Son Preference and the Fertility Squeeze in India

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Abstract

India's sex ratio at birth has become increasingly masculine, coinciding with the spread of ultrasound technology which facilitates sex-selective abortion. We use household level data from all four waves of India's National Family Health Survey (NFHS) to investigate the effect of India's demographic transition on the sex ratio at birth. Mixed-effects logit regression analysis demonstrates that since the early 1990s the probability of a third-order birth being male is increasing in the number of daughters previously born, while for second-order births this effect does not become apparent until the 2000s. Accounting for geographic heterogeneity in the fertility transition, we find additional heterogeneity in son preference and sex selection at the neighborhood level. By incorporating the most recent 2015-16 round of the NFHS, we demonstrate that previously documented trends in sex selection continue, and sex selection is increasingly occurring at lower parities as the desire for a smaller family combines with the traditional preference for sons. Moreover, geographic heterogeneity in sex selection has strengthened over time at both second- and third-order births, suggesting various stages of the sex ratio transition throughout India.

Keywords: son preference, fertility decline, sex-selective abortion, fertility squeeze, mixed-effects

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1 Introduction

India has a long history of preference for sons over daughters (Das Gupta 2005; Madan and Breuning 2014; Mayer 1999; Sen 1990). The spread of ultrasound technology has allowed the practice of sex-selective abortion to proliferate, despite its legal ban in India under the Pre-Natal Diagnostic Techniques Act passed in 1994 (Madan and Breuning 2014), magnifying the demographic effects of more traditional methods of gender control such as stopping behavior and even infanticide or neglect of newborn daughters (Bongaarts 2013; Das Gupta and Bhat 1997).[1] Increases in the sex ratio at birth (SRB) have followed geographical patterns of ultrasound technology diffusion, particularly throughout the 1980s in India, South Korea, and China (Guilmoto and Attané 2007; Kim and Song 2007). While South Korea's sex ratio has returned to normal since its peak of 1.15 in the early 1990s, India remains less economically developed and its SRB continues to worsen (Guilmoto 2009). Yet, although son preference tends to decline with economic development, the sex ratio imbalance tends to worsen, at least over a certain range, as a desire to have a son couples with the desire for a smaller family (Jayachandran 2015). It may be the case that India is working its way through the "sex ratio transition" whereby sex ratios first worsen, then level off, then become more equal again as the fertility transition progresses (Bongaarts 2013; Guilmoto 2009; Kashyap and Villavicencio 2016).

As parents choose to have fewer children, the probability of ending up sonless increases, exerting pressure to sex select when there is strong preference for sons. This results in a "fertility squeeze" on the SRB (Guilmoto 2009). Traditional methods, in particular fertility stopping behavior whereby parents have children until the desired number of sons is born, distort SRBs at the individual family level, with girls generally growing up in larger families, but not at the national level (Bongaarts 2013). The "stopping rule" assumes that sonless families are willing to keep having children, but as desired fertility falls this approach becomes less effective in achieving multiple family planning goals. With the widespread availability of non-invasive, prenatal sex-determination technology in the form of the ultrasound, parents can effectively choose to have more sons and fewer daughters. For example, falling fertility combined with son preference led to rapid increases in SRBs during the 1990s in all newly independent countries of the South Caucasus, reaching 1.17 in Azerbaijan in 2002, 1.19 in Georgia in 1998, and 1.16 in Armenia in 2001 (Guilmoto 2009).

The most recent India census data of 2011 indicate that the SRB was 1.12 (899 girls

[1] Abortions are legal but restricted in India, as dictated by the Medical Termination Act of 1971 (Rajan, Srinivasan and Bedi 2017). Amniocentesis was first introduced to India in the mid-1970s, leading to immediate increases in abortion of female fetuses, and ultrasound technology was introduced a few years later, both spreading throughout the 1980s (Guilmoto 2009).

per 1,000 boys), up from 1.10 (905 girls per 1,000 boys) in 2001 (Rajan, Srinivasan and Bedi 2017).[2] By some counts the SRB has reached as high as 1.3-1.5 in parts of Punjab and Haryana, the states with the most skewed SRBs (Guilmoto 2009). Although the various available data sources depict at times conflicting results, as illustrated in Rajan, Srinivasan and Bedi (2017), the most recent estimates provided by the Sample Registration System indicate a continuation of the national trend as recently as 2015 (Census India).[3]

In this paper we investigate the dynamics of a fertility squeeze on the sex ratio in India using nationally representative, individual-level data from all four rounds of the National Family Health Survey (NFHS) spanning the early 1990s up until 2015-16. Specifically, we examine the manifestation of son preference in the form of sex selection at various birth orders, accounting for differences in timing of the fertility transition throughout India. Regression results support the effect of a fertility squeeze on India's SRB, with urban areas leading rural ones through the sex ratio transition. Sex selection continues to occur at thrid-order births but more recently is also evident at second-order births. Moreover, we find growing unobserved heterogeneity in sex selection at the urban neigborhood and rural village level, in both the notoriously gender skewed Northwest and in the historically more balanced South (Das Gupta and Bhat 1997). With the incorporation of the most recent round of the NFHS (2015-16) data into the analysis, our results demonstrate a strengthening of all these effects more recently.

A preference for sons arises from economic considerations and cultural norms (Mayer 1999). Where social security programs and an efficient financial system by which to save are lacking, parents rely on their children to care for them in old age. In India, China and South Korea, traditionally the son supports his parents when they age, inherits the property, and continues the family line (Chung and Das Gupta 2007; Jayachandran 2015). Widows in India traditionally do not inherit their husbands ancestral property and thus rely on their sons as the conduit to holding on to the land (Jayachandran 2015). Moreover, earning potential for women in India is limited with female labor force participation puzzlingly low (Mayer 1999). On the other hand, more educated women express greater acceptance of aborting unwanted pregnancies, likely resulting in higher actual abortion rates (Basu 1999). Modernization is contributing to both fertility decline and son preference in India even though conventional views predict weakening son preference as societies become more industrialized and urbanized and labor less brawn-based and more skill-based (Croll 2000). At the same

[2] The overall sex ratio did improve 2001-2011, however, from 1.07 to 1.06 (933 to 940 females per 1,000 males) due to improved longevity among women (Dandona *et al.* 2017; Madan and Breuning 2014).

[3] According to the Sample Registration System, the SRB for the country has worsened from 1.10 (906 girls per 1,000 boys) in 2012-2014 to 1.11 (900 girls per 1,000 boys) in 2013-2015.

time, old traditions continue and are even spreading. For Hindus, a son is deemed essential since he must light the funeral pyre (Bhaskar 2011). According to Confucianism only sons can care for parents in their life and their afterlife (Chung and Das Gupta 2007; Jayachandran 2015). In contrast, raising a daughter is considered akin to "watering your neighbor's garden" since she eventually moves in with her husband's family and cares for his parents (Arnold *et al.* 1998; Guilmoto 2009). Marriage remains an important vehicle for social and economic mobility in India, devaluing women. Basu (1999) describes how the state of Tamil Nadu in the south has experienced an increase in hypergamy (marrying a person of a superior caste or class) and kin and territorial exogamy (marrying outside a community, clan, or tribe), both contributing to increasing dowry payments. This may be contributing to greater sex ratio imbalances by reversing the historically higher status of women in south Indian society.[4] Patrilocal and patrilineal traditions are stronger in India's northern states, coinciding with a higher sex ratio in the north, and this relationship is observed in other parts of Asia, the Middle East and North Africa (Jayachandran 2015). Basu (1999) argues that the North, through its cultural dominance in politics, mass media and cinema, has contributed to the "sanskritization" of southern India, as lower socioeconomic groups imitate upper ones, which tend to have both stronger son preference and lower fertility (Madan and Breuning 2014).

India's growing SRB imbalance coincides with the country's fertility decline. The total fertility rate (TFR) fell from 6 children per woman in the 1950s to 4.7 during 1976-81 to 2.7 in 2005-06 and most recently stands at 2.35 (World Bank Indicators 2015). There is considerable variation though, with fertility as high as 4 in some states and below replacement level in others (Dharmalingam, Rajan and Morgan 2014). Fertility is generally higher in India's north where sex ratios are also most distorted, consistent with the view that son preference and large ideal family size are positively correlated (Bongaarts 2013; Jayachandran 2017). As is typical with such persistent fertility declines, over this time, infant and child mortality have fallen, and women's age at marriage and age at first birth have risen. However, women's education and job opportunities have played a smaller role in the fertility decline than in other Asian countries (Dharmalingam, Rajan and Morgan 2014).

China's experience of rapid fertility decline in response to combined rapid economic growth and the so-called "one-child policy" sheds some empirical light on how falling fertility may affect sex ratios.[5] China's TFR fell from 2.9 in 1979, just prior to the implementation of the one-child policy, to 1.7 in 2004. Coinciding with the spread of ultrasound sex determination

[4]Dowries in South Asia have increased in real value over time and are a financial burden to the daughter's family, despite the official ban under the long-standing Dowry Prohibition Act (Madan and Breuning 2014).

[5]The one-child policy allowed for many exceptions, among others, some families were permitted to have a second child if their first child was a girl.

technology, the sex ratio worsened from 1.06 in 1979 to 1.17 in 2001 (Hesketh, Lu and Xing 2011). The SRB rose from 1.09 in 1982 to 1.18 in 2012 (UNICEF). The one-child policy generated pressure for families to sex select at first-order births, or at second-order births in cases where a second birth was allowed (Li, Yi and Zhang 2011). Qiao (2008) found that when the first child was a son, the sex ratio of the second birth was 101.1, while it was 126.4 if the first child was a daughter (Yang 2012). Yang (2012) illustrates a clear fertility squeeze in China, with populations subject to the 1-child policy resulting in the most severely imbalanced SRB at first-order births, those subject to the 1.5-child policy at second-order births, and those subject to a 2-child limit regardless of sex of first born exhibiting the most balanced sex ratios. India's fertility decline has been slower and so sex selection may not manifest until higher order births, but a similar fertility squeeze is expected (Bhalotra and Cochrane 2010; Dharmalingam, Rajan and Morgan 2014; Das Gupta and Bhat 1997).

Theoretically, falling desired fertility could improve sex ratios. For example, among Hindus there is a general desire to have one daughter because it is considered sacramental to give away one daughter in marriage (Bhat and Zavier 2003). Sons, on the other hand, are perceived as productive assets. Thus as ideal family size declines, the ideal number of daughters changes little, while the ideal number of sons changes more. If instead ideal number of sons declines more slowly than desired fertility, the SRB imbalance worsens (Das Gupta and Bhat 1997). Empirical evidence supports the latter (Croll 2002; Guilmoto 2009, 2012). Basu (1999) describes the surprising recent skewing of SRBs in traditionally more gender equal southern India as already low fertility has fallen even further. Arnold, Kishor and Roy (2002) demonstrate a fertility squeeze at the third birth in India based on 1998-99 data. Bhat and Zavier (2003) demonstrate that while the percentage of couples preferring more sons than daughters drops with ideal family size in India, improved access to sex-selective technologies is fulfilling unmet demand thereby raising SRBs in northern India. Bongaarts (2013) shows desired SRB becomes more balanced even while actual SRB becomes more masculine at lower levels of fertility, based on data from India and other countries. Similarly, Jayachandran (2017) demonstrates that while son preference and ideal family size are positively correlated in India, the desired sex ratio rises sharply as fertility falls and estimates that fertility decline may explain one third to one half of India's recent sex ratio increase.

India's accelerated fertility decline began in the 1980s and initially appeared to exasperate regional differences in sex ratio imbalances. The rise in the imbalance has been greater in the North than in the South and has always been highest in the Northwest, and correspondingly fertility declined more rapidly in the Northwest than the rest of the North (Das Gupta and Bhat 1997). On the other hand fertility has declined most rapidly in the South but the sex ratio has risen least there, so historical regional differences in sex discrimination persist (Das

Gupta and Bhat 1997). Yet reports of widespread infanticide remain even in some southern states (Madan and Breuning 2014).

Although India's North has traditionally had higher fertility and stronger son preference (Bongaarts 2013; Dyson and Moore 1983), some northern states have demonstrated a reversal in SRB imbalances alongside falling fertility (Basu 1999). Recent analysis by Diamond-Smith and Bishai (2015) demonstrates that states with the most skewed SRBs have begun to reverse course. At the same time, India's South, which has typically had lower fertility rates and weaker son preference, has seen worsening sex ratio imbalances as fertility has fallen even further.[6] These reversals suggest possible convergence rather than a clear weakening or strengthening of son preference as India's demographic transition progresses (Rajan, Srinivasan and Bedi 2017). However, apparent convergence may be partially attributed to a mathematical phenomenon rather than the implied changes in behavior (Dubuc and Sivia 2017; Kashyap and Villavicencio 2016). At low fertility a small proportion of sex-selective procedures suffice to significantly distort the SRB. Importantly, this "disproportionality effect" illustrates how SRBs can be an inaccurate measure of son preference. Rather than focusing on aggregate sex ratio measures, this paper examines the extent to which sex of a birth can be predicted by the sex composition of previous births. Regression results demonstrate continuing sex selection in the North and West and some emerging evidence in the South most recently, but with increased heterogeneity in sex selection within these regions as well.

Substantial variation in SRBs across Indian states (Bongaarts 2013) demonstrates differences in son preference as well as ability and willingness of parents to actually manipulate sex ratios to achieve their ideal family composition. The analysis here accounts for this heterogeneity by estimating mixed-effects models to allow for different responses to the sex composition of one's existing children. This technique has had only limited applications in studying sex ratio imbalances. Bhalotra and Cochrane (2010) similarly find higher likelihood of a male being born if previous births are female in India, more so as couples approach their desired family size. They investigate potential unobserved heterogeneity at the mother level for third- and higher order births in that sex selection at earlier births might affect the tendency to sex select at higher order births, but find this heterogeneity to be of little importance. We argue that the heterogeneity may occur at a community, not just individual, level, since social norms have a strong influence on both desired fertility and sex ratio ideals.[7]

[6] Basu (1999) identifies three regimes: (1) high fertility/high son preference in the North recently and some states today, (2) medium fertility/medium son preference in the South recently and some northern states today, and(3) low fertility/continued medium son preference in some states such as Tamil Nadu in the South. Kerala represents a possible fourth regime of low fertility/low son preference.

[7] See, for instance, Munshi and Myaux (2006) who demonstrate distinct fertility behaviors across religious groups within villages in rural Bangladesh.

Our results demonstrate this heterogeneity is substantial in magnitude and increasing over time in most regions of the country. Since heterogeneity is increasing in both regions with traditionally more and less skewed SRBs, this result seems to support convergence across India, but toward a skewed rather than balanced SRB.

Many empirical studies describe India's distorted SRB. For the northern states where SRBs are most skewed, Arnold, Kishor and Roy (2002) show higher use of ultrasound and amniocentesis during pregnancy among women with no sons, especially among those with two children, and this is followed by higher rates of abortion and more masculine SRBs. Bongaarts (2013) illustrates variation in sex ratios at birth and at last birth and in desired sex ratios across Indian states. Das Gupta (2005) discusses SRBs at higher parities based on sex composition of existing children. Das Gupta and Bhat (1997) examine competing effects of fertility decline on SRB. Jha *et al.* (2011) document rising SRBs at second-order births when the first-born is female between 1991 and 2011. Mayer (1999) presents correlations between sex ratios and potential explanatory factors over a long time span. Rajan, Srinivasan and Bedi (2017) compare recent regional SRB trends using different sources of data. Patel, Badhoniya, Mamtani and Kulkarni (2013) demonstrate a higher probability of a son being born if previous children were female among a group of Indian physicians, more so than for the general population. Like our study, Jayachandran (2017) is one of the few to apply regression analysis. Using cross-sectional survey data from several districts within the state of Haryana, notorious for its unusually skewed sex ratio, Jayachandran demonstrates a sharply rising desired sex ratio as desired fertility falls. She examines changes in the desired sex ratio as the hypothetical number of children parents' children might have is varied exogenously. Yet Bongaarts (2013) shows significant differences between desired and actual SRBs. We instead consider geographic variation in fertility and examine its impact on the sex composition of *actual* births using a much larger data set, nationally representative data from four surveys spanning 24 years. Our analysis also differs from Jayachandran's in how fertility norms are measured. The neighborhood or village average number of children born to women at all stages of their reproductive lives is used as an indicator of prevailing fertility norms, since desired family size is affected by ones own experiences as well as the behavior of peers.

Section 2 introduces the data and presents some descriptive statistics supporting the existence of a fertility squeeze, Section 3 describes the econometric technique, and Section 4 presents and discusses the regression results. Section 5 concludes.

2 Data

The National Family Health Survey (NFHS) is a large-scale, multi-round survey conducted among a nationally representative sample of households covering over 99% of India's population. The survey collected information on population, health, and nutrition, with a focus on women and young children, and included questions about reproductive health and family plannnig services. There have been four rounds of the NFHS for the years 1992-1993, 1998-1999, 2005-2006 and 2015-2016. NFHS-1 sampled 89,777 ever-married women age 13-49, NFHS-2 sampled 90,303 ever-married women age 15-49, NFHS-3 sampled 124,385 ever-married women age 15-49, and NFHS-4 sampled 699,686 women age 15-49.

In each state, the rural sample was selected in two stages, with the selection of Primary Sampling Units (PSUs), which are villages, with probability proportional to population size (PPS) at the first stage, followed by the random selection of households within each PSU in the second stage. Villages with fewer than five households were omitted, and villages with fewer than 50 households were combined with other contiguous villages. In urban areas, a three-stage procedure was followed. In the first stage, wards were selected with PPS sampling. In the next stage, one census enumeration block (CEB) was randomly selected from each sample ward. In the final stage, households were randomly selected within each selected CEB. An average of 20-30 households were targeted per PSU with a target range of 15-60.

Reflecting changing geopolitical boundaries in India over time, the first survey covered 25 states, the second and third 26 states, and the fourth 29 states as well as India's six union territories. Newly created states may differ from their mother state in ways that would affect regression results, so we present regression results using the newest state and territory definitions when controlling for state fixed effects. However, results are confirmed when aggregating observations to their original state groupings (and dropping observations from the union territories which do not appear in the first three rounds of the NFHS), and are available upon request.

This study uses all four rounds of the NFHS and includes data on all women who have had at least two or three births, depending on the regression model. All descriptive statistics and regression results presented below are based on sampling weighted estimates, since oversampling in some areas could otherwise bias outcomes. The sampling weights are the national level weights provided by NFHS, which are appropriate when conducting analysis above the state level.

Figures 1-5 present distributions of sampling weighted PSU-level averages of key variables for each of the four survey years to demonstrate changes in mean and variance over time. All available observations are included in the graphs, not just those used in the final regression samples. In Figure 1 the average number of children born to women in the sample declines over time, reflecting falling fertility since the early 1990s, with a clear leftward shift of the distribution between the 1990s and 2000s. While a slightly higher proportion of males tends to be born even in populations not practicing sex selection, approximately 105 male per 100 female births, the sex ratio eventually balances out due to naturally higher male infant and child mortality (Guilmoto 2009).[8] However, Figure 2 clearly shows that among respondents with a first-born daughter, the second birth is, on average, more likely to be male. The distribution has shifted further to the right over time, with a clear shift between the 1990s and 2000s especially in urban areas, coinciding with the fertility change in Figure 1 and thereby suggesting a fertility squeeze effect on the SRB. Moreover, the distribution has widened over time, indicating rising variation across PSUs in the practice of sex selection at second-order births. The urban sub-sample in Figure 2 exhibits a stronger movement to the right, and in fact the widening of the distribution is non-monotonic, first tightening during the 1990s and then widening during the 2000s as the distribution inches to the right. The regional breakdown in Figure 3 demonstrates a similar trend in all regions of the country, movement to the right with a general widening of the distribution, even in the South where sex selection has historically been less visible (Das Gupta and Bhat 1997). In Figure 4, similar changes are observed for male third-order births when the first two births are female. The distribution becomes increasingly skewed to the right while flattening. The distribution of the urban sub-sample, again, inches to the right, first tightening before widening again. The regional breakdown in Figure 5 again confirms that the national trend is ubiquitous throughout India.

Declining fertility accompanied by increasingly masculine proportions of male births conditional on previous female births suggests a fertility squeeze effect. Parents are feeling growing pressure to sex select as they approach their desired family size.

3 Methods

The demand for sex selection may vary at different birth orders depending on desired fertility size such that a family desiring a total of two children would act on their son preference at the second birth, while a family desiring a total of three children might not do so until the third birth, in the case that the previous births were female. The following regression analysis accounts for differences in desired fertility by investigating whether the impact of sex composition of children on the sex of a subsequent birth is affected by local fertility rates.

[8] Notably, neglect of daughters remains a widely used method of sex selection so that under-5 mortality is actually higher among girls than boys in Nepal, Pakistan, India, and especially China (Guilmoto 2009).

We expect a greater probability of a male birth when previous births have been female among women living in areas with lower fertility rates (Guilmoto 2009). The use of local fertility rates avoids reporting bias inherent in individually-reported ideal family size (Jayachandran 2017) and reflects the influence of social norms and geographically-shared socioeconomic influences on fertility (Bloom *et al.* 2008).

We further explore unobserved regional heterogeneity in the degree of son preference and sex selection through the use of mixed-effects models. Assuming that retrospective reporting may bias stated ideal sex ratios of children and also that survey respondents do not accurately report if they have engaged in sex selection, the data set lacks accurate information about son preference and sex selection. Mixed-effects models allow for standard random effects (different intercepts for each geographic area) but also for different effects of selected covariates. In our case, the probability of having a son when previous births have been female is allowed to differ by geographic area.

We implement a mixed-effects logit estimation with two levels. At the first level, the indicator Son_{ij} takes the value of one if woman i in geographic area j gave birth to a son. Otherwise Son_{ij} takes the value of zero. Second- and third-order births are separately considered: the first set of models considers women who have had at least two births, and the second set of models includes only those women who have had at least three births, estimating the probability of a male second- or third-order birth, respectively. In the second level, we account for geographic heterogeneity by allowing some coefficients to vary across PSU. The two-level logit models are specified as follows:

$$logit(p_{ij}) = X_{ij}\beta + Z_{ij}u_j + \varepsilon_{ij} \tag{1}$$

where $p_{ij} = Pr(Son_{ij} = 1)$ for woman i living in PSU j, X is a vector of variables potentially associated with son preference, Z is a subset of factors assumed to have heterogeneous effects across PSUs, and ε is the error term that follows a logistic distribution. β is the vector of relevant fixed effect coefficients to be estimated, and u_j is a set of random effects that depict heterogeneity across PSUs. The random-intercept logit model is obtained when vector Z is reduced to a vector of ones. In this model, the effects of covariates on the probability of a son being born are assumed to be fixed, but the intercept is allowed to vary across PSUs to account for heterogeneity. As an extension of this model, a subset of variables is included in vector Z to estimate a random-coefficient logit model in which the estimated effects of those variables are allowed to randomly vary across PSUs. We explore the possibility that the sex composition of previously born children can have mixed (fixed and random) effects on the probability of a son being born by including sex composition as an indicator variable in vector Z.

The vector X includes variables that indirectly capture household wealth, education, and exposure to media, while maximizing sample size. Specifically, X includes presence of electricity and a toilet in the home, education of the woman and that of her partner, and ownership of a radio or television. Previous research suggests more masculine SRBs among the more educated and wealthy in India (Madan and Breuning 2014; Portner 2016). More educated women may have higher opportunity cost of children and thus lower desired fertility, which would affect the birth order at which the pressure to sex select occurs (Clark 2000). More educated women may also be better informed about accessing sex-selective abortions (Arokiasamy 2007; Bhat and Zavier 2007). On the other hand, greater education of women might be associated with higher perceived status of women, which would weaken the preference for sons, although this does not seem to the case in India.

We control for woman's age since the reported first-, second- or third-order births could have occurred as recently as in the past year or up to 36 years ago for any particular survey year. Death of a child is included as this could influence fertility decisions within the household. The respondent's relationship to the head of the household includes the categories: self, wife, daughter, daughter-in-law, grandaughter, mother, mother-in-law, sister, other relative, adopted/foster child, not related, sister-in-law, niece, and domestic servant. While all are included in the regression models, only the categories self, wife, daughter and daughter-in-law are presented explicitly in the descriptive statistics that follow. Women residing with their in-laws may face more pressure to sex select (Robitaille 2013).

Indicator variables for the most dominant religions are also included in X, since these will reflect differences in traditions which may influence son preference, with Hinduism being more strongly associated with son preference than Islam and Christianity (Guilmoto 2009). Caste is not included in the main regressions due to inconsistency in reporting across survey years. Many mechanisms by which caste might influence both fertility and son preference, however, are accounted for through the other control variables. Moreover, recent research by Borker *et al.* (2018) demonstrates substantial variation in sex selection within castes in India, so that members of any particular caste are not homogeneously more or less likely to sex select. Nevertheless, we conduct robustness checks of all regressions including caste for the three years available, 1998-99, 2005-06 and 2015-16. An indicator variable for urban is included, since desired family size tends to be lower in urban areas thereby affecting the rate of fertility squeeze. State fixed effects control for state-level heterogeneity in son preference not captured by the individual control variables.

The rate of fertility decline has differed throughout India (Das Gupta and Bhat 1997). The PSU average level of children born per respondent is included in X as a proxy for the local fertility rate as this may affect fertility decisions at the household level. If fertility rates have declined locally, social norms may push couples to choose to have fewer children, and such a fertility squeeze may exasperate the manifestation of son preference by encouraging sex selection at lower order births. The regressions that follow present results with and without this PSU average number of children born per woman, as well as with the average interacted with sex of previously born children. To make the PSU average a meaningful measure, and to avoid endogeneity at the individual respondent level, all observations in PSUs numbering less than five households are dropped from the regression analysis.[9] These make up an imperceptible fraction of of the observations, 71 out of 260,942 for the second-order birth regression sample and 40 out of 175,711 for the third-order birth regression sample, with an average 31 households per PSU.

Unobserved heterogeneity at the PSU level could cause variation in the manifestation of son preference. Early on in the data this may include geographic differences in access to sex-determination technology. While ultrasound technology was widespread in India by the 1990s, access did continue expanding throughout that decade (Bhalotra and Cochrane 2010). Figures 6-7 illustrate that actual usage of ultrasound during pregnancy by women in the NFHS data set has increased over time but to varying degrees across regions. Unfortunately, data collection on ultrasound usage is only available for a small subset of the sample and not at all for 1992-93, so it is not included in our regression models. We discuss the implications later in Section 4.2. However, PSU-level random effects (u_j in equation 1) can account for some of this unobserved heterogeneity in access to sex-determination technology.

There remains potential heterogeneity in social norms affecting the degree of son preference or at least the willingness to sex select. The preference for sons may itself differ across states or more locally between villages or throughout major urban areas depending on economic and educational opportunities for women, religious traditions, and other social norms. While the control variables in X aim to account for such variation, they cannot capture all social norms or even wealth effects completely, so there may remain unobserved heterogeneity. Moreover, even for a particular degree of son preference, social norms may affect how individuals act upon that son preference, whether it manifests in sex-selective abortions, or even infanticide, or whether parents use the more natural "stopping rule", having children until the desired number of sons is born. Since responses to survey questions regarding sex-selection cannot be considered reliable, in part due to the illegality of both sex-selective abortions and of infanticide, individual-level preferences cannot be directly measured (Arnold, Kishor and Roy 2002). Assuming social norms play a role in son preference and the proclivity to actually sex select, PSU-level random effects can account for some of this potential bias by controlling

[9]This mirrors the NFHS sampling methodology which omits villages with fewer than five households from the survey.

for unobserved neighborhood/village-level heterogeneity.

Sex selection at earlier births may affect the tendency to sex select at higher order births. If those having a third birth sex selected at previous births, they might be more likely to sex select again but to also have more sons, thereby biasing our results towards a weaker effect of having sons on the probability of having another son. If those having a third birth have not sex selected at previous births, they may be less willing and therefore less likely to sex select at the third order but also have more daughters, similarly biasing the estimated effects downward. Once again assuming social norms play a role in son preference and the proclivity to actually sex select, PSU-level random effects can account for some of this potential bias.

There could also be some sex-selection occurring at first-order births, varying regionally throughout India, although past evidence concludes this an uncommon practice and is much more likely at higher order births (Ebenstein 2007; Jha *et al.* 2011; Portner 2010; Rosenblum 2013).[10] However, to the extent that sex-selection is occurring at the first-order, this would bias the regression results that follow, which assume that the sex of the first-born child is exogenous, i.e. not affected by son preference. Again, random effects can account for some of this potential bias.

In the regression analysis that follows, we first regress the probability of a male second-order birth on the sex of the first-born child. Secondly, we regress the probability of a male third-order birth on the sex composition of the first two children.

4 Results

4.1 Descriptive Statistics

Table 1 presents summary statistics for the sample used in the first set of regression results, those regressing the probability of a male second-order birth on the sex of the first-born child. For all years there are slightly more males born than females at both the first and second orders, but no clear upward or downward trend emerges over time. Fertility has clearly declined over time, along with child mortality. Years of education have increased, with some narrowing of the gap between men and women. Religious composition remains stable, with 81% of the Indian population Hindu and 12-13% Muslim. Urbanization has increased as have access to electricity and toilets in the home. While more households own a television, radio ownership has decreased over time.

Table 2 breaks down these descriptive statistics according to sex of the respondent's

[10] Further drops in fertility could create a fertility squeeze at first-order births as in China where the one-child policy has had such an effect (Jha *et al.* 2011).

second-born child. The manifestation of son preference would present as a greater proportion of first-born female children among respondents who had a son at second birth. In 1992 the opposite is true, although the difference is statistically insignificant, while over time the mean of first-born females is greater among respondents having a second-born son, the difference in means becoming statistically significant at the 1% level for 2005 and 2015. Fertility is on average lower among respondents having a second-born son, with differences in the reported means statistically significant at the 1% level, suggesting that either women who successfully have a son are less likely to continue having children, or conversely that where desired family size is smaller, the pressure to produce a son is stronger. Among the other variables, there is no clear pattern which emerges between the two groups.

Table 3 limits the summary statistics to those women who have had at least three births, that is, the sample used to regress the probability of a male third-order birth on the sex composition of the first two children born. Examining the mean of male first-, second- and third order births suggests an intensification of son preference relative to fertility decline over time. In 1992 more boys than girls were born, on average, at each birth order, but in 1998 there is a higher prevalence of daughters as first births, and in 2005 and 2015 a higher prevalence of daughters as first and second births. Overall, respondents who have had at least three births tend to be those who have more daughters at earlier birth orders, with a clear reversal towards male births at the third order. This suggests a fertility squeeze, instensifying over time, whereby higher order births are pursued when the respondent has yet to yield a son.

Table 4 again breaks down these descriptive statistics according to sex of the third-born child. On average, respondents with a third-order male birth have higher prevalence of previous female births, with the exception of the 1992 sample when a fertility squeeze effect would have been weakest at this earlier stage of the demographic transition. The difference in means is not, however, statistically significant until 2005 at the 10% level of significance and 2015 at the 0.1% level of significance.

The descriptive statistics thus far suggest that the sex of later births is largely conditional on the sex of previous births (Gu and Roy 1995; Yang 2009; Yang *et al.* 2009; Yang and Wang 2006).

4.2 Regression Results

Table 5 present results regressing probability that the second-born child is male on sex of the first-born child and all of the control variables (not shown) for each sample year individually and then using the pooled sample with year fixed effects. Observations are weighted using sampling probability weights in all regressions that follow. If son preference is present and is manifesting in sex selection, then we expect a positive coefficient on the explanatory variable of interest, a first-born daughter. For each year, two models are presented: with and without average PSU children born per woman and its interaction with sex of first-born child. The latter investigates the presence of a fertility squeeze whereby a tendency towards smaller families may exasperate son preference and thus sex selection at lower order births, specifically at the second-order birth here. Later, comparison with regressions of third-order births will provide additional insight on progression of the fertility squeeze over time. Coefficient estimates and statistical significance are similar across the logit, random-intercept and random-coefficient models, but the AIC and BIC statistics favor the random-coefficient model over the basic logit and the random-intercept model in each case. Thus only the random-coefficient estimates are presented in the interest of brevity.

Comparing results across years demonstrates no evidence of sex selection at the second-order birth in 1992 and 1998 but clear evidence for 2005 and 2015. The 2015 results indicate a fertiltiy squeeze effect related to sex selection, that is, where fertility is lower, there is higher probability that a first-born daughter is followed by the birth of a son. The relationship appears strong enough that it drives statistical significance in the pooled sample as well (columns 9 and 10). Notably, none of the control variables are statistically significant, except for the education variables and respondent's age and relationship to the household head, but those only in some specifications across some years. Thus it seems that sex of the first-born child is the key predictor of whether a second-born child will be male, with stronger effects where the fertility decline is more advanced.

The magnitude of the random coefficient estimates are sizable (0.14 in 2005 and 0.45 in 2015) relative to the estimated β coefficients. Unobserved heterogeneity at the PSU level is causing substantial variation in the manifestation of son preference at second-order births, even after controlling for PSU heterogeneity in fertility rates.

The lack of evidence of sex selection for earlier years is likely due to the pace of demographic transition. India's total fertility rate was approximately 3.8 in 1992-93, 3.4 in 1998-99, 2.9 in 2005-06 and 2.3 in 2015 (World Bank Indicators). With a higher fertility rate, the pressure to sex select may not manifest until higher order births. Table 6 presents results regressing probability of a third-born male birth on sex composition of the first- and second-born children. Again, if son preference is present and manifesting in sex selection, we expect a lower probability of the third-born child being male if at least one son is already born, and even more so if there are already two sons, relative to the benchmark of two previous female births. Moreover, this effect is likely stronger where fertility rates are lower as families act to fulfill the dual desires of having sons but also a small family. Again, we present only the random-coefficient estimates as these are supported by the AIC and BIC statistics over the basic logit and the random-intercept models.

Unlike the regressions of second-order births, we see evidence of sex selection at the third-order birth even as early as 1992 once we account for variation in fertility rates. That is, the fertility squeeze was occurring at third-order births at least as early as 1992, but not yet at second-order births. The effects are generally consistent across years with some qualifications. First, the effect of having two sons is stronger than that of having one son and one daughter for the earlier years, but statistical significance strengthens over time, consistent with the idea of a tightening fertility squeeze. Geographic heterogeneity strengthens over time based on increasing magnitude of the random-coefficient estimates (0.26 and 0.10 in 1992 up to 1.66 and 0.67 in 2015). As with the second-order birth regressions, this magnitude relative to the β coefficient estimates on sex composition indicates the importance of the unobserved, local heterogeneity.

Tables 7 and 8 segment the sample into respondents residing in rural versus urban areas. At second-order births (Table 7) there is evidence of sex selection throughout the 2000s in both rural and urban areas, although evidence of the fertility squeeze is clear only in the urban sub-sample. In other words, urban trends are the primary driver of the main results in Table 5. The results are less consistent at third-order births (Table 8), but there is evidence of sex selection as early as 1992 in both rural and urban areas, as in the main results in Table 6. Moreover, evidence of sex selection and the fertility squeeze appear stronger in rural areas most recently. Comparing Tables 7 and 8, most recently the fertility squeeze is stronger in urban areas at second-order births and in rural areas at third-order births, consistent with lower desired fertility in urban areas. Increasing magnitudes of the random-coefficient estimates also indicate growing heterogeneity in sex selection in both rural and urban areas.

Geographic variation at the larger regional level is more closely investigated in Tables 9 and 10. Since in some cases the regression models failed to converge for some regional sub-samples, the basic logit model results are also presesnted in Tables 11 and 12 for comparison and completeness. Coefficient estimates and statistical significance are similar across the basic logit and random-coefficients models. Table 9 indicates that the results for second-order births in Table 5 are being driven by the North and West and, to some degree, the Central region. However, PSU-level heterogeneity is significant and growing over time in most regions, including the South. The relationship between sex of first- and second-born children is more homogeneous in the Northeast and Central regions, where the random coefficients are mostly statistically insignificant. Table 10 indicates that the results for third-order births in Table 6 are being driven primarily by the North and more recently by the West. However, the South is recently beginning to exhibit some tendency to sex select at third births so the fertility squeeze is finally affecting even this region of the country where sex ratios have traditionally remained more balanced. The 2015 random coefficient estimates are also particularly large for the South.

Tables 13 and 14 segment the sample into respondent less than 35 years old and those 35 and older. Consistent with the main results in Tables 5 and 6, there is evidence of sex selection at second-order births in the 2000s (Table 13) and at third-order births as early as 1992 (Table 14) across younger and older women. Most recently, a clear fertility squeeze is only seen among the sample of older women for the year 2015, for both second- and third- order births (column 8), possibly reflecting greater variation in desired family size when compared to younger women.

It is possible that variation in sampling strategy or sample size across years is driving some of the regression results. Tables 15 and 16 present random-coefficient regression results for the pooled sample, with the explanatory variables of interest interacted with year fixed effects, specifically sex of previous births, average PSU children born per woman, and the interaction of these. Results are similar for the basic logit and random-intercept models, but statistical signficance for most variables is somewhat stronger for the random-coefficients model. The year-specific regression results in Tables 5 and 6 are confirmed with these pooled samples. The effect of having a first-born daughter on the probability of having a second-born son is statistically significant only more recently, for 2005 and 2015 (column 1), with the fertility squeeze more evident in 2015 (column 2), consistent with the year-specific results in Table 5. Turning to third-order births, column 4 demonstrates a fertility squeeze for all survey years, with the impact of having two sons born previously stronger than one son and one daughter, consistent with the year-specific results in Table 6. The effect of having two sons born previously is statistically stronger most recently, while the coefficients on having one son and one daughter born previously are not statistically different over time.[11]

As a robustness check, all of the above regressions are repeated including the caste variables as controls (scheduled caste, scheduled tribe, other backwards class). The 1992-93 regressions are omitted because of lack of data. Results are not substantially altered by this addition. The main results are presented in Tables 17 and 18, while the regional and age breakdowns are available upon request.

Because of data limitations, none of the regression results presented account for access to sex-determination technology, and this could be driving some of the results. As access

[11] Testing for equality of coefficients across all four years yields a p-value of 0.09 for two sons born previously, while testing whether the larger coefficient in year four is different than any of the others yields a p-value of 0.01, and testing equality for the first three years yields a p-value of 0.81. Testing for equality of coefficients across all four years for one son and one daughter born previously yields a p-value of 0.35.

to ultrasound technology spread, so would evidence of sex selection, as in Table 5 where sex selection at second-order births shows up only more recently in the 2000s. However, evidence of sex selection at third-order births as early as 1992 (Table 6) suggests that access to technology is not driving these results. Variation in access to sex-determination technology might also explain the PSU-level heterogeneity indicated by the random-coefficient estimates. Figures 6 and 7 illustrate the rising prevalence of ultrasound usage over time. Variation increased between 1998 and 2005 and then remained steady through 2015 although with a strong shift to the right. In urban areas, however, the distribution tightened again as ultrasound usage increased. Regionally, variation increased over time in the East, Northeast and Central regions (Table 7), while evidence of random effects is weakest for the Northeast and Central regions (Tables 9 and 10). Variation increased and then decreased for the South and West regions, while evidence of random effects is particularly strong for these regions, and the random coefficients grow substantially between 2005 and 2015 in Tables 9 and 10. Thus it is unlikely that variation in ultrasound usage explains the strong, monotonic increase in unobserved heterogeneity indicated by the random-coefficients regression results.

5 Conclusion

The tendency for son preference to decline with economic development may alleviate concerns about India's masculinized SRB (Bongaarts 2013). Yet falling desired family size can have the perverse effect of intensifying these imbalances, even as actual son preference weakens, by pressuring parents to sex select at earlier parities. Indeed, the analysis presented here demonstrates sex selection at increasingly earlier parities, consistent with the "intensification effect" described by Gupta and Bhat (1997).

This paper is the first to combine all four waves of India's NFHS to examine the influence of the fertility transition on the country's notoriously skewed SRB. The regression results demonstrate a fertility squeeze at third-order births in even the earliest survey years (1992-93), while the effect at second-order births does not emerge until more recently, beginning with the 2005-06 survey years and strengthening for 2015-16. Accordingly, India's total fertility rate fell from 3.8 to 2.35 during this time (World Bank Indicators 2015). The analysis also accounts for unobserved heterogeneity at the village or urban neighborhood level that may affect the degree of son preference and its propensity to manifest in sex selection. Unlike Bhalotra and Cochrane (2010) who conclude that heterogeneity at the individual mother level is of little importance in India, we show that heterogeneity at the local level is considerable in magnitude and has increased over time, even after controlling for geographic variation in the pace of fertility decline. Future research may determine the drivers of this heterogeneity, whether they be access to health care facilities willing to provide abortions or specific cultural or socioeconomic factors not captured in the estimated models. We find no systematic impact of religion, caste, household structure, exposure to media, or education or wealth levels on the propensity to sex select in the regression analysis here, supporting Basu's argument of cultural convergence throughout India as lower socioeconomic groups imitate upper ones (Basu 1999).[12]

As desired fertility continues to decline, even decreased rates of sex selection could exasperate sex ratio imbalances because the number of missing girls weighs disproportionately on the SRB of a small birth cohort. Accordingly, our results demonstrate sex selection at increasingly lower order births. India's SRB could eventually re-balance, as was the case in South Korea, although likely not until well after fertility rates have stabilized and further economic development counters the fertility squeeze effect. On the other hand, India may be on a path of regional convergence towards a permanently skewed SRB if willingness to sex select persists at very low fertility (Basu 1999; Diamond-Smith and Bishai 2015; Rajan, Srinivasan and Bedi 2017). Our results demonstrate that the northern region is driving much of the aggregate trends in sex selection. But they also reveal some evidence of sex selection most recently, in 2015, in the southern region where sex ratios have historically remained more balanced, with the increase in unobserved heterogeneity in sex selection particular strong in this region. While the southern state of Kerala has been widely touted as a bastion of relative gender equality with both very low fertility and weak son preference (Todaro and Smith 2015; Basu 1999), there are nevertheless reports of widespread discrimination against baby girls throughout the South (Madan and Breuning 2014). Our regression results could reflect a cultural shift in that region.

A number of policies have been pursued in India with the intent of re-balancing the SRB. For instance, over two dozen conditional cash transfer programs aimed at improving the welfare of girls have been launched. These so-called *ladli-lakshmi* schemes that subsidize daughters have met with mixed success and are, of course, subject to funding availability (Anukriti 2014). Future research can pinpoint specific villages and neighborhoods that are more prone to the practice of sex-selective abortion. It is possible that social network effects play a role in the local geographic heterogeneity identified by the regression analysis here. In that case policies may be able to exploit these social network effects to better target those couples most likely to sex select.

[12]Partner's education is associated with a lower probability of a son at second parity, while education of the respondent is associated with a higher probability at third parity, but both effects are statistically significant only for some years. Echavarri and Ezcurra (2010) find a non-linear effect of education on sex selection in India, which may explain the inconsistency across our results.

India's journey through its sex ratio transition reveals the potential future for some less economically developed countries as fertility decline begins later and the ability to sex select spreads (Guilmoto 2009). Bongaarts (2013) demonstrates much higher *desired* than actual SRBs in Mauritania, Pakistan, Senegal, Guinea, Nepal, Azerbaijan, Jordan, Mali, Armenia, Niger, Chad, and still in India. In some the availability of contraceptives has resulted in a very high sex ratio at last birth (SRLB), indicating widely practiced stopping behavior, but in most of these sex-selective abortion is not yet widely practiced or available.[13] This could change, as in Vietnam where SRBs have become more skewed only recently, reaching 111 in 2006, with Bangladesh and Nepal poised to follow (Guilmoto 2009). With fertility falling, sex selection occurring at increasingly earlier parities, and sex selection emerging in southern, not just northwestern, parts of the country, India's SRB seems destined to continue rising in the coming years.

[13] Mauritania and Senegal have high desired SRB but normal SRB and SRLB, Nepal has high desired SRB and SRLB but normal SRB, and Armenia and Azerbaijan have high SRB, DSRB and SRLB (Bongaarts 2013).

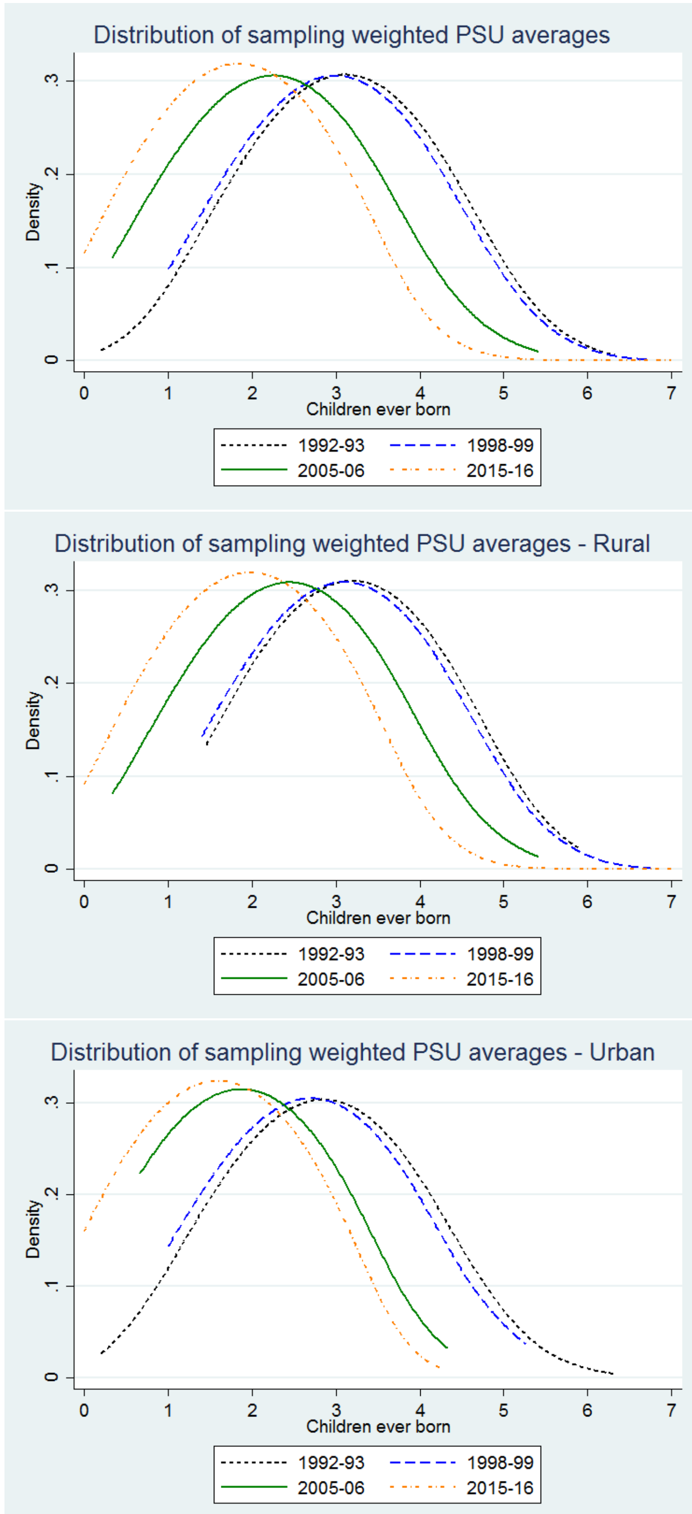

Figure 1: Children ever born per respondent for "All India" and rural/urban

Note: First PSU averages are calculated, then probability sampling weights are applied when generating the density distributions.

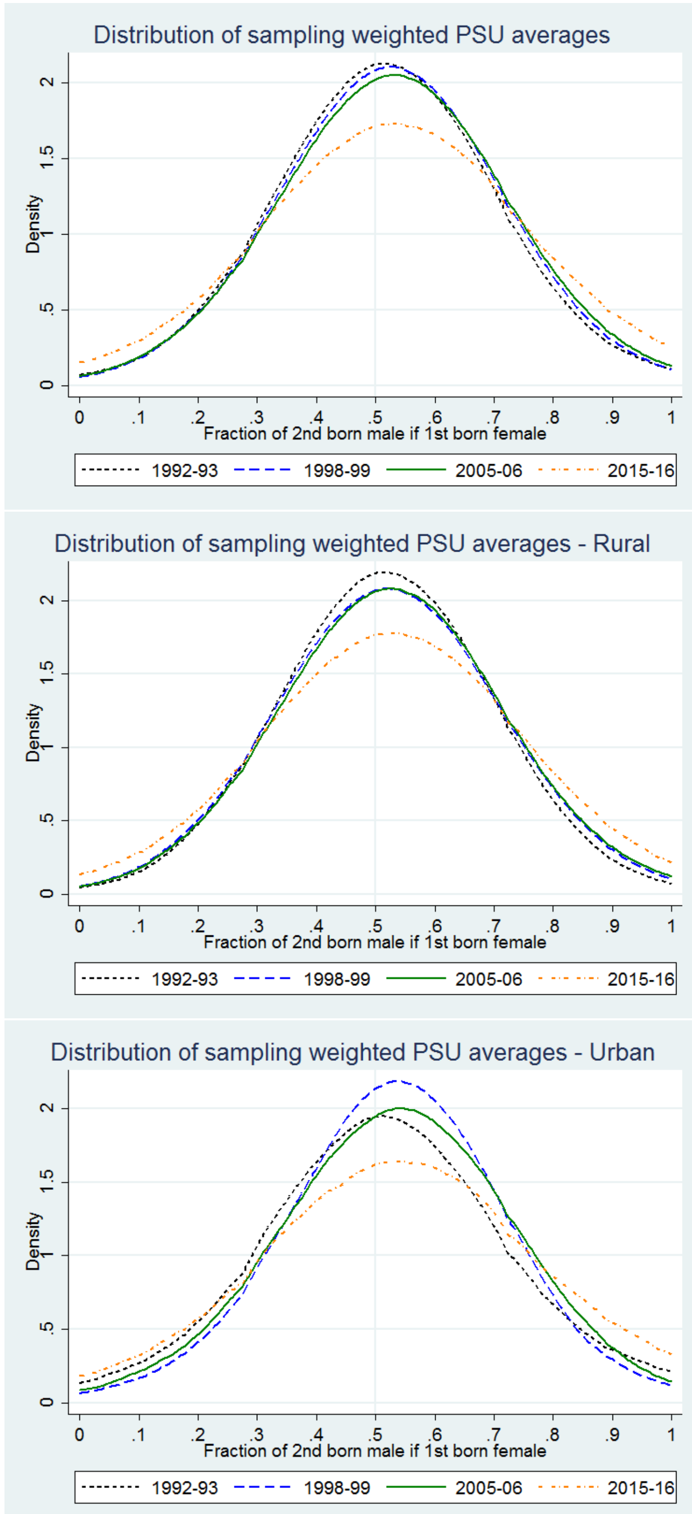

Figure 2: Proportion of second births male if first birth female for "All India" and rural/urban

Note: First PSU averages are calculated, then probability sampling weights are applied when generating the density distributions.

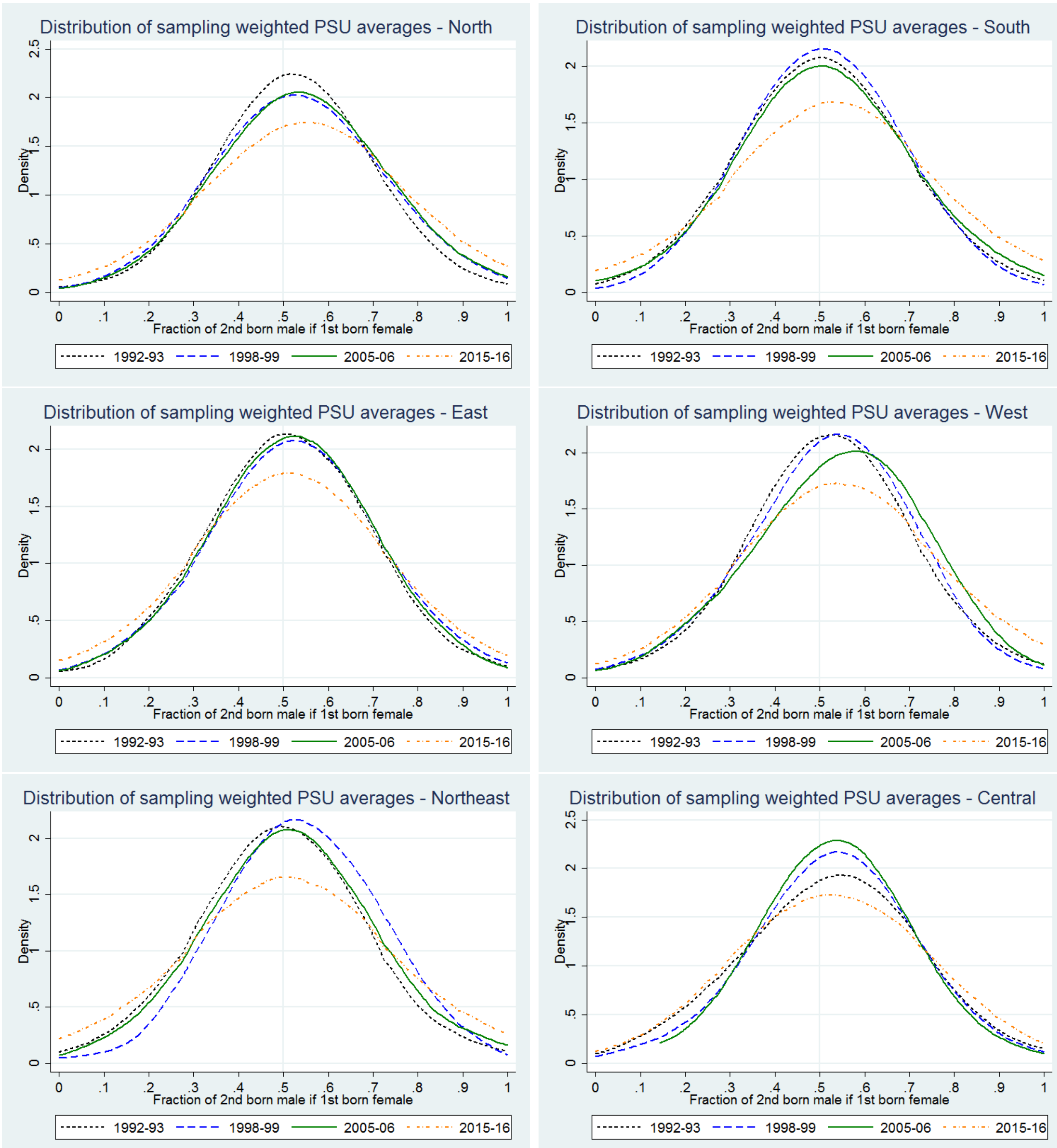

Figure 3: Proportion of second births male if first birth female by region

Note: First PSU averages are calculated, then probability sampling weights are applied when generating the density distributions.

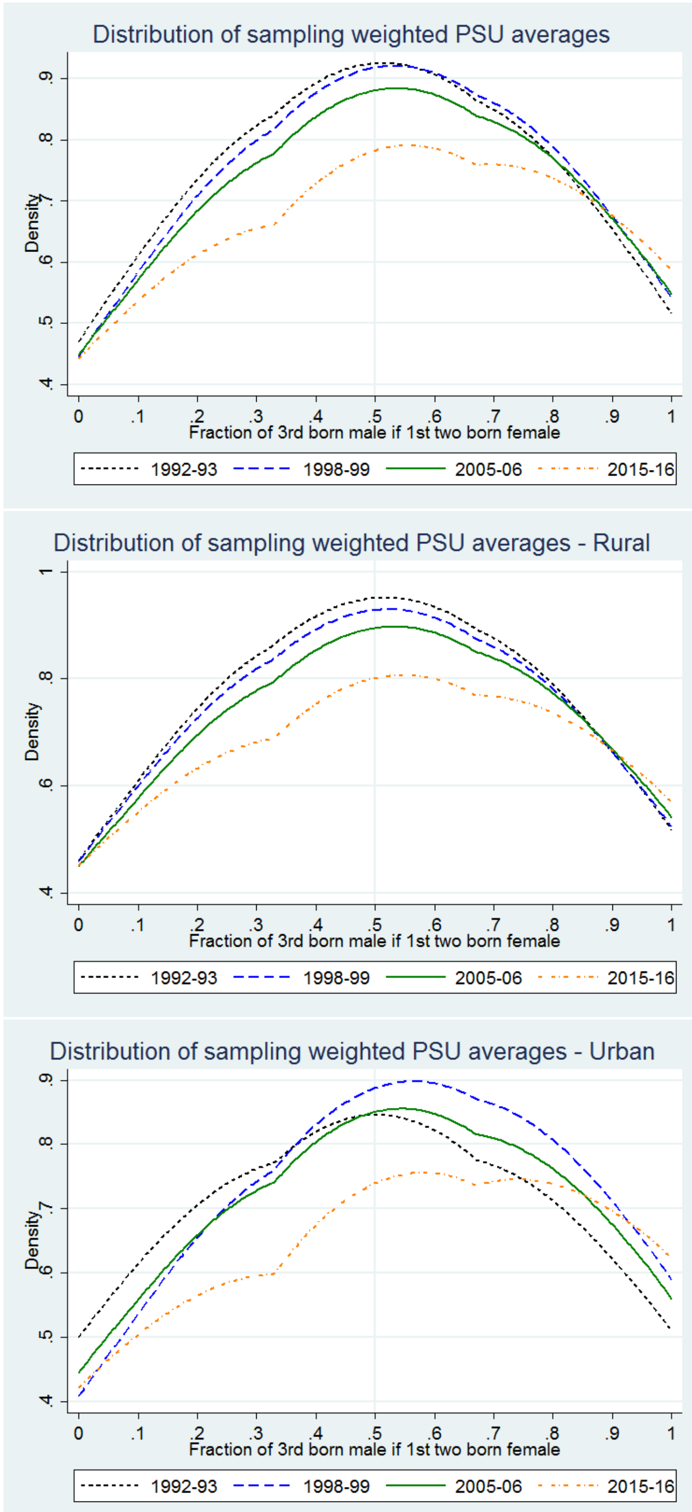

Figure 4: Proportion of third births male if first two births are female for 'All India' and rural/urban

Note: First PSU averages are calculated, then probability sampling weights are applied when generating the density distributions.

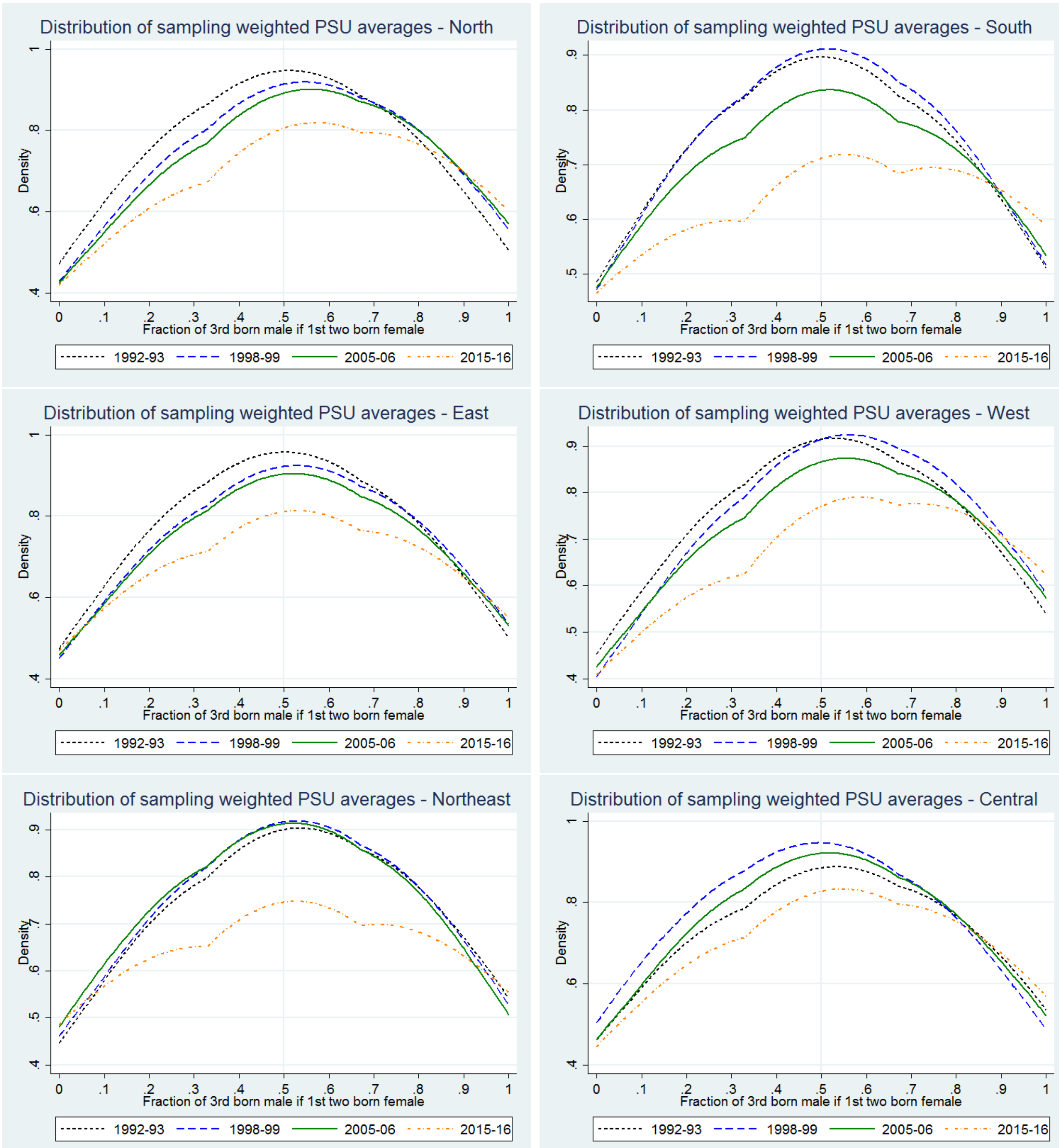

Figure 5: Proportion of third births male if first two births are female by region

Note: First PSU averages are calculated, then probability sampling weights are applied when generating the density distributions.

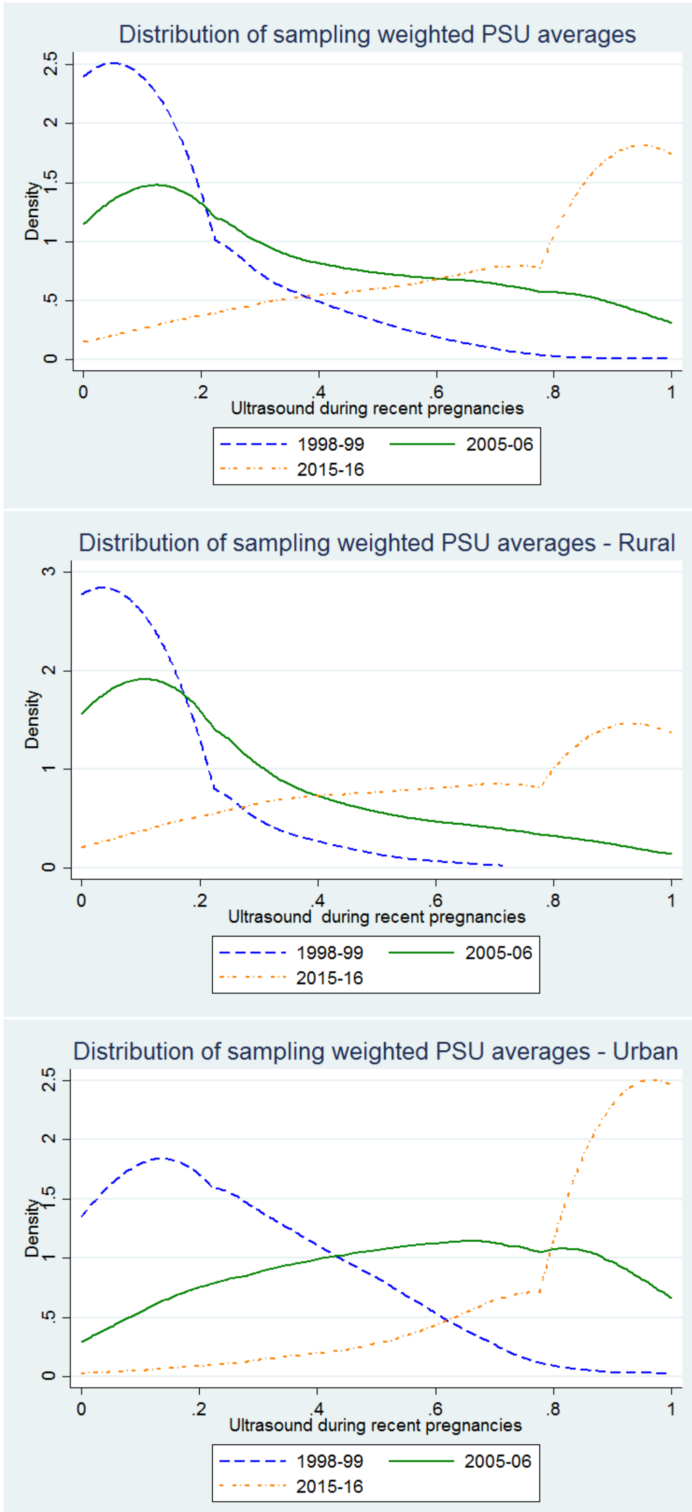

Figure 6: Proportion of respondents reporting at least one ultrasound, conditional on having been pregnant within past 5 years, for 'All India' and rural/urban

Note: First PSU averages are calculated, then probability sampling weights are applied when generating the density distributions.

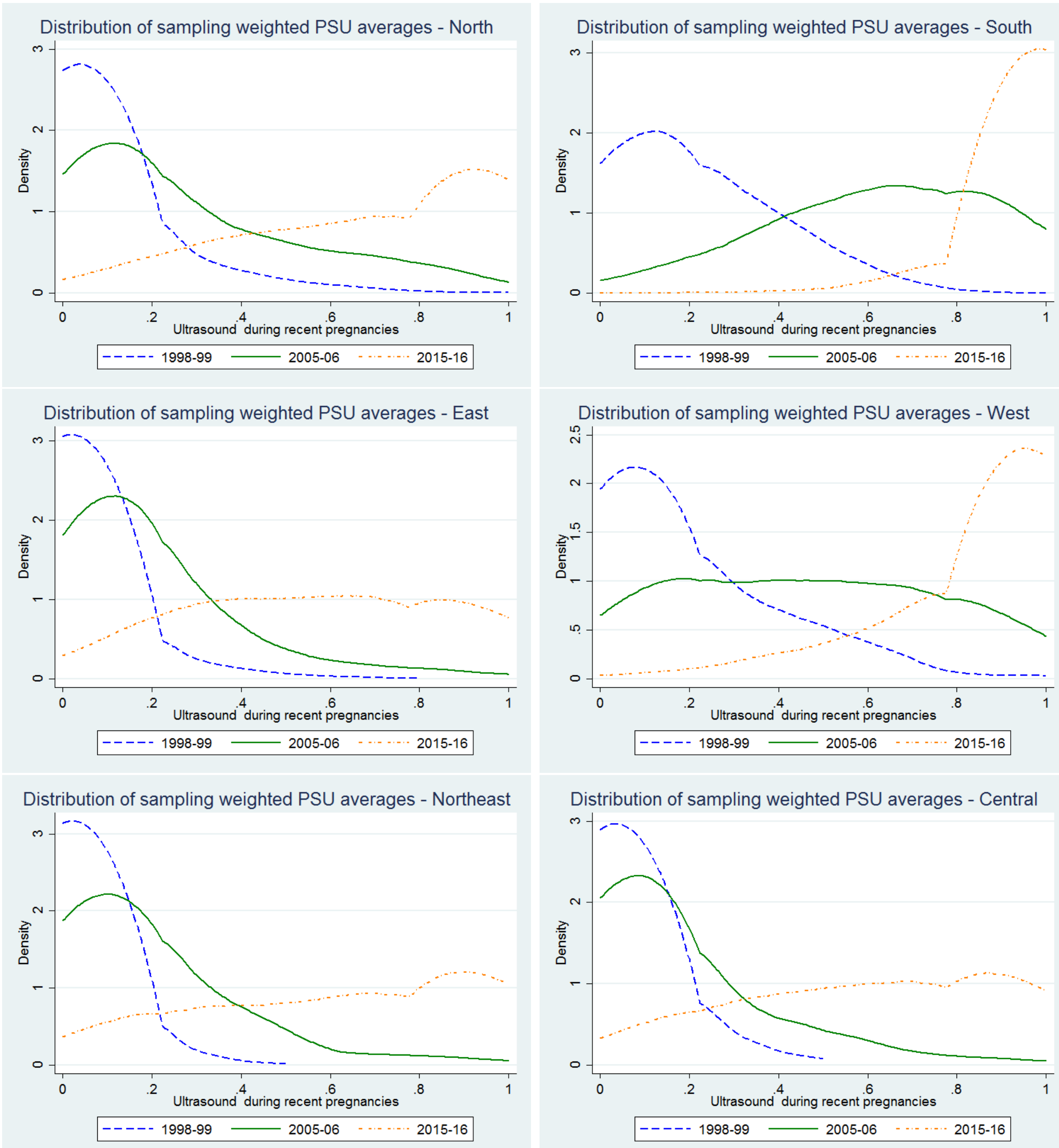

Figure 7: Proportion of respondents reporting at least one ultrasound, conditional on having been pregnant within past 5 years, by region

Note: First PSU averages are calculated, then probability sampling weights are applied when generating the density distributions.

Table 1: Summary statistics for sample: 2nd-born child male

	1992-93	1998-99	2005-06	2015-16	Total
1st born male	0.519	0.518	0.509	0.514	0.515
	(0.500)	(0.500)	(0.500)	(0.500)	(0.500)
2nd born male	0.519	0.523	0.521	0.511	0.519
	(0.500)	(0.499)	(0.500)	(0.500)	(0.500)
1st and 2nd born female	0.232	0.229	0.231	0.233	0.231
	(0.422)	(0.420)	(0.421)	(0.423)	(0.422)
1st 2 born male	0.270	0.270	0.261	0.258	0.265
	(0.444)	(0.444)	(0.439)	(0.438)	(0.441)
1st 2 born - 1 male and 1 female	0.498	0.501	0.508	0.509	0.504
	(0.500)	(0.500)	(0.500)	(0.500)	(0.500)
Children ever born	4.019	3.807	3.615	3.059	3.627
	(1.934)	(1.841)	(1.760)	(1.378)	(1.778)
Average PSU children born per woman	2.869	2.991	2.452	1.900	2.555
	(0.627)	(0.264)	(0.626)	(0.508)	(0.676)
1st child died	0.167	0.147	0.135	0.0809	0.133
	(0.373)	(0.354)	(0.342)	(0.273)	(0.339)
Mother's education	2.569	3.056	3.565	5.085	3.563
	(4.018)	(4.241)	(4.526)	(4.930)	(4.538)
Partner's education	5.336	5.794	6.059	6.931	6.028
	(5.002)	(4.998)	(5.093)	(4.945)	(5.044)
HH head	0.0491	0.0505	0.0908	0.0989	0.0725
	(0.216)	(0.219)	(0.287)	(0.298)	(0.259)
Wife of HH head	0.683	0.691	0.719	0.678	0.693
	(0.465)	(0.462)	(0.449)	(0.467)	(0.461)
Daughter of HH head	0.0461	0.0453	0.0159	0.0216	0.0320
	(0.210)	(0.208)	(0.125)	(0.145)	(0.176)
Daugher-in-law of HH head	0.148	0.150	0.142	0.173	0.153
	(0.356)	(0.357)	(0.349)	(0.379)	(0.360)
Hindu	0.818	0.816	0.810	0.810	0.813
	(0.386)	(0.387)	(0.392)	(0.393)	(0.390)
Muslim	0.122	0.127	0.135	0.137	0.130
	(0.327)	(0.334)	(0.341)	(0.344)	(0.337)
Christian	0.0237	0.0245	0.0223	0.0249	0.0238
	(0.152)	(0.154)	(0.148)	(0.156)	(0.153)
Scheduled caste	-	0.185	0.194	0.199	0.146
		(0.388)	(0.395)	(0.399)	(0.353)
Scheduled tribe	-	0.0874	0.0841	0.0937	0.0668
		(0.282)	(0.278)	(0.291)	(0.250)
Other backwards class	-	0.328	0.400	0.449	0.296
		(0.470)	(0.490)	(0.497)	(0.457)
Mother's age	33.20	33.44	34.26	35.74	34.15
	(8.019)	(7.948)	(7.716)	(7.578)	(7.878)
Urban	0.260	0.257	0.300	0.332	0.287
	(0.439)	(0.437)	(0.458)	(0.471)	(0.452)
Electricity	0.522	0.603	0.675	0.891	0.672
	(0.500)	(0.489)	(0.469)	(0.312)	(0.470)
Radio	0.418	0.394	0.315	0.0819	0.303
	(0.493)	(0.489)	(0.464)	(0.274)	(0.460)
TV	0.221	0.354	0.462	0.685	0.430
	(0.415)	(0.478)	(0.499)	(0.465)	(0.495)
No toilet	0.703	0.653	0.573	0.397	0.582
	(0.457)	(0.476)	(0.495)	(0.489)	(0.493)
Observations	64777	66595	65814	63756	260942

Note: Observations are weighted using sampling probability weights.

Table 2: Summary statistics by sex of 2nd-born child

	1992		1998		2005		2015		Total	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
1st born female	0.483	0.480	0.480	0.484	0.482	0.499	0.477	0.495	0.481	0.490
	(0.500)	(0.500)	(0.500)	(0.500)	(0.500)	(0.500)	(0.499)	(0.500)	(0.500)	(0.500)
Children ever born	4.119	3.925	3.924	3.701	3.763	3.479	3.213	2.913	3.755	3.508
	(1.960)	(1.904)	(1.862)	(1.815)	(1.789)	(1.722)	(1.443)	(1.295)	(1.806)	(1.743)
Average PSU children born per woman	2.874	2.865	2.992	2.991	2.451	2.452	1.899	1.901	2.553	2.558
	(0.623)	(0.630)	(0.264)	(0.264)	(0.631)	(0.622)	(0.512)	(0.505)	(0.679)	(0.674)
1st child died	0.166	0.169	0.144	0.149	0.136	0.134	0.0810	0.0808	0.132	0.134
	(0.372)	(0.375)	(0.351)	(0.356)	(0.343)	(0.341)	(0.273)	(0.273)	(0.338)	(0.340)
Mother's education	2.585	2.553	3.070	3.043	3.538	3.590	5.033	5.135	3.558	3.568
	(4.028)	(4.008)	(4.237)	(4.244)	(4.484)	(4.565)	(4.918)	(4.942)	(4.522)	(4.552)
Partner's education	5.371	5.304	5.847	5.747	6.031	6.084	6.860	7.000	6.029	6.027
	(4.995)	(5.009)	(4.976)	(5.018)	(5.076)	(5.109)	(4.920)	(4.967)	(5.021)	(5.065)
HH head	0.0511	0.0471	0.0527	0.0486	0.0964	0.0858	0.102	0.0962	0.0758	0.0694
	(0.220)	(0.212)	(0.223)	(0.215)	(0.295)	(0.280)	(0.302)	(0.295)	(0.265)	(0.254)
Wife of HH head	0.683	0.683	0.689	0.692	0.718	0.720	0.684	0.673	0.694	0.693
	(0.465)	(0.465)	(0.463)	(0.462)	(0.450)	(0.449)	(0.465)	(0.469)	(0.461)	(0.461)
Daughter of HH head	0.0465	0.0457	0.0461	0.0446	0.0164	0.0155	0.0218	0.0214	0.0324	0.0316
	(0.211)	(0.209)	(0.210)	(0.206)	(0.127)	(0.124)	(0.146)	(0.145)	(0.177)	(0.175)
Daugher-in-law of HH head	0.149	0.148	0.151	0.150	0.138	0.145	0.167	0.179	0.151	0.155
	(0.356)	(0.355)	(0.358)	(0.357)	(0.344)	(0.352)	(0.373)	(0.384)	(0.358)	(0.362)
Hindu	0.817	0.820	0.818	0.815	0.809	0.811	0.805	0.814	0.812	0.815
	(0.387)	(0.384)	(0.386)	(0.388)	(0.393)	(0.391)	(0.396)	(0.389)	(0.391)	(0.388)
Muslim	0.123	0.120	0.127	0.128	0.135	0.134	0.140	0.134	0.131	0.129
	(0.328)	(0.326)	(0.333)	(0.334)	(0.342)	(0.341)	(0.347)	(0.341)	(0.338)	(0.336)
Christian	0.0248	0.0227	0.0238	0.0250	0.0232	0.0215	0.0269	0.0231	0.0247	0.0231
	(0.156)	(0.149)	(0.153)	(0.156)	(0.151)	(0.145)	(0.162)	(0.150)	(0.155)	(0.150)
Scheduled caste	–	–	0.183	0.187	0.191	0.196	0.201	0.197	0.145	0.146
			(0.387)	(0.390)	(0.393)	(0.397)	(0.400)	(0.398)	(0.352)	(0.353)
Scheduled tribe	–	–	0.0874	0.0874	0.0843	0.0840	0.0956	0.0919	0.0673	0.0663
			(0.282)	(0.282)	(0.278)	(0.277)	(0.294)	(0.289)	(0.251)	(0.249)
Other backwards class	–	–	0.328	0.329	0.401	0.398	0.448	0.450	0.297	0.296
			(0.469)	(0.470)	(0.490)	(0.490)	(0.497)	(0.497)	(0.457)	(0.456)
Mother's age	33.15	33.25	33.35	33.53	34.25	34.27	35.79	35.69	34.14	34.17
	(8.019)	(8.020)	(7.928)	(7.965)	(7.732)	(7.701)	(7.570)	(7.586)	(7.881)	(7.875)
Urban	0.261	0.260	0.254	0.259	0.300	0.300	0.334	0.331	0.287	0.287
	(0.439)	(0.439)	(0.436)	(0.438)	(0.458)	(0.458)	(0.471)	(0.471)	(0.452)	(0.452)
Electricity	0.523	0.522	0.603	0.603	0.668	0.681	0.889	0.892	0.671	0.673
	(0.499)	(0.500)	(0.489)	(0.489)	(0.471)	(0.466)	(0.314)	(0.311)	(0.470)	(0.469)
Radio	0.415	0.420	0.392	0.397	0.312	0.317	0.0840	0.0798	0.301	0.306
	(0.493)	(0.494)	(0.488)	(0.489)	(0.463)	(0.465)	(0.277)	(0.271)	(0.459)	(0.461)
TV	0.219	0.223	0.353	0.354	0.456	0.467	0.679	0.690	0.428	0.432
	(0.413)	(0.416)	(0.478)	(0.478)	(0.498)	(0.499)	(0.467)	(0.463)	(0.495)	(0.495)
No toilet	0.702	0.704	0.652	0.653	0.571	0.574	0.399	0.395	0.581	0.583
	(0.457)	(0.456)	(0.476)	(0.476)	(0.495)	(0.494)	(0.490)	(0.489)	(0.493)	(0.493)
Observations	31247	33530	31812	34783	31409	34405	30954	32802	125422	135520

Note: Observations are weighted using sampling probability weights.

Table 3: Summary statistics for sample: 3rd-born child male

	1992-93	1998-99	2005-06	2015-16	Total
1st born male	0.508	0.499	0.484	0.467	0.491
	(0.500)	(0.500)	(0.500)	(0.499)	(0.500)
2nd born male	0.509	0.505	0.493	0.462	0.495
	(0.500)	(0.500)	(0.500)	(0.499)	(0.500)
3rd born male	0.516	0.522	0.526	0.531	0.523
	(0.500)	(0.500)	(0.499)	(0.499)	(0.499)
1st and 2nd born female	0.245	0.252	0.264	0.294	0.262
	(0.430)	(0.434)	(0.441)	(0.456)	(0.439)
1st 2 born male	0.262	0.257	0.242	0.223	0.248
	(0.440)	(0.437)	(0.428)	(0.417)	(0.432)
1st 2 born - 1 male and 1 female	0.493	0.491	0.494	0.483	0.491
	(0.500)	(0.500)	(0.500)	(0.500)	(0.500)
Children ever born	4.686	4.518	4.398	3.959	4.423
	(1.784)	(1.713)	(1.650)	(1.322)	(1.667)
Average PSU children born per woman	2.924	3.006	2.573	2.048	2.682
	(0.626)	(0.275)	(0.603)	(0.515)	(0.633)
1st child died	0.195	0.180	0.175	0.127	0.172
	(0.396)	(0.384)	(0.380)	(0.333)	(0.378)
2nd child died	0.168	0.149	0.134	0.0894	0.139
	(0.374)	(0.356)	(0.341)	(0.285)	(0.346)
1st 2 children died	0.0526	0.0463	0.0406	0.0237	0.0421
	(0.223)	(0.210)	(0.197)	(0.152)	(0.201)
Mother's education	1.980	2.247	2.428	3.318	2.431
	(3.446)	(3.583)	(3.739)	(4.173)	(3.740)
Partner's education	4.865	5.200	5.238	5.759	5.228
	(4.791)	(4.791)	(4.838)	(4.750)	(4.805)
HH head	0.0522	0.0539	0.101	0.119	0.0787
	(0.222)	(0.226)	(0.302)	(0.324)	(0.269)
Wife of HH head	0.728	0.737	0.754	0.716	0.735
	(0.445)	(0.440)	(0.431)	(0.451)	(0.441)
Daughter of HH head	0.0304	0.0310	0.0110	0.0138	0.0222
	(0.172)	(0.173)	(0.104)	(0.116)	(0.147)
Daugher-in-law of HH head	0.120	0.119	0.104	0.124	0.116
	(0.325)	(0.323)	(0.305)	(0.330)	(0.321)
Hindu	0.814	0.811	0.801	0.788	0.805
	(0.389)	(0.392)	(0.400)	(0.409)	(0.396)
Muslim	0.130	0.138	0.151	0.169	0.145
	(0.336)	(0.345)	(0.358)	(0.375)	(0.353)
Christian	0.0212	0.0205	0.0175	0.0180	0.0194
	(0.144)	(0.142)	(0.131)	(0.133)	(0.138)
Scheduled caste	-	0.198	0.208	0.224	0.152
		(0.399)	(0.406)	(0.417)	(0.359)
Scheduled tribe	-	0.0929	0.0948	0.108	0.0711
		(0.290)	(0.293)	(0.310)	(0.257)
Other backwards class	-	0.330	0.409	0.443	0.283
		(0.470)	(0.492)	(0.497)	(0.450)
Mother's age	34.85	35.06	35.77	37.57	35.68
	(7.553)	(7.510)	(7.280)	(7.067)	(7.443)
Urban	0.239	0.230	0.261	0.276	0.250
	(0.427)	(0.421)	(0.439)	(0.447)	(0.433)
Electricity	0.499	0.572	0.623	0.849	0.620
	(0.500)	(0.495)	(0.485)	(0.358)	(0.485)
Radio	0.390	0.365	0.288	0.0749	0.295
	(0.488)	(0.481)	(0.453)	(0.263)	(0.456)
TV	0.195	0.317	0.405	0.589	0.360
	(0.396)	(0.465)	(0.491)	(0.492)	(0.480)
No toilet	0.734	0.694	0.636	0.482	0.648
	(0.442)	(0.461)	(0.481)	(0.500)	(0.478)
Observations	48124	47537	42745	37305	175711

Note: Observations are weighted using sampling probability weights.

Table 4: Summary statistics by sex of 3rd-born child

	1992		1998		2005		2015		Total	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
1st born female	0.488 (0.500)	0.496 (0.500)	0.495 (0.500)	0.506 (0.500)	0.509 (0.500)	0.521 (0.500)	0.516 (0.500)	0.547 (0.498)	0.501 (0.500)	0.516 (0.500)
1st and 2nd born female	0.247 (0.431)	0.243 (0.429)	0.249 (0.432)	0.256 (0.436)	0.260 (0.439)	0.268 (0.443)	0.274 (0.446)	0.311 (0.463)	0.256 (0.436)	0.267 (0.442)
1st 2 born male	0.261 (0.439)	0.263 (0.440)	0.259 (0.438)	0.254 (0.436)	0.245 (0.430)	0.239 (0.427)	0.236 (0.424)	0.213 (0.409)	0.252 (0.434)	0.244 (0.430)
1st 2 born - 1 male and 1 female	0.492 (0.500)	0.495 (0.500)	0.492 (0.500)	0.490 (0.500)	0.495 (0.500)	0.493 (0.500)	0.490 (0.500)	0.476 (0.499)	0.492 (0.500)	0.489 (0.500)
Children ever born	4.783 (1.790)	4.596 (1.774)	4.643 (1.732)	4.403 (1.687)	4.555 (1.678)	4.256 (1.613)	4.140 (1.379)	3.799 (1.248)	4.562 (1.687)	4.296 (1.638)
Average PSU children born per woman	2.928 (0.630)	2.921 (0.622)	3.004 (0.273)	3.007 (0.278)	2.580 (0.606)	2.567 (0.600)	2.053 (0.516)	2.044 (0.514)	2.689 (0.633)	2.676 (0.632)
1st child died	0.194 (0.395)	0.195 (0.397)	0.181 (0.385)	0.180 (0.384)	0.178 (0.383)	0.172 (0.378)	0.132 (0.338)	0.123 (0.329)	0.174 (0.379)	0.171 (0.376)
2nd child died	0.168 (0.374)	0.169 (0.375)	0.149 (0.356)	0.148 (0.356)	0.133 (0.340)	0.135 (0.342)	0.0907 (0.287)	0.0883 (0.284)	0.139 (0.346)	0.139 (0.345)
1st 2 children died	0.0527 (0.223)	0.0525 (0.223)	0.0462 (0.210)	0.0464 (0.210)	0.0398 (0.195)	0.0413 (0.199)	0.0232 (0.150)	0.0241 (0.153)	0.0419 (0.200)	0.0423 (0.201)
Mother's education	1.985 (3.434)	1.975 (3.458)	2.197 (3.551)	2.292 (3.611)	2.341 (3.665)	2.507 (3.804)	3.236 (4.093)	3.391 (4.241)	2.376 (3.686)	2.482 (3.788)
Partner's education	4.857 (4.810)	4.872 (4.774)	5.153 (4.788)	5.243 (4.793)	5.185 (4.816)	5.285 (4.856)	5.664 (4.705)	5.842 (4.788)	5.178 (4.793)	5.273 (4.815)
HH head	0.0543 (0.227)	0.0503 (0.219)	0.0522 (0.223)	0.0554 (0.229)	0.103 (0.304)	0.0998 (0.300)	0.117 (0.321)	0.121 (0.326)	0.0785 (0.269)	0.0789 (0.270)
Wife of HH head	0.729 (0.445)	0.728 (0.445)	0.740 (0.439)	0.733 (0.442)	0.756 (0.429)	0.752 (0.432)	0.719 (0.449)	0.713 (0.452)	0.737 (0.440)	0.733 (0.442)
Daughter of HH head	0.0320 (0.176)	0.0290 (0.168)	0.0309 (0.173)	0.0310 (0.173)	0.0121 (0.110)	0.0100 (0.0995)	0.0148 (0.121)	0.0128 (0.112)	0.0232 (0.151)	0.0213 (0.144)
Daugher-in-law of HH head	0.119 (0.323)	0.122 (0.327)	0.119 (0.324)	0.118 (0.323)	0.0986 (0.298)	0.108 (0.310)	0.124 (0.330)	0.125 (0.330)	0.115 (0.318)	0.118 (0.322)
Hindu	0.815 (0.389)	0.814 (0.389)	0.811 (0.392)	0.811 (0.392)	0.798 (0.401)	0.803 (0.398)	0.778 (0.416)	0.797 (0.402)	0.802 (0.398)	0.807 (0.395)
Muslim	0.130 (0.337)	0.129 (0.335)	0.139 (0.346)	0.138 (0.345)	0.154 (0.361)	0.149 (0.356)	0.177 (0.381)	0.162 (0.369)	0.148 (0.355)	0.143 (0.350)
Christian	0.0210 (0.143)	0.0213 (0.144)	0.0212 (0.144)	0.0200 (0.140)	0.0174 (0.131)	0.0177 (0.132)	0.0208 (0.143)	0.0155 (0.123)	0.0201 (0.140)	0.0188 (0.136)
Scheduled caste	–	–	0.198 (0.399)	0.198 (0.398)	0.210 (0.407)	0.205 (0.404)	0.223 (0.416)	0.226 (0.418)	0.151 (0.358)	0.152 (0.359)
Scheduled tribe	–	–	0.0963 (0.295)	0.0898 (0.286)	0.0983 (0.298)	0.0917 (0.289)	0.110 (0.312)	0.107 (0.309)	0.0728 (0.260)	0.0695 (0.254)
Other backwards class	–	–	0.328 (0.470)	0.331 (0.470)	0.406 (0.491)	0.412 (0.492)	0.440 (0.496)	0.446 (0.497)	0.280 (0.449)	0.286 (0.452)
Mother's age	34.80 (7.574)	34.89 (7.533)	35.00 (7.548)	35.13 (7.474)	35.74 (7.236)	35.80 (7.319)	37.57 (7.073)	37.56 (7.062)	35.63 (7.454)	35.72 (7.433)
Urban	0.240 (0.427)	0.238 (0.426)	0.226 (0.418)	0.235 (0.424)	0.262 (0.440)	0.261 (0.439)	0.266 (0.442)	0.284 (0.451)	0.247 (0.431)	0.252 (0.434)
Electricity	0.497 (0.500)	0.500 (0.500)	0.567 (0.495)	0.577 (0.494)	0.616 (0.486)	0.630 (0.483)	0.850 (0.357)	0.848 (0.359)	0.615 (0.487)	0.624 (0.484)
Radio	0.386 (0.487)	0.393 (0.488)	0.366 (0.482)	0.364 (0.481)	0.285 (0.451)	0.291 (0.454)	0.0743 (0.262)	0.0755 (0.264)	0.294 (0.456)	0.295 (0.456)
TV	0.194 (0.396)	0.196 (0.397)	0.311 (0.463)	0.322 (0.467)	0.396 (0.489)	0.414 (0.492)	0.585 (0.493)	0.593 (0.491)	0.354 (0.478)	0.366 (0.482)
No toilet	0.732 (0.443)	0.736 (0.441)	0.697 (0.459)	0.690 (0.462)	0.637 (0.481)	0.635 (0.481)	0.484 (0.500)	0.481 (0.500)	0.650 (0.477)	0.646 (0.478)
Observations	23247	24877	22705	24832	20259	22486	17681	19624	83892	91819

Note: Observations are weighted using sampling probability weights.

Table 5: Random coefficients regressions: Second-born male

	(1) 1992	(2) 1992	(3) 1998	(4) 1998	(5) 2005	(6) 2005	(7) 2015	(8) 2015	(9) Pooled	(10) Pooled
1st born female=1	−0.00778	0.159	0.0175	0.143	0.0705***	0.134	0.0872***	0.361***	0.0421***	0.201***
	(0.0187)	(0.0953)	(0.0188)	(0.0898)	(0.0205)	(0.0750)	(0.0225)	(0.0899)	(0.0102)	(0.0361)
Average PSU children born per woman		−0.0287		−0.00337		0.0185		0.0899**		0.00569
		(0.0231)		(0.0224)		(0.0276)		(0.0335)		(0.0118)
1st born female=1 × Average PSU children born per woman		−0.0530		−0.0415		−0.0276		−0.144**		−0.0617***
		(0.0299)		(0.0288)		(0.0320)		(0.0438)		(0.0130)
var(girl1[psuid])										
Constant	0.0719***	0.0711***	0.0842***	0.0838***	0.144***	0.145***	0.449***	0.449***	0.156***	0.155***
	(0.0129)	(0.0129)	(0.0130)	(0.0129)	(0.0156)	(0.0157)	(0.0380)	(0.0381)	(0.00977)	(0.00976)
var(_cons[psuid])										
Constant	0.0332***	0.0328***	0.0281***	0.0281***	0.0645***	0.0645***	0.207***	0.206***	0.0732***	0.0732***
	(0.00556)	(0.00554)	(0.00576)	(0.00576)	(0.00711)	(0.00710)	(0.0151)	(0.0151)	(0.00447)	(0.00447)
Observations	64716	64716	66593	66593	65812	65812	63750	63750	260871	260871
AIC	88789.2	88780.2	91739.4	91739.5	95918.5	95921.3	87132.2	87120.3	364022.2	363991.6
BIC	89161.4	89170.5	92121.9	92140.2	96327.7	96348.7	87594.4	87600.6	364598.1	364588.5

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: Random coefficients regressions: Third-born male

	(1) 1992	(2) 1992	(3) 1998	(4) 1998	(5) 2005	(6) 2005	(7) 2015	(8) 2015	(9) Pooled	(10) Pooled
1st 2 born male=1	0.0170	−0.529**	−0.0429	−0.583***	−0.0393	−0.356**	−0.197***	−1.057***	−0.0628***	−0.538***
	(0.0315)	(0.165)	(0.0316)	(0.156)	(0.0373)	(0.136)	(0.0457)	(0.186)	(0.0178)	(0.0664)
1st 2 born - 1 male and 1 female=1	0.0188	−0.311*	−0.0267	−0.288*	−0.0256	−0.237*	−0.134***	−0.616***	−0.0408**	−0.335***
	(0.0273)	(0.145)	(0.0275)	(0.139)	(0.0309)	(0.112)	(0.0360)	(0.150)	(0.0150)	(0.0560)
Average PSU children born per woman		−0.113**		−0.102**		−0.0838		−0.200***		−0.105***
		(0.0372)		(0.0373)		(0.0429)		(0.0562)		(0.0180)
1st 2 born male=1 × Average PSU children born per woman		0.170***		0.173***		0.131*		0.418***		0.174***
		(0.0507)		(0.0488)		(0.0552)		(0.0851)		(0.0229)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.103*		0.0840		0.0871		0.238***		0.108***
		(0.0445)		(0.0435)		(0.0466)		(0.0690)		(0.0195)
var(boyboy[psuid])										
Constant	0.264***	0.264***	0.249***	0.246***	0.529***	0.528***	1.663***	1.661***	0.453***	0.449***
	(0.0371)	(0.0371)	(0.0381)	(0.0378)	(0.0602)	(0.0601)	(0.169)	(0.168)	(0.0294)	(0.0291)
var(boygirl[psuid])										
Constant	0.0999***	0.100***	0.118***	0.118***	0.183***	0.182***	0.669***	0.666***	0.186***	0.186***
	(0.0170)	(0.0170)	(0.0188)	(0.0189)	(0.0222)	(0.0221)	(0.0698)	(0.0692)	(0.0134)	(0.0133)
var(_cons[psuid])										
Constant	0.0216**	0.0211**	0.0177*	0.0173*	0.0748***	0.0748***	0.292***	0.292***	0.0677***	0.0669***
	(0.00768)	(0.00767)	(0.00789)	(0.00786)	(0.0115)	(0.0115)	(0.0301)	(0.0302)	(0.00642)	(0.00641)
Observations	48087	48087	47536	47536	42744	42744	37304	37304	175671	175671
AIC	66662.0	66651.1	65782.7	65771.8	64208.1	64204.7	46274.3	46248.6	243483.6	243402.9
BIC	67057.2	67072.5	66186.1	66201.5	64632.6	64655.2	46743.2	46743.1	244078.1	244027.7

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Random coefficients regressions: Second-born male - Rural vs Urban

Rural										
1st born female=1	−0.00731	0.101	0.00799	0.0880	0.0576*	0.0590	0.0520*	0.175	0.0278*	0.129**
	(0.0219)	(0.119)	(0.0224)	(0.120)	(0.0253)	(0.102)	(0.0251)	(0.102)	(0.0118)	(0.0443)
Average PSU children born per woman		−0.0432		−0.0181		0.0353		0.0142		−0.0148
		(0.0282)		(0.0272)		(0.0340)		(0.0361)		(0.0139)
1st born female=1 × Average PSU children born per woman		−0.0334		−0.0255		−0.000487		−0.0608		−0.0373*
		(0.0365)		(0.0371)		(0.0407)		(0.0479)		(0.0154)
var(girl1[psuid])										
Constant	0.0641***	0.0640***	0.101***	0.101***	0.161***	0.161***	0.290***	0.290***	0.135***	0.134***
	(0.0139)	(0.0139)	(0.0154)	(0.0153)	(0.0205)	(0.0206)	(0.0359)	(0.0359)	(0.0103)	(0.0102)
var(_cons[psuid])										
Constant	0.0334***	0.0328***	0.0289***	0.0287***	0.0761***	0.0760***	0.145***	0.145***	0.0645***	0.0643***
	(0.00625)	(0.00624)	(0.00698)	(0.00697)	(0.00903)	(0.00901)	(0.0149)	(0.0149)	(0.00471)	(0.00471)
Observations	44808	44808	46373	46373	37794	37794	45758	45758	174733	174733
AIC	65735.8	65731.2	68178.2	68179.7	67105.2	67107.4	58644.6	58646.6	259758.5	259748.6
BIC	66084.2	66097.0	68536.7	68555.8	67481.0	67500.3	59072.4	59091.8	260292.2	260302.5
Urban										
1st born female=1	−0.00608	0.323	0.0487	0.242	0.0980**	0.241	0.186***	0.784***	0.0788***	0.330***
	(0.0360)	(0.167)	(0.0346)	(0.144)	(0.0351)	(0.137)	(0.0467)	(0.195)	(0.0196)	(0.0641)
Average PSU children born per woman		0.0214		0.0448		−0.000689		0.281***		0.0527*
		(0.0414)		(0.0422)		(0.0512)		(0.0853)		(0.0232)
1st born female=1 × Average PSU children born per woman		−0.113*		−0.0700		−0.0743		−0.360***		−0.112***
		(0.0559)		(0.0518)		(0.0709)		(0.109)		(0.0255)
var(girl1[psuid])										
Constant	0.0995***	0.0973**	0.0345	0.0346	0.113***	0.112***	0.896***	0.894***	0.206***	0.205***
	(0.0302)	(0.0297)	(0.0238)	(0.0238)	(0.0240)	(0.0238)	(0.109)	(0.109)	(0.0226)	(0.0226)
var(_cons[psuid])										
Constant	0.0246*	0.0246*	0.0239*	0.0239*	0.0336**	0.0339**	0.374***	0.370***	0.0958***	0.0954***
	(0.0117)	(0.0117)	(0.0101)	(0.0101)	(0.0112)	(0.0112)	(0.0405)	(0.0399)	(0.0103)	(0.0102)
Observations	19908	19908	20220	20220	28018	28018	17992	17992	86138	86138
AIC	23091.1	23089.2	23596.9	23598.6	28842.4	28844.1	28406.6	28389.0	104276.8	104254.0
BIC	23407.1	23420.9	23921.4	23939.0	29205.0	29223.1	28796.5	28794.5	104782.4	104778.4

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Random coefficients regressions: Third-born child male - Rural vs Urban

					Rural					
1st 2 born male=1	0.0190	−0.404*	−0.0156	−0.360	−0.0137	−0.350*	−0.164***	−1.104***	−0.0407*	−0.478***
	(0.0366)	(0.199)	(0.0372)	(0.198)	(0.0453)	(0.176)	(0.0488)	(0.209)	(0.0206)	(0.0804)
1st 2 born - 1 male and 1 female=1	−0.00617	−0.293	0.0000227	−0.131	−0.00509	−0.198	−0.113**	−0.557**	−0.0298	−0.273***
	(0.0316)	(0.179)	(0.0316)	(0.172)	(0.0369)	(0.144)	(0.0394)	(0.171)	(0.0173)	(0.0674)
Average PSU children born per woman		−0.0964*		−0.0527		−0.0791		−0.206**		−0.0878***
		(0.0436)		(0.0444)		(0.0506)		(0.0628)		(0.0209)
1st 2 born male=1 × Average PSU children born per woman		0.129*		0.107		0.132		0.438***		0.154***
		(0.0601)		(0.0604)		(0.0675)		(0.0932)		(0.0270)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.0874		0.0411		0.0752		0.211**		0.0863***
		(0.0541)		(0.0526)		(0.0567)		(0.0765)		(0.0229)
var(boyboy[psuid])										
Constant	0.277***	0.278***	0.317***	0.315***	0.607***	0.606***	1.074***	1.076***	0.445***	0.442***
	(0.0417)	(0.0417)	(0.0478)	(0.0475)	(0.0767)	(0.0765)	(0.147)	(0.147)	(0.0324)	(0.0322)
var(boygirl[psuid])										
Constant	0.119***	0.119***	0.138***	0.138***	0.198***	0.198***	0.473***	0.471***	0.181***	0.181***
	(0.0203)	(0.0203)	(0.0228)	(0.0228)	(0.0268)	(0.0267)	(0.0625)	(0.0624)	(0.0142)	(0.0142)
var(_cons[psuid])										
Constant	0.0142	0.0139	0.0191*	0.0188*	0.0842***	0.0844***	0.193***	0.192***	0.0561***	0.0555***
	(0.00822)	(0.00821)	(0.00934)	(0.00932)	(0.0141)	(0.0142)	(0.0306)	(0.0306)	(0.00698)	(0.00696)
Observations	34405	34405	34654	34654	26395	26395	28344	28344	123798	123798
AIC	50726.9	50725.2	50607.3	50609.1	47354.9	47355.0	34078.7	34058.2	182864.7	182825.6
BIC	51098.5	51122.2	50987.7	51014.9	47747.5	47772.3	34516.0	34520.3	183419.1	183409.1
					Urban					
1st 2 born male=1	0.0250	−0.843**	−0.135*	−1.052***	−0.101	−0.338	−0.309**	−0.806	−0.123***	−0.653***
	(0.0621)	(0.298)	(0.0588)	(0.261)	(0.0657)	(0.257)	(0.114)	(0.453)	(0.0352)	(0.121)
1st 2 born - 1 male and 1 female=1	0.102	−0.505*	−0.114*	−0.559*	−0.0762	−0.284	−0.220**	−0.748*	−0.0703*	−0.479***
	(0.0545)	(0.252)	(0.0558)	(0.247)	(0.0559)	(0.206)	(0.0833)	(0.345)	(0.0305)	(0.103)
Average PSU children born per woman		−0.183*		−0.227**		−0.0932		−0.157		−0.148***
		(0.0738)		(0.0729)		(0.0942)		(0.138)		(0.0373)
1st 2 born male=1 × Average PSU children born per woman		0.288**		0.317***		0.116		0.276		0.217***
		(0.0957)		(0.0890)		(0.123)		(0.236)		(0.0448)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.201*		0.155		0.101		0.296		0.168***
		(0.0812)		(0.0831)		(0.101)		(0.182)		(0.0389)
var(boyboy[psuid])										
Constant	0.195*	0.186*	0.0521	0.0477	0.342***	0.343***	4.248***	4.247***	0.476***	0.469***
	(0.0824)	(0.0824)	(0.0555)	(0.0536)	(0.0954)	(0.0957)	(0.684)	(0.684)	(0.0664)	(0.0657)
var(boygirl[psuid])										
Constant	0.0199	0.0194	0.0596	0.0589	0.136***	0.136***	1.506***	1.495***	0.211***	0.210***
	(0.0289)	(0.0290)	(0.0341)	(0.0341)	(0.0410)	(0.0409)	(0.254)	(0.251)	(0.0349)	(0.0343)
var(_cons[psuid])										
Constant	0.0496*	0.0496*	0.0124	0.0119	0.0439*	0.0427*	0.671***	0.674***	0.104***	0.103***
	(0.0193)	(0.0194)	(0.0163)	(0.0162)	(0.0193)	(0.0192)	(0.0949)	(0.0951)	(0.0152)	(0.0153)
Observations	13682	13682	12882	12882	16349	16349	8960	8960	51873	51873
AIC	15978.7	15971.2	15214.3	15202.8	16889.6	16893.5	12103.1	12105.3	60638.3	60604.5
BIC	16309.7	16324.8	15550.1	15561.1	17259.3	17286.3	12486.5	12510.0	61152.0	61144.7

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Random coefficients regressions: Second-born male - By Region

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1992	1992	1998	1998	2005	2005	2015	2015	Pooled	Pooled
North										
1st born female=1	0.0227	0.140	0.0486	−0.305	0.168***	0.254	0.119**	0.842***	0.0894***	0.316***
	(0.0372)	(0.161)	(0.0362)	(0.305)	(0.0395)	(0.187)	(0.0402)	(0.166)	(0.0192)	(0.0796)
Average PSU children born per woman		0.0130		−0.0423		−0.00569		0.158**		0.0334
		(0.0467)		(0.0675)		(0.0507)		(0.0595)		(0.0212)
1st born female=1 × Average PSU children born per woman		−0.0375		0.115		−0.0317		−0.359***		−0.0829**
		(0.0540)		(0.0991)		(0.0692)		(0.0795)		(0.0288)
var(girl1[psuid])										
Constant	0.0396	0.0404	0.0599*	0.0585*	0.112***	0.111***	0.141**	0.132**	0.0794***	0.0802***
	(0.0206)	(0.0207)	(0.0237)	(0.0238)	(0.0289)	(0.0286)	(0.0473)	(0.0472)	(0.0141)	(0.0141)
var(_cons[psuid])										
Constant	0.0175	0.0174	0.0353**	0.0355**	0.0491***	0.0493***	0.0544*	0.0552*	0.0370***	0.0368***
	(0.00961)	(0.00962)	(0.0132)	(0.0133)	(0.0142)	(0.0142)	(0.0217)	(0.0217)	(0.00697)	(0.00695)
Observations	19654	19654	17871	17871	17318	17318	17959	17959	72802	72802
AIC	21245.8	21249.2	21102.3	21104.5	22382.2	22384.8	18791.9	18769.5	83505.8	83498.3
BIC	21427.2	21446.3	21289.3	21307.1	22576.1	22586.6	18994.6	18987.8	83744.9	83755.8
South										
1st born female=1	−0.0168	0.0639	−0.0222	−0.657	−0.0193	−0.0774	0.0275	0.140	−0.00741	0.0220
	(0.0394)	(0.192)	(0.0420)	(0.810)	(0.0432)	(0.180)	(0.0594)	(0.295)	(0.0231)	(0.0886)
Average PSU children born per woman		−0.101		−0.0273		0.153*		0.111		0.0126
		(0.0592)		(0.184)		(0.0732)		(0.124)		(0.0269)
1st born female=1 × Average PSU children born per woman		−0.0312		0.217		0.0307		−0.0683		−0.0131
		(0.0737)		(0.275)		(0.0925)		(0.175)		(0.0364)
var(girl1[psuid])										
Constant	0.0808*	0.0800*	0.108***	0.108***	0.169***	0.171***	1.301***	1.300***	0.276***	0.276***
	(0.0318)	(0.0318)	(0.0276)	(0.0276)	(0.0407)	(0.0404)	(0.182)	(0.182)	(0.0305)	(0.0305)
var(_cons[psuid])										
Constant	0.0527***	0.0510***	0.0165	0.0165	0.0691***	0.0648***	0.562***	0.561***	0.133***	0.133***
	(0.0133)	(0.0131)	(0.0110)	(0.0110)	(0.0176)	(0.0171)	(0.0643)	(0.0644)	(0.0139)	(0.0139)
Observations	12014	12014	11439	11439	12288	12288	8917	8917	44664	44664
AIC	20384.0	20381.9	22103.3	22106.2	21244.1	21237.8	21241.0	21243.8	85366.2	85369.9
BIC	20539.3	20551.9	22257.5	22275.2	21392.4	21393.6	21397.1	21414.1	85575.2	85596.3
East										
1st born female=1	−0.0109	0.0223	0.00741	1.158	−0.00618	0.152	0.0115	0.0983	−0.000215	0.0807
	(0.0416)	(0.219)	(0.0439)	(0.596)	(0.0501)	(0.213)	(0.0495)	(0.201)	(0.0233)	(0.105)
Average PSU children born per woman		−0.0969		0.116		0.0209		−0.0149		−0.0251
		(0.0514)		(0.134)		(0.0726)		(0.0680)		(0.0300)
1st born female=1 × Average PSU children born per woman		−0.0115		−0.386		−0.0631		−0.0416		−0.0312
		(0.0730)		(0.199)		(0.0854)		(0.0904)		(0.0383)
var(girl1[psuid])										
Constant	0.121***	0.117***	0.129***	0.127***	0.220***	0.219***	0.511***	0.510***	0.206***	0.205***
	(0.0321)	(0.0319)	(0.0342)	(0.0337)	(0.0430)	(0.0428)	(0.0859)	(0.0860)	(0.0237)	(0.0237)
var(_cons[psuid])										
Constant	0.0318*	0.0297*	0.0290*	0.0287*	0.125***	0.125***	0.191***	0.190***	0.0904***	0.0903***
	(0.0130)	(0.0126)	(0.0124)	(0.0124)	(0.0213)	(0.0214)	(0.0325)	(0.0325)	(0.0104)	(0.0104)
Observations	10177	10177	11289	11289	9411	9411	10986	10986	41864	41864
AIC	19130.7	19128.6	19581.3	19580.6	20994.7	21001.6	18183.3	18186.8	77955.9	77956.4
BIC	19275.3	19287.6	19735.3	19749.2	21144.8	21158.9	18344.0	18362.1	78154.7	78172.5

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Random coefficients regressions: Second-born male - By Region (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1992	1992	1998	1998	2005	2005	2015	2015	Pooled	Pooled
West										
1st born female=1	−0.0111	−0.0128	0.0202	0.988	0.132**	0.482*	0.189***	0.730**	0.0823***	0.449***
	(0.0434)	(0.251)	(0.0422)	(0.506)	(0.0498)	(0.219)	(0.0573)	(0.242)	(0.0244)	(0.112)
Average PSU children born per woman		0.0278		−0.0378		−0.00285		0.0891		0.0713*
		(0.0639)		(0.125)		(0.0808)		(0.0920)		(0.0308)
1st born female=1 × Average PSU children born per woman		0.000531		−0.327		−0.145		−0.293*		−0.149***
		(0.0913)		(0.169)		(0.0881)		(0.123)		(0.0423)
var(girl1[psuid])										
Constant	0.0622*	0.0618*	0.0671*	0.0608*	0.204***	0.195***	0.855***	0.852***	0.231***	0.228***
	(0.0269)	(0.0270)	(0.0297)	(0.0292)	(0.0381)	(0.0382)	(0.132)	(0.132)	(0.0286)	(0.0286)
var(_cons[psuid])										
Constant	0.0367**	0.0364**	0.0532***	0.0532***	0.0741***	0.0737***	0.357***	0.357***	0.113***	0.113***
	(0.0124)	(0.0122)	(0.0132)	(0.0132)	(0.0172)	(0.0171)	(0.0478)	(0.0477)	(0.0127)	(0.0126)
Observations	11762	11762	12773	12773	10546	10546	10150	10150	45231	45231
AIC	17740.1	17743.7	18627.2	18625.2	19647.8	19649.0	18382.3	18378.9	74587.0	74570.3
BIC	17894.9	17913.3	18791.2	18804.1	19807.6	19816.0	18555.7	18566.8	74796.3	74797.0
Northeast										
1st born female=1	−0.109	−0.0738	0.0116	1.342	−0.0654	−0.293	−0.00671	−0.228		
	(0.0704)	(0.243)	(0.0661)	(1.493)	(0.0653)	(0.268)	(0.0680)	(0.235)		
Average PSU children born per woman		−0.0845		0.142		0.0218		0.0500		
		(0.0661)		(0.347)		(0.0761)		(0.0947)		
1st born female=1 × Average PSU children born per woman		−0.0126		−0.445		0.0925		0.118		
		(0.0880)		(0.502)		(0.105)		(0.119)		
var(girl1[psuid])										
Constant	1.27e−34	5.79e−38	8.19e−40	4.36e−35	1.62e−35	1.07e−34	1.46e−33	4.35e−36		
	(1.42e−34)	(1.30e−37)	(6.19e−39)	(1.25e−33)	(4.26e−35)	(4.92e−34)	(3.75e−33)	(3.60e−35)		
var(_cons[psuid])										
Constant	2.67e−33	1.23e−34	1.42e−37	1.59e−35	1.87e−35	2.27e−35	2.10e−33	2.61e−37		
	(5.99e−33)	(7.05e−35)	(3.13e−37)	(4.35e−35)	(2.94e−35)	(3.46e−35)	(1.41e−33)	(1.38e−36)		
Observations	6693	6693	8027	8027	10346	10346	7903	7903		
AIC	3480.3	3483.2	3156.8	3160.3	3382.6	3384.0	2781.6	2783.8		
BIC	3630.1	3646.6	3324.5	3342.0	3556.4	3565.1	2942.0	2958.2		
Central										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1992	1992	1998	1998	2005	2005	2015	2015	Pooled	Pooled
2nd born male										
1st born female=1	−0.0126	0.138	0.0806	−0.471	0.124*	0.413	0.109*	0.372	0.0754*	0.279*
	(0.0717)	(0.395)	(0.0595)	(0.661)	(0.0589)	(0.377)	(0.0504)	(0.223)	(0.0300)	(0.130)
Average PSU children born per woman		−0.0312		−0.180		0.188		0.0866		0.0574
		(0.0931)		(0.153)		(0.0998)		(0.0748)		(0.0367)
1st born female=1 × Average PSU children born per woman		−0.0488		0.183		−0.105		−0.126		−0.0750
		(0.121)		(0.217)		(0.138)		(0.105)		(0.0474)
Constant	−0.461	−0.366	−0.666	−0.136	−1.535*	−2.050**	0.735	0.545	−0.478	−0.640
	(0.698)	(0.779)	(0.521)	(0.717)	(0.620)	(0.696)	(0.560)	(0.577)	(0.302)	(0.327)
var(girl1[psuid])										
Constant	0.142*	0.140*	0.0852	0.0854	0.0261	0.0236	2.40e−41	4.74e−36	0.0564*	0.0563*
	(0.0611)	(0.0599)	(0.0454)	(0.0460)	(0.0386)	(0.0387)	(9.75e−40)	(2.05e−34)	(0.0230)	(0.0229)
var(_cons[psuid])										
Constant	0.0781**	0.0778**	0.00172	0.00180	0.0327*	0.0323*	8.45e−36	2.01e−34	0.0279**	0.0280**
	(0.0257)	(0.0255)	(0.0245)	(0.0240)	(0.0149)	(0.0146)	(3.60e−35)	(1.70e−34)	(0.0102)	(0.0102)
Observations	4416	4416	5193	5193	5899	5899	7748	7748	23256	23256
AIC	6834.2	6837.4	7233.5	7236.3	8239.8	8237.8	7318.9	7321.5	29596.8	29597.7
BIC	6942.9	6958.9	7345.0	7360.8	8360.1	8364.8	7430.1	7446.7	29741.8	29758.8

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: Random coefficients regressions: Third-born male - By Region

	(1) 1992	(2) 1992	(3) 1998	(4) 1998	(5) 2005	(6) 2005	(7) 2015	(8) 2015	(9) Pooled	(10) Pooled
North										
1st 2 born male=1	0.00645		−0.0689	−1.037*	−0.191**	−1.122***	−0.186**	−1.529***	−0.109***	−0.952***
	(0.0608)		(0.0627)	(0.435)	(0.0713)	(0.306)	(0.0677)	(0.280)	(0.0328)	(0.134)
1st 2 born - 1 male and 1 female=1	0.0562		−0.0611	−0.511	−0.0806	−0.562*	−0.133*	−0.722**	−0.0548	−0.572***
	(0.0523)		(0.0550)	(0.416)	(0.0607)	(0.277)	(0.0576)	(0.242)	(0.0283)	(0.117)
Average PSU children born per woman				−0.131		−0.176*		−0.252**		−0.170***
				(0.107)		(0.0866)		(0.0934)		(0.0359)
1st 2 born male=1 × Average PSU children born per woman				0.312*		0.334**		0.629***		0.299***
				(0.139)		(0.110)		(0.125)		(0.0473)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman				0.146		0.173		0.282*		0.184***
				(0.133)		(0.102)		(0.114)		(0.0421)
var(boyboy[psuid])										
Constant	0.129*		0.160*	0.158*	0.366***	0.360***	0.382**	0.330*	0.226***	0.222***
	(0.0504)		(0.0634)	(0.0630)	(0.0968)	(0.0978)	(0.148)	(0.143)	(0.0400)	(0.0397)
var(boygirl[psuid])										
Constant	0.0610*		0.0612*	0.0610*	0.182***	0.181***	0.213**	0.209**	0.108***	0.108***
	(0.0291)		(0.0278)	(0.0277)	(0.0397)	(0.0396)	(0.0791)	(0.0790)	(0.0188)	(0.0188)
var(_cons[psuid])										
Constant	0.00457		0.0126	0.0127	0.0512*	0.0508*	0.0970**	0.102**	0.0299**	0.0291**
	(0.0124)		(0.0145)	(0.0144)	(0.0211)	(0.0213)	(0.0365)	(0.0367)	(0.00947)	(0.00950)
Observations	14885		13114	13114	12067	12067	11319	11319	51385	51385
AIC	16738.5		16343.1	16343.8	16812.4	16807.5	12192.8	12175.3	62070.2	62022.9
BIC	16936.4		16537.6	16560.8	17012.2	17029.4	12398.2	12402.7	62318.0	62297.2
South										
1st 2 born male=1	−0.0463	0.296	0.00791	0.140	0.0275	−0.543	−0.207	−1.582	−0.0474	−0.311
	(0.0673)	(0.329)	(0.0753)	(1.521)	(0.0860)	(0.399)	(0.280)	(1.371)	(0.0441)	(0.184)
1st 2 born - 1 male and 1 female=1	−0.00226	−0.0455	0.0354	0.379	−0.000275	0.208	−0.618***	−2.294*	−0.0684	−0.497**
	(0.0586)	(0.302)	(0.0618)	(1.224)	(0.0716)	(0.336)	(0.182)	(0.894)	(0.0370)	(0.158)
Average PSU children born per woman		0.0459		0.258		0.111		−0.862*		−0.124**
		(0.0948)		(0.321)		(0.131)		(0.336)		(0.0472)
1st 2 born male=1 × Average PSU children born per woman		−0.131		−0.0450		0.290		0.792		0.110
		(0.123)		(0.519)		(0.202)		(0.766)		(0.0729)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.0167		−0.117		−0.104		0.964		0.180**
		(0.112)		(0.416)		(0.170)		(0.499)		(0.0620)
var(boyboy[psuid])										
Constant	0.440***	0.439***	0.500***	0.502***	0.671***	0.668***	21.88***	22.04***	0.925***	0.927***
	(0.104)	(0.103)	(0.129)	(0.129)	(0.187)	(0.184)	(5.246)	(5.278)	(0.113)	(0.113)
var(boygirl[psuid])										
Constant	0.167***	0.167***	0.188***	0.190***	0.182**	0.182**	8.494***	8.290***	0.401***	0.397***
	(0.0489)	(0.0489)	(0.0470)	(0.0470)	(0.0579)	(0.0579)	(1.632)	(1.587)	(0.0551)	(0.0541)
var(_cons[psuid])										
Constant	0.0438	0.0439	0.0214	0.0204	0.0338	0.0331	3.266***	3.263***	0.128***	0.128***
	(0.0234)	(0.0234)	(0.0202)	(0.0203)	(0.0282)	(0.0284)	(0.527)	(0.528)	(0.0228)	(0.0227)
Observations	8087	8087	6930	6930	6375	6375	3321	3321	24713	24713
AIC	13979.8	13984.0	13624.2	13629.0	11061.2	11058.9	6974.7	6970.1	46330.1	46321.9
BIC	14147.7	14172.9	13788.4	13813.8	11223.4	11241.5	7133.5	7147.2	46541.0	46557.2
East										
1st 2 born male=1	0.0893	−0.312	−0.0269	−0.436	0.0387	−0.0194	−0.154	−0.114	−0.0151	−0.281
	(0.0711)	(0.377)	(0.0682)	(0.965)	(0.0912)	(0.440)	(0.106)	(0.459)	(0.0413)	(0.207)
1st 2 born - 1 male and 1 female=1	0.0450	0.0996	−0.0118	−0.0613	0.00664	0.293	0.0422	0.192	0.0195	0.146
	(0.0591)	(0.293)	(0.0569)	(0.748)	(0.0740)	(0.311)	(0.0775)	(0.339)	(0.0335)	(0.159)
Average PSU children born per woman		−0.0633		0.00834		0.0955		0.0289		−0.0235
		(0.0768)		(0.207)		(0.123)		(0.123)		(0.0493)
1st 2 born male=1 × Average PSU children born per woman		0.134		0.137		0.0234		−0.0183		0.0984
		(0.123)		(0.324)		(0.172)		(0.197)		(0.0739)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		−0.0190		0.0166		−0.110		−0.0678		−0.0469
		(0.0944)		(0.252)		(0.124)		(0.145)		(0.0568)
var(boyboy[psuid])										
Constant	0.322***	0.320***	0.369***	0.369***	0.823***	0.822***	2.444***	2.447***	0.690***	0.687***
	(0.0847)	(0.0843)	(0.103)	(0.103)	(0.167)	(0.166)	(0.437)	(0.437)	(0.0804)	(0.0800)
var(boygirl[psuid])										
Constant	0.162***	0.160***	0.166**	0.166**	0.282***	0.281***	0.487***	0.485***	0.232***	0.230***
	(0.0364)	(0.0365)	(0.0547)	(0.0548)	(0.0623)	(0.0624)	(0.122)	(0.122)	(0.0301)	(0.0300)
var(_cons[psuid])										
Constant	0.00855	0.00859	0.0518*	0.0516*	0.114***	0.113***	0.375***	0.376***	0.104***	0.104***
	(0.0153)	(0.0153)	(0.0244)	(0.0244)	(0.0291)	(0.0289)	(0.0728)	(0.0730)	(0.0174)	(0.0173)
Observations	7731	7731	8183	8183	6378	6378	7067	7067	29359	29359
AIC	14565.5	14568.4	14190.0	14195.6	14647.1	14651.1	10872.7	10878.3	54386.6	54386.2
BIC	14725.4	14749.1	14351.2	14377.9	14809.4	14833.6	11037.4	11063.6	54593.8	54618.2

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: Random coefficients regressions: Third-born male - By Region (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1992	1992	1998	1998	2005	2005	2015	2015	Pooled	Pooled
West										
1st 2 born male=1	−0.0448	−0.661	−0.117	−0.570	−0.0470	−0.291	−0.314*	−1.957***	−0.131**	−0.856***
	(0.0734)	(0.459)	(0.0736)	(0.951)	(0.0918)	(0.403)	(0.132)	(0.538)	(0.0431)	(0.214)
1st 2 born - 1 male and 1 female=1	−0.00637	−0.755	−0.100	0.353	−0.0715	−0.398	−0.192*	−0.486	−0.0938**	−0.494**
	(0.0636)	(0.409)	(0.0663)	(0.811)	(0.0715)	(0.292)	(0.0949)	(0.423)	(0.0359)	(0.173)
Average PSU children born per woman		−0.232		−0.00532		−0.202		−0.231		−0.190***
		(0.124)		(0.223)		(0.110)		(0.144)		(0.0514)
1st 2 born male=1 × Average PSU children born per woman		0.225		0.153		0.0966		0.824**		0.281***
		(0.166)		(0.321)		(0.154)		(0.253)		(0.0788)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.273		−0.153		0.130		0.151		0.156*
		(0.149)		(0.273)		(0.111)		(0.204)		(0.0644)
var(boyboy[psuid])										
Constant	0.282**	0.282**	0.274**	0.273**	0.777***	0.774***	4.068***	3.909***	0.635***	0.628***
	(0.0948)	(0.0947)	(0.0901)	(0.0897)	(0.193)	(0.194)	(0.892)	(0.864)	(0.0900)	(0.0883)
var(boygirl[psuid])										
Constant	0.0475	0.0486	0.121**	0.120**	0.259***	0.263***	1.545***	1.539***	0.277***	0.277***
	(0.0349)	(0.0345)	(0.0418)	(0.0418)	(0.0668)	(0.0669)	(0.266)	(0.266)	(0.0398)	(0.0397)
var(_cons[psuid])										
Constant	0.0505**	0.0489**	0.0133	0.0133	0.171***	0.169***	0.548***	0.550***	0.127***	0.125***
	(0.0187)	(0.0185)	(0.0147)	(0.0147)	(0.0383)	(0.0381)	(0.108)	(0.108)	(0.0192)	(0.0190)
Observations	8726	8726	9252	9252	6631	6631	5623	5623	30232	30232
AIC	13276.1	13275.2	13598.2	13603.0	13029.7	13031.3	9112.0	9107.8	49304.7	49283.2
BIC	13445.9	13466.2	13769.4	13795.6	13192.9	13214.9	9284.5	9300.2	49521.0	49524.4
Northeast										
1st 2 born male=1			−0.0863	−3.675		−0.0503	0.0222	−0.404	0.000931	−0.273
			(0.113)	(2.007)		(0.512)	(0.139)	(0.470)	(0.0613)	(0.252)
1st 2 born - 1 male and 1 female=1			−0.165	0.429		−0.685	0.142	0.162	−0.0413	−0.152
			(0.0894)	(2.095)		(0.425)	(0.105)	(0.361)	(0.0523)	(0.221)
Average PSU children born per woman				−0.235		−0.0476		−0.0766		−0.0201
				(0.552)		(0.147)		(0.159)		(0.0657)
1st 2 born male=1 × Average PSU children born per woman				1.199		0.0444		0.205		0.103
				(0.667)		(0.202)		(0.232)		(0.0944)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman				−0.198		0.280		−0.00619		0.0422
				(0.704)		(0.166)		(0.169)		(0.0828)
var(boyboy[psuid])										
Constant			$1.52e-39$	$2.53e-36$		$1.31e-36$	$1.02e-36$	$2.97e-39$	$6.19e-38$	$1.56e-36$
			$(3.34e-38)$	$(3.83e-35)$		$(5.21e-36)$	$(4.43e-36)$	$(7.26e-39)$	$(5.93e-36)$	$(2.72e-36)$
var(boygirl[psuid])										
Constant			$1.57e-40$	$8.28e-36$		$7.45e-40$	$8.05e-36$	$6.90e-38$	$1.71e-33$	$2.02e-36$
			$(1.39e-39)$	$(7.20e-34)$		$(7.54e-39)$	$(1.41e-35)$	$(2.96e-36)$	$(1.05e-33)$	$(4.23e-35)$
var(_cons[psuid])										
Constant			$1.69e-36$	$1.81e-36$		$4.09e-37$	$3.79e-39$	$1.39e-38$	$1.70e-34$	$2.22e-38$
			$(7.84e-36)$	$(1.07e-32)$		$(4.16e-36)$	$(1.45e-38)$	$(3.03e-37)$	$(8.89e-35)$	$(2.09e-37)$
Observations			5903	5903		7042	4959	4959	23077	23077
AIC			2334.7	2338.3		2328.6	1636.3	1641.4	8970.9	8975.9
BIC			2501.8	2525.4		2520.7	1799.1	1823.7	9172.1	9201.2
Central										
1st 2 born male=1		−0.389			0.0684	−0.265			0.0802	−0.544*
		(0.665)			(0.110)	(0.673)			(0.0523)	(0.231)
1st 2 born - 1 male and 1 female=1		−0.214			0.0657	−0.168			0.0388	−0.285
		(0.597)			(0.0881)	(0.519)			(0.0449)	(0.204)
Average PSU children born per woman		−0.0572				−0.278				−0.165**
		(0.150)				(0.193)				(0.0627)
1st 2 born male=1 × Average PSU children born per woman		0.188				0.120				0.225**
		(0.201)				(0.240)				(0.0814)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.0730				0.0831				0.117
		(0.187)				(0.183)				(0.0737)
var(boyboy[psuid])										
Constant		0.471*			0.402**	0.409**			0.219***	0.217***
		(0.186)			(0.144)	(0.145)			(0.0651)	(0.0647)
var(boygirl[psuid])										
Constant		0.153			0.0654	0.0587			0.109**	0.109**
		(0.0841)			(0.0506)	(0.0495)			(0.0351)	(0.0351)
var(_cons[psuid])										
Constant		0.0377			0.0713*	0.0684*			0.0325*	0.0323*
		(0.0308)			(0.0339)	(0.0329)			(0.0151)	(0.0151)
Observations		3485			4251	4251			16864	16864
AIC		5337.3			6299.5	6300.8			22040.0	22036.4
BIC		5485.1			6439.3	6459.7			22210.2	22229.8

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Logit regressions: Second-born male - By Region

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1992	1992	1998	1998	2005	2005	2015	2015	Pooled	Pooled
North										
1st born female=1	0.0241	0.114	0.0447	−0.309	0.158***	0.250	0.111**	0.824***	0.0837***	0.291***
	(0.0377)	(0.161)	(0.0360)	(0.304)	(0.0399)	(0.190)	(0.0402)	(0.167)	(0.0193)	(0.0799)
Average PSU children born per woman		0.0191		−0.0479		−0.000137		0.151*		0.0385
		(0.0470)		(0.0679)		(0.0502)		(0.0589)		(0.0214)
1st born female=1 × Average PSU children born per woman		−0.0287		0.115		−0.0336		−0.354***		−0.0748**
		(0.0538)		(0.0989)		(0.0699)		(0.0795)		(0.0288)
Observations	19654	19654	17871	17871	17318	17318	17959	17959	72802	72802
AIC	21259.0	21262.5	21130.7	21132.6	22459.5	22462.2	18823.7	18798.8	83664.2	83657.3
BIC	21416.7	21436.0	21286.5	21304.0	22622.5	22633.0	18995.3	18985.9	83866.5	83878.0
South										
1st born female=1	−0.0160	0.0686	−0.0254	−0.538	−0.0231	−0.0609	0.0243	−0.0282	−0.00987	0.0204
	(0.0385)	(0.187)	(0.0420)	(0.807)	(0.0424)	(0.176)	(0.0526)	(0.261)	(0.0221)	(0.0865)
Average PSU children born per woman		−0.0933		−0.0193		0.143*		0.127		0.0161
		(0.0580)		(0.184)		(0.0721)		(0.114)		(0.0260)
1st born female=1 × Average PSU children born per woman		−0.0326		0.175		0.0188		0.0326		−0.0134
		(0.0719)		(0.274)		(0.0895)		(0.152)		(0.0354)
Observations	12014	12014	11440	11440	12291	12291	8919	8919	44664	44664
AIC	20429.1	20425.2	22140.2	22143.2	21350.4	21340.8	22215.5	22211.7	86143.0	86146.3
BIC	20562.2	20573.1	22272.4	22290.1	21483.9	21481.7	22357.4	22367.8	86317.1	86337.9
East										
1st born female=1	−0.0188	0.0513	0.0114	1.104	0.00740	0.0557	−0.0133	0.0376	−0.00337	0.0559
	(0.0410)	(0.216)	(0.0434)	(0.579)	(0.0499)	(0.208)	(0.0472)	(0.192)	(0.0228)	(0.102)
Average PSU children born per woman		−0.104*		0.140		0.000502		−0.0307		−0.0256
		(0.0518)		(0.133)		(0.0716)		(0.0682)		(0.0292)
1st born female=1 × Average PSU children born per woman		−0.0235		−0.367		−0.0191		−0.0245		−0.0224
		(0.0724)		(0.193)		(0.0824)		(0.0860)		(0.0375)
Observations	10177	10177	11289	11289	9412	9412	10986	10986	41864	41864
AIC	19191.5	19183.8	19624.0	19622.5	21207.3	21213.8	18501.2	18504.1	78512.6	78511.3
BIC	19314.4	19321.1	19748.6	19761.8	21336.0	21349.6	18632.7	18650.2	78676.8	78692.8

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Logit regressions: Second-born male - By Region (continued)

	(1) 1992	(2) 1992	(3) 1998	(4) 1998	(5) 2005	(6) 2005	(7) 2015	(8) 2015	(9) Pooled	(10) Pooled
West										
1st born female=1	−0.0160	−0.0333	0.0194	0.994*	0.127**	0.497*	0.176**	0.614*	0.0799***	0.445***
	(0.0428)	(0.246)	(0.0418)	(0.501)	(0.0486)	(0.220)	(0.0561)	(0.252)	(0.0240)	(0.115)
Average PSU children born per woman		0.0329		−0.0405		0.00399		0.0771		0.0764*
		(0.0638)		(0.127)		(0.0773)		(0.0967)		(0.0314)
1st born female=1 × Average PSU children born per woman		0.00625		−0.330*		−0.152		−0.240		−0.148***
		(0.0899)		(0.167)		(0.0879)		(0.128)		(0.0433)
Observations	11762	11762	12773	12773	10546	10546	10150	10150	45231	45231
AIC	17761.1	17764.3	18678.3	18674.0	19768.6	19764.4	19013.6	19007.5	75223.4	75198.8
BIC	17893.9	17911.7	18812.5	18823.1	19899.4	19902.4	19158.1	19166.4	75397.8	75390.6
Northeast										
1st born female=1	−0.108	−0.0677	0.0117	1.338	−0.0652	−0.293	−0.00435	−0.224	−0.0444	−0.109
	(0.0703)	(0.242)	(0.0661)	(1.494)	(0.0653)	(0.267)	(0.0680)	(0.235)	(0.0336)	(0.128)
Average PSU children born per woman		−0.0820		0.141		0.0220		0.0496		0.0465
		(0.0652)		(0.347)		(0.0761)		(0.0947)		(0.0368)
1st born female=1 × Average PSU children born per woman		−0.0144		−0.444		0.0926		0.117		0.0255
		(0.0877)		(0.502)		(0.105)		(0.119)		(0.0493)
Observations	6693	6693	8027	8027	10346	10346	7905	7905	32971	32971
AIC	3478.6	3481.5	3152.8	3156.4	3378.8	3380.2	2780.7	2783.0	12709.2	12710.8
BIC	3621.6	3638.1	3306.6	3324.1	3538.2	3546.8	2934.2	2950.4	12894.1	12912.5
Central										
1st born female=1	−0.0190	0.156	0.0811	−0.529	0.129*	0.372	0.109*	0.372	0.0743*	0.273*
	(0.0716)	(0.387)	(0.0596)	(0.661)	(0.0588)	(0.374)	(0.0504)	(0.223)	(0.0301)	(0.130)
Average PSU children born per woman		−0.0294		−0.175		0.175		0.0866		0.0561
		(0.0938)		(0.151)		(0.101)		(0.0748)		(0.0370)
1st born female=1 × Average PSU children born per woman		−0.0573		0.202		−0.0881		−0.126		−0.0728
		(0.120)		(0.217)		(0.136)		(0.105)		(0.0476)
Observations	4416	4416	5193	5193	5899	5899	7748	7748	23256	23256
AIC	6872.1	6874.7	7235.3	7238.1	8243.1	8240.9	7318.9	7321.5	29625.0	29626.0
BIC	6968.0	6983.3	7333.6	7349.5	8350.1	8354.5	7430.1	7446.7	29753.9	29770.9

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 12: Logit regressions: Third-born male - By Region

	(1) 1992	(2) 1992	(3) 1998	(4) 1998	(5) 2005	(6) 2005	(7) 2015	(8) 2015	(9) Pooled	(10) Pooled
North										
1st 2 born male=1	0.00560	−0.852**	−0.0638	−0.974*	−0.165*	−1.018**	−0.185**	−1.483***	−0.100**	−0.898***
	(0.0602)	(0.272)	(0.0621)	(0.424)	(0.0693)	(0.310)	(0.0645)	(0.269)	(0.0323)	(0.133)
1st 2 born - 1 male and 1 female=1	0.0523	−0.644*	−0.0629	−0.519	−0.0814	−0.561*	−0.138*	−0.684**	−0.0561*	−0.569***
	(0.0525)	(0.254)	(0.0546)	(0.409)	(0.0599)	(0.275)	(0.0563)	(0.236)	(0.0281)	(0.117)
Average PSU children born per woman		−0.273***		−0.132		−0.192*		−0.252**		−0.174***
		(0.0734)		(0.107)		(0.0862)		(0.0912)		(0.0358)
1st 2 born male=1 × Average PSU children born per woman		0.269**		0.293*		0.303**		0.606***		0.280***
		(0.0878)		(0.135)		(0.110)		(0.120)		(0.0464)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.220**		0.148		0.173		0.262*		0.182***
		(0.0842)		(0.131)		(0.101)		(0.111)		(0.0420)
Observations	14885	14885	13114	13114	12067	12067	11319	11319	51385	51385
AIC	16758.6	16741.7	16364.9	16365.4	16954.2	16947.9	12254.0	12233.8	62289.8	62240.5
BIC	16933.6	16939.5	16537.0	16559.9	17131.8	17147.7	12437.4	12439.2	62510.9	62488.2
South										
1st 2 born male=1	−0.0500	0.268	−0.00131	0.415	0.0188	−0.328	−0.227*	−0.997	−0.0546	−0.264
	(0.0643)	(0.314)	(0.0700)	(1.426)	(0.0797)	(0.362)	(0.111)	(0.548)	(0.0387)	(0.161)
1st 2 born - 1 male and 1 female=1	−0.00194	−0.00316	0.0333	0.520	−0.00976	0.138	−0.413***	−1.463**	−0.0667	−0.494**
	(0.0572)	(0.297)	(0.0607)	(1.212)	(0.0693)	(0.332)	(0.107)	(0.528)	(0.0352)	(0.156)
Average PSU children born per woman		0.0397		0.239		0.106		−0.433		−0.117*
		(0.0935)		(0.317)		(0.128)		(0.230)		(0.0463)
1st 2 born male=1 × Average PSU children born per woman		−0.122		−0.142		0.172		0.445		0.0880
		(0.117)		(0.486)		(0.182)		(0.309)		(0.0638)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.000498		−0.166		−0.0739		0.603*		0.178**
		(0.110)		(0.412)		(0.168)		(0.291)		(0.0607)
Observations	8087	8087	6930	6930	6375	6375	3321	3321	24713	24713
AIC	14061.9	14066.0	13711.6	13716.7	11132.4	11130.4	8120.6	8113.3	47037.6	47025.8
BIC	14208.9	14234.0	13855.3	13880.9	11274.4	11292.7	8261.1	8272.1	47224.3	47236.7
East										
1st 2 born male=1	0.0797	−0.279	−0.0218	−0.374	0.00909	−0.0953	−0.164	0.0536	−0.0160	−0.284
	(0.0693)	(0.361)	(0.0644)	(0.883)	(0.0832)	(0.404)	(0.0939)	(0.405)	(0.0387)	(0.198)
1st 2 born - 1 male and 1 female=1	0.0474	0.103	−0.0192	−0.106	−0.0175	0.366	0.0161	0.0705	0.00632	0.136
	(0.0594)	(0.292)	(0.0555)	(0.734)	(0.0734)	(0.312)	(0.0733)	(0.322)	(0.0330)	(0.157)
Average PSU children born per woman		−0.0630		0.0128		0.0513		0.00571		−0.0309
		(0.0766)		(0.203)		(0.117)		(0.121)		(0.0488)
1st 2 born male=1 × Average PSU children born per woman		0.119		0.118		0.0381		−0.0976		0.0970
		(0.119)		(0.296)		(0.157)		(0.171)		(0.0703)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		−0.0187		0.0293		−0.145		−0.0254		−0.0468
		(0.0943)		(0.248)		(0.124)		(0.137)		(0.0561)
Observations	7731	7731	8183	8183	6378	6378	7067	7067	29359	29359
AIC	14644.9	14646.6	14281.9	14287.3	14909.0	14909.7	11312.8	11317.7	55126.2	55119.1
BIC	14783.9	14806.5	14422.1	14448.5	15051.0	15071.9	11456.9	11482.4	55308.5	55326.3

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 12: Logit regressions: Third-born male - By Region (continued)

	(1) 1992	(2) 1992	(3) 1998	(4) 1998	(5) 2005	(6) 2005	(7) 2015	(8) 2015	(9) Pooled	(10) Pooled
West										
1st 2 born male=1	−0.0490	−0.625	−0.133	−0.586	−0.0817	−0.392	−0.386***	−1.794***	−0.151***	−0.857***
	(0.0723)	(0.447)	(0.0723)	(0.950)	(0.0831)	(0.365)	(0.109)	(0.454)	(0.0410)	(0.209)
1st 2 born - 1 male and 1 female=1	−0.0125	−0.757	−0.105	0.355	−0.0621	−0.373	−0.220**	−0.484	−0.100**	−0.481**
	(0.0623)	(0.401)	(0.0673)	(0.821)	(0.0667)	(0.273)	(0.0839)	(0.385)	(0.0347)	(0.167)
Average PSU children born per woman		−0.243		−0.0126		−0.177		−0.160		−0.200***
		(0.125)		(0.224)		(0.0991)		(0.136)		(0.0504)
1st 2 born male=1 × Average PSU children born per woman		0.210		0.153		0.123		0.715***		0.273***
		(0.163)		(0.320)		(0.139)		(0.211)		(0.0768)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.271		−0.155		0.124		0.137		0.150*
		(0.146)		(0.277)		(0.103)		(0.185)		(0.0624)
Observations	8726	8726	9252	9252	6631	6631	5623	5623	30232	30232
AIC	13321.3	13319.4	13644.8	13649.0	13259.2	13259.8	9725.7	9707.1	49982.7	49950.9
BIC	13469.9	13489.1	13794.6	13820.2	13401.9	13423.0	9878.3	9879.6	50173.9	50167.2
Northeast										
1st 2 born male=1	−0.0137	−0.945	−0.0863	−3.675	0.0598	−0.0503	0.0222	−0.404	0.000931	−0.273
	(0.130)	(0.575)	(0.113)	(2.007)	(0.111)	(0.512)	(0.139)	(0.470)	(0.0613)	(0.252)
1st 2 born - 1 male and 1 female=1	−0.104	−1.131*	−0.165	0.429	0.0278	−0.685	0.142	0.162	−0.0413	−0.152
	(0.119)	(0.552)	(0.0894)	(2.095)	(0.0988)	(0.425)	(0.105)	(0.361)	(0.0523)	(0.221)
Average PSU children born per woman		−0.215		−0.235		−0.0476		−0.0766		−0.0201
		(0.140)		(0.552)		(0.147)		(0.159)		(0.0657)
1st 2 born male=1 × Average PSU children born per woman		0.329		1.199		0.0444		0.205		0.103
		(0.199)		(0.667)		(0.202)		(0.232)		(0.0944)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.363		−0.198		0.280		−0.00619		0.0422
		(0.190)		(0.704)		(0.166)		(0.169)		(0.0828)
Observations	5173	5173	5903	5903	7042	7042	4959	4959	23077	23077
AIC	2790.0	2792.6	2334.7	2338.3	2325.2	2328.6	1636.3	1641.4	8970.9	8975.9
BIC	2947.3	2969.5	2501.8	2525.4	2496.7	2520.7	1799.1	1823.7	9172.1	9201.2
Central										
1st 2 born male=1	0.215	−0.523	0.0838	−0.365	0.0377	−0.224	−0.0427	−0.714	0.0773	−0.568*
	(0.118)	(0.648)	(0.0951)	(0.999)	(0.106)	(0.649)	(0.0887)	(0.397)	(0.0517)	(0.230)
1st 2 born - 1 male and 1 female=1	0.0181	−0.287	0.118	−0.272	0.0602	−0.134	−0.0536	−0.411	0.0357	−0.297
	(0.107)	(0.595)	(0.0877)	(0.979)	(0.0868)	(0.508)	(0.0759)	(0.327)	(0.0447)	(0.204)
Average PSU children born per woman		−0.0546		−0.251		−0.247		−0.166		−0.162**
		(0.150)		(0.278)		(0.193)		(0.125)		(0.0627)
1st 2 born male=1 × Average PSU children born per woman		0.238		0.149		0.0946		0.310		0.231**
		(0.198)		(0.325)		(0.230)		(0.178)		(0.0812)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.0988		0.130		0.0693		0.167		0.120
		(0.188)		(0.321)		(0.178)		(0.146)		(0.0733)
Observations	3485	3485	4154	4154	4251	4251	4974	4974	16864	16864
AIC	5373.9	5376.7	5748.5	5753.2	6331.5	6331.5	4701.5	4705.0	22110.9	22106.5
BIC	5484.7	5506.0	5862.5	5886.2	6452.2	6471.3	4825.2	4848.3	22257.8	22276.6

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 13: Random coefficients regressions: Second-born male - By Age Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1992	1992	1998	1998	2005	2005	2015	2015	Pooled	Pooled
Ages 15-34										
1st born female=1	0.000889	0.0752	0.0421	0.0793	0.135***	0.304**	0.0878*	0.287	0.0635***	0.204***
	(0.0247)	(0.129)	(0.0253)	(0.123)	(0.0301)	(0.111)	(0.0366)	(0.148)	(0.0143)	(0.0531)
Average PSU children born per woman		−0.0364		−0.00629		0.0113		0.00195		−0.0166
		(0.0311)		(0.0311)		(0.0394)		(0.0514)		(0.0165)
1st born female=1 × Average PSU children born per woman		−0.0236		−0.0121		−0.0716		−0.101		−0.0527**
		(0.0406)		(0.0390)		(0.0457)		(0.0704)		(0.0186)
var(girl1[psuid])										
Constant	0.116***	0.117***	0.160***	0.160***	0.340***	0.338***	1.206***	1.204***	0.299***	0.298***
	(0.0229)	(0.0229)	(0.0247)	(0.0247)	(0.0378)	(0.0377)	(0.113)	(0.113)	(0.0196)	(0.0195)
var(_cons[psuid])										
Constant	0.0659***	0.0653***	0.0533***	0.0532***	0.154***	0.154***	0.505***	0.504***	0.142***	0.141***
	(0.0106)	(0.0105)	(0.0104)	(0.0104)	(0.0161)	(0.0161)	(0.0416)	(0.0416)	(0.00900)	(0.00899)
Observations	35982	35982	36278	36278	32200	32200	27973	27973	132433	132433
AIC	50746.7	50746.2	51248.1	51251.7	48890.5	48891.0	37790.7	37791.7	189156.8	189143.6
BIC	51094.8	51111.3	51605.0	51625.7	49267.6	49284.9	38210.9	38228.4	189695.4	189701.9
Ages 35-49										
1st born female=1	−0.00891	0.296*	−0.00557	0.238	0.0272	0.0282	0.107**	0.502***	0.0323*	0.233***
	(0.0301)	(0.146)	(0.0277)	(0.126)	(0.0303)	(0.102)	(0.0329)	(0.128)	(0.0153)	(0.0515)
Average PSU children born per woman		−0.0127		−0.00598		0.0432		0.172***		0.0309
		(0.0352)		(0.0334)		(0.0405)		(0.0484)		(0.0177)
1st born female=1 × Average PSU children born per woman		−0.0972*		−0.0810*		−0.000315		−0.210***		−0.0805***
		(0.0456)		(0.0409)		(0.0447)		(0.0637)		(0.0189)
var(girl1[psuid])										
Constant	0.270***	0.267***	0.143***	0.139***	0.349***	0.349***	1.038***	1.038***	0.397***	0.397***
	(0.0403)	(0.0401)	(0.0325)	(0.0323)	(0.0380)	(0.0380)	(0.0937)	(0.0938)	(0.0250)	(0.0251)
var(_cons[psuid])										
Constant	0.0957***	0.0953***	0.0825***	0.0825***	0.137***	0.137***	0.445***	0.443***	0.179***	0.179***
	(0.0155)	(0.0155)	(0.0139)	(0.0139)	(0.0155)	(0.0155)	(0.0333)	(0.0331)	(0.0103)	(0.0103)
Observations	28734	28734	30315	30315	33612	33612	35777	35777	128438	128438
AIC	37809.2	37804.5	40378.0	40375.2	46439.3	46441.5	47946.3	47930.0	172905.7	172886.1
BIC	38148.1	38160.0	40727.4	40741.3	46818.3	46837.3	48379.0	48379.7	173442.6	173442.6

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14: Random coefficients regressions: Third-born male - By Age Group

	(1) 1992	(2) 1992	(3) 1998	(4) 1998	(5) 2005	(6) 2005	(7) 2015	(8) 2015	(9) Pooled	(10) Pooled
Ages 15-34										
1st 2 born male=1	0.00343	−0.467*	−0.0524	−0.429	−0.0321	−0.198	−0.180*	−0.604	−0.0528	−0.446**
	(0.0468)	(0.233)	(0.0465)	(0.516)	(0.0650)	(0.286)	(0.0885)	(0.377)	(0.0280)	(0.137)
1st 2 born - 1 male and 1 female=1	0.0269	−0.264	−0.0407	0.322	−0.0299	−0.0988	−0.0785	−0.485	−0.0254	−0.213
	(0.0387)	(0.197)	(0.0392)	(0.444)	(0.0499)	(0.221)	(0.0654)	(0.276)	(0.0226)	(0.109)
Average PSU children born per woman		−0.132*		0.0569		−0.0348		−0.195*		−0.0930**
		(0.0573)		(0.116)		(0.0727)		(0.0985)		(0.0316)
1st 2 born male=1 × Average PSU children born per woman		0.161*		0.125		0.0636		0.198		0.143**
		(0.0794)		(0.171)		(0.107)		(0.168)		(0.0484)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.0996		−0.120		0.0263		0.190		0.0687
		(0.0673)		(0.147)		(0.0839)		(0.125)		(0.0392)
var(boyboy[psuid])										
Constant	0.531***	0.531***	0.506***	0.505***	1.853***	1.852***	3.198***	3.215***	0.956***	0.955***
	(0.0841)	(0.0839)	(0.0912)	(0.0912)	(0.246)	(0.246)	(0.508)	(0.509)	(0.0751)	(0.0749)
var(boygirl[psuid])										
Constant	0.198***	0.199***	0.263***	0.262***	0.562***	0.561***	1.266***	1.263***	0.367***	0.366***
	(0.0374)	(0.0375)	(0.0421)	(0.0421)	(0.0769)	(0.0771)	(0.200)	(0.199)	(0.0298)	(0.0298)
var(_cons[psuid])										
Constant	0.0689***	0.0673***	0.0391*	0.0393*	0.235***	0.235***	0.852***	0.853***	0.152***	0.151***
	(0.0175)	(0.0174)	(0.0175)	(0.0175)	(0.0331)	(0.0332)	(0.0947)	(0.0947)	(0.0145)	(0.0145)
Observations	23066	23066	22248	22248	17520	17520	12652	12652	75486	75486
AIC	33082.7	33080.1	31597.4	31600.4	27603.4	27608.9	15454.5	15455.8	108055.4	108045.3
BIC	33444.8	33466.3	31965.9	31992.9	27984.2	28013.0	15864.0	15887.6	108572.4	108590.0
Ages 35-49										
1st 2 born male=1	0.0397	−0.497*	−0.0270	−1.132*	−0.0238	−0.334	−0.229***	−1.448***	−0.0619*	−0.712***
	(0.0453)	(0.218)	(0.0442)	(0.480)	(0.0522)	(0.210)	(0.0601)	(0.242)	(0.0248)	(0.106)
1st 2 born - 1 male and 1 female=1	0.0193	−0.433*	−0.0107	−0.648	0.00226	−0.0910	−0.166***	−0.794***	−0.0427*	−0.453***
	(0.0392)	(0.192)	(0.0385)	(0.459)	(0.0420)	(0.168)	(0.0469)	(0.191)	(0.0208)	(0.0885)
Average PSU children born per woman		−0.148*		−0.187		−0.0694		−0.251***		−0.157***
		(0.0593)		(0.127)		(0.0622)		(0.0740)		(0.0273)
1st 2 born male=1 × Average PSU children born per woman		0.186*		0.369*		0.126		0.601***		0.251***
		(0.0746)		(0.160)		(0.0841)		(0.113)		(0.0391)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.156*		0.213		0.0380		0.316***		0.160***
		(0.0661)		(0.153)		(0.0684)		(0.0904)		(0.0331)
var(boyboy[psuid])										
Constant	0.475***	0.473***	0.450***	0.451***	1.139***	1.138***	2.399***	2.369***	0.862***	0.857***
	(0.0792)	(0.0788)	(0.0786)	(0.0785)	(0.146)	(0.146)	(0.276)	(0.274)	(0.0618)	(0.0614)
var(boygirl[psuid])										
Constant	0.175***	0.175***	0.220***	0.220***	0.398***	0.398***	1.179***	1.173***	0.390***	0.389***
	(0.0381)	(0.0382)	(0.0373)	(0.0373)	(0.0523)	(0.0523)	(0.124)	(0.123)	(0.0287)	(0.0285)
var(_cons[psuid])										
Constant	0.0844***	0.0835***	0.0496**	0.0493**	0.157***	0.156***	0.483***	0.484***	0.158***	0.157***
	(0.0186)	(0.0186)	(0.0168)	(0.0168)	(0.0231)	(0.0231)	(0.0505)	(0.0507)	(0.0131)	(0.0131)
Observations	25021	25021	25288	25288	25224	25224	24652	24652	100185	100185
AIC	33379.3	33373.8	34043.2	34043.0	35829.4	35832.0	30125.2	30095.8	133717.6	133655.1
BIC	33745.0	33763.9	34417.6	34441.8	36228.0	36255.1	30571.3	30566.3	134250.4	134216.5

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects.
Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 15: Random coefficients regressions with year interactions: Second-born male

	1	2
1st born female=1× group(yeargroup)=1	−0.00792	0.0501
	(0.0188)	(0.0896)
1st born female=1× group(yeargroup)=2	0.0180	−0.0468
	(0.0189)	(0.218)
1st born female=1× group(yeargroup)=3	0.0713***	0.0630
	(0.0206)	(0.0842)
1st born female=1× group(yeargroup)=4	0.0802***	0.329***
	(0.0221)	(0.0889)
1st born female=1× group(yeargroup)=1		−0.0204
× Average PSU children born per woman		(0.0312)
1st born female=1× group(yeargroup)=2		0.0217
× Average PSU children born per woman		(0.0726)
1st born female=1× group(yeargroup)=3		0.00338
× Average PSU children born per woman		(0.0341)
1st born female=1× group(yeargroup)=4		−0.131**
× Average PSU children born per woman		(0.0432)
var(girl1[psuid])		
Constant	0.155***	0.155***
	(0.00976)	(0.00977)
var(_cons[psuid])		
Constant	0.0731***	0.0730***
	(0.00446)	(0.00446)
Observations	260871	260871
AIC	364014.4	364007.0
BIC	364663.6	364698.1

Observations are weighted using sampling probability weights. Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ Years 1, 2, 3 and 4 correspond to 1992-93, 1998-99, 2005-06 and 2015-16, respectively. All regressions include state and year fixed effects and control variables. Not shown, average PSU children born per woman is statistically significant in column 1 for year 1 (p-value=0.011) and in column 2 for year 4 (p-value=0.041).

Table 16: Random coefficients regressions with year interactions: Third-born male

	3rd male	3rd male
3rd born male		
1st 2 born male=1 × group(yeargroup)=1	0.0202	−0.538**
	(0.0322)	(0.169)
1st 2 born male=1 × group(yeargroup)=2	−0.0419	−0.577***
	(0.0323)	(0.160)
1st 2 born male=1 × group(yeargroup)=3	−0.0424	−0.356**
	(0.0368)	(0.135)
1st 2 born male=1 × group(yeargroup)=4	−0.214***	−0.959***
	(0.0413)	(0.170)
1st 2 born - 1 male and 1 female=1 × group(yeargroup)=1	0.0213	−0.307*
	(0.0276)	(0.146)
1st 2 born - 1 male and 1 female=1 × group(yeargroup)=2	−0.0252	−0.283*
	(0.0277)	(0.140)
1st 2 born - 1 male and 1 female=1 × group(yeargroup)=3	−0.0281	−0.240*
	(0.0307)	(0.112)
1st 2 born - 1 male and 1 female=1 × group(yeargroup)=4	−0.148***	−0.588***
	(0.0343)	(0.145)
1st 2 born male=1 × group(yeargroup)=1 × Average PSU children born per woman		0.174***
		(0.0518)
1st 2 born male=1 × group(yeargroup)=2 × Average PSU children born per woman		0.171***
		(0.0500)
1st 2 born male=1 × group(yeargroup)=3 × Average PSU children born per woman		0.130*
		(0.0549)
1st 2 born male=1 × group(yeargroup)=4 × Average PSU children born per woman		0.364***
		(0.0776)
1st 2 born - 1 male and 1 female=1 × group(yeargroup)=1 × Average PSU children born per woman		0.102*
		(0.0449)
1st 2 born - 1 male and 1 female=1 × group(yeargroup)=2 × Average PSU children born per woman		0.0828
		(0.0439)
1st 2 born - 1 male and 1 female=1 × group(yeargroup)=3 × Average PSU children born per woman		0.0877
		(0.0465)
1st 2 born - 1 male and 1 female=1 × group(yeargroup)=4 × Average PSU children born per woman		0.219**
		(0.0666)
Constant	−0.309*	−0.0444
	(0.137)	(0.172)
var(boyboy[psuid])		
Constant	0.452***	0.449***
	(0.0293)	(0.0291)
var(boygirl[psuid])		
Constant	0.186***	0.186***
	(0.0133)	(0.0133)
var(_cons[psuid])		
Constant	0.0671***	0.0670***
	(0.00640)	(0.00641)
Observations	175671	175671
AIC	243464.9	243411.2
BIC	244160.1	244187.1

Observations are weighted using sampling probability weights. Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ Years 1, 2, 3 and 4 correspond to 1992-93, 1998-99, 2005-06 and 2015-16, respectively. All regressions include state and year fixed effects and control variables. Not shown, average PSU children born per woman is statistically significant in column 4 for all years.

Table 17: Random coefficients regressions: Second-born male - With Caste

	(1) 1998	(2) 1998	(3) 2005	(4) 2005	(5) 2015	(6) 2015	(7) Pooled	(8) Pooled
1st born female=1	0.0175	0.143	0.0704***	0.134	0.0871***	0.361***	0.0412***	0.199***
	(0.0188)	(0.0899)	(0.0205)	(0.0750)	(0.0225)	(0.0899)	(0.0102)	(0.0361)
Average PSU children born per woman		−0.00494		0.0170		0.0904**		0.0250*
		(0.0225)		(0.0276)		(0.0335)		(0.0101)
1st born female=1 × Average PSU children born per woman		−0.0412		−0.0275		−0.144**		−0.0614***
		(0.0288)		(0.0320)		(0.0438)		(0.0130)
var(girl1[psuid])								
Constant	0.0844***	0.0839***	0.145***	0.145***	0.450***	0.449***	0.156***	0.155***
	(0.0130)	(0.0129)	(0.0157)	(0.0157)	(0.0380)	(0.0381)	(0.00977)	(0.00978)
var(_cons[psuid])								
Constant	0.0280***	0.0280***	0.0647***	0.0647***	0.206***	0.206***	0.0734***	0.0734***
	(0.00576)	(0.00576)	(0.00712)	(0.00711)	(0.0151)	(0.0151)	(0.00448)	(0.00447)
Observations	66593	66593	65812	65812	63750	63750	260871	260871
AIC	91741.7	91741.6	95918.2	95921.0	87137.0	87125.1	364028.6	364001.6
BIC	92151.5	92169.6	96354.7	96375.7	87626.4	87632.6	364604.5	364598.5

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects. Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 18: Random coefficients regressions: Third-born male - With Caste

	(1) 1998	(2) 1998	(3) 2005	(4) 2005	(5) 2015	(6) 2015	(7) Pooled	(8) Pooled
1st 2 born male=1	−0.0432	−0.582***	−0.0383	−0.356**	−0.197***	−1.058***	−0.0626***	−0.538***
	(0.0316)	(0.156)	(0.0373)	(0.136)	(0.0457)	(0.187)	(0.0178)	(0.0664)
1st 2 born - 1 male and 1 female=1	−0.0268	−0.288*	−0.0246	−0.236*	−0.133***	−0.617***	−0.0406**	−0.335***
	(0.0275)	(0.139)	(0.0309)	(0.112)	(0.0360)	(0.150)	(0.0150)	(0.0560)
Average PSU children born per woman		−0.102**		−0.0824		−0.201***		−0.104***
		(0.0374)		(0.0430)		(0.0563)		(0.0181)
1st 2 born male=1 × Average PSU children born per woman		0.172***		0.132*		0.419***		0.174***
		(0.0488)		(0.0552)		(0.0852)		(0.0229)
1st 2 born - 1 male and 1 female=1 × Average PSU children born per woman		0.0838		0.0873		0.239***		0.108***
		(0.0435)		(0.0466)		(0.0690)		(0.0195)
var(boyboy[psuid])								
Constant	0.248***	0.245***	0.527***	0.526***	1.665***	1.663***	0.453***	0.449***
	(0.0381)	(0.0378)	(0.0602)	(0.0601)	(0.169)	(0.169)	(0.0294)	(0.0291)
var(boygirl[psuid])								
Constant	0.118***	0.118***	0.183***	0.182***	0.668***	0.665***	0.186***	0.186***
	(0.0188)	(0.0189)	(0.0222)	(0.0221)	(0.0698)	(0.0692)	(0.0134)	(0.0133)
var(_cons[psuid])								
Constant	0.0179*	0.0175*	0.0748***	0.0747***	0.292***	0.292***	0.0677***	0.0670***
	(0.00789)	(0.00787)	(0.0114)	(0.0115)	(0.0301)	(0.0302)	(0.00642)	(0.00641)
Observations	47536	47536	42744	42744	37304	37304	175671	175671
AIC	65785.7	65774.9	64210.8	64207.4	46278.5	46252.7	243484.3	243404.0
BIC	66215.4	66230.9	64661.2	64683.8	46773.0	46772.9	244109.0	244058.9

Observations are weighted using sampling probability weights. All regressions include state fixed effects and control variables. Pooled regressions also include year fixed effects. Clustered standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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