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Changing Status of Daughters in Indonesia

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Abstract: In many nations, parents exhibit a variety of behaviors that favor sons over daughters. In this paper we provide evidence suggesting that in Indonesia there is no problem of "missing daughters" and that patterns of births, birth spacing and nutrition allocations do not suggest son preference during the cohorts born from 1940's to the 1990's. In contrast, gender differences in educational attainment and inheritance were quite prevalent in the recent past. These gaps have narrowed for secondary education and inheritance, and disappeared for primary education.

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Son preference influences parental decisions and child outcomes in many parts of the world. These outcomes range from the sex composition of the family and the spacing of births to the resources devoted to children of different sexes. In South and East Asia, perhaps 80 million young women are "missing" because they have been aborted, killed or neglected; that is, the proportion of young women alive is much lower than would be expected to occur under normal chances of survival with equal access to health care (Bardhan and Klasen 1999). At the same time, the publicity devoted to missing girls obscures considerable variation in the treatment of daughters across Asia and over time (Banister 1999).

This paper offers a comprehensive view of the relative treatment of daughters in Indonesia, using the 1993 and 1997 waves of the Indonesia Family Life Survey (IFLS). We examine multiple measures of son preference and the status of girls relative to boys more generally. We study several birth cohorts to understand how the relative treatment of daughters has evolved in recent decades. The measures we study capture the actions parents, siblings and others take (often encouraged by customs, laws, or economic incentives) that favor sons over daughters.

Indonesia is famous for its relatively egalitarian treatment of women. Thus, some readers may doubt why an article is needed that looks at gender differences in the treatment of sons and daughters. In fact, the evidence for equality was never that strong. There is plenty of anthropological evidence suggesting unequal treatment, and bias towards boys (Atkinson and Errington 1990; Bedner 1999; Hobart 1995; Ihromi 1994; Mulatsih 1994; Parker 1997; Sullivan 1994; Wolf 1992). As we will document, for children born in the middle of the 20th century, education and inheritance were much more favorable to sons than to daughters. At the same time, there has been no evidence of son preference in birth spacing. Nevertheless, this lack of differentiation may merely have been because it was difficult to space children before modern contraception was accessible. In India, for example, recent debates have highlighted a possible increased manifestation of son preference as more control over birth can be exercised (DasGupta and Bhat 1997). The *adat* survey

evidence we present below indicates that in roughly half of 270 Indonesian communities, the tradition was, in fact, to prefer a son for the first birth (and only six percent preferred a daughter first). Respondents also indicated there was more 'social pressure' to have a son than to have a daughter.

Because son preference can take many forms, we examine its several possible facets in turn. We start with a brief review of the anthropological literature on the status of daughters in Indonesia, and then describe the IFLS dataset and the methods we use. The following sections present evidence on "missing girls," provide tests of whether parents spaced births to obtain a desired number of sons, and examine whether sons received preferences in nutrition, education and inheritance.

Our analysis is more comprehensive than most in that we look at many dimensions of son preference over several decades. Given the many time periods and results we examine, it is important to sketch the coherent story our results present – recalling that our results present averages for a diverse nation. Our first main result is that there is no evidence that parents intrinsically value daughters less than sons. Most importantly, there is no "missing girls" problem in Indonesia. In addition, there is also no systematic evidence that son preference has affected the size and sex composition of families even with the advent of modern contraception; for example, we do not find that parents who have many daughters have large families as they try to achieve a desired number of sons. Furthermore, there is little evidence of discriminatory allocations of nutrition.

Our second main result is that in the past as daughters grew up, gender differences became more important. In both education and inheritance, sons born in the middle of the twentieth century were strongly favored on average.

Our final main result is that these gender gaps have diminished over time. As primary school became universal, gaps in enrollments have largely disappeared. Moreover, the gap has narrowed considerably at the secondary level. Gender gaps in inheritance were also much smaller by the 1990s.

Setting and data

Indonesia is the fourth most populous country in the world and contains tremendous cultural and economic diversity, and widespread poverty. From the end of the 1960s until the 1997 financial crisis, real per annual capita GDP growth rate was an impressive 3.9 percent. Even after this growth, annual per capita incomes averaged only US$880 in 1996. During this period Indonesia also saw remarkable improvements in health status. Between 1960 and 1995, life expectancy at birth increased from 39 to 66 years and infant mortality decreased from 148 to 49 per thousand.

Generalizing over the archipelago with its hundreds of languages and ethnic groups, and over the time period of the second half of the twentieth century, during which Indonesia has undergone rapid urbanization and industrialization, is obviously difficult. Moreover, class differences in the status of women can be very large even within ethnic groups. There is little doubt, however, that overall gender differentials are less salient in most parts of Indonesia than in countries with well-documented unequal status such as India and China (see the papers in the collection edited by Atkinson and Errington (1990)). Nevertheless, substantial disagreement exists in how best to summarize the differential treatment of children and of adults, and evidence is plentiful of localized discrimination against girls. These disagreements and ambiguities emphasize the important role of large-scale surveys in determining the nature, extent, and causes of bias against girls in Indonesia.

The data used in this analysis come from the 1993 and 1997 waves of the Indonesia Family Life Survey (IFLS) (Frankenberg and others 1995); and Frankenberg and Thomas, 1997). This panel survey has information on individuals in approximately 7224 households distributed in several hundred villages or neighborhoods. The IFLS is a representative sample of 83% of the population in late 1993, covering 13 of 27 provinces in the country. Small provinces and politically unstable provinces such as Irian Jaya and the former East Timor were not sampled; thus, our sample misses some heavily Christian areas and the enormous variety of Irian Jaya. After stratifying by urban and rural areas, households were randomly selected in 321

enumeration areas. Within households different members were interviewed according to various selection criteria to ensure adequate numbers of older respondents.

For most of the different facets of potential son preference, we analyzed three groups of individuals. Results were almost always consistent across samples; thus, we typically only report results from one or two of the samples. The first sample consists of the household heads, their spouses, and their siblings. This group gives us family sex composition and other demographic information going back to the cohort born in the 1940s. These data must be treated with some caution. The "families" for which we have data on are ones where a child grew up to become head of a household or the spouse of a household head, and survived to 1993. More worrisome is that the adults responded to questionnaires regarding their own schooling and biological siblings, but only reported data on siblings currently alive or deceased in the past year, and not on the deceased siblings who may have been present during their childhoods. Thus, for older respondents the number of siblings is much more likely to be significantly lower than for relatively younger adults. Indeed, the frequency in household rosters of adults over 60 declines rapidly.

The second sample consists of children of ever-married mothers, as reported in a retrospective pregnancy history for all women aged 15-49 in the sample households. With this retrospective history, we are able to reconstruct sex composition of families and other demographic information at different times.

The third group uses the roster of children and adults present in households in 1993. From this roster we constructed both children residing in the household (regardless of biological parents) and biological children of the household head (regardless of residence). We use the 'residential' sample to report on differential allocations of nutrition and health care (captured by height-for-age), education, and inheritances, because only persons residing in the household were measured for height and weight and asked about education and inheritances. We estimated demographic outcomes for these families but we do not report them because they are virtually identical to the results from the families of ever-married mothers.

There are two sets of tests for son preference in intra-household resource allocation. The first set compares mean outcomes for sons and daughters. We examine a panoply of outcomes including births,

mortality, number of siblings, likelihood of being youngest child, intervals after birth to birth of next child, height, and education attainment. We rely on simple comparisons of unadjusted means whenever possible, and note when differences are statistically significant. The second set of tests looks for competition from siblings (Garg and Morduch 1998). Intuitively, if parents invest more in sons or if brothers are more successful competitors for scarce family resources, then children will have better outcomes if their siblings are sisters, not brothers.[1] We present regression results testing if, after controlling for family size, the proportion of siblings who are brothers affects an individual's education, height, and inheritance.

No single paper or dataset could capture the behavior of the entire population of Indonesia. Surveyed provinces contain vast heterogeneity, and our results reporting average behavior do not capture the different experiences among regions and ethnic groups. For many of the tests of differences in means, we also ran regressions with controls for family demographic characteristics, socio-economic status of current household, ethnicity, religion, local marriage norm (virilocal, uxorilocal or ambilocal), and region. These controls never affected results.

One further source of evidence we use is a unique opinion survey of custom and traditional law carried out in the 1997 IFLS. In 270 relatively homogeneous rural enumeration areas (where one ethnic group accounted for at least 50% of the community), village chiefs were asked to name a local expert in *adat*. This word, *adat*, refers to the local norms and traditional law that stand in contrast to the formal laws of the nation-state. In many parts of Indonesia the state is far removed, and *adat* norms bind and guide behavior. The *adat* questionnaire consisted of approximately ninety questions related to customs concerning gender. Each expert was asked to state whether the custom held in traditional law and whether it remained common practice at the time of the 1997 interview. These responses are best thought of as the opinions of influential members of communities.[2]

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[1] Of course, having brothers might increase the share of resources going to children generally; see Butcher and Case (1994), Kaestner (1997) and Hauser and Kuo (1998) for the mixed U.S. evidence.

[2] The selection process of respondents seems to have been fairly arbitrary (very few women were included, for example). The exact phrasing of questions is not known, and this is of course very important when measuring

Some traditions related to son preference showed enormous declines according to these experts' opinions. We have recoded responses as zero if the custom favored girls or women (rarely the case) or was neutral (more common), and one if the custom favored boys or men. Slightly less than half of the adat respondents thought that families preferred to have their first child be a son in the past, while less than one-third thought that was the case in the present. There was a similar decline in pressure to have sons more generally. The tradition that boys receive education priority declined from 48 to 14 percent. Exclusive male decision-making about schooling also declined substantially. Furthermore, health care priority for boys virtually disappeared. Cases of unequal inheritance declined as well. Girls inherited more than boys according to only 12.5% of the respondents. But the fraction of areas where boys received more than half of their parents' estates declined from 69% in traditional practice to 48% in current practice, suggesting movement away from Islamic inheritance norms (where boys inherit twice their sisters' shares).

Gender relations at the adult level also moved toward equality. Women were less restricted in births than they were before (births are now less likely to be at the home of the husband's family, the incidence of forty days of seclusion following birth declined, and women are less likely to have restrictions on bathing following birth). Marriage ages increased dramatically, with girls no longer expected to marry young. The 60 percent of the sample that reported female circumcision seems quite high. Anecdotal evidence suggests, however, that in Indonesia female circumcision almost usually has involved a symbolic drawing of blood, and is different from the genital mutilation found in parts of Africa and South Asia that is the focus of most of the research literature and the press (Feillard and Marcoes, 1998).

In questions relating to the status of women as adults and within households, there were also improvements in status for almost every indicator, but there is still evidence of inequality. Under local traditional laws, unmarried women still could not own land in roughly a fifth of the enumeration areas. Their

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differences between the ideals of 'custom' or 'tradition' and actual practice. "The past' is also a vague concept, open to multiple interpretations. Finally, since only one person in each enumeration area was interviewed, there is no way to validate opinions (though we have found that responses on many items do correlate with averages of actual

husbands almost always seemed to have the right to not let them work. In a majority of cases women could not spend their income as they chose. In 42 percent of the enumeration areas, an older man could remarry if his wife died, but an older woman could not if she became a widow.

Note that while the received wisdom regarding the status of women in Indonesia is that gender status is much more equitable than in many other societies, the *adat* responses suggest that there are many areas in Indonesia where unequal treatment has been regarded as the norm.

Son preference and "missing girls"

In much of Asia, very strong preferences for sons results in a skewed sex composition of the family. This happens through infanticide and through relative neglect of girls in health and nutrition leading to higher rates of female than male mortality during childhood. More recently, in Korea, Taiwan, and many provinces of China, sex-selective abortions following ultrasound, amniocentesis, or CVS (a procedure similar to amniocentesis) reduced the number of daughters in the 1990s (Cho and Kim 1994; Coale and Banister 1994; Hong 1994; Hull 1990). In Indonesia, the techniques were only gradually becoming familiar and affordable to only a small portion of parents during the period covered by our data.

Regardless of whether the source is prenatal abortion or postnatal treatment, it is important to look for evidence of missing girls in Indonesia. The *adat* survey suggests that son preference was present. Slightly less than half of the *adat* respondents thought that families preferred to have their first child be a boy in the past, while less than one-third thought that was the case in the present. There was also a large decline in the pressure to have sons more generally. Interestingly, the "no pressure to have female child" response also increased. Apparently, as families began to have smaller families, they were increasingly content to have only sons. In addition, if a family were going to adopt, the likelihood that they would adopt boys increased rather than decreased.

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reported practices). For all of these reasons, the responses from the survey should be seen as responses from a small sample of influential persons.

The data presented in Table 1 on the sex ratio of children of various ages does not indicate son preference. Given the biological norm of 1.05 boys born for every girl, an initial ratio of 51.2% would be expected. Higher mortality of girls would lead to an increase in the percentage of boys. Using several samples, no pattern of excess female mortality appears.[3] The first three columns use the pregnancy histories of 4890 ever-married women to count the number of boys and girls that survived in each age group at three points in time (1973, 1983, and 1993). The fourth column uses the pregnancy history administered to women in the second wave of the IFLS in 1997. In only one case out of twenty-one is the number of girls in an age group at a particular point in time statistically significantly less than the number of boys (3 year olds in 1993). Having one in 21 tests be statistically significant at the 5% level is almost exactly the rate predicted by mere chance. These results held for the sample of biological children of household heads, and for the sample of all children present in households regardless of their biological status. The data were also broken down according to urban or rural residence, with no differences.

Table 2 checks this finding by using the detailed pregnancy histories to find the sex ratio of children who died between 1970 and 1993. There is no evidence of higher mortality for daughters, and for infants the normal higher mortality for boys was evident.[4] These findings are consistent with larger scale findings, such as those reported in United Nations (2000, pp.158-63) and those of Martin, et al. (1983), using the 1976 World Fertility Survey for Indonesia. Note that the most important feature of the table is the apparent decline in excess infant deaths for boys, from .63 to .56 of all infant deaths, over the twenty-year period. However,

[3] This finding of no differential births or mortality in the past was further confirmed in data from a short pregnancy history form administered to older women over 50. Of these 2,423 women who had given birth to a child, the gender ratios of births and deaths were also basically 50:50.

[4] Hill and Upchurch (1995) and (Klasen 1999) note that mortality rates should normalize for the known higher propensity of boy children to suffer excess mortality over girls. The bounds for the 95% confidence intervals for the mortality ratios found in Table 2 include the estimates of normal excess boy mortality presented in Klasen's Table 1, except for the 1960s cohort, where the Indonesia data display slightly lower female mortality than would be expected. The finding of no son preference is therefore quite robust. Hill and Upchurch do find that the Demographic and Health surveys show a slight female disadvantage in mortality in Indonesia, compared with a normal standard. But out of 34 developing countries, 24 have more disadvantage than Indonesia, and Middle Eastern countries and Pakistan have disadvantages three times the level of Indonesia's.

results from this sample must be treated with caution, as many women from these birth cohorts were no longer living in 1993.

Son preference and the sex composition of families

As the target fertility of parents declines and access to contraception increases, son preference might be more likely to manifest itself in birth ordering and spacing (DasGupta and Bhat 1997; Rahman and DaVanzo 1993). When parents prefer sons, then they are more likely to keep having children after the birth of a daughter or when their first children are largely daughters. In the extreme case of parents with a target number of sons, they will always try to have another child when the most recent child is a daughter. This logic suggests the proportion of families with completed fertility whose youngest child is a son should be higher than the proportion with a youngest child who is a daughter. In addition, girls should be more likely to be members of bigger households. Finally, when parents can affect birth timing, the spacing of births after a son should be longer (for a review of these 'optimal stopping' hypotheses, see Clark 2000)

In Indonesia, contraceptive use was very low in the 1970s, and rather high in the 1990s. Only 20% of women responding to the IFLS 1993 questionnaire who were born in the period 1944-53 had started using contraceptives when they were under 25 years old. In contrast, 50% of women born in the period 1954-63 started when they were under 25, and a full 86% of women born in the period 1964-73 had already started using contraceptives when they were under 25 (and this number would be expected to rise, as some of the women not using contraceptives were still under 25).

In any case, there is no evidence in the IFLS data supporting the three hypotheses about "optimal stopping" behavior.[5] We first look at whether it was more likely that the last child of a family that had

[5]Tables 4, 5 and 6 were also reproduced in regression form, adding province dummies and other controls; the regressions confirmed the lack of son preference. Many parents in Indonesia report a desire to have at least one daughter. This desire is particularly important in the few matrilineal regions, and in the larger number of regions where elderly parents traditionally live with a daughter and her family (see Cameron 2000). Thus, we repeated all tests of son preference for families with at least one daughter, and look for daughter preference in families with only sons. We found little evidence supporting preference of either kind.

completed its fertility was a boy. Table 3 reports this statistic over six decades, from the 1940s to the 1990s. Only one of the cohorts has a percentage different from .50, and that only at the 10% level of significance, and it is the 1990s cohort in the sample where mothers indicated they had completed their fertility. These were younger mothers whose fertility had probably not ended for sure, even though they had indicated a desire not to have more children (especially considering that the average interval between births was on the order of 3.5 years). It may be that young mothers having boys were more likely to say that they had attained their desired family size, but in fact did not typically stop. (Recall moreover that the chance of having a boy is actually slightly higher than the chance of having a girl, so the test of equality of boys and girls is actually more generous than the correct test.) For the sample of ever-married mothers, there was no correlation between the sex of the youngest child and current contraception use (not shown).

We next look at whether there is a tendency for larger families to be composed of more girls, as "unlucky" parents who prefer sons continue to have children. Table 4 shows that, again, over the decades from the 1940's to the 1990's only one ratio of the size of family for boys over the size of family for girls is significantly different from one, and in the wrong direction (boys are more likely to live in larger families). None of the cohorts from the sample of children of ever-married mothers have ratios different from one.[6]

Spacing between children is also basically the same for boys and girls at present, but seems to have been slightly skewed in the distant past. In Table 5 we consider the intervals in years that follow the birth of a boy until the birth of the next child, compared with the intervals that follow the birth of a girl. We present the ratios of these intervals, again for cohorts where the older child was born in the decade indicated (from the 1940s to the 1990s). We calculate the ratio for several different intervals: first, all the intervals following a child; second, the intervals following children when there is at least one girl older sibling, not including the child just born herself (because in many parts of Indonesia elderly parents reside with a daughter, the anthropological literature suggests that son preference may be stronger when the family has at least one

[6]In a separate table (available upon request), we find that there is no tendency for the percent of boys to decline as family sizes get larger, a fundamental implication of son preference, given the small size of Indonesian families overall.

daughter); third, the intervals following a second child, if the first child is a boy (that is, are intervals longer after boy-boy combinations than girl-boy/girl combinations); and fourth, the intervals following a second child when the first child is a girl. (In the interest of saving space, we do not present the latter two sets of intervals.)

For the sample of children of ever-married mothers, we omitted intervals where the older child died prior to the conception of the new child, and so the next child was plausibly a 'replacement' for the previous child who died. Including these intervals (5.8% of all intervals) did not substantively alter the main results. But they do indicate some son preference for the earlier cohorts (1960s through the 1980s); compared with daughters, the intervals between the birth of a son and the next child are quite a bit shorter in cases where the son dies before conception of the following child. Parents did seem to hurry to replace sons.

For the childhood families of adults, the mean interval across the entire sample of intervals is 3.4 years, identical to the intervals for the younger cohorts. (Actually, the mean interval falls from around 4.0 years for children in the 1940s to 3.0 years for the 1970s, partly due to the deaths of siblings meaning intervals getting miscounted because they are no longer anchoring separate intervals.)

The ratios of intervals are sometimes statistically different from one, but in ambiguous directions. For the earlier generations the intervals are longer following the birth of a boy, consistent with son preference, but for the 1970s cohort the intervals are considerably shorter following a boy. The intervals following boys when there was at least one girl present were typically slightly lower than the overall intervals. Overall, we are left with an ambiguous result. In any case, the differences in mean intervals are fairly small, with the largest difference on the order of six months. That suggests looking at the median intervals. Looking at median intervals has the additional advantage of being able to include the intervals after the last birth, by coding them as large intervals. Here we find that for all of the adult cohorts the median intervals are the same following a boy as for those following a girl (for the adults we only have year of birth and not month of birth, so intervals are whole numbers). For the more recent cohorts there is variation, but no pattern of differential spacing emerges.

As a caution, recall that the data on birth spacing for earlier generations rely on adults' reports of their siblings (and not on direct reports of their parents' fertility). In previous generations divorce rates were high in much of Indonesia, and families often formed and re-formed over time. In many parts of Indonesia, extended families were the norm, some with multiple wives and many with step-siblings and foster-siblings.

Son preference and nutritional status

We have established above that there is not so much discrimination against daughters that they have experienced excess mortality or differential 'presence' in families. Nevertheless, allocations of resources to boys and girls may still be unequal.

We conduct three tests to examine the hypothesis of unequal nutritional allocation to sons and daughters. First, we examine the relative heights of adult males and females because for adults height largely measures nutritional status as a child (Strauss and Thomas 1988). Second, we ask whether standardized height-for-age for children under 10 in 1993 were different for boys and girls. We standardize height-for-age using the NCHS/WHO reference norms calculated from a population of well-fed children. Specifically, we transformed each height observation into a z-scored height-for-age by subtracting the NCHS/WHO reference mean for each age and sex and dividing by the age- and sex-specific NCHS/WHO reference standard deviation. Finding differences in these standardized measures is not necessarily indicative of unequal allocations because children of different ethnic groups may follow different growth paths. At the same time, substantial evidence suggests that for young children, most differences in height-for-age is due to health, not genetic differences (for controversies on the use of the NCHS/WHO reference standards, see Klasen 2000). Third, in the section with multivariate analysis (below) we examine whether children and adults who grew up in families with a higher proportion of male siblings were (controlling for family size) shorter on average.

Chart 1 presents the results of a smoothed estimate of the relationship between year of birth and height for adult men and women. (We use a lowess smoother, which computes a locally weighted polynomial regression at each age (StataCorp 1999).) As is apparent, there was no tendency for the gender

differences in height to narrow for younger cohorts. We also calculated the ratio of median height of adult men to median height of adult women for various age groups. There was virtually no change in the ratio from the first cohort (adults born in 1934-43) to the latest cohort (adults born in the 1970s); adult men remained about eight percent taller than women for all age groups. Note that this constancy is at odds with an implication of son preference that as nutrition improves and both sexes grow taller, women would grow relatively taller and the gap would narrow.

Chart 2 graphs a smoothed estimate of the relation between z-scores of height-for-age for children under 10, using the NCHS/WHO reference values, and age. The chart shows that children in Indonesia in 1993 were considerably below the international norms (by almost two standard deviations).[7] Boys were farther below the norms than girls. Again, results provide no evidence of son preference. (these findings are consistent with those presented in Frankenberg, Surisatini, and Thomas 1996)

Overall, unfavorable allocation of nutrition for girls does not appear to have been large in the past, and is absent in the present.

Son preference and education

Matters are quite different when it comes to allocations of education. Indonesia's transition to near-universal primary education in the 1970s and 1980s was gender-neutral, implemented through an extensive program of school building and open access (Duflo 2000). Nevertheless, this policy had a disparate impact that strongly favored groups with below-average education in 1970, including women.

In the past Indonesia had very wide disparities in enrollments and attainments between men and women. Chart 3 graphs the results of a smoothed (using a lowess smoother) estimate of the relation between

[7] Six records with heights under ten centimeters (four inches) were discarded. The large differences in z-score between Indonesian children and the reference norm may be due to high incidence of infectious diseases, endemic malaria, and maternal stunting; such facts suggest environment, not genes, is responsible for much of the gaps in child anthropometrics. Indeed, restricting the sample of children to those from families with very high per capita expenditures reduces the gap by half; children in the very wealthiest families in the wealthiest enumeration areas had mean z-scores of around –1.0, instead of the overall average of –2.0.

educational attainment (years of schooling) and year of birth. As can be seen, the large gap between older men and women narrowed and disappeared over the decades. For cohorts of men and women over age 50, men had roughly twice the education of women. In contrast, by the 1990s enrollment of young men and women was equal, and the gap in attainment was down to roughly one year for young adults in their 20s (see also Oeygardiner 1991).

These results are not unique to the IFLS. Data from the 1990 Census and from the annual Susenas surveys show an almost identical convergence in male and female rates of completing lower secondary school between those born in the 1920s and those born in the early 1970s (Knodel and Jones 1996).[8] At the same time, Cameron (2000) finds evidence of lingering unequal treatment of girls; when agricultural households were faced with negative shocks, they were more likely to withdraw 12-17 year old girls from school than boys.

Son preference and inheritance

Inheritance is subject to a number of gender-related influences in Indonesia. First, as noted above, Islamic jurisprudence has sons inheriting twice the portions of daughters. In contrast, many local *adat* traditions continue to emphasize gender equality. For example, in the IFLS *adat* survey about thirty percent of village elders reported exactly even divisions as traditional (rising to fifty percent of elders reporting equal division as current practice). Both sets of rules are often modified by the tradition that the child who cares for the parents inherits a larger share. In Java, where half of Indonesians live, the tradition is that the youngest daughter cares for the parents in their house, and then inherits the house. Generalization must be qualified by the enormous diversity of Indonesia. For instance, among the matrilineal Minangkabau, property traditionally passes from a mother to her daughters' families (Blackwood 1997; Whalley 1998).

With these thoughts in mind, we summarize in Table 6 inheritance patterns over time, focusing on respondents who have lost both parents. Unlike the previous analyses, for the analysis of inheritance we

stratify our sample based on the decade of the most recent death of a parent (as opposed to the age of the child). Thus, we are looking at trends in inheritances that took place in the 1950s through the 1980-1993 period. The table presents the proportion of sons and daughters who have received any inheritance, and whether they received a house or land as inheritance.[9]

The basic results are clear. Differences between sons and daughters are significant for the earliest decade, and not for the later decades. For people who lost their parents in the 1950s, sons were more likely to have a positive inheritance than were daughters (58 vs. 45 percent). Somewhat consistent with the Javanese custom of younger daughters inheriting the house, the gap in home inheritance was smaller in absolute terms, though the relative gap remained quite large. At the same time, consistent with gender discrimination, sons were far more likely to inherit land than were their sisters. The results on land inheritance are similar to the patterns Estudillo, et al., (1999) reported for the Philippines.

These gaps declined over the next 40 years. By the 1980-1993 period, the gap in inheriting the family home disappeared and men were only 5 percentage points more likely to inherit land than were their sisters. Given that the absolute share of men who inherited land actually declined from 50 to 45 percent (presumably due in part to urbanization), it is remarkable that the proportion of daughters who inherited land rose from 29 to 40 percent. These results contrast sharply to the Philippines results, where the two-to-one advantage of sons over daughters in land inheritance remained from mid-century till the 1990s (Estudillo, Quisumbing, and Otsuka 1999). Thus, consistent with the findings for education, Indonesia exhibited substantial gender discrimination in inheritance in the 1950s and 1960s, but the gender gap shrank markedly by the 1980s and 1990s. At the same time, economically and statistically significant gender gaps in inheritances remained at the end of our study period.[10]

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[8] We are grateful to Minnie Ames for verifying this using the pooled 1993-1996 Susenas data.

[9] Rupiah figures valuing inheritances suffer from problems of consistency across responses, given the history of often high inflation, and from an extremely high number of non-responses.

[10] Our measures of inheritance leave off transfers to children while the parents were still alive. Thus, it is possible that the inheritance gap in favor of sons was counterbalanced by higher *in vivo* transfers to daughters. Similarly, the

The effects of a high proportion brothers

In societies where sons receive large preferences, both sons and daughters will receive a greater share of the resources children receive if they have fewer brothers. The absence of differential birth rates or mortality enables us to use the percent of siblings who are boys as an exogenous determinant of family decisions. That is, we can see whether children are better fed, better educated, or more likely to receive inheritances, if (given their number of siblings) more of the siblings are sisters.[11]

For example, Garg and Morduch (1998) find that both girls and boys in Ghana are substantially smaller if they have a high proportion of male siblings. The magnitude of this brother effect is quite large; they estimate that if children had all sisters (and no brothers) rather than all brothers, there would be 25-40% improvements in various health indicators.

We estimated basic regression models to determine if a higher proportion of brothers (for a given family size) reduced height, educational attainment, or the likelihood of inheritance. Standard errors take into account the clustering due to the complex survey design. Table 7 gives descriptive statistics for the variables included in the regressions. Explanatory variables fall into three categories: (1) demographic data on the person, such as age and gender; (2) number of siblings and percent of siblings who are brothers (for children we use the expansive definition of siblings as those in the household under 20, while for adults we use the siblings alive during the year of the survey, the only measure available), and birth order; (3) a number of family characteristics including schooling attainment of mother and father, age of mother (for children) or birth year of mother (for adults), whether person currently resides in urban or rural setting (we ignore the

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lower gender gap in inheritances in the 1960s and later periods than in the 1950s could be offset by lower gap in *in vivo* transfers. While we do not have data on past transfers, we do have some evidence from the *adat* survey; according to the *adat* experts, traditions of dowries and bridewealth (transfers from groom's families to bride's families) showed no change over time (Table 1). Although amounts of such transfers may have lessened, this evidence makes it appear that lower gender differences in inheritances were probably not offset by changes in patterns of *in vivo* transfers.

[11] In general, sibling sex composition is only exogenous when controlling for family size because, as noted above, parents with son preference may keep having children if they have many daughters (2000). Only for populations as a

selectivity of migration), and whether person is Muslim. The control variables are also interacted with the gender of the person. We also experimented with numerous other versions of sibling characteristics, including younger siblings only, with little change in the basic results.

Table 8 gives the results for five regressions testing son preference by looking at whether the percent of siblings who are brothers affects outcomes. All of the regressions also include controls for province of residence (coefficients not reported).

Height for age: We first look at nutritional outcomes, measured by height for age. Column 1 is for the sample of children under 10 with the dependent variable equal to z-scores for the NCHS/WHO (U.S.) standard. We have excluded children having heights more than five standard deviations away from the U.S. mean. Column 2 uses adult height as the dependent variable, and the sample is restricted to household heads and their spouses. These are the groups for whom we have information on the number of siblings surviving. For adults, the number of siblings is subject to measurement error because it does not include siblings who died more than one year before the survey.

In neither of the regressions is the percent of brothers significant for either males or females. Women have lower heights than men, as expected. When standardizing children's heights, girls do slightly better than boys, though the effect is not significant.

Coefficients on several of the control variables are interesting. None of the demographic data on the person's family affect their height. Increasing age predicts lower height for children compared with well-fed children in the United States; that is, Indonesian babies start near U.S. norms, but heights diverge as the children age. For the younger cohort, mother's education predicts significantly taller children. In both of the regressions, if the person is in an urban setting height is greater.

Education: Turning to estimates of schooling attainment, column 3 presents the results of a probit regression explaining the current enrollment of children between the ages of 10 and 17, as of 1993, while

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whole is sex composition orthogonal to the total number of children. At the same time, as shown above, in Indonesia daughters do not on average live in larger families than do sons.

column 4 has as dependent variable the years of schooling completed by adults. The most interesting result is that first daughters are less likely to be enrolled, for the sample of children, and attained less schooling, for the sample of adults. This result is consistent with the ethnographic finding in Indonesia and elsewhere that first daughters often help mothers with child care and domestic tasks, at the expense of their education. Last-born daughters in the adult sample had higher education attainment.

For education there is some evidence of son preference due to competition among brothers. For the adult sample, men had lower education if they had a higher proportion of siblings being brothers. Interestingly, the coefficient is quite close to zero for females (that is, the sum of the main effect on %brothers and the interaction of %brothers*female).

Turning to the control variables, surprisingly, having more siblings meant more education for the older cohorts. It is possible the number of children was correlated with wealth of the parents. Urban residents had higher schooling, though the effect is smaller for older women. The negative effect of being Muslim, strong for the older cohort, disappears with the universal enrollment experienced by the younger cohort. Father's schooling had a larger effect than mother's schooling, and both are strongly significant.

Inheritance: Finally, we turn to column (5), which reports the results of a probit model estimating the likelihood of receiving an inheritance. The percentage of brothers in the family has no effect on the likelihood of receiving an inheritance.

The control variables remain interesting. Consistent with the Javanese tradition that the youngest daughter cares for her parents and receives the family house, the youngest daughter is more likely to receive an inheritance than are her sisters. Youngest sons are also more likely to report inheritances. Urban residents are less likely to receive inheritances, perhaps because they (almost by definition) did not inherit a family farm. Girls are less likely to receive inheritances in general, though girls in Muslim families are not as disadvantaged

Caveats

Our study is subject to many limitations, each of which presents opportunities for future research. For example, we focus here on national averages. Future research will describe the heterogeneity across cultural groups, regions, and levels of educational and economic development (see Soeradji and Hatmadji 1994). It is also important to remember that the IFLS excluded a number of regions experiencing conflict. Understanding the clustering of cultural norms and of female outcomes is also crucial. Substantial evidence from other countries indicates that where daughters move to their husbands' villages, parents have weaker incentives to invest in their daughter's health and education (Skinner 1997). A companion paper offers some preliminary findings that are surprisingly unsupportive of this effect (Levine and Kevane 2001). That is, Indonesian daughters do not fare relatively worse in cultures where daughters typically move away from their parents after marriage.

We study various measures going back to between 1933 and 1960. It is possible that the status of daughters may have been more distinct in earlier periods, and substantial convergence may have occurred prior to when our data start. Moreover, our data on families from the earlier cohorts used retrospective data, which may introduce errors. Future research can try to use more data sources drawn from the earlier periods, though these tend to be fragmentary.

In our discussion we implicitly use numerical equality as a benchmark. Although this standard is adequate for description, equality may not always be the relevant benchmark for understanding if Indonesian parents are treating their daughters well compared to their sons. For example, if investing disproportionately in sons raises the family's income so much that daughters benefit, then unequal investments can be optimal for daughters. Moreover, if the daughters internalize norms of unequal treatment, they may prefer their brothers to eat more. Welfare analysis of such situations is fraught with difficulties.

Our analysis does not analyze the separate preferences of fathers and mothers. It is potentially important to look for such divergences in terms of son preference (as in Thomas, Conterras, and

Frankenberg 1999). The preferences of others, ranging from older siblings who provide care to neighbors, to school officials, can also matter.

Our study ends in 1997, and tracks women's educational success in large part during the strong economic growth of the New Order regime (1965-1997). It is important to understand whether the financial crisis of 1997-1998 and the following economic and social collapse disproportionately hurt women (Frankenberg, Thomas, and Beegle 1999; Thomas and others 1999). Press reports cited disproportionately large harms for young women. Interestingly, other work by one of the present authors does not find disproportionate effects on women and girls (Ames, Gertler, and Levine 2000).

Conclusion

We have examined a number of measures of son preference and the relative status of daughters. In the past, daughters did not have excess mortality, birth of a daughter did not predict patterns of future childbirth, and women were not relatively malnourished (as indicated by their adult height). At the same time, norms favored sons in education and inheritance. Moreover, gaps in educational attainment and inheritance matched the norms, and women had far less education and were less likely to inherit land than were men. In the spheres where it was present, son preference has weakened in Indonesia. By the 1990s almost all girls (along with their brothers) attended primary school, and gender gaps in higher levels of education and in inheritance narrowed.

These findings accord with much of the received understanding of son preference in Indonesia (Atkinson and Errington 1990; Banister 1999; Central Bureau of Statistics 1978; Dube 1997). But much of this understanding stems from work done on early census results, showing normal sex ratios. The spread of inexpensive contraception throughout the archipelago after the 1970s may have led to the emergence of demographic effects of a latent son preference. Once parents were able to more easily control their fertility, their preferences may have been more visible. It is important, therefore, to update the older studies with more

recent data. We find that even with extensive contraception availability and use, there is still no manifestation of son preference in the demographic data.

The absence of son preference shows that societies can have distinct patterns of age-dependent gender outcomes; girls may be treated as well as boys, but women face substantial discrimination. In Indonesia discrimination and unequal treatment of adult women is well established. For example, 93 percent of managers of formal enterprises are male (higher than the average for nations with similar incomes), and over 98 percent of village heads are male (Sullivan 1994). Thus, these results do not imply that gender has no effect on economic or political outcomes in Indonesia; that conclusion would plainly fly in the face of a considerable body of evidence. But the gendering of economic and social life does not seem to be associated with some of the basic capacities fostered during childhood; son preference is neither a significant determinant of nutrition and (by the 1990s) of education. The question then is how equal treatment of boys and girls becomes unequal treatment of women and men? Our results suggest the need for continued exploration of the mechanisms that determine son preference and gendered economic behavior more generally. One might also enquire whether other countries, such as Thailand and Sri Lanka, where son preference is apparently absent in terms of sex composition of families (Abeykoon 1995; Wongboonsin and Ruffolo 1995), are also gender-neutral in terms of resource allocations?

Daughters are less disadvantaged in Indonesia than several very populous poor countries: India, China, Pakistan and Bangladesh. It remains an area of active research to identify the causal mechanisms underlying these important differences, which may reflect complex economic or social processes: different agricultural technologies and institutions; different patterns of incipient industrialization; different non-economic cultural preferences with origins in the distant past; or different equilibria of a common structure, with the relevant equilibrium in each region selected largely by historical accident. Cross-national analyses are especially important in view of recent interest in gender equality as a determinant, as well as consequence, of economic growth.

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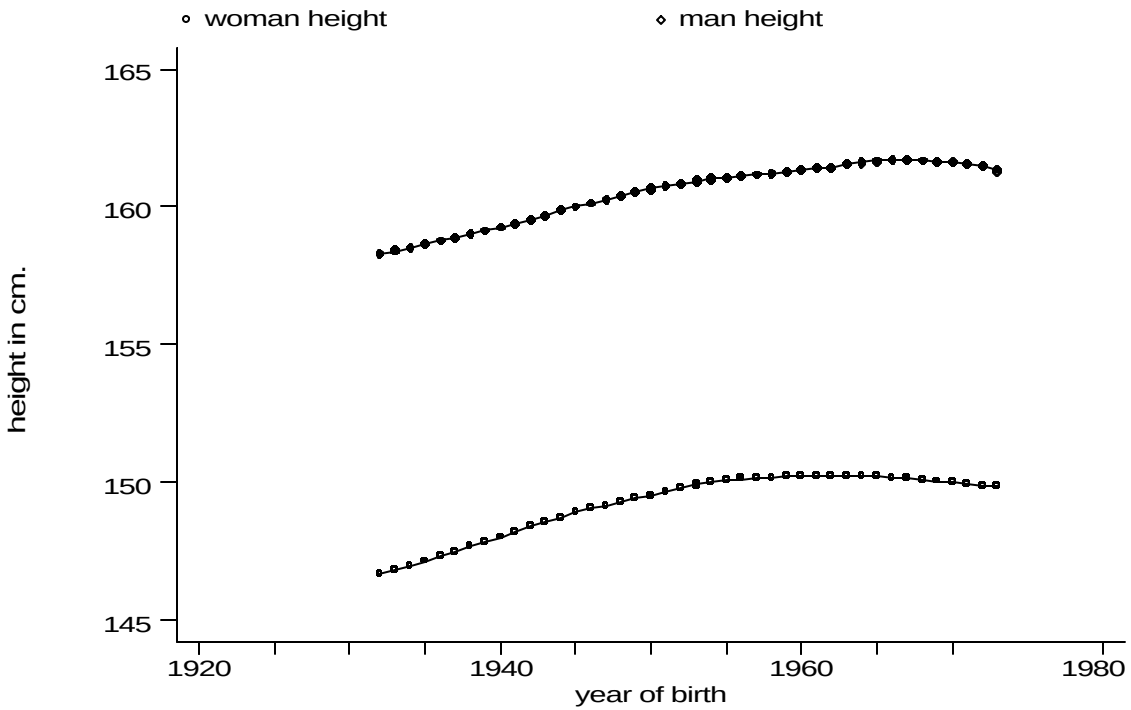

Chart 1: Smoothed regression of height v. birth year

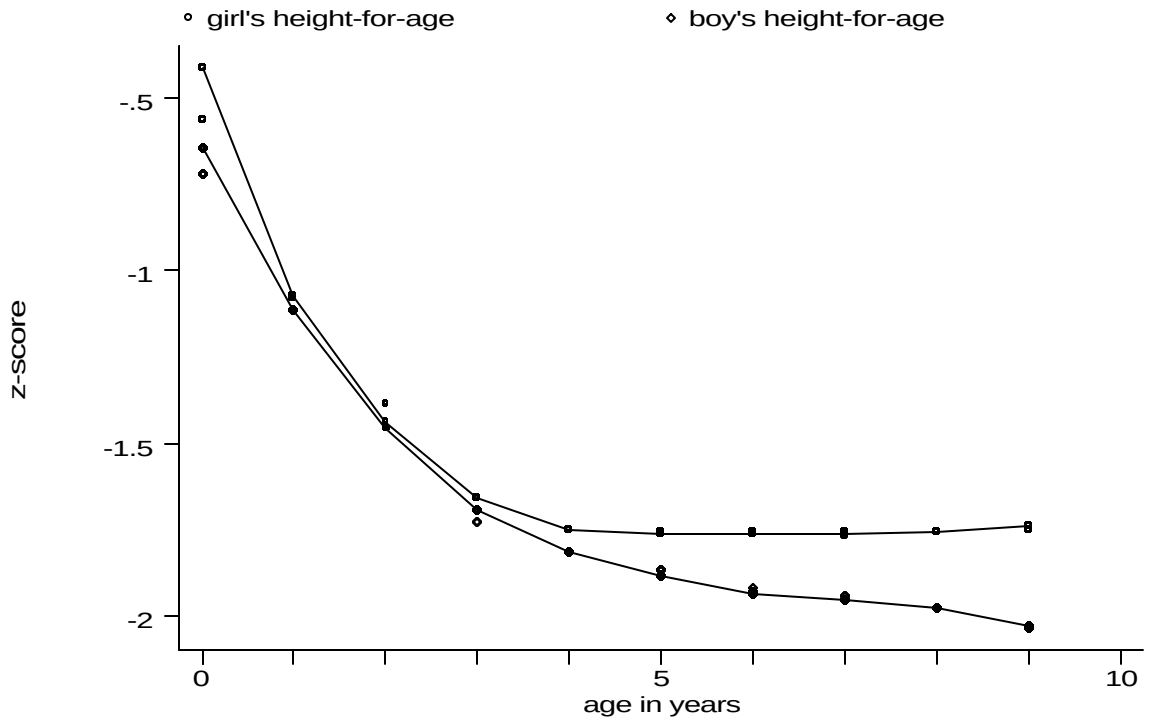

Chart 2: Smoothed regression of height z-score against age

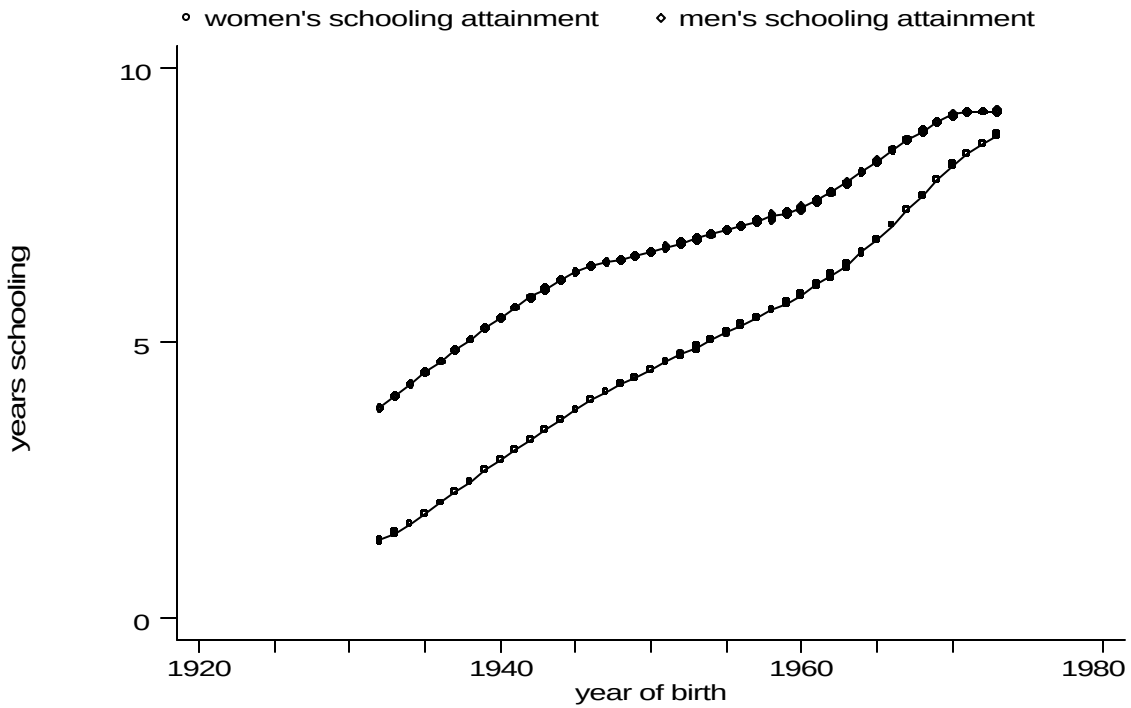

Chart 3: Smoothed regression of school years v. birth year

Table 1: Are there more boys than girls?

	% boys of children under 5 alive in year indicated							
	(1) 1973		(2) 1983		(3) 1993		(4) 1997 (under age 3)	
	% boys	n	% boys	n	% boys	n	% boys	n
all children	0.50	1443	0.49	3643	0.51	3489	0.51	1192
age of child								
0	0.54	336	0.49	647	0.52	526	0.51	358
1	0.49	293	0.49	669	0.52	608	0.53	442
2	0.53	272	0.51	637	0.51	595	0.49	392
3	0.47	204	0.46	613	0.55*	615	.	0
4	0.46	197	0.49	528	0.47	565	.	0
5	0.43	141	0.50	549	0.51	580	.	0

Notes: Columns (1), (2) and (3) count children aged five and under who were alive in January of 1973, 1983, and 1993, as reported in the pregnancy history administered to 4890 women in the 1993 IFLS. Column (4) counts children aged three and under who were alive in January of 1997 as reported in the pregnancy history administered to 3142 women in the 1997 IFLS. Table uses weights assigned to individual mothers.
* indicates that the number of boys was different from the number of girls at the 5% level. Similar results obtain in testing for the 1.05 ratio of boys to girls.

Table 2: Do girls die more frequently than boys?

	Percent of deaths that are boys							
	(1) children born in 1960s		(2) children born in 1970s		(3) children born in 1980s		(4) children born in 1990s	
age at death	% boys	n	% boys	n	% boys	n	% boys	n
infant	0.63**	108	0.59*	415	0.55	521	0.56	251
child aged 1-5	0.42	73	0.51	241	0.46	238	0.46	39

Notes: Columns 1,2 and 3 are derived from the pregnancy history administered to 4890 women in the 1993 IFLS. Column 4 combines the reported deaths from the 1993 IFLS and the pregnancy history administered to 3142 women in the 1997 IFLS. Table uses weights assigned to individual mothers.
** and * mean significantly different from .5 at the 1% and 5% level, respectively, in a two-sided t test.
n = # of deceased children.

Table 3: Are youngest children more often boys? Percent of youngest children who are boys

	age group of child											
	1940s		1950s		1960s		1970s		1980s		1990s	
	% boys	n	% boys	n	% boys	n	% boys	n	% boys	n	% boys	n
youngest child in family of household head or spouse	0.50	1841	0.50	2544	0.50	3383	0.48*	2407				
youngest child of ever-married mother (when age over 4)							0.49	461	0.49	1640		
youngest child of ever-married mothers (when said stopped)							0.49	460	0.49	1992	0.53	1976

Notes: Table uses two sources: row (a) counts the percent boys of youngest siblings of the families of household heads and their spouses, using their responses to questions about siblings (so siblings do not include deceased siblings); rows (b) and (c) count the percent boys of youngest children of ever-married mothers who had completed fertility, determined in (b) by having the youngest son over four years of age, and in (c) by having responded negatively to a question about desire for more children.
Observations are weighted using household weights.
Cells with n<30 have been excluded
* indicates significantly different from .5125 (the normal proportion of boys) at the 5% level, in a two-sided t test that takes into account the complex survey design (so no differences significant).

Table 4: Do girls live in bigger families?

Ratio of number of children in family for boys to number for girls

	age group of child					
	(1) 1940s	(2) 1950s	(3) 1960s	(4) 1970s	(5) 1980s	(6) 1990s
(a) siblings of household heads and spouses	1.02	0.99	1.00	1.04**		
n	9456	14680	14440	6704		
(b) families of ever married mothers			1.00	1.01	1.02	1.02
n			1076	4932	6812	2341

Notes: Row (a) uses data on siblings of household head and spouses.
Row (b) uses data from children of ever-married mothers, and includes families that have not completed fertility.
Mean size of family calculated using household weights.
** indicates that size of family of girls is different from size of families of boys at 1% level of significance, using a Wald test for differences in means that takes into account complex survey design.

Table 5: After a boy, do parents wait longer to have another child?

Ratio of mean interval, in years, until next child following birth of a son to years following birth of a daughter

	age cohort of older child					
	(1)	(2)	(3)	(4)	(5)	(6)
category	1940s	1950s	1960s	1970s	1980s	1990s
families of heads and spouses						
between all children	1.04	1.04*	1.02	0.92**		
	1.00	1.00	1.00	1.00		
	7426	11932	10894	4230		
when at least one girl	1.00	1.02	1.03	0.94**		
	1.00	1.00	1.00	1.00		
	2144	6299	7390	3580		
families of ever-married women						
between all children			1.09	0.95	1.00	1.03
			1.07	0.97	0.98	
			945	4030	4360	287
when at least one girl			1.00	0.94	1.01	0.98
			1.00	1.00	1.05	
			273	1902	2216	163

Notes: In each cell, first number is ratio of mean intervals, second is ratio of median intervals, third is number of observations.
Rows (1)-(2) use sample of families of adult heads of households and spouses of heads,
Rows (3)-(4) use sample of children of ever-married mothers, from pregnancy history administered to 4890 women in the 1993 IFLS, excluding intervals where the previously born child died prior to conception of the next child
Intervals for families with at least one girl include intervals if previously there was a girl and not if current child is first girl.
If interval less than .66, or zero, or greater than 15, then excluded.
Median intervals include intervals after last child; mean intervals do not include last child.
No median interval for children born in 1990s, since almost all are youngest child of mother.
Intervals calculated using year of birth for rows (1)-(2), and year and month of birth for rows (3)-(4).
Mean intervals are constructed using household weights, median intervals are not.
*, and ** indicate that interval till the next child following birth of a boy is significantly different from the interval following a girl, at the 5% and 1% level, respectively using a Wald test for differences in means that takes into account complex survey design. For families of ever-married women, none of medians are significantly different, using a Wilcox ranksum text.

Table 6: Do girls inherit differently from boys?

Ratio of response of men to response of women

Decade in which both parents deceased

	1940s	1950s	1960s	1970s	1980s
number of observations	199	212	395	649	1168
inherit anything?	1.29	1.44*	1.11	0.94	1.12
(percent men inheriting)	0.58	0.55	0.51	0.57	0.56
(percent women inheriting)	0.45	0.38	0.46	0.61	0.50
inherited house?	1.36	1.98*	1.17	1.12	0.87
inherited land?	1.92**	1.53*	1.16	1.12	1.24**

Notes: Data comes from ILFS 1993 adult questionnaire.
** and * mean significant difference in gender means using Wald test that takes into account complex survey design, at 1% and 5% level, respectively. Data are weighted by individual weights.

Table 7: Descriptive statistics for variables in the regression analysis

		children aged 6-19			adults aged 20-60		
		mean	st.dev.	n	mean	st.dev.	n
Individual characteristics							
	age in years	12.64	3.86	10848	36.28	11.62	15928
	female	0.49	0.50	10848	0.52	0.51	15928
	no siblings	0.11	0.32	10848	0.10	0.31	10727
	first boy in family	0.34	0.47	10819	0.27	0.46	11391
	first girl in family	0.34	0.48	10819	0.31	0.48	11391
	last boy in family	0.24	0.43	10819	0.23	0.43	11391
	last girl in family	0.25	0.44	10819	0.24	0.44	11391
Family characteristics							
	percent of siblings who are boys	0.45	0.38	10848	0.43	0.35	11391
	Muslim	0.90	0.30	10848	0.91	0.30	15928
	rural	0.64	0.48	10848	0.64	0.49	15928
	number of siblings	2.28	1.58	10848	3.37	2.55	11391
	years schooling of mother	4.23	4.00	9266	1.41	2.84	8665
	years schooling of father	5.59	4.58	8394	2.37	3.63	7936
	age of mother of child, in 1993	38.35	8.41	9254			
Outcomes							
	year of birth of mother (1900s)				29.22	15.29	8241
	year of birth of father (1900s)				21.09	16.76	8054
	height in cm. for females over 19				149.28	5.83	6262
	height in cm. for males over 19				160.46	6.76	4858
	height z-score for under age 10, US standard	-1.89	1.34	2561			
	years of school for girls/women	4.39	3.05	5246	5.02	4.74	8288
	years of school for boys/men	4.30	3.17	5157	6.68	5.04	7421
	percent of girls enrolled	0.74	0.44	5263			
	percent of boys enrolled	0.71	0.45	5287			
	female inherit from dead mother				0.32	0.47	3593
	female inherit from dead father				0.25	0.44	2409
	male inherit from dead mother				0.38	0.51	2997
	male inherit from dead father				0.23	0.44	2015
	male inherit if both parents dead				0.39	0.49	3783
	female inherit if both parents dead				0.42	0.52	3188

Notes: Values are weighted by individual roster weights that scale the sample to match the means by province, rural/urban and sex.

Table 8: The effects of a high proportion brothers

	(1)	(2)	(3)	(4)	(5)
	Height z-scored with WHO/NCHS standard (children under 10)	Height in cm. (adults)	Currently enrolled? (children aged 10-17)	Years schooling (adults)	Did inherit anything? (adults)
number of siblings	0.004	0.102	-0.012	0.112	0.000
	(0.11)	(1.36)	(1.30)	(2.24)*	(0.01)
percent siblings who are brothers	0.059	-0.665	-0.041	-0.723	0.081
	(0.50)	(1.16)	(1.23)	(2.20)*	(1.30)
are you only child?	0.042	-0.181	-0.030	-0.337	-0.040
	(0.42)	(0.50)	(1.00)	(1.35)	(0.89)
first born boy	0.075	-0.037	-0.002	-0.286	-0.033
	(0.78)	(0.11)	(0.11)	(1.34)	(0.86)
first born girl	-0.112	-0.170	-0.047	-0.580	-0.019
	(1.13)	(0.72)	(2.08)*	(4.04)**	(0.52)
last born boy	0.046	0.010	-0.018	-0.061	0.087
	(0.54)	(0.03)	(0.66)	(0.24)	(2.10)*
last born girl	-0.044	-0.102	0.016	0.363	0.109
	(0.44)	(0.39)	(0.56)	(2.52)*	(3.21)**
age in years	-0.075	-0.091	-0.202	-0.038	0.010
	(6.14)**	(6.26)**	(4.27)**	(3.90)**	(6.52)**
age squared	2.386	-0.406	0.713	-0.083	-0.021
	(6.27)**	(3.05)**	(2.82)**	(1.01)	(1.39)
Muslim	-0.107	-0.775	-0.037	-1.195	0.052
	(0.91)	(1.38)	(1.17)	(3.42)**	(1.06)
urban area	0.298	0.962	0.077	2.343	-0.119
	(3.90)**	(2.92)**	(3.40)**	(7.78)**	(4.07)**
years schooling of mother	0.026	0.054	0.015	0.216	0.012
	(2.69)**	(0.80)	(3.52)**	(4.93)**	(1.77)
years schooling of father	0.012	0.062	0.022	0.405	-0.004
	(1.33)	(1.13)	(6.42)**	(12.88)**	(0.97)
female	0.395	-11.234	0.109	-1.757	-0.376
	(1.41)	(12.94)**	(0.32)	(3.02)**	(2.18)*
number of siblings*female	-0.054	-0.072	-0.005	-0.029	-0.000
	(1.17)	(0.75)	(0.45)	(0.48)	(0.03)
percent siblings brothers * female	0.109	0.914	0.048	0.588	-0.061
	(0.71)	(1.29)	(1.11)	(1.53)	(0.78)
age*female	0.032	0.034	-0.020	-0.034	-0.001
	(2.00)*	(1.88)	(0.27)	(3.72)**	(0.53)
age squared * female	0.626	0.049	0.097	-0.062	0.018
	(1.20)	(0.31)	(0.25)	(0.75)	(0.88)
Muslim * female	-0.063	0.076	-0.041	-0.036	0.260
	(0.61)	(0.16)	(1.27)	(0.11)	(3.97)**
urban * female	0.082	0.210	0.021	-0.768	-0.057
	(1.05)	(0.61)	(0.77)	(3.56)**	(1.48)
schooling father * female	-0.007	-0.022	-0.002	0.047	0.010
	(0.50)	(0.32)	(0.56)	(1.25)	(1.43)
schooling mother * female	0.000	0.003	0.005	0.040	-0.002
	(0.03)	(0.04)	(0.90)	(0.71)	(0.17)
year of death of parent					0.001
					(0.86)
year of death of parent * female					0.001
					(1.11)
Constant	-2.161	161.506		5.152	
	(7.98)**	(177.03)**		(7.07)**	
Observations	4739	6797	4007	7057	3450
R-squared or F-stat	0.12	0.50	F(34,285)=17.13**	0.40	F(36,284)=6.46**
Absolute value of t-statistics in parentheses					
*significant at 5% level; ** significant at 1% level All regressions include dummy variables for provinces. Probit results marginal effects; dy/dx for dummy variables is effect of change from 0 to 1.					