Sex of first child and new parents' desired fertility *

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Abstract

The desire for a certain number of children of each sex is one of the most universal human preferences, co-determined by a host of cultural, historic, and personal factors, and influencing outcomes ranging from demography, to health, to women's agency in society. We combine a sample of over 90,000 recently interviewed first-time mothers and 30,000 first-time fathers to look at how the largely random variation in sex of first birth changes new parents' desired fertility. Having a daughter increases new mothers' desired total number of daughters by 5% (β= 0.09 [95% CI []), an effect that is stable across age of first birth, nearly universal across countries, and persists into latter life. This increase is compensated by a -.04 decrease in desired number of sons, an effect that is stronger in lower fertility countries, resulting in increased desired fertility after first-born daughters. Fathers show a similar average increase in desired number of daughters following a first born daughter, but the effect is not found across all countries and is not accompanied by a decreased desire for sons. These results highlight a novel, stochastic channel through which family composition influences preferences, and the daughter response is consistently similar while sons differs by gender and culture highlights something and implies something about demographic change and psychology. Universality and possible explanations vs men,.

- One or two sentences providing a basic introduction to the field, comprehensible to a scientist in any discipline.
- Two to three sentences of more detailed background, comprehensible to scientists in related disciplines.
- One sentence clearly stating the general problem being addressed by this particular study.
- One sentence summarizing the main result (with the words "here we show" or their equivalent).
- Two or three sentences explaining what the main result reveals in direct comparison to what was thought to be the case previously, or how the main result adds to previous knowledge.
- One or two sentences to put the results into a more general context.
- Two or three sentences to provide a broader perspective, readily comprehensible to a scientist in any discipline, may be included in the first paragraph if the editor considers that the accessibility of the paper is significantly enhanced by their inclusion. Under these circumstances, the length of the paragraph can be up to 300 words. (This example is 190 words without the final section, and 250 words with it).

1 Introduction

Preferences over child outcomes are at the root of many major social issues, ranging from determined fertility and hence total population size Pritchett (1994) to demography to feminist social power to development. Health effects Jayachandran and Kuziemko (2011)

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Theories of origin of fertility prefs emphasize blah blah blah. Here are some key cites Saarela and Finnäs (2014); Orzack et al. (2015); Pollard and Morgan (2002); Reher et al. (2017) Compiositional effects: replacement following mortality, son-based stopping rules, closely related preferences for "at least one boy or girl" Cassar style changes in competitive behavior among women ex-post of having kids, motherhood transitions, etc.

Here, we show that a universal aspect of human experience, giving birth to one's first child, seems to quickly and permanently shift one's stated fertility preferences towards that child's sex. This effect seems universal in women, but is less

There are two existing theories as to how the sex of children influence parity progression. The first is that the sex of existing children will matter more in low fertility regimes in explaining subsequent births. The second is that the sex of children will matter more in places with more unequal gender norms (Gray et al., 2004; Hank, 2007; Pollard and Morgan, 2002).

The strength of my research lies in the opportunity to observe how fertility preferences update in response to the sex of firstborn children, and how differential fertility regimes and cultural gender norms play a role in the ways that these preferences change. Becoming a parent marks a distinct change to anyone's life no matter their cultural context or motivations. For a number of intrinsic and extrinsic reasons, it is a reasonable assumption that the realities of birthing and caring for a child may cause individuals to reevaluate their reproductive goals and fertility preferences.

Additionally, the exogenous sex of one's firstborn child is likely to factor into how these preferences are updated as substitutability of daughters and sons is highly dependent upon cultural gender norms. My study is unique in using the plausibly exogenous variation in the sex of recently firstborn children to understand how the sex outcome of a birth changes preferences for total fertility and family composition. To my knowledge, this is the first study to analyze the effects of sex outcome of first birth on fertility preferences. I investigate changes in stated preferences for total number of children, and number of preferred sons and daughters, based upon the sex of an individual's recently firstborn child.

2 Data

Data are taken from the Demographic and Health Survey (DHS), administered by USAID in over 90 countries since 1984. Surveys are representative at the first subnational administrative unit, and record detailed demographic and health information on the household, including all women of reproductive age (15 – 49) and young children, as well as men for some countries. The DHS women's questionnaire includes a detailed birth history for each woman, enabling identification of all women who have given birth within the twelve months preceding the DHS survey, whether children were firstborns, and child sex. Surveys for men include far less information on children, but provide total number of children, the number of each sex, the number of children of each sex that have died, and the age of their most recent child given in single year increments. Using this information, we are able to construct a sample of men who have a single living child aged one or under, including indicator variables for firstborn daughters and firstborn sons. Both women and men report data on desired total fertility "irrespective of the number of children" one already has, and almost all surveys further differentiate between desired sons and desired daughters. We recode desired fertility to have a maximum value of 7, 9n% of the total sample, to minimize the influence of a small number of extreme outliers and possibly miscoded observations.

3 Methods

We estimate the average change in

4 Notes and to-do list

4.1 to-do

- permutation inf test

- fig 1: amir to get from raw data
- fig 2: edits and add educ heterogeneity
- fig 3: amir to get from raw data
- talk next meeting about tables
- lit review framing: jesse

4.2 notes

- universal ish human experience with variation in effect in the sample
- classic social norms? global heterogeneity vs local homogeneity? effect at global scale, country FE, adm FE, and dhs cluster FE
- Natural experiment framing? experience and exposure builds preferences.
- universality of response across most of domain of women's' ages, less so for men
- core gender asymmetry in preference formation driven by random physical outcome btwn men and women response, and highlighting the origin of a fundamental disagreement and tension
- Limit to just recent first births sample
- both men and women similar net size for girls, but only the women offset by wanting fewer boys
- Examine the extent to which couples move together contextualize and help with magnitudes
- origins of motherhood norms, Hrdy 's work on emotional intelligence etc.Hrdy (2016)
- How can we contextualise the magnitude of the numbers
- Succinct documentation of a social / sociocultural mechanism through which preferences are originated. Is there a big open question about how random experience determines our life outcomes?
- highlight that this is relevant to multiple literatures
- quantity quality tradeoff implications by gender (eg more female control implies more tradeoff). So key part of mechanism driving dynamics in so- based stopping rules
- heterogeneity by some indicator of intra household power, e.g., acceptance of partner violence
- country level heterogeneity by eg avg son preference or son preference for compelted fertility (...) or zero fertility. maybe order countries by SRB from low to high and color code the groups into three to highlight the country level difference
- matrilineal belt https://blogs.worldbank.org/impactevaluations/ties-bind-matrilineal-kinship-and-spousal-cooperation-guest-post-sara-lowes
- Seema son preference blog: https://blogs.worldbank.org/impactevaluations/odds-are-you-re-measuring-son-preference-incorrectly
- check country vs. pop weighting
- country level balance tables (because of significant differences in all sample age and education years)
- oster bounds - how many abortions or female infanticides to drive the results? Maybe also check premature, etc.

- in the non human behavior literature a lot is about imprinting, ie, effects of early experience. Early life experience in humans for example seems to shift preferences towards same eye-color. exposure, Rao's familirity does not breed contempt thing
- Gordon's point: how much is adjusting from not wanting girls to normal ish? how much is undoing gender bias, how much is setting thigns in stone
- can we think of a simulation that would give us the total ferility effect of these random shocks, since we have the asymmetric response? like Vogl and Freese 2020
- Is the framing about fertility outcomes (with preferences as one determinant), or about fertility preference formation
- Check the raw data on women with completed fertility to see what the total number of children are if first born is a daughter versus first born a son. Compare son based stopping to first born daughter
- if it's a selection effect, then it's a near universal and the selection itself is noteworthy
- do results change if we exclude / limit to recent births that resulted in mortality?

5 References

References

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6 Figures and Tables

6.1 Figures

1. Data figure: from average preferences to actual outcome
   (a) map of average total desired fertility (ADM1 data to come from Jesse, all survey years)
   (b) map of average stated desired gender balance - sum of total (by ADM1) to get ratio (Jesse to get ADM1 for this, using classic sex ratio)
   (c) scatter plot of desired sex ratio against total desired fertility for first sons and first daughters sample, only recent moms (Jesse - average ADM1 level for first time same data as above)
   (d) separating histograms with raw data for girls preference after first born being a girl, and for girl preference after first born being a boy (one country one vote weighting) (AMIR to plot using Lauren's data)
2. Results figure 1: OLS coeffs as boxplots showing the overall, female, and male prefs for women and men
   (a) Boxplot of coefficients for pooled sample (Move these to the appendix: add in Education and asset wealth heterogeneity) (AMIR to make this based on laurens code / data)
   (b) age response for JUST women (AMIR to plot)
3. Spatial heterogeneity figure cultural influences REPLACE WITH HISTOGRAM DIFFERENCE SCATTER PLOTS
   (a) scatter / line plots of the histogram differences in counts (maybe also show mens results) LOOK FOR INDIVIDUAL PLOTS IN DROPBOX. POTENTIALLY DO THIS AS A KERNEL DENSITY OF MEAN DIFFERENCES BETWEEN BOYS AND GIRLS. ALSO SHOW MENS RESULT.
   (b) Look at other aspects of heterogeneity: high med and low, order countries by SRB from low to high and color code the groups into three to highlight the country level difference? TO DISCUSS DURING NEXT MEETING - HOW UNIVERSAL OR HETEROGENEOUS IS THIS?

6.2 Tables

6.3 Appendix

- table version of main fig
- table version of main fig with no demographic controls
- table of all children perference not restricted to people who also answered the ideal boys and ideal girls question
- randomization inference where we take the sample of recent first births and do random reassign of child sex
- fixed effects heterogeneity table

Table 1

	Dependent variable:
	prestige
log2(income)	14.942^{***}
	(1.354)
Constant	-139.856^{***}
	(16.954)
Observations	102
R^2	0.549
Adjusted R^2	0.545
Residual Std. Error	11.609 (df = 100)
F Statistic	121.810^{***} (df = 1; 100)
Note:	*p<0.1; **p<0.05; ***p<0.01