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Abstract: I document extremely son-biased sex ratios at birth among Asian-born parents in Spain. Using data on the universe of registered births in Spain during 2007-2012, I show that there are 117 boys per 100 girls born to Indian parents, compared with a national average of 107 boys per 100 girls. The difference is even more pronounced at higher parities. Indian parents with one or more previous children have 143 boys per 100 girls (117 for Chinese parents with at least two previous children). These biases are significant even after controlling for a broad range of family characteristics. The most likely mechanism is sex-selective abortions. I find no increase in the sex ratio after the 2010 reform that deregulated abortion during the first 14 weeks of pregnancy.

JEL codes: J13

Keywords: fertility, sex ratio, abortion, sex selection, son preference, India, Spain.

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1. Introduction

It is well-known that fertility rates are higher among immigrants than natives, in Spain as well as in other countries (Adsera and Ferrer, 2013). For instance, in 2012 the birth rate among Spanish nationals was about 44 births per 1,000 women, compared with 51 for foreign nationals (see Figure 1).[1] It has also been documented that the fertility patterns of immigrants tend to reflect those in the source country (Fernández and Fogli, 2009), although there is also evidence of assimilation in fertility behaviors (Mayer and Riphahn, 2000).

Several Asian countries (notably India and China) are known for their increasingly biased sex-ratios in favor of boys (Jha et al., 2006, Abrevaya, 2009), a phenomenon which is referred to by the term "missing girls". There is some recent evidence that these patterns are also present among Asian immigrants in developed countries (see Abrevaya, 2009 and Almond & Edlund, 2008 for the US, Dubuc and Coleman, 2007 for the UK and Almond et al., 2013 for Canada).

In this paper I use birth-certificate data to document for the first time son-biased sex-ratios at birth among Asian immigrants in Spain. This bias is particularly pronounced among parents born in India, and for higher parities, and it remains significant after controlling for a wide range of family characteristics.

I argue that the most likely mechanism driving the low fraction of newborn girls is the practice of sex-selective abortions among (some) Indian families in Spain.[2] Other methods potentially used by families with a preference for sons, such as selective fertility stopping (families that stop having children as soon as they have a son), cannot

[1] Source: Spanish National Statistical Institute (www.ine.es).
[2] Other methods for prenatal sex-selection, such as gender-selective in-vitro fertilization and sperm sorting, are illegal for non-therapeutic reasons in Spain.

by themselves generate a biased sex ratio at birth (although they would generate other patterns such as girls having on average more siblings than boys).

In 2010, a reform in the legal regulation of abortion in Spain made it easier to get an abortion during the first 14 weeks of pregnancy. I evaluate the effect of this reform on the degree of sex-selection among Asian parents, but find little evidence that the reform led to any increase in the prevalence of sex-selection. This is consistent with the most widely used methods for sex determination (ultrasound and amniocentesis) not being available before week 16 of the pregnancy.

The remainder of the paper is organized as follows. Section 2 introduces the methodology and the data used in the analysis. Section 3 presents the results, and section 4 concludes.

2. Methods and data

The main data source comes from birth-certificate data, as made publicly available by the Spanish National Statistical Institute (www.ine.es). The micro-data files provide information on the universe of births registered annually in Spain, including some demographic variables for the parents. I focus on years 2007-2012, since before 2007 no information was provided on the country of birth of the parents. As an additional data source, I also explore the aggregate data provided by the National Statistical Institute on registered abortions (by weeks of gestation, country of birth of the mother, etc).

I focus on singleton births (less than 2% of all births were multiple). There were a total of 2,810,143 registered singleton births in Spain between 2007 and 2012, almost 18% of them with both parents born outside of Spain (see Table 1). Almost 8% of newborns with foreign-born parents (about 38,000) had both parents born in Asia. There are 24,499 births with both parents born in China (26,977 with at least one parent born

in China), and 2,805 with both parents born in India (3,665 with at least one parent born in India).[3]

The descriptive analysis starts by calculating sex ratios at birth. The sex ratio is defined as the number of boys born per 100 girls. A sex ratio of about 105 is considered "biologically normal" (Almond & Edlund, 2008).

The econometric analysis estimates the following equation on the sample of all singleton births:

$$(1) \qquad B_{ic} = \alpha + \beta I_{ic} + \gamma X_{ic} + \varepsilon_{ic}$$

Each observation refers to an individual newborn baby *i*, with parents born in country *c*. The dependent variable takes value 1 if the newborn is a boy (0 if it's a girl). The main explanatory variable, *I*, is an indicator that takes value 1 if both parents are born outside of Spain. A second specification defines *I* as equal to 1 if both parents are Asian-born, and a third one uses a set of indicators for specific source countries. I include control variables *X* that might be related to the sex of the baby (age of the mother and father, education of the mother, year dummies, and number of previous children). The coefficient of interest, β, will be different from zero if immigrant parents are more (or less) likely than natives to give birth to boys.

In additional specifications, I interact the indicators of country of birth of the parents with birth order. As has been noted in the literature (Abrevaya 2009), once a family approaches its maximum size (the desired total number of children), the incentives for sex selection increase if there is a strong preference for one sex over the other (given the sex composition of the previous children). Thus, we would expect that

[3] There are 7 Asian countries reported separately in the birth-certificate data. The Asian country with the highest number of immigrant parents is China (65%), followed by Pakistan (15%), the Philippines (8%) and India (7%).

parents with a preference for boys will be more likely to have sex-selective abortions, the higher the birth order of the child.

Ideally, we would like to be able to control for the sex of previous children born to the same parents. We would expect that, among parents with a preference for boys having a third child, a family where the first two children were girls will be more likely to select the sex of the third child, compared with a family with two boys. However, the Spanish birth-certificate data do not provide information on the sex of the previous children.

3. Results

3.1 Descriptive results

Descriptive statistics for the sample of singletons born in Spain in 2007-2012 are presented in Table 1. The fraction of boys among all singleton births was 51.7%, which translates into an overall sex ratio at birth of 106.9 boys born per 100 girls ((51.7x100)/48.3), with no particular trend apparent over the time period analyzed. Mothers are on average 31 years old at birth, while fathers are about two years older. Almost 2% of babies have no registered father. About 27% of the mothers have a high-school degree but no college, and 30% are university-educated. Regarding birth order, 54% of births are first-born children for the mother, while 36% are second-born, and only 10% of mothers had 2 or more previous children.

Figure 2 shows the sex ratio at birth for native parents, all immigrant parents, and Chinese and Indian parents. The sex ratio is not significantly different between native (106.8) and foreign-born parents (107). The sex ratio for Chinese parents is also very close to the one for natives (107.1). However, Indian parents in Spain are significantly less likely to give birth to girls, compared with native parents as well as with other

immigrant source countries. Indian parents had 117 boys per 100 girls. This suggests that the practice of sex-selective abortions, documented in India, might also be prevalent among Indian families residing in Spain.

Figure 3 breaks down the sex ratios by birth order, showing the number of boys born per 100 girls, separately for women having their first, second, third and higher-order child. The sex ratio in the full sample is close to 107 for all birth orders. Chinese parents have 106 boys per 100 girls in first and second births. However, third births to Chinese parents show a sex ratio of 116, and the ratio is 122 for higher-order births. This suggests some degree of sex selection among Chinese parents with two or more previous children.[4]

The trend becomes striking in the case of Indian parents. With a sex ratio close to parity for first births, there are 134 boys per 100 girls among second births, increasing to the enormous 211 and 237 for third- and higher-order births, respectively. These figures strongly suggest that sex selection is a prevalent practice among Indian parents in Spain, especially for higher parities. This is a well-documented pattern in India in recent decades (Jha et al., 2006), as well as among Indian parents in other immigrant-receiving countries like the US (Almond & Edlund, 2008).

The most likely mechanism for sex-selection is sex-selective abortions (i.e. parents aborting baby girls in a higher proportion than baby boys). The sex of the baby is typically found out around week 20 of the pregnancy via ultrasound (or around week 14-18 via amniocentesis). During the period of analysis (2007-2012), about 5% of all abortions in Spain took place after week 16 of the pregnancy (2% after week 20), i.e. around or after the time when most parents learn about the sex of their baby.

[4] The overall sex ratio for Pakistani and Filipino parents is 104 and 113, respectively (101 and 111 for those with at least one previous child).

It would be informative to provide direct evidence on the incidence of abortions among Indian women in Spain. Unfortunately, the publicly available data on abortions do not report the specific country of birth of the parents. Figure A1 in the appendix shows that Indian women have high fertility rates (compared with native mothers and even other immigrants), while their birth rate is close to the Asian average (in Spain). We can also show (see Figure A2) that Asian women have more abortions as a fraction of all pregnancies compared with natives (23% versus 15.5%), but the rate is even higher for other immigrant groups (around 30%).

In the next section, we estimate regressions for sex of the baby while controlling for observable characteristics of the parents, on top of country of birth. This allows us to rule out potential confounders, as well as to put confidence intervals around the estimated biases.

3.2 Main regression results

Table 2 reports the main regression results, obtained from estimating equation 1 on the sample of all singleton births in Spain in 2007-2012. Each column reports the results of a different regression. All specifications include the following control variables: three dummies for mother's educational attainment, a third-order polynomial in age of the mother and age of the father, a dummy for babies with no registered father, year dummies, and dummies for number of previous children of the mother.

I first discuss the results for the control variables (coefficients not reported in the table). There is no significant trend in the fraction of boys over time, with none of the year dummies significantly different from zero at 95% confidence. Age of the father and the indicator for no registered father are not significantly associated with the sex of the baby. However, age of the mother does turn out to be significant, with older mothers

significantly less likely to give birth to boys.[5] Boys are also less common among mothers with medium-low education levels (primary or secondary). Finally, birth order is not significantly associated with the sex of the newborn.

In the first specification (column 1 of Table 2), the main explanatory variable is an indicator for both parents being foreign-born. The coefficient is very close to 0 and not statistically significant. Overall, immigrant parents are no more or less likely to give birth to a boy than native parents. The second column includes instead a dummy for both parents born in Asia. The coefficient is now positive, but small and far from significant. In column 3, we include a set of dummies for individual source countries. We include the three main source countries in the data (Morocco, Romania and Ecuador), as well as China and India.

The results in column 3 suggest that Moroccan parents are significantly more likely to give birth to boys than natives, while the opposite is true for Ecuadorian parents. However, the magnitude of both these coefficients is small. The average fraction of boys is 51.7% for the whole sample, while these results suggest that the corresponding fraction would be 51.9 for Moroccan parents, and 51.2 for Ecuadorians, holding family characteristics constant. There is no significant difference for Romanian or Chinese parents. Finally, Indian parents are significantly more likely to give birth to boys than natives, and the magnitude is not negligible (more than 2 percentage points). The estimated coefficient suggests that the fraction of boys in Indian families is about 53.8%, compared with the overall average of 51.7%.[6]

Specification 4 interacts the country dummies with an indicator for second or higher-order births. There are only two significant coefficients: the one for Moroccan

[5] The quadratic and cubic terms are also significant (positive and negative, respectively).

[6] In additional specifications (not reported), we also include indicators for the five remaining Asian countries. None of them are statistically significant.

parents, which remains in the same order of magnitude as in the previous specification, and the one for higher-order births for Indian parents. This coefficient suggests that the fraction of boys among Indian families with previous children is about 7 percentage points higher than the overall average.[7]

Finally, in column 5 we include only the dummies for Chinese and Indian parents, and add separate interactions with second, third, and higher-order births. We now find a significantly positive coefficient for third births to Chinese parents, who are almost 2 percentage points more likely to be boys than average. The coefficient for higher births to Chinese parents is also sizeable (3.6 points), although not statistically significant. However, the really striking results are those for higher-order births to Indian parents. Second births to Indian parents are 5 percentage points more likely to be boys than average, but third births exceed the average by 16 points, and higher-order births are 32 percentage points more likely to be boys than the baseline. These results are consistent with the patterns shown Figure 2, which therefore do not seem to be driven by other family characteristics other than the country of birth of the parents.

In table 3, we run additional specifications with several variations. Column 1 adds controls for marital status and Spanish citizenship of the mother. Columns 2 and 3 use country of birth of the mother or of the father only, respectively, instead of both parents as in the main specification. In column 4, the indicators for Chinese and Indian take value 1 if either of the parents was born in China or India, respectively. The results are barely affected: Indian parents are significantly more likely to give birth to boys, while the sex ratio is no different from average for Chinese parents.

[7] We also run specifications that interact indicators for each of the 7 Asian countries with higher-order births. The results suggest a significantly son-biased biased sex ratio among Bangladeshi parents with previous children (by almost 3 percentage points).

3.3 The effect of a reform in abortion law

Since the most likely way of "selecting" the sex of a baby would be via abortions, it is relevant to pay attention to the legal regulation of abortion in Spain. Since 1985, abortions could be performed legally in three cases: "therapeutic" (risk to the health of the mother), rape, or fetus malformation. The procedure was allowed to be performed during the first 12 weeks of the pregnancy in the case of rape, during the first 22 in the case of malformation, and at any time in the therapeutic case (which needed to be certified by a doctor). Between 2000 and 2009, about 97% of registered abortions reported risk to the health of the mother as the reason.[8]

Abortion law was reformed in 2010. Starting July 5, 2010, abortion was made easier during the initial 14 weeks of gestation, with no requirement to provide any specific reason. After week 14, abortions can only be performed in cases of "important risks to the health of mother or baby".

It seems unlikely that this reform would have facilitated sex-selective abortions, since ultrasound technology is able to determine the health of the baby only after week 16 of the pregnancy (usually around week 20).[9] The data on abortions by weeks of gestation do not show any increase in the number of abortions after week 16 following the reform of the abortion law, as expected.[10]

In any case, we can test directly whether the fraction of boys changed significantly after the legal reform, overall and for Asian parents. We do so by interacting the country

[8] A common way of complying with the "therapeutic" reason was to provide a report by a psychologist certifying that the continuation of the pregnancy would have negative effects on the mental health of the mother.

[9] In fact, the sex of the fetus may be discerned by ultrasound as early as 11 weeks of gestation, although the accuracy is relatively imprecise when attempted early (Merz, 2005; Efrat et al., 1999; Hsiao et al., 2008; Odeh et al., 2009).

[10] In 2000-2009, between 3 and 4% of annual registered abortions took place in weeks 17 to 20 of the pregnancy, while the figure was 2.7% in 2011. Between 1.5 and 2% of abortions were performed after week 20 in 2000-2009, down to 1.35% in 2011. Source: National Statistical Institute (www.ine.es).

of birth dummies in equation 1 with a "post-reform" dummy.[11] The results are shown in Table 4. The coefficient on the post-reform dummy is not significantly different from zero (column 1), and neither is the interaction with Indian parents, or with any other of the source countries, except for China. Chinese parents are about 1 percentage point more likely to give birth to boys after the abortion law reform. However, note that the sum of the coefficients for Chinese parents and its interaction with the post-reform dummy is not significantly different from zero.

The second specification drops the Moroccan, Ecuadorian and Romanian dummies. Finally, column 3 tests for differential effects on the sex ratio by birth order. In order to do so, I add a dummy for non-first-born children, as well as its interactions with Chinese and Indian parents (and the post-reform dummy), and triple interactions with country and post-reform. The post-reform dummy is not significant.[12] Regarding Indian parents, as we knew from the previous section, their higher-order births are significantly more likely to be boys. However, the interaction with post-reform is not significant for either first or later births.

The results for Chinese parents, on the other hand, suggest "too many" boys among first births after the reform (by about 2 percentage points). However, once again, the sum of the coefficient for the Chinese dummy plus the interaction with post is not significantly different from zero. Thus, the fraction of boys among first-births for Chinese parents after the reform is not significantly different from the overall sex ratio.

In sum, I find no evidence that sex-selection among Indian or Chinese parents increased after the new abortion law of 2010, as expected since the new law only

[11] The "post-reform" dummy takes value 1 for births taking place on or after November 2010, since this is the first cohort of births that could have been aborted under the new law (considering that more than 98% of abortions take place before 21 weeks of gestation and that a pregnancy is considered full-term at 37 weeks).

[12] The dummy for higher-order births and its interaction with post-reform are also not statistically significant (not shown).

liberalized abortion in the initial 14 weeks of the pregnancy, while most parents would only find out about the sex of the baby via ultrasound after week 16.

4. Conclusions

I examine the sex ratio at birth in Spain using birth-certificate data for 2007-2012. I find that there are on average 107 boys born per 100 girls, similar to other countries (Chahnazarian 1988). However, babies born to parents from India are significantly more likely to be male, with 117 boys born per 100 girls. This pattern is even stronger for higher parities, with more than twice as many boys as girls for third and higher-order births. I also find some evidence of son-biased sex ratios for third and higher-order births among Chinese-born parents. These results survive the inclusion of a broad set of individual-level control variables, including age of the parents and birth order.

This empirical finding suggests that sex-selective abortions are prevalent among Indian (and Chinese) families living in Spain, leading to a "missing girls" phenomenon similar to that documented in recent decades in India and other Asian countries (Jha et al., 2006). This effect is not important quantitatively, since it involves a very small fraction of all births in Spain (newborns with at least one Indian parent represented only 0.13% of all singleton births during the period). During the six-year period under analysis (2007-1012), my estimates imply a little under a hundred "missing girls" among Indian families.[13] Thus, the sex imbalance documented in this paper is unlikely to have any noticeable effects on the national marriage market, although it could have an impact among the relevant subpopulation.

[13] The fraction of boys among non-Indian families was 0.5166, while for newborns with at least one Indian parent, table 3 shows the adjusted fraction would be 0.5166+0.0245=0.5411. Since there were 3665 newborns with an Indian parent, we can compare the actual number of boys (3665x0.5411=1983) with the one that would deliver the non-Indian average (3665x0.5166=1893). The difference, about 90, is the number of "extra boys" (or "missing girls").

My results do underline the importance of culture in driving fertility decisions. Fernández and Fogli (2009) showed that the fertility rate of second-generation immigrants in the US is highly correlated with that in their parents' home country. The evidence presented here, together with that in previous papers for several other host countries, strongly suggests that gender preferences also cross borders.

Some of the arguments used to rationalize son-biased sex ratios in India (high dowry payments, patrilocal marriage patterns) refer to institutions that are not present in contemporary Spain. It remains to be seen whether Asian immigrants will experience assimilation towards the average sex ratio over time, given the documented persistence of cultural son biases.

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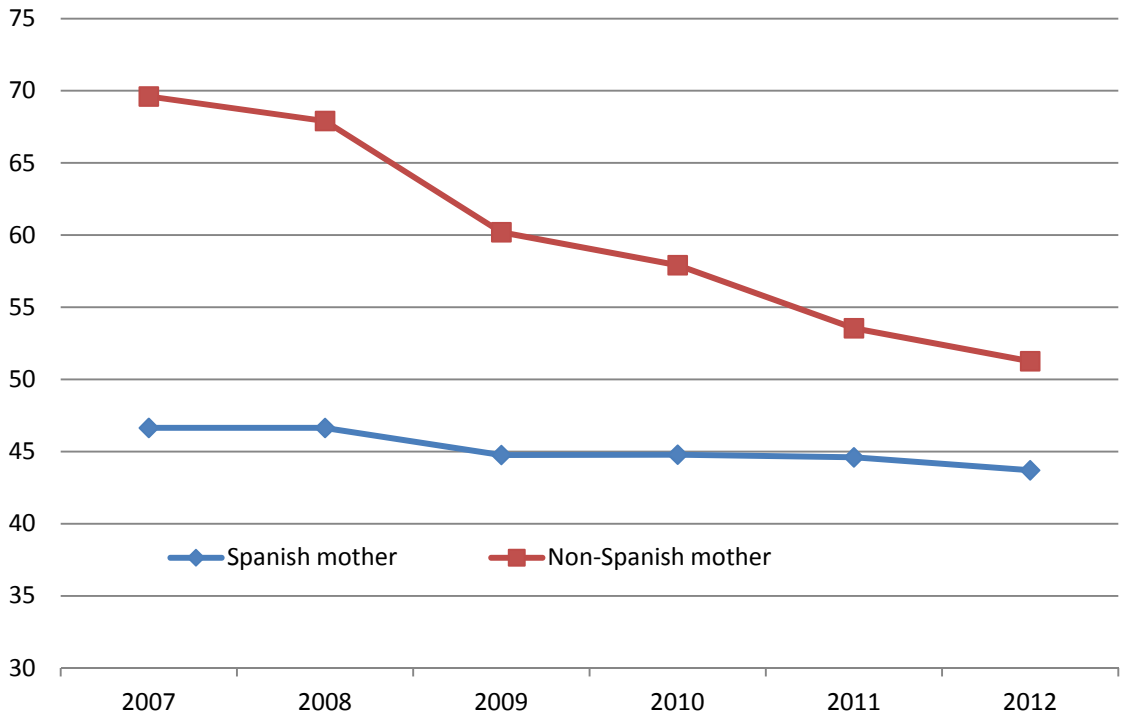
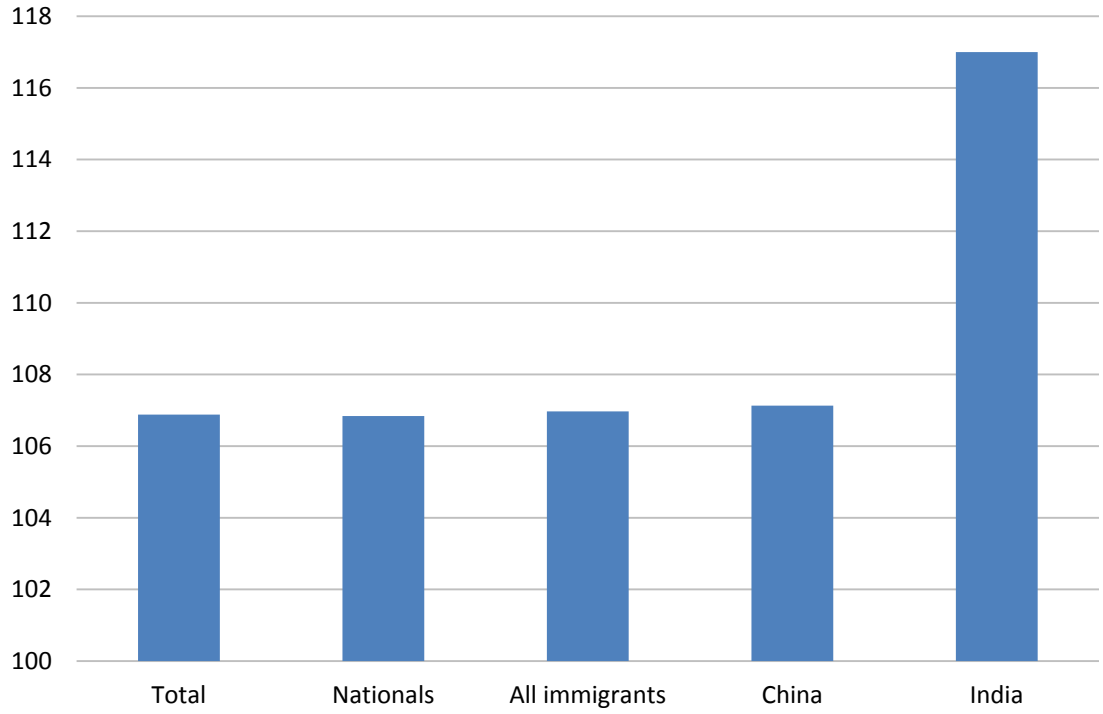
Tables and figures

Figure 1. Birth rate by country of birth of the parents, Spain 2007-2012



Source: Spanish National Statistical Institute (www.ine.es). The birth rate is defined as the annual number of births per 1,000 women aged 15-44 (by country of nationality).

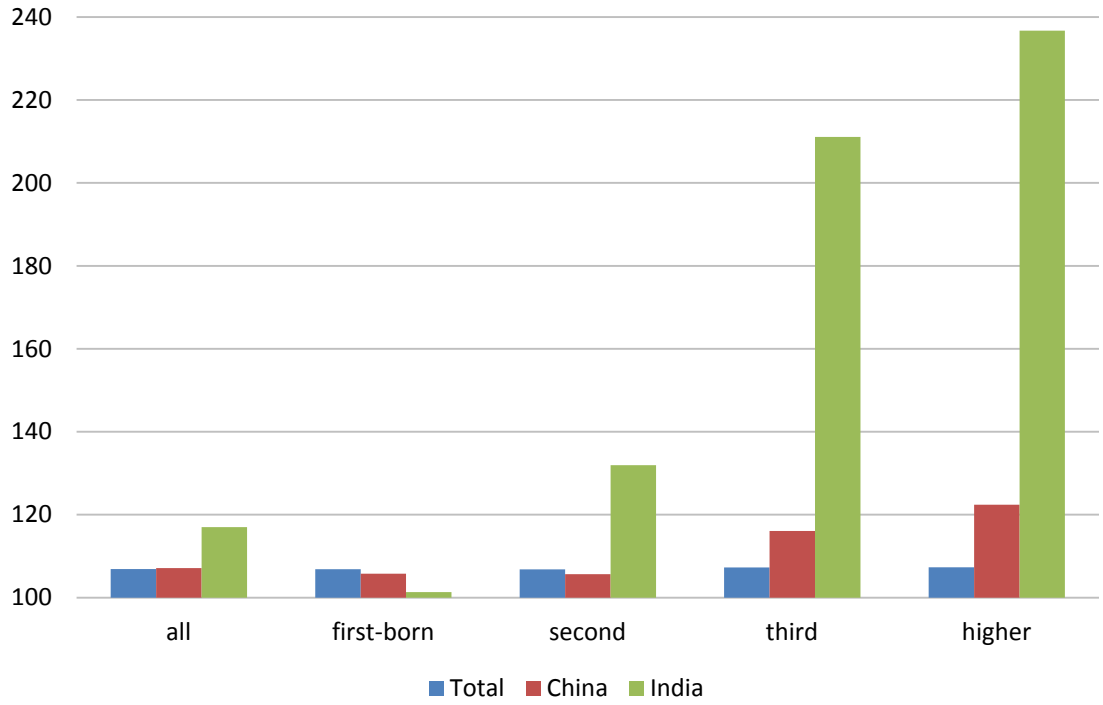
Figure 2. Sex ratio at birth by country of birth of the parents, Spain 2007-2012



Source: Birth-certificate data, Spain 2007-2012 (www.ine.es).

Note: Sample of all singleton births. The sex ratio is just the number of boys divided by the number of girls (times 100). "Nationals" are defined as newborns with both parents born in Spain, while "immigrants" are babies with both parents born outside of Spain. "China" and "India" are also defined based on the country of birth of both parents.
The number of observations is 2,810,143 (24,499 for the subsample of Chinese parents, 2,805 for Indian parents).

Figure 3. Sex ratio at birth by birth order and country of birth of the parents, Spain 2007-2012



Source: Birth-certificate data, Spain 2007-2012 (www.ine.es).

Note: Sample of all singleton births. The sex ratio is the number of boys divided by the number of girls (times 100). "China" and "India" are defined based on the country of birth of both parents. Birth order is defined based on the number of previous children of the mother. The number of observations is 2,810,143 (24,499 for the subsample of Chinese parents, 2,805 for Indian parents).

Table 1. Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
Boy	0,5166	0,4997	0	1
Foreign-born parents	0,1769	0,3815	0	1
Asian-born parents	0,0134	0,1150	0	1
Chinese parents	0,0087	0,0930	0	1
Pakistani parents	0,0020	0,0443	0	1
Philippino parents	0,0011	0,0329	0	1
Indian parents	0,0010	0,0316	0	1
Romanian parents	0,0196	0,1386	0	1
Moroccan parents	0,0478	0,2134	0	1
Ecuadorian parents	0,0137	0,1163	0	1
Age of the mother	31,3	5,4	12	55
Age of the father	33,3	7,4	0	83
No registered father	0,0192	0,1371	0	1
Mother's education (omitted: less than primary)				
Primary	0,2268	0,4188	0	1
Secondary	0,2722	0,4451	0	1
University	0,3017	0,4590	0	1
Year of birth (omitted: 2007)				
2008	0,1784	0,3829	0	1
2009	0,1694	0,3751	0	1
2010	0,1666	0,3726	0	1
2011	0,1615	0,3680	0	1
2012	0,1552	0,3621	0	1
Number of previous children of the mother (omitted: 0)				
1	0,3558	0,4788	0	1
2	0,0741	0,2619	0	1
3 or more	0,0252	0,1568	0	1

Source: Birth-certificate micro data, Spanish National Statistical Institute.
Sample: Singleton births, 2007-2012. The number of observations is 2,810,143.

Table 2. Regression results: Country of birth of the parents and fraction of boys

(Dependent variable: Boy indicator)

	1	2	3	4	5
Foreign-born parents	-0,00004				
	(0,00085)				
Asian-born parents		0,00104			
		(0,00262)			
Moroccan			0,0025 *	0,00494 **	
			(0,00152)	(0,00214)	
Moroccan*Non-first-birth				-0,00435	
				(0,00282)	
Ecuadorian			-0,0051 **	-0,00184	
			(0,00258)	(0,00425)	
Ecuador*Non-first				-0,00495	
				(0,00533)	
Romanian			0,00077	0,0026	
			(0,00218)	(0,00274)	
Romania*Non-first				-0,00475	
				(0,00445)	
Indian			0,02126 **	-0,01363	-0,01407
			(0,00943)	(0,01234)	(0,01234)
Indian*Non-first				0,08419 ***	0,06568 ***
				(0,01901)	(0,01997)
Indian*Third birth					0,17475 ***
					(0,04136)
Indian*Higher than 3rd					0,33627 ***
					(0,07418)
Chinese			-0,00058	-0,00353	-0,0039
			(0,00324)	(0,00461)	(0,00461)
China*Non-first				0,00566	-0,00009
				(0,00642)	(0,00691)
China*Third birth					0,02245 **
					(0,01096)
China*Higher than 3rd					0,03573
					(0,02206)

Note: Sample of singleton births, 2007-2012 (N=2,810,143). Robust standard errors in parentheses. Control variables: year dummies, third-order polynomial in age of the mother and age of the father, three dummies for mother's educational attainment, a dummy for newborns with no registered father, and dummies for number of older siblings. (* 90%; ** 95%; *** 99%)

Table 3. Robustness checks: Additional controls and mother versus father country of birth

	1		2		3		4	
Indian	0,02103	**	0,02443	***	0,02173	**	0,02451	***
	(0,00944)		(0,00907)		(0,00853)		(0,00825)	
Chinese	-0,00078		-0,00103		-0,00098		-0,00122	
	(0,00328)		(0,00318)		(0,00322)		(0,00313)	

Note: Sample of singleton births, 2007-2012 (N=2,810,143). Robust standard errors in parentheses. In column 1, the country of birth indicators (India and China) refer to both parents; in column 2, to the mother only; in column 3, to the father; and in column 4 to either one of the parents. Control variables: year dummies, third-order polynomial in age of the mother and age of the father, three dummies for mother's educational attainment, a dummy for newborns with no registered father, dummies for number of older siblings, a dummy indicating married mothers, and a dummy for Spanish nationality of the mother. (* 90%; ** 95%; *** 99%)

Table 4. The effect of the abortion law reform on sex selection by country of birth of the parents

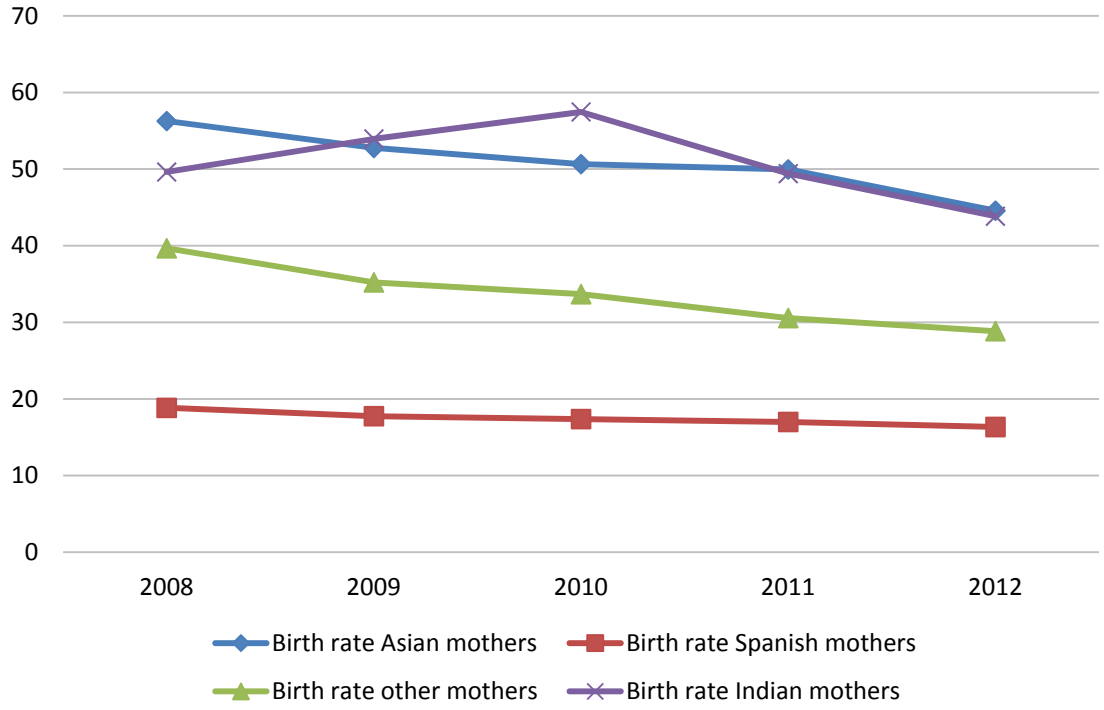
(Dependent variable: Boy indicator)

	1		2		3	
Post-reform	-0,00096		-0,00081		-0,00113	
	(0,00148)		(0,00146)		(0,00157)	
Moroccan	0,00257					
	(0,00208)					
Morocco*Post	0,00098					
	(0,00283)					
Ecuadorian	-0,00463					
	(0,00328)					
Ecuador*Post	-0,00064					
	(0,00536)					
Romanian	-0,00095					
	(0,00292)					
Romania*Post	0,00533					
	(0,00438)					
Indian	0,02311	*	0,02247	*	-0,0132	
	(0,01334)		(0,01333)		(0,01738)	
Indian*Non-first					0,08729	***
					(0,02690)	
Indian*Post	-0,00096		-0,00283		-0,00151	
	(0,00148)		(0,01884)		(0,02467)	
India*Post*Non-first					-0,00523	
					(0,03801)	
China	-0,00499		-0,00556		-0,01205	**
	(0,00433)		(0,00429)		(0,00599)	
China*Non-first					0,01318	
					(0,00846)	
China*Post	0,01140	*	0,01124	*	0,02026	**
	(0,00649)		(0,00649)		(0,00933)	
China*Post*Nonfirst					-0,01796	
					(0,01299)	

Note: Sample of singleton births, 2007-2012 (N=2,810,143). Robust standard errors in parentheses. “Post” takes value 1 for births in November 2010 or later. “Non-first” takes value 1 for mothers having their second or higher-order child. Control variables: year dummies, third-order polynomial in age of the mother and age of the father, three dummies for mother’s educational attainment, a dummy for newborns with no registered father, dummies for number of older siblings, a dummy indicating married mothers, and a dummy for Spanish nationality of the mother. (* 90%; ** 95%; *** 99%)

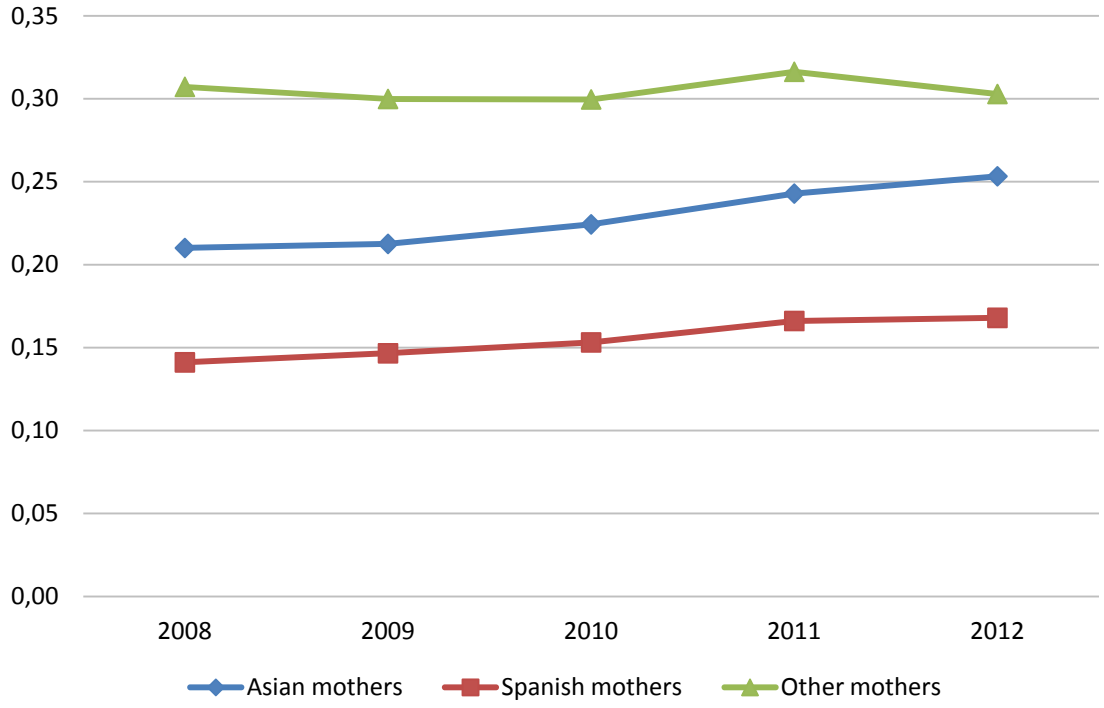
Appendix figures

Figure A1. Birth rates by country of birth of the mother



Source: Spanish National Statistical Institute (www.ine.es). The birth rate is defined as the annual number of births per 1,000 women aged 15-44 (by country of nationality).

Figure A2. Abortion rates by country of birth of the mother



Note: The abortion rate is defined as the number of abortions as a fraction of all pregnancies. The total number of pregnancies is estimated as the annual number of births plus the number of abortions.