarriages, stillbirth, prematurity, low birth weight, small size for gestational age, maternal morbidity and mortality (World Health Organization, 2005). While birth intervals of less than 15 months are particularly dangerous, the World Health Organization recommends parents to space births by at least 33 months for optimal health outcomes for mothers and children. We thus follow the literature and use the standard cut-off of 15 and 33 months. Specifically, the following model is estimated using a logit estimator, with the variables as described above and ζ, the constant, and η, θ and κ, vectors of coefficients:

$$Y_i = \zeta + \mathbf{E}\eta + \mathbf{X}\theta + \mathbf{P}\kappa + \epsilon_i \tag{2}$$

It should be noted here that the results for both the Cox Proportional Hazard model and the logit are lower-bound estimates given the high prevalence of sex-selective abortions in Albania. Indeed, if a couple tries for a son but conceives a female fetus instead, and if the couple decides to abort the female fetus, this will automatically result in a longer observed birth interval, as we have information only on children born alive. Thus, parents proceeding to the next parity in the quest for a son will have, on average, longer birth intervals when practising sex-selective abortions, biasing our results downward.

As abortion was legalized in 1991 and ultrasound was already available at that time in Albania, the options available to women having started their fertility history in the 1990s is different than for those having had their first child at an earlier time. Therefore, we split the sample into three categories, 1976 to 1990, 1991 to 2000 and 2001 to 2018.

Descriptive statistics are presented in Table 1. The data confirms that Albania is still a mostly agrarian society, the vast majority of its population has some education, even though more than half of the population has only completed primary education. Age at first birth remains low at 22 years, and the typical woman in our sample has 3.1 children. As only 3% of the respondents have more than 4 children, we restrict our sample to women who had at most 4 children.

[Table 1 about here]

4 Results

4.1 Differential Stopping Behavior

Before the advent of sex-selective abortions, parents had limited ability to obtain the sex composition they wanted. Aside from sex-selective infanticide and abandonment, the only other reliable method was to continue childbearing until a son is born. This method, known as differential stopping behaviour, does not affect the sex ratio at birth in the population but results in girls being born in larger families. As parents have limited resources, such as time and financial resources, higher sibships result in fewer resources per child, putting girls at a disadvantage, even without overt gender discrimination.

A simple method to identify differential stopping behaviour is to look at the percentage of sons born at different parity for different family sizes. If the percentage of sons is higher at the last parity than at earlier parities, parents are more likely to stop childbearing after the birth of a son. As we do not know which families are right-censored and will continue childbearing after the data collection, we need to use all households and keep in mind, while interpreting the results, that the estimated percentage of sons at last birth is a lower bound estimate.[5]

To interpret the results, it is important to remember that the natural sex ratio at birth ranges from 104 to 107 boys per 100 girls, equivalent to, at most, 51.7% boys. Thus, without discrimination, it is expected that at most 51.7% of children at the final parity reached by a woman will be male. If not the case, it can be either because parents use sex-selective abortions or because parents are more likely to stop childbearing once they have reached their target number of sons. That said, we know that at its peak, in 2007, the sex ratio at birth in Albania was 112 boys per 100 girls (World Bank, 2019), which is equivalent to 52.8% boys.

Table 2, Panel A presents the results for the whole sample. The percentage of sons at last parity for families with 3 or 4 children is always significantly higher than for the previous parities. This result also holds when the data is disaggregated by period. It is also interesting to note that for families with 3 or 4 children, the proportion of boys is well below 51%, the minimum natural sex ratio at birth for all parities except the last. We reach the same conclusion when the data is disaggregated by sub-periods.[6] Those two sets of results confirm that parents are more likely to continue childbearing in son-less households.

For households with at most two children, for all years and all parities, the proportion of sons is well above the natural sex-ratio at birth. Before 2001, the proportion of sons oscillates around 60% (57.60% to 67.57%), implying a sex ratio of 150 boys per 100 girls. We, however, observe a significant decrease in later years, as the proportion of sons for all parities among households with at most two children oscillate around 53%, implying a sex-ratio of 113 boys per 100 girls. As the fertility rate has sharply decreased over time, prior to 2001, the rare households that will stop with only one or two children were disproportionately those with sons. As in recent years the fertility rate is well below 2 (see Figure 3), some households with only girls may decide to stop after 1 or 2 children, as the priority has shifted from ensuring sons to limiting the family size. That said, given that the sex-ratio remains elevated at last parity still nowadays, some households are still willing to continue childbearing in order to secure a son.

When the sample is disaggregated by rural/urban location, urban born/rural born city dwellers, region and education level, the same pattern as for the whole sample is observed (results available on request). The only difference worth mentioning is for urban areas, women with secondary education or higher, and for urban Tirana. For those three sub-samples, we observe a proportion of males at first births of around 57%, followed by a much lower sex-ratio at the second parity in households with only two children. That pattern is highly unusual and might indicate that sex-selective abortion occurs in those sub-groups at first parity when parents are willing to limit childbearing at most to two children. This surprising result is in line with the most recent evidence from Albania's Institution of Statistics (INSTAT). Indeed, using administrative data from birth registries, INSTAT (2020, see pg. 24) and INSTAT (2021) also report for 2019 a high sex-ratio at birth of 110 at parity 1 that decreases for parity 2 and increases back to up to 120 for parity 3 and parities 4 and above. From our results, we can infer that the INSTAT results are likely driven by most-educated women and women in urban areas.

[Table 2 about here]

4.2 Birth Spacing

Parents may not only continue childbearing until a son is born, but they may also speed up in the quest for a son. As previously mentioned, short birth intervals have negative health consequences for the mother, the previous child and the subsequent child.

In Table 3, we present results from a Cox Proportional Hazard model. In Panel A, the sex composition of all previous children is taken into account with, for each parity, respondents split between those with only daughters (D), only sons (S) and mixed-sexes children (M). In Panel B, only the sex of the previous child is accounted for, again by parity, with either a boy being born (B) or a girl being born (G) at the last parity. Thus, for example, a family with a firstborn daughter followed by a son is considered as 2M in specification 1 but as 2B in specification 2.

Hazard ratios are presented in Table 3. As previously mentioned, the hazard ratio is defined as the ratio of the hazard[7] of a person with a set of characteristics to the hazard of a person with the base characteristics over time. A hazard ratio above 1 indicates that the variable increases the hazard. A ratio below 1 indicates that the variable reduced the hazard.

In our case, it is only for households at parity 1 with one daughter that the comparison with the reference category (household at parity 1 with one son) is sensible. Indeed, as parity progresses, a higher proportion of parents will choose to not proceed to the next parity. As a result, the hazard ratios are significantly lower at higher parity than at lower parity. The meaningful comparison is thus, boy versus girl, for a given parity. If the hazard ratio is lower for boys than for girls at a given parity and the relevant t-test is significant, this indicates that the parents are eager to speed up in the quest for a son.

Starting with Table 3, Panel A, we can see that, for all parities, and for all years, parents with only sons have significantly longer birth intervals than parents of only daughters. The difference between only sons family and only daughters family is large. For example, at parity 1, for all years, mothers with a firstborn daughter have a 37% higher hazard of giving birth than mothers with a firstborn son, everything else constant. We reach the same conclusions when we control for the sex of the last birth only (Table 3, Panel B).

Another interesting comparison is between households with only sons and households with mixed sexes, for a given parity. While in many Western societies it has been found that parents with only sons (or only daughters) are more likely to continue till the next parity (for Canada, see McDougall et al. (1999), for Denmark, see Jacobsen et al. (1999), for Germany, see Hank & Kohler (2003)), we do not observe such a desire for mixed sexes in Albania. Indeed, we find no statistically significant differences between households with only sons and households with mixed sexes, for a given parity (the t-test p-value reaches statistical significance, at 0.09, only for parity 3 in the all years sample and in the 1991-2000 sample).

[Table 3 about here]

The limit of the Cox Proportional Hazard model is that it cannot tell us if son preference increases the proportion of risky birth intervals. To answer this question we turn next to a logit model.[8] The dependent variable takes the value of 1 if a birth took place within 15 months from the previous birth and 0 otherwise (Tables 4 and 5, Panel A). Such short birth intervals are considered high risk by the World Health Organization. We also look at birth having taken place within 33 months of the previous birth, which the World Health Organization considers too short to result in optimal health outcomes (Tables 4 and 5, Panel B).

Odds ratios are presented in tables 4 and 5. An odd is by definition the ratio of the probability of success on the probability of failure, while an odds ratio is the ratio of two odds. Thus, for example, if we obtain an odds ratio of 1.3 for 1D, as in Table 4 Panel A, this indicates that the odds of being followed by another birth within 15 months is 1.3 larger than for the reference category, 1S. As was the case for the Cox Proportional

Hazard model, the comparison to the reference category is meaningful only for 1D. To test if girls are more likely to be followed by a short birth interval than boys, we thus need to perform a t-test, at each parity, comparing the odds ratio for boy-only and for girl-only families.

Starting with birth intervals of less than 15 months, the pattern is inconsistent across years. Indeed, while for all years (Column 1) and the period 1991-2000 (Column 3), we find a statistically significantly higher coefficient for households with a first-born daughter compared to a first-born son; for all other years and parity, no statistical significance is found. That holds for both specification 1 (Table 4) and specification 2 (Table 5). The only difference between the two specifications is for parity 3 in specification 2 for which we find a statistically significant difference between households with a son at last birth and households with a daughter at last birth. Thus, there is little evidence that parents shorten so much birth spacing after the birth of a daughter to significantly endanger mother and children.

That said, looking at birth intervals of less than 33 months, which are considered too short to be optimal, we see that parents are willing to shorten birth intervals in son-less households, at least until parity 3 (Table 5, Panel B) and when the previous child was a daughter (Table 4, Panel B). As time passes, however, we lose statistical significance for higher parity in specification 2. This might be due to the drastic drops in fertility in recent years, which likely cause parents to be reluctant to continue childbearing in the quest for a son.

An alternative way to present the results from the *logit* specification is to calculate the predicted probability for a typical woman. Our typical woman is a woman from the Central region, whose age at first birth was 22 years old and who, and her husband, have only completed primary education. The results are presented in Table 6 (specification 1) and Table 7 (specification 2). The results can be interpreted as follow. For a woman with one son only (parity 1, column boy), the probability of giving birth within the next

15 months is of 4.81% compared to 6.61% for a woman with only one daughter (the difference is however not statistically significant). As before, while we do not see much differences for birth intervals of less than 15 months, a woman with a firstborn daughter is 11 percentage points (or 26%) more likely to have another child within 33 months or less than a woman with a firstborn son. The percentage point difference between women with only sons and only daughters reduce with higher parity but, still at parity 4, it remains 6 percentage points (or 18%) higher for sonless women.

Thus, while parents are not willing to accept extremely short birth intervals, of less than 15 months, in the quest for a son, they are willing to accept short birth intervals, of less than 33 months, to secure a son.

[Tables 4 to 7 about here]

4.3 Birth Spacing across Space and Education Level

It is plausible that parents in urban areas and in the most developed regions may have a different preference for sons or different ways to articulate their preference for sons than parents in rural areas and in more remote regions. To see if this is the case, the Cox Proportional Hazard model was re-estimated separately for urban and rural areas, as well as for the four Albanian regions, that is, Coastal, Central, Mountains and urban Tirana.

The results, presented in Table 8, are surprisingly consistent. In all regions, from urban Tirana to the Mountains, parents are eager to speed up for a son. Similarly, parents speed up for a son in both urban and rural areas. This result, in line with our findings for differential stopping behaviour, is surprising. It is also worrying, as it is common for son preference to first abate in the urban areas before abating in rural areas (Chung & Gupta, 2007; Jensen & Oster, 2009). Similar conclusions are reached using the logit model (results available on request).

[Table 8 about here]

In the same way, when we distinguish between women who have completed at most primary education with women who have completed at least secondary education or higher in the Cox Proportional Hazard model (Table 9), the conclusions are the same irrespective of the education level. Similar results hold in the logit model (results available on request).

[Table 9 about here]

5 Conclusion

There are numerous factors that may bring about and reinforce son preference in a society. Unlike some other societies with strong son preference, such as India, in Albania, son preference is not related to marriage expenses or dowry; it is not related to religion either. Rather, this preference is rooted deep in the traditions of the Albanian people. In the early 20th century, Durham (1910) observes that the Albanian tribes considered the birth of a daughter a misfortune. Having a son meant having the support needed to provide for and protect the tribe, but also the continuation of the bloodline that was of primary importance for a nation that faced survival threats in a hot war zone such as the Balkans.

Half a century later, the dictator Enver Hoxha, recognized the labor force potential of women and the importance of gender balance in society. A series of policies and propaganda to improve the status of women was implemented (Gjonca et al., 2008; Xheraj, 2016). Participation in labor force was mandatory and as a result high in communism, but as soon as the regime changed, the status of women as homemakers and primary caregivers (children and elderly) was restored, resulting in a substantial decrease in their labor force participation from 67% in 1992 to a low 50% in 2014 (World Bank, 2021b; Lerch, 2016). The developments during the early post-communism transition years may also have contributed to reinforcing the preference for sons. Migration, sex trafficking of women, and domestic violence are arguably among the most salient reasons.

It is well-known from the literature that sex-selective abortions are commonly used in Albania. However, little is known about other consequences of son preference on fertility behaviours to this date. Using data from two Demographic and Health Surveys, we demonstrate that differential stopping behaviours and shortening birth spacing are routinely practised in the quest for a son. Those two fertility behaviours are practised across the socio-economic spectrum, in all Albania regions, in rural and urban areas, and across time.

In terms of differential stopping behaviours, prior to 2001, we find a very high proportion of sons in households who stopped after one or two children. After 2001, and a dramatic decrease in fertility rate, we observe a smaller proportion of sons in households who stopped at parity one or two, likely due to more families deciding to stop fertility after one or two children, irrespective of the sexes. There is, however, still a proportion of sons well beyond the natural range in all households, at last parity, indicating that the practice of differential stopping behaviour is still present in recent years.

Another important finding is for households with two children in urban areas, Tirana and among women who completed at least secondary education. For these households, we see a very high percentage of sons at first birth, followed by a lower percentage of sons at second birth. That might indicate that sex-selective abortions are practised at first parity for these specific socio-economic groups while more parents let chance determine the sex of the second child. Such a practice is unusual. Indeed, a well-acknowledged fact in the literature is that sex-selective abortions at first parity in uncommon. More research on this issue is required.

Using Cox Proportional Hazard models, we show that son-less parents and parents with a daughter at last parity have significantly shorter birth intervals than parents of only sons. This result, again, holds in all regions, in urban and rural areas, and across different levels of education. We, however, find no evidence that parents with only sons speed up in the quest for mixed-sexes, as is common in many Western countries.

Finally, as extremely short birth intervals, of less than 6 months between birth and the next conception, are very rare in Albania, we do not find evidence that the desire for sons results in a significant increase in the proportion of those extremely short birth intervals. We, however, find evidence that short birth intervals of less than 33 months are more common in sonless households, increasing health risk for mothers and children.

While in this article we have focused exclusively on the fertility consequences of son preference, son preference can have much broader ramifications. For example, son preference has been shown to have long-term implications in the cognitive development of children. Indeed, Dossi et al. (2019) find that in the U.S. girls born in families with a son preference score less in standardized math scores. They also find evidence that maternal gender attitudes are transmitted to their children. Dahl & Moretti (2008) conclude that, in the United States, parents are more likely to divorce in son-less households than in a household with at least one son, and are less likely to marry in the first place. A broader understanding of the ramification of son preference in Albania is thus needed, as well as, a better understanding of what causes parents to prefer sons in this specific context. Those are important avenues for future research.

Notes

[1]The ultrasound technology was first available in 1987 in the main maternity hospital in Tirana, but after 1993 it started to become available in most private clinics across the country and ultrasound scans were performed at low cost for the patient (Guilmoto et al., 2012).

[2]If caught crossing the border, the person was imprisoned, faced a death sentence for treason, and their immediate and extended family were taken to internment/concentration camps and all were labelled with

"black biography". People with "black biography" were inferior to people with a "clear/clean biography". They had no right to higher education, were placed in physically challenging jobs or very remote areas where life was extremely challenging, and it was nearly impossible for them to marry someone out of their "group". They suffered the sentence of a "crime" they never committed, just because a relative emigrated.

[3]That, unfortunately, was not associated with betterment of women's status within household (Xheraj, 2016).

[4]The hazard rate is the number of times a person will fail during one-time unit–here one month.

[5]It is important to note that we cannot differentiate between households who let chance determine the sex and those using sex-selective abortions. This is true for any differential stopping behaviour analysis in societies practising sex-selective abortions.

[6]The only exception is for the period 1976-1990 for families with 3 children at parity 1, for which the 95% confidence interval includes the natural sex-ratio at birth of 51.7%.

[7]Remember, the hazard rate is the number of times a person will fail during one-time unit–here one month.

[8]The smaller sample size for the logit comes from the fact that the sample for the Cox Proportional Hazard model includes censored intervals, which is not the case for the logit.

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Table 1: Descriptive Statistics

Variable	Mean
Specification 1	
1S	0.32
1D	0.31
2S	0.06
2D	0.10
2M	0.12
3S	0.01
3D	0.02
3M	0.05
Specification 2	
1B	0.32
1G	0.31
2B	0.12
2G	0.16
3B	0.03
3G	0.05
Control variables	
Region: Coastal	0.28
Region: Central	0.32
Region: Moutain	0.30
Region: Tirana	0.10
Urban	0.41
Mother's age at 1^{st} birth	22.13
	(3.14)
Mother: No education	0.01
Mother: Primary education	0.61
Mother: Secondary education	0.30
Mother: Higher education	0.08
Father: No education	0.01
Father: Primary education	0.52
Father: Secondary education	0.39
Father: Higher education	0.08
Observation	14,730

Note: Mean. Standard deviation in parenthesis.

Table 2: Weighted percentage of sons, by parity

Panel A: All years

Parity	# of children: 1	2	3	4
1	54.57% [51.87%,57.26%]	56.94% [55.19%,58.69%]	44.47% [42.19%,46.75%]	34.93% [30.54%,39,32%]
2		55.76% [53.98%,57.53%]	44.64% [42.36%, 46.92%]	37.55% [33,04%,42.06%]
3			58.61% [56.33%,60.90%]	39.14% [34.68%,43.60%]
4				62.56% [58.08%,67.03%]
Obs.	2,266	5,250	3,025	854

Panel B: 1976-1990

Parity	# of children: 1	2	3	4
1	67.57% [55.04%, 80.10%]	60.95% [56.47%,65.42%]	48.09% [43.58%,52.61%]	39.75% [32.54%,46.96%]
2		60.24% [55.73%,64.76%]	46.76% [42.26%,51.27%]	41.43% [33.96%,48.90%]
3			59.89% [55.40%,64.37%]	42.01% [34.78%,49.25%]
4				58.08% [50.55%,65.62%]
Obs.	75	743	728	331

Panel C: 1991-2000

Parity	# of children: 1	2	3	4
1	60.18% [54.03%,66.34%]	58.99% [56.43%,61.54%]	43.39% [40.26%,46.51%]	30.34% [24.41%,36.26%]
2		57.60% [54.99%,60.21%]	44.63% [41.48%,47.78%]	34.52% [28.36%,40.68%]
3			57.67% [54.51%,60.83%]	39.57% [33.09%,46.04%]
4				68.21% [62.53%,73.90%]
Obs.	379	2,275	1,590	417

Panel D: 2001-2018

Parity	# of children: 1	2	3	4
1	52.79% [49.72%,55.86%]	53.28% [50.45%,56.11%]	42.59% [37.64%,47.55%]	34.48% [20.83%,48.13%]
2		52.11% [49.27%,54.96%]	41.98% [37.06%,46.89%]	35.10% [22.02%,48.17%]
3			59.36% [54.47%,64.26%]	27.56% [16.36%,38.76%]
4				57.86% [44.57%,71.16%]
Obs.	1,812	2,232	707	106

Notes: Sampling weights are used. All families with 1 to 4 children are included. 95% confidence intervals in brackets.

Table 3: Cox Proportional Hazard model: Birth interval (in months)

Panel A: Specification 1	(1)		(2)		(3)		(4)	
	All years	*	1976-1990	*	1991-2000	*	2001-2018	*
1D	1.3672***	***	1.3524***	***	1.4420***	***	1.3187***	***
	(0.0310)		(0.0734)		(0.0488)		(0.0518)	
2S	0.2402***		0.2599***		0.2326***		0.2028***	
	(0.0093)		(0.0180)		(0.0128)		(0.0166)	
2D	0.5259***	***	0.5284***	***	0.5683***	***	0.4281***	***
	(0.0155)		(0.0315)		(0.0232)		(0.0248)	
2M	0.2372***		0.2686***		0.2380***		0.1752***	
	(0.0080)		(0.0168)		(0.0111)		(0.0115)	
3S	0.1749***		0.2025***		0.1392***		0.1095***	
	(0.0175)		(0.0290)		(0.0217)		(0.0362)	
3D	0.5066***	***	0.4602***	***	0.5491***	***	0.3535***	***
	(0.0275)		(0.0418)		(0.0387)		(0.0481)	
3M	0.2066***		0.2188***		0.1822***		0.1441***	
	(0.0099)		(0.0176)		(0.0118)		(0.0170)	
Control variables	Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes	
Observations	24,617		5,285		11,003		8,329	
Log pseudo-likelihood	-131459		-27923		-56923		-30885	
Panel B: Specification 2	(1)		(2)		(3)		(4)	
	All years	*	1976-1990	*	1991-2000	*	2001-2018	*
1G	1.3651***	***	1.3466***	***	1.4396***	***	1.3171***	***
	(0.0307)		(0.0720)		(0.0480)		(0.0516)	
2B	0.2415***		0.2638***		0.2406***		0.1903***	
	(0.0078)		(0.0159)		(0.0108)		(0.0123)	
2G	0.3701***	***	0.3858***	***	0.3840***	***	0.2995***	***
	(0.0106)		(0.0222)		(0.0154)		(0.0162)	
3B	0.1783***		0.1967***		0.1595***		0.1019***	
	(0.0096)		(0.0168)		(0.0118)		(0.0171)	
3G	0.3403***	***	0.3187***	***	0.3287***	***	0.2718***	***
	(0.0156)		(0.0254)		(0.0202)		(0.0292)	
Control variables	Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes	
Observations	24,617		5,285		11,003		8,329	
Log pseudo-likelihood	-131661		-27965		-57063		-30927	

Notes: Cox Proportional Hazard models are presented. The dependent variable is the hazard of having another child. Controls for mother's age at first birth, mother's highest level of education, father's highest level of education, place of residence and region fixed effects are included. Specification 1 controls for the sex of all previous children at the time of conception, specifically only sons S, only daughters D and mixed sexes M, for different parity (1, 2 or 3). Specification 2 controls for the sex of the previous child, boy B or girl G at different parity (1, 2 or 3). Standard-errors in parenthesis. *** p-value<0.01, ** p-value<0.05 and * p-value<0.10. The p-values from the t-tests of statistical difference between D and S (or G and B), for a given parity, are presented in the columns *, using the symbol *.

Table 4: Specification 1: Logit: Relative odds of being followed by a short birth interval

Panel A: Birth interval < 15 months	(1) All years	*	(2) 1976-1990	*	(3) 1991-2000	*	(4) 2001-2018	*
1D	1.3006***	***	1.2221		1.4045**	**	1.2331	
	(0.1202)		(0.2194)		(0.1972)		(0.2025)	
2S	0.7623		0.5914		0.8681		0.7161	
	(0.1441)		(0.1994)		(0.2169)		(0.3275)	
2D	0.9166		0.9069		0.9243		0.8772	
	(0.1256)		(0.2330)		(0.1862)		(0.2412)	
2M	0.8752		0.8352		0.7144*		1.2853	
	(0.1133)		(0.1879)		(0.1454)		(0.3363)	
3S	0.7969		0.2910		0.7861		3.8431	
	(0.3721)		(0.2999)		(0.5966)		(3.2423)	
3D	0.6432		0.7098		0.4986		0.8816	
	(0.2062)		(0.3365)		(0.2317)		(0.6424)	
3M	1.0642		1.2079		0.6611		2.0160*	
	(0.1760)		(0.2955)		(0.1866)		(0.8081)	
Control variables	Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes	
Observations	14,751		3,786		6,898		3,963	
Log pseudo-likelihood	-3026		-825.5		-1358		-811.1	
Panel B: Birth interval < 33 months	(1) All years	*	(2) 1976-1990	*	(3) 1991-2000	*	(4) 2001-2018	*
1D	1.5567***	***	1.5132***	***	1.7693***	***	1.3699***	***
	(0.0668)		(0.1446)		(0.1148)		(0.1038)	
2S	0.6370***		0.5722***		0.5697***		0.7944	
	(0.0515)		(0.0769)		(0.0674)		(0.1391)	
2D	0.9725	***	1.0356	***	0.9237	***	0.9989	
	(0.0601)		(0.1254)		(0.0812)		(0.1252)	
2M	0.7409***		0.7306***		0.6680***		0.7976*	
	(0.0423)		(0.0782)		(0.0546)		(0.1035)	
3S	0.7754		0.6688		0.4481**		4.4763*	
	(0.1646)		(0.1919)		(0.1701)		(3.7274)	
3D	1.0149		1.0012		0.8741	*	1.2303	
	(0.1184)		(0.1981)		(0.1405)		(0.3820)	
3M	0.8294**		0.8319		0.5949***		1.2064	
	(0.0675)		(0.1056)		(0.0750)		(0.3034)	
Control variables	Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes	
Observations	14,751		3,802		6,986		3,963	
Log pseudo-likelihood	-9753		-2541		-4506		-2631	

Notes: Logit models are presented. The dependent variable takes the value of 1 if the birth interval (birth to birth) is 15 months or less in specification 1 (33 months or less in specification 2), and 0 otherwise. Controls for mother's age at first birth, mother's highest level of education, father's highest level of education, place of residence and region fixed effects are included. Specification 1 controls for the sex of all previous children at the time of conception, specifically only sons S, only daughters D and mixed sexes M, for different parity (1, 2 or 3). Specification 2 controls for the sex of the previous child, boy B or girl G at different parity (1, 2 or 3). Standard-errors in parenthesis. *** p-value<0.01, ** p-value<0.05 and * p-value<0.10. The p-values from the t-tests of statistical difference between D and S, for a given parity, are presented in the columns *.

Table 5: Specification 2: Logit: Relative odds of being followed by a short birth interval

Panel A: Birth interval < 15 months	(1)		(2)		(3)		(4)	
	All years	*	1976-1990	*	1991-2000	*	2001-2018	*
1G	1.3006***	***	1.2228		1.4049**	**	1.2334	
	(0.1202)		(0.2195)		(0.1972)		(0.2026)	
2B	0.8732		0.6909		0.8045		1.2814	
	(0.1154)		(0.1681)		(0.1542)		(0.3330)	
2G	0.8581		0.8927		0.8338		0.7905	
	(0.0997)		(0.1862)		(0.1450)		(0.1939)	
3B	1.0756		0.9040		0.9716		2.2497	
	(0.2208)		(0.2843)		(0.3145)		(1.1528)	
3G	0.8302		1.0813		0.3943***	**	1.5210	
	(0.1531)		(0.2823)		(0.1423)		(0.6137)	
Control variables	Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes	
Observations	14,751		3,786		6,898		3,963	
Log pseudo-likelihood	-3027		-827.5		-1357		-811.9	

Panel B: Birth interval < 33 months	(1)		(2)		(3)		(4)	
	All years	*	1976-1990	*	1991-2000	*	2001-2018	*
1G	1.5564***	***	1.5116***	***	1.7686***	***	1.3700***	***
	(0.0668)		(0.1442)		(0.1147)		(0.1038)	
2B	0.6814***		0.6093***		0.6056***		0.9045	
	(0.0411)		(0.0666)		(0.0524)		(0.1193)	
2G	0.8890**	***	0.9397	***	0.8402**	***	0.8559	
	(0.0454)		(0.0962)		(0.0623)		(0.0929)	
3B	0.7412***		0.6677***		0.5573***		1.6705	
	(0.0755)		(0.1035)		(0.0907)		(0.5587)	
3G	0.9724	**	1.0173	**	0.7348**		1.1853	
	(0.0799)		(0.1322)		(0.0902)		(0.2763)	
Control variables	Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes	
Observations	14,751		3,802		6,986		3,963	
Log pseudo-likelihood	-9756		-2539		-4510		-2633	

Notes: Logit models are presented. The dependent variable takes the value of 1 if the birth interval (birth to birth) is 15 months or less in specification 1 (33 months or less in specification 2), and 0 otherwise. Controls for mother's age at first birth, mother's highest level of education, father's highest level of education, place of residence and region fixed effects are included. Specification 1 controls for the sex of all previous children at the time of conception, specifically only sons S, only daughters D and mixed sexes M, for different parity (1, 2 or 3). Specification 2 controls for the sex of the previous child, boy B or girl G at different parity (1, 2 or 3). Standard-errors in parenthesis. *** p-value<0.01, ** p-value<0.05 and * p-value<0.10. The p-values from the t-tests of statistical difference between G and B, for a given parity, are presented in the columns *.

Table 6: Specification 1: Predicted probability to be followed by a short birth interval by sex and parity

	≤ 15 months			≤ 33 months		
Parity	Boy	Girl	Mixed	Boy	Girl	Mixed
1	4.81%	6.61%		41.60%	52.31%	
	[3.90%, 5.72%]	[5.32%, 7.90%]		[39.14%, 44.06%]	[49.70%, 54.92%]	
2	3.71%	4.43%	4.23%	31.21%	40.92%	34.55%
	[2.39%, 5.02%]	[3.30%, 5.55%]	[3.16%, 5.31%]	[27.50%, 34.93%]	[37.77%, 44.08%]	[31.67%, 37.43%]
3	3.87%	3.15%	5.10%	35.58%	41.96%	37.14%
	[0.51%, 7.23%]	[1.27%, 5.03%]	[3.54%, 6.66%]	[26.05%, 45.11%]	[36.29%, 47.64%]	[33.16%, 41.12%]

Notes: The predicted probabilities have been obtained for a woman from the Central region, whose age at first birth was 22 years old and who, and her husband, have only completed primary education. Confidence intervals at the 95 percent level are in brackets.

Table 7: Specification 2: Predicted probability to be followed by a short birth interval by sex and parity

	≤ 15 months		≤ 33 months	
Parity	Boy	Girl	Boy	Girl
1	4.81%	6.17%	41.60%	52.58%
	[3.90%, 5.73%]	[5.05%, 7.29%]	[39.15%, 44.05%]	[50.08%, 55.07%]
2	4.23%	4.16%	32.68%	38.77%
	[3.15%, 5.31%]	[3.25%, 5.07%]	[29.73%, 35.63%]	[36.08%, 41.47%]
3	5.16%	4.03%	34.55%	40.92%
	[3.23%, 7.08%]	[2.65%, 5.41%]	[29.95%, 39.16%]	[36.77%, 45.06%]

Notes: The predicted probabilities have been obtained for a woman from the Central region, whose age at first birth was 22 years old and who, and her husband, have only completed primary education. Confidence intervals at the 95 percent level are in brackets.

Table 8: Cox Proportional Hazard model: Birth intervals (in months) by location

Panel A: Specification 1	(1) Rural	*	(2) Urban	*	(3) Region: Coastal	*	(4) Region: Central	*	(5) Region: Mountain	*	(6) Region: Urban Tirana	*
1D	1.4633***	***	1.2514***	***	1.3083***	***	1.3950***	***	1.4293***	***	1.2915***	***
	(0.0458)		(0.0408)		(0.0504)		(0.0513)		(0.0696)		(0.0988)	
2S	0.2732***		0.1979***		0.2262***		0.2025***		0.3129***		0.2033***	
	(0.0131)		(0.0129)		(0.0156)		(0.0149)		(0.0218)		(0.0252)	
2D	0.5896***	***	0.4493***	***	0.4932***	***	0.5130***	***	0.6290***	***	0.4053***	***
	(0.0222)		(0.0210)		(0.0282)		(0.0240)		(0.0359)		(0.0392)	
2M	0.2769***		0.1846***		0.2173***		0.2006***		0.3353***		0.1633***	
	(0.0120)		(0.0100)		(0.0130)		(0.0123)		(0.0212)		(0.0161)	
3S	0.1877***		0.1475***		0.1443***		0.1548***		0.2171***		0.0719***	
	(0.0217)		(0.0307)		(0.0325)		(0.0325)		(0.0307)		(0.0514)	
3D	0.5392***	***	0.4549***	***	0.4877***	***	0.4546***	***	0.5835***	***	0.4451***	***
	(0.0370)		(0.0412)		(0.0514)		(0.0513)		(0.0533)		(0.0720)	
3M	0.2227***		0.1718***		0.1455***		0.2058***		0.2516***		0.1855***	
	(0.0128)		(0.0157)		(0.0153)		(0.0190)		(0.0193)		(0.0308)	
Control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Observations	13,726		10,891		7,103		8,365		6,481		2,668	
Log pseudo-likelihood	-72237		-49205		-31827		-37433		-33001		-9792	

Panel B: Specification 2	(1) Rural	*	(2) Urban	*	(3) Region: Coastal	*	(4) Region: Central	*	(5) Region: Mountain	*	(6) Region: Urban Tirana	*
1G	1.4588***	***	1.2515***	***	1.3066***	***	1.3927***	***	1.4264***	***	1.2905***	***
	(0.0452)		(0.0406)		(0.0500)		(0.0508)		(0.0686)		(0.0981)	
2B	0.2764***		0.1966***		0.2221***		0.2053***		0.3288***		0.1832***	
	(0.0114)		(0.0103)		(0.0125)		(0.0121)		(0.0204)		(0.0174)	
2G	0.4192***	***	0.3068***	***	0.3452***	***	0.3410***	***	0.4682***	***	0.2819***	***
	(0.0155)		(0.0138)		(0.0189)		(0.0162)		(0.0254)		(0.0248)	
3B	0.1932***		0.1473***		0.1352***		0.1725***		0.2179***		0.1315***	
	(0.0124)		(0.0155)		(0.0157)		(0.0176)		(0.0187)		(0.0286)	
3G	0.3617***	***	0.3001***	***	0.2830***	***	0.3403***	***	0.3885***	***	0.3128***	***
	(0.0203)		(0.0244)		(0.0270)		(0.0294)		(0.0303)		(0.0409)	
Control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Observations	13,726		10,891		7,103		8,365		6,481		2,668	
Log Pseudo-likelihood	-72352		-49300		-31898		-37511		-33046		-9812	

Notes: Cox Proportional Hazard models are presented. The dependent variable is the hazard of having another child. Controls for mother's age at first birth, mother's highest level of education, father's highest level of education, place of residence and region fixed effects are included. Specification 1 controls for the sex of all previous children at the time of conception, specifically only sons S, only daughters D and mixed sexes M, for different parity (1, 2 or 3). Specification 2 controls for the sex of the previous child, boy B or girl G at different parity (1, 2 or 3). Standard-errors in parenthesis. *** p-value<0.01, ** p-value<0.05 and * p-value<0.10. The p-values from the t-tests of statistical difference between D and S (or G and B), for a given parity, are presented in the columns *.

Table 9: Cox Proportional Hazard model: Birth intervals (in months) by mother's education level

Panel A: Specification 1				
	(1) At most primary	*	(2) Secondary or higher	*
1D	1.4480***	***	1.2538***	***
	(0.0436)		(0.0430)	
2S	0.2821***		0.1810***	
	(0.0129)		(0.0121)	
2D	0.5971***	***	0.4383***	***
	(0.0207)		(0.0208)	
2M	0.2816***		0.1780***	
	(0.0112)		(0.0094)	
3S	0.2050***		0.1090***	
	(0.0233)		(0.0264)	
3D	0.5616***	***	0.4228***	***
	(0.0357)		(0.0393)	
3M	0.2315***		0.1589***	
	(0.0126)		(0.0133)	
Control variables	Yes		Yes	
Region fixed effects	Yes		Yes	
Observations	14,300		10,317	
Log pseudo-likelihood	-76182		-45448	

Panel B: Specification 2				
	(1) At most primary	*	(2) Secondary or higher	*
1G	1.4443***	***	1.2534***	***
	(0.0431)		(0.0427)	
2B	0.2813***		0.1871***	
	(0.0107)		(0.0096)	
2G	0.4315***	***	0.2907***	***
	(0.0145)		(0.0134)	
3B	0.2063***		0.1240***	
	(0.0125)		(0.0133)	
3G	0.3679***	***	0.2988***	***
	(0.0191)		(0.0239)	
Control variables	Yes		Yes	
Region fixed effects	Yes		Yes	
Observations	14,300		10,317	
Log pseudo-likelihood	-76302		-45535	

Notes: Cox Proportional Hazard models are presented. The dependent variable is the hazard of having another child. Controls for mother's age at first birth, mother's highest level of education, father's highest level of education, place of residence and region fixed effects are included. Specification 1 controls for the sex of all previous children at the time of conception, specifically only sons S, only daughters D and mixed sexes M, for different parity (1, 2 or 3). Specification 2 controls for the sex of the previous child, boy B or girl G at different parity (1, 2 or 3). Standard-errors in parenthesis. *** p-value<0.01, ** p-value<0.05 and * p-value<0.10. The p-values from the t-tests of statistical difference between D and S (or G and B), for a given parity, are presented in the columns *.

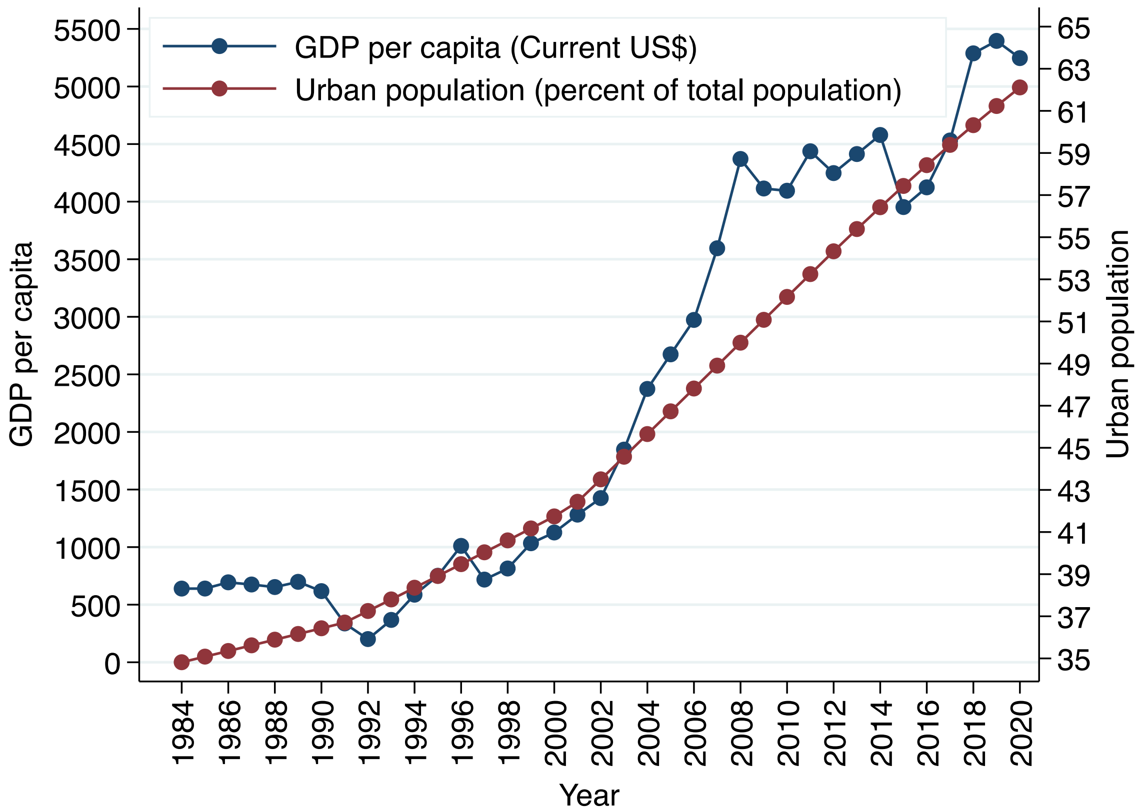

Figure 1: GDP per capita and percent of urban population
Data source: World Development Indicators, 2021.
http://data.worldbank.org/data-catalog/world-development-indicators

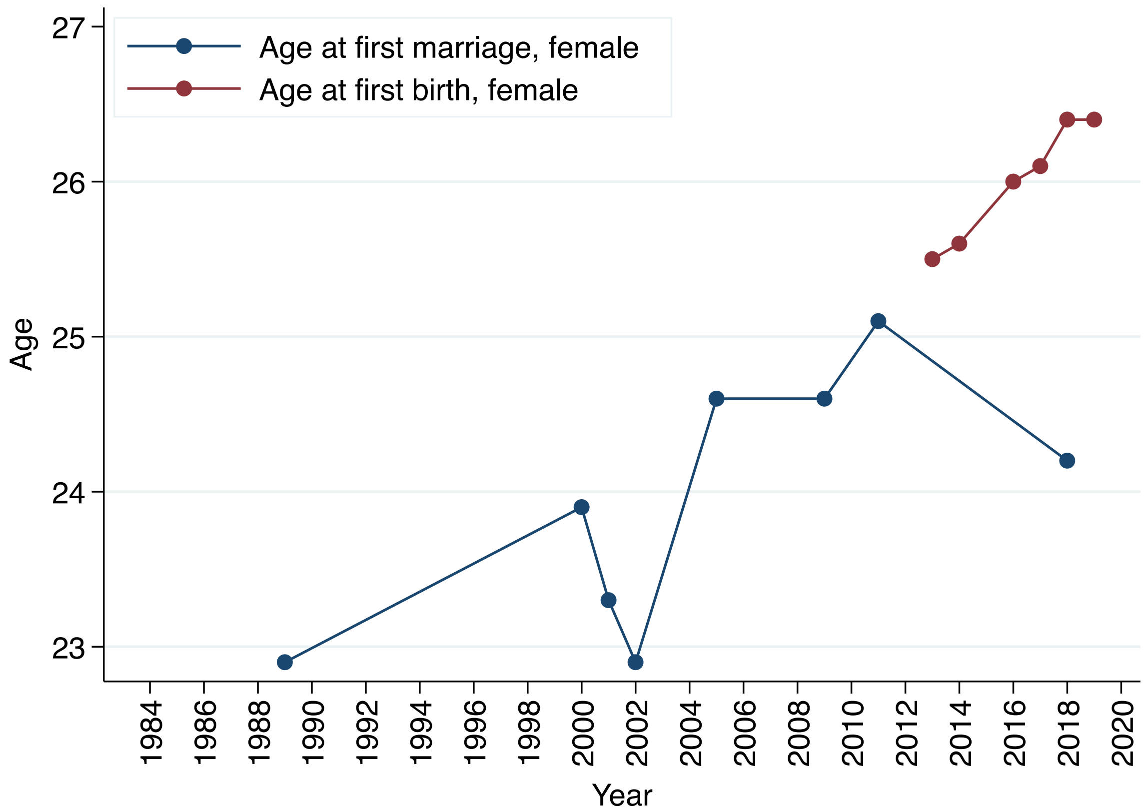

Figure 2: Women's age at first marriage and first birth
Data source: Age at first marriage is retrieved from World Development Indicators, http://data.worldbank.org/data-catalog/world-development-indicators, and age at first birth is retrieved from EUROSTAT, https://db.nomics.world/Eurostat/tps00017/A.AGEMOTH.AL.

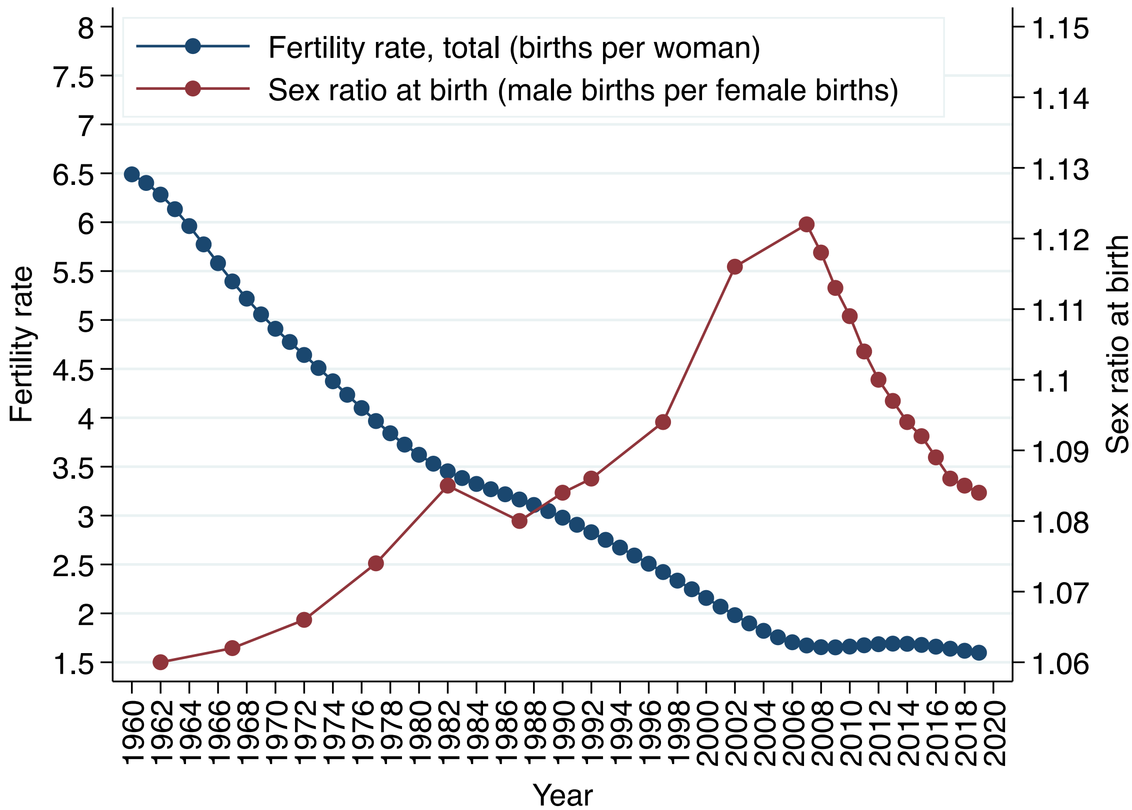

Figure 3: Fertility rate and sex ratio at birth in Albania
Data source: World Development Indicators, 2021.
http://data.worldbank.org/data-catalog/world-development-indicators

Tables available on request

Table R1: Weighted percentage of sons, by parity and socio-economic characteristics

Panel A: Rural				
\# of children	1	2	3	4
Parity				
1	57.25%	55.89%	45.52%	37.54%
	[53.63%,60.88%]	[53.46%,58.31%]	[42.75%,48.29%]	[32.64%,42.44%]
2		59.97%	46.09%	36.96%
		[57.61%,62.33%]	[43.31%,48.88%]	[32.17%,41.75%]
3			60.37%	40.73%
			[57.65%,63.09%]	[35.75%,45.71%]
4				60.17%
				[55.22%,65.13%]
Obs.	1098	2429	1824	611
Panel B: Urban				
\# of children	1	2	3	4
Parity				
1	52.57%	57.73%	43.07%	29.50%
	[48.73%,56.41%]	[55.26%,60.20%]	[39.25%,46.89%]	[20.73%,38.28%]
2		52.61%	42.68%	38.78%
		[50.09%,55.13%]	[38.86%,46.49%]	[29.10%,48.47%]
3			56.26%	35.87%
			[52.36%,60.16%]	[26.96%,44.79%]
4				67.50%
				[58.41%,76.59%]
Obs.	1168	2821	1201	243
Panel C: Region: Coastal				
\# of children	1	2	3	4
Parity				
1	52.63%	55.45%	48.45%	29.03%
	[48.25%,57.02%]	[52.69%,58.21%]	[44.91%,52.00%]	[21.90%,36.15%]
2		57.05%	44.34%	35.51%
		[54.31%,59.80%]	[40.79%,47.88%]	[27.93%,43.09%]
3			57.95%	37.76%
			[54.45%,61.45%]	[30.34%,45.18%]
4				62.67%
				[55.13%,70.21%]
Obs.	657	1568	930	198
Panel D: Central				
\# of children	1	2	3	4
Parity				
1	57.02%	57.87%	40.72%	37.39%
	[53.11%,60.94%]	[55.36%,60.37%]	[37.14%,44.30%]	[29.81%,44.97%]
2		58.00%	44.63%	35.60%
		[55.51%,60.48%]	[41.02%,48.24%]	[28.26%,42.93%]
3			60.56%	41.76%
			[57.03%,64.08%]	[34.07%,49.44%]
4				57.24%
				[49.58%,64.89%]
Obs.	843	2047	955	212

Note: 95% confidence intervals in brackets

Table R1 (Cont.): Weighted percentage of sons, by parity and socio-economic characteristics

Panel E: Region: Mountain				
\# of children	1	2	3	4
Parity				
1	57.14%	57.84%	48.38%	41.05%
	[52.08%,62.21%]	[54.24%,61.44%]	[44.61%,52.16%]	[35.53%,46.58%]
2		57.05%	50.53%	43.66%
		[53.45%,60.66%]	[46.77%,54.29%]	[38.11%,49.21%]
3			61.80%	44.22%
			[58.13%,65.47%]	[38.68%,49.77%]
4				60.69%
				[55.12%,66.26%]
Obs.	459	918	872	388
Panel F: Region: Urban Tirana				
\# of children	1	2	3	4
Parity				
1	52.67%	57.07%	43.18%	31.60%
	[45.76%,59.58%]	[52.45%,61.70%]	[35.81%,50.55%]	[15.46%,47.75%]
2		50.61%	41.63%	38.37%
		[45.91%,55.30%]	[34.28%,48.99%]	[21.04%,55.70%]
3			53.76%	28.78%
			[46.22%,61.29%]	[13.36%,44.19%]
4				77.80%
				[62.06%,93.53%]
Obs.	307	717	268	56
Panel G: At most primary				
\# of children	1	2	3	4
Parity				
1	57.84%	57.43%	45.47%	37.11%
	[54.02%,61.66%]	[55.04%,59.81%]	[42.72%,48.22%]	[32.05%,42.18%]
2		59.51%	46.15%	39.55%
		[57.15%,61.88%]	[43.39%,48.91%]	[34.50%,44.61%]
3			60.22%	40.36%
			[57.52%,62.92%]	[35.31%,45.42%]
4				61.13%
				[56.17%,66.09%]
Obs.	1020	2584	1925	623
Panel H: Secondary or higher				
\# of children	1	2	3	4
Parity				
1	52.23%	56.50%	42.72%	28.84%
	[48.50%,55.95%]	[53.95%,59.05%]	[38.71%,46.73%]	[20.44%,37.24%]
2		52.35%	41.98%	31.97%
		[49.76%,54.93%]	[37.97%,45.99%]	[22.36%,41.58%]
3			55.79%	35.75%
			[51.67%,59.90%]	[26.51%,44.99%]
4				66.52%
				[56.61%,76.44%]
Obs.	1246	2666	1097	231

Note: 95% confidence intervals in brackets

Table R1 (Cont.): Weighted percentage of sons, by parity and socio-economic characteristics

Panel I: Migrant rural				
\# of children	1	2	3	4
Parity				
1	48.84%	58.66%	41.28%	24.19%
	[41.50%, 56.19%]	[54.51%, 62.82%]	[35.13%, 47.43%]	[12.31%, 36.07%]
2		55.58%	45.49%	34.14%
		[51.35%, 59.81%]	[39.23%, 51.75%	[20.12%, 48.17%]
3			60.68%	51.67%
			[54.56%, 66.80%]	[37.09%, 66.24%]
4				74.92%
				[63.57%, 86.27%]
Obs.	307	874	431	101
Panel J: Urban or urban migrant				
\# of children	1	2	3	4
Parity				
1	53.69%	57.40%	43.92%	31.84%
	[49.21%, 58.16%]	[54.39%, 60.40%]	[39.09%, 48.74%]	[20.28%, 43.41%]
2		51.55%	41.37%	40.86%
		[48.50%, 54.61%]	[36.60%, 46.15%]	[28.25%, 53.47%]
3			54.18%	28.81%
			[49.25%, 59.11%]	[18.67%, 38.95%]
4				64.20%
				[52.11%, 76.29%]
Obs.	861	1948	770	142

Note: 95% confidence intervals in brackets

Table R2: Specification 1: Logit: Relative odds of being followed by a short birth interval by location

	(1) Rural	*	(2) Urban	*	(3) Region: Coastal	*	(4) Region: Central	*	(5) Region: Mountain	*	(6) Region: Urban Tirana	*
Panel A: Birth interval < 15 months												
1D	1.2919**	**	1.3129*	*	1.5921***	***	1.4274**	**	0.9414		1.6331	
	(0.1591)		(0.1839)		(0.2608)		(0.2481)		(0.1570)		(0.5218)	
2S	0.8916		0.5055		0.9333		1.0160		0.5709*		0.3311	
	(0.1920)		(0.2112)		(0.3118)		(0.3529)		(0.1851)		(0.3253)	
2D	1.0984		0.5822**		1.3306		0.6511		0.8880		0.4034	
	(0.1807)		(0.1538)		(0.3064)		-0.2028		(0.1900)		(0.3033)	
2M	0.7930		1.0859		1.1061		1.0430		0.5853**		1.1538	
	(0.1317)		(0.2197)		(0.2649)		(0.2542)		(0.1287)		(0.4655)	
3S	0.8312		0.7040		2.6198		1.0077		0.3897			
	(0.4356)		(0.7407)		(1.9880)		(1.0663)		(0.2801)			
3D	0.5991		0.7616		1.1428		0.8060		0.2907**		1.1705	
	(0.2412)		(0.4016)		(0.6078)		(0.4735)		(0.1723)		(1.2540)	
3M	1.2704		0.3995*		1.5311		1.4028	*	0.8012			
	(0.2320)		(0.2094)		(0.5088)		(0.4649)		(0.1886)			
Control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Observations	8,709		6,042		4,144		4,762		4,378		1,376	
Log Pseudo-likelihood	-1925		-1091		-886.2		-849.2		-1028		-228.6	
Panel B: Birth interval < 33 months												
	(1) Rural	*	(2) Urban	*	(3) Region: Coastal	*	(4) Region: Central	*	(5) Region: Mountain	*	(6) Region: Urban Tirana	*
1D	1.5874***	***	1.5204***	***	1.5609***	***	1.4320***	***	1.6923***	***	1.6593***	***
	(0.0906)		(0.0997)		(0.1242)		(0.1074)		(0.1353)		(0.2327)	
2S	0.6459***		0.6197***		0.5893***		0.6458***		0.6354***		0.7917	
	(0.0632)		(0.0900)		(0.0921)		(0.1014)		(0.0850)		(0.2126)	
2D	0.9817	***	0.9608	**	0.9445	***	0.8028*		1.1464	***	1.1969	
	(0.0752)		(0.1006)		(0.1116)		(0.0922)		(0.1230)		(0.2432)	
2M	0.7136***		0.8065**		0.6733***	**	0.8066**		0.7164***		0.8728	
	(0.0484)		(0.0846)		(0.0739)		(0.0877)		(0.0677)		(0.1766)	
3S	0.6654*		1.2612		1.5169		0.7473		0.6026*		2.4788	
	(0.1633)		(0.5060)		(0.7252)		(0.3539)		(0.1718)		(1.4186)	
3D	1.0222		1.0145		1.0178		1.0322		1.0881	*	0.6057	*
	(0.1440)		(0.2153)		(0.2261)		(0.2274)		(0.2077)		(0.2828)	
3M	0.7973**		0.9130		1.0864		1.1373		0.6572***		0.5921*	
	(0.0751)		(0.1488)		(0.2002)		(0.1620)		(0.0791)		(0.1826)	
Control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Observations	8,709		6,042		4,144		4,762		4,392		1,453	
Log Pseudo-likelihood	-5845		-3902		-2727		-3106		-2951		-932.8	

Notes: Logit models are presented. The dependent variable takes the value of 1 if the birth interval (birth to birth) is 15 months or less in specification 1 (33 months or less in specification 2), and 0 otherwise. Controls for mother's age at first birth, mother's highest level of education, father's highest level of education, place of residence and region fixed effects are included. Specification 1 controls for the sex of all previous children at the time of conception, specifically only sons S, only daughters D and mixed sexes M, for different parity (1, 2 or 3). Specification 2 controls for the sex of the previous child, boy B or girl G at different parity (1, 2 or 3). Standard-errors in parenthesis. *** p-value<0.01, ** p-value<0.05 and * p-value<0.10. The p-values from the t-tests of statistical difference between D and S, for a given parity, are presented in the columns *.

Table R3: Specification 2: Logit: Relative odds of being followed by a short birth interval by location

Panel A: Birth interval < 15 months	(1) Rural	*	(2) Urban	*	(3) Region: Coastal	*	(4) Region: Central	*	(5) Region: Mountain	*	(6) Region: Urban Tirana	*
1G	1.2918**	**	1.3121*	*	1.5915***	***	1.4274**	**	0.9415		1.6300	
	(0.1591)		(0.1839)		(0.2607)		(0.2481)		(0.1571)		(0.5207)	
2B	0.8755		0.8797		1.0370		1.2360		0.5669**		0.8991	
	(0.1424)		(0.2035)		(0.2543)		(0.3014)		(0.1295)		(0.3771)	
2G	0.9494		0.6700*		1.2302		0.6325*	**	0.7736		0.5228	
	(0.1362)		(0.1389)		(0.2558)		(0.1623)		(0.1410)		(0.2252)	
3B	1.2089		0.6578		2.1961**		1.3088		0.6830			
	(0.2772)		(0.3469)		(0.8013)		(0.5578)		(0.2041)			
3G	0.9592		0.4703		1.0274		1.1367		0.6207*		0.4424	
	(0.1961)		(0.2219)		(0.4039)		(0.4181)		(0.1604)		(0.4661)	
Control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Observations	8,709		6,042		4,144		4,762		4,378		1,404	
Log Pseudo-likelihood	-1928		-1093		-885.8		-848.2		-1031		-230.5	

Panel B: Birth interval < 33 months	(1) Rural	*	(2) Urban	*	(3) Region: Coastal	*	(4) Region: Central	*	(5) Region: Mountain	*	(6) Region: Urban Tirana	*
1G	1.5871***	***	1.5203***	***	1.5608***	***	1.4320***	***	1.6900***	***	1.6586***	***
	(0.0906)		(0.0997)		(0.1241)		(0.1074)		(0.1350)		(0.2328)	
2B	0.6720***		0.7026***		0.6301***		0.7235***		0.6508***		0.8866	
	(0.0498)		(0.0732)		(0.0731)		(0.0847)		(0.0645)		(0.1700)	
2G	0.8762**	***	0.9151	**	0.8360*	**	0.8051**		0.9817	***	1.0316	
	(0.0549)		(0.0811)		(0.0835)		(0.0756)		(0.0865)		(0.1753)	
3B	0.6755***		0.9833		0.9626		1.1130		0.5547***		0.5515	
	(0.0779)		(0.2017)		(0.2321)		(0.2110)		(0.0769)		(0.2089)	
3G	0.9726	***	0.9607		1.1692		1.0507		0.8892	***	0.6856	
	(0.0960)		(0.1474)		(0.2093)		(0.1521)		(0.1142)		(0.2165)	
Control variables	Yes		Yes		Yes		Yes		Yes		Yes	
Region fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Observations	8,709		6,042		4,144		4,762		4,392		1,453	
Log Pseudo-likelihood	-5847		-3904		-2729		-3108		-2953		-934.4	

Notes: Logit models are presented. The dependent variable takes the value of 1 if the birth interval (birth to birth) is 15 months or less in specification 1 (33 months or less in specification 2), and 0 otherwise. Controls for mother's age at first birth, mother's highest level of education, father's highest level of education, place of residence and region fixed effects are included. Specification 1 controls for the sex of all previous children at the time of conception, specifically only sons S, only daughters D and mixed sexes M, for different parity (1, 2 or 3). Specification 2 controls for the sex of the previous child, boy B or girl G at different parity (1, 2 or 3). Standard-errors in parenthesis. *** p-value<0.01, ** p-value<0.05 and * p-value<0.10. The p-values from the t-tests of statistical difference between G and B, for a given parity, are presented in the columns *.

Table R4: Specification 1: Logit: Relative odds of being followed by a short birth interval by mother's education level

Panel A: Birth interval < 15 months	(1) At most primary	*	(2) Secondary or higher	*
1D	1.3758***	***	1.1385	
	(0.1513)		(0.1868)	
2S	0.7908		0.6849	
	(0.1642)		(0.2905)	
2D	0.8054		1.1784	
	(0.1310)		(0.2720)	
2M	0.8638		0.9009	
	(0.1351)		(0.2204)	
3S	0.7712		1.2250	
	(0.3992)		(1.3131)	
3D	0.7734		0.2215	
	(0.2629)		(0.2282)	
3M	1.1471		0.7808	
	(0.2151)		(0.3111)	
Control variables	Yes		Yes	
Region fixed effects	Yes		Yes	
Observations	9,126		5,625	
Log Pseudo-likelihood	-2087		-925.5	

Panel B: Birth interval < 33 months	(1) At most primary	*	(2) Secondary or higher	*
1D	1.6818***	***	1.4005***	***
	(0.0942)		(0.0929)	
2S	0.6948***		0.5323***	
	(0.0640)		(0.0834)	
2D	0.9694	***	1.0058	***
	(0.0743)		(0.1048)	
2M	0.7687***		0.7078***	
	(0.0526)		(0.0732)	
3S	0.7213		1.3108	
	(0.1672)		(0.6591)	
3D	1.1406	*	0.7779	
	(0.1594)		(0.1834)	
3M	0.8233**		0.9287	
	(0.0774)		(0.1590)	
Control variables	Yes		Yes	
Region fixed effects	Yes		Yes	
Observations	9,126		5,625	
Log Pseudo-likelihood	-6134		-3611	

Notes: Logit models are presented. The dependent variable takes the value of 1 if the birth interval (birth to birth) is 15 months or less in specification 1 (33 months or less in specification 2), and 0 otherwise. Controls for mother's age at first birth, mother's highest level of education, father's highest level of education, place of residence and region fixed effects are included. Specification 1 controls for the sex of all previous children at the time of conception, specifically only sons S, only daughters D and mixed sexes M, for different parity (1, 2 or 3). Specification 2 controls for the sex of the previous child, boy B or girl G at different parity (1, 2 or 3). Standard-errors in parenthesis. *** p-value<0.01, ** p-value<0.05 and * p-value<0.10. The p-values from the t-tests of statistical difference between D and S, for a given parity, are presented in the columns *.

Table R5: Specification 2: Logit: Relative odds of being followed by a short birth interval by mother's education level

Panel A: Birth interval < 15 months	(1) At most primary	*	(2) Secondary or higher	*
1G	1.3757***	***	1.1384	
	(0.1513)		(0.1868)	
2B	0.8822		0.8402	
	(0.1363)		(0.2237)	
2G	0.7838*		1.0547	
	(0.1086)		(0.2134)	
3B	1.1692		0.7770	
	(0.2576)		(0.4126)	
3G	0.9106		0.5455	
	(0.1864)		(0.2546)	
Control variables	Yes		Yes	
Region fixed effects	Yes		Yes	
Observations	9,126		5,625	
Log Pseudo-likelihood	-2088		-927.1	

Panel B: Birth interval < 33 months	(1) At most primary	*	(2) Secondary or higher	*
1G	1.6813***	***	1.4004***	***
	(0.0942)		(0.0929)	
2B	0.7326***		0.5962***	
	(0.0525)		(0.0646)	
2G	0.8866*	**	0.9242	***
	(0.0554)		(0.0802)	
3B	0.7606**		0.7481	
	(0.0869)		(0.1739)	
3G	0.9860	*	0.9952	
	(0.0954)		(0.1602)	
Control variables	Yes		Yes	
Region fixed effects	Yes		Yes	
Observations	9,126		5,625	
Log Pseudo-likelihood	-6138		-3612	

Notes: Logit models are presented. The dependent variable takes the value of 1 if the birth interval (birth to birth) is 15 months or less in specification 1 (33 months or less in specification 2), and 0 otherwise. Controls for mother's age at first birth, mother's highest level of education, father's highest level of education, place of residence and region fixed effects are included. Specification 1 controls for the sex of all previous children at the time of conception, specifically only sons S, only daughters D and mixed sexes M, for different parity (1, 2 or 3). Specification 2 controls for the sex of the previous child, boy B or girl G at different parity (1, 2 or 3). Standard-errors in parenthesis. *** p-value<0.01, ** p-value<0.05 and * p-value<0.10. The p-values from the t-tests of statistical difference between G and B, for a given parity, are presented in the columns *.