

Are Investments in Daughters Lower When Daughters Move Away?

Evidence from Indonesia

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In much of the developing world daughters receive lower education and other investments than do their brothers, and may even be so devalued as to suffer differential mortality (both before and after birth). Daughter disadvantage may be due in part to social norms that prescribe that daughters move away from their natal family upon marriage. We evaluate the validity of this theory of the cause of female disadvantage by analyzing the database provided by the Indonesia Family Life Survey. We find little support for the theory. On the contrary, we find that all regions, independent of pattern of location after marriage, do not have “missing daughters,” nor patterns of rapid attempts to have another child after the birth of a daughter, nor relatively lower levels of education, of women, nor relatively low height-for-age for girls and women.

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1. Introduction

In much of the developing world girls receive less nutrition and health care, and fewer years of education, than do boys. One hypothesis for this differential treatment is that daughters usually move near their in-laws after they marry— a practice known as “virilocality.” Intuitively, investments in daughters have lower payoffs for parents if the daughters live most of their lives in distant villages. In the vivid, if sometimes tragic, aphorism from a virilocal region in India: “Educating daughters is like planting seeds in a neighbor’s field.”

Many anthropologists, demographers, and economists have referred to virilocality as an important cause of daughters’ disadvantage relative to sons, and women’s lack of well-being, power and status compared with men. Bloom, Wypij, and Das Gupta (2001, p. 68), argue that in northern India, “women are transferred between patrilineal at the time of marriage and live with affinal [that is, husband’s] kin... any material good that is given to a daughter belongs, in effect, to her affinal kin after marriage. This organization of the kinship structure around property, ownership, and rights ultimately marginalizes daughters in north Indian society.” Skinner(1997, p. 59) notes that “in the East and South Asian societies where marriage is exogamous, the bride moves not only to the groom’s family but to another village or town altogether, where she has no connections and her social knowledge is no longer of use.”

Virilocality features prominently in Dube’s (1997) comparative analysis of gender relations between South Asia and South-east Asia. She notes, “Women in South-East Asia exercise an unusual degree of autonomy in economic and social life.” Among the list of elements of the these societies’ kinship and family organization that she views important in increasing the relative status of women, she includes “bilateral kinship with variations in its inclination towards matrilineal and matrilocality that does not seem to have the compulsive [patriarchal] character that the patrilineal, patri-virilocal pattern has.”

If parents understand and expect to follow virilocal rules, their private return to investments in their daughters' health or education might be expected to be lower than their private return in investments in their sons. Although altruism and many other forces (described below) may partly equalize investments, it is easy to understand why so many scholars have thought that virilocality is important in understanding the relatively low status of women in much of the world.

This paper considers whether investments in daughters in Indonesia vary according to the pattern of post-marital residence. Do ethnic groups that traditionally practice virilocality exhibit lower relative investments in daughters than ethnic groups where the daughter often or always stays living near her parents? It should be noted immediately that much of the theorizing (by anthropologists such as Dube and Skinner) on the relationship between virilocality and son preference deals with big-picture comparisons between South Asia and South-east Asia. And Dube (1997) notes that in much of South-east Asia post-marital residence is uxorilocal, with the groom moving to the bride's home. But for a theory to be valid, it should hold in the small as well as the large. Winzeler (1974; 1976) made much the same point in a discussion of the comparative gender equality and weak capacity of states of South-east Asia; any explanation would also have to explain variation (or its absence) *within* South-east Asia.

Many anthropologists have in fact commented on large differences in the status of girls and women within South-east Asia, and within Indonesia. Firth (1995, p. 6), for example, observes that, "in Kelantan peasant women were much freer socially than their sisters in western Malaysia..." Directly consistent with the theory we test here, Ihromi (1994) notes that in Indonesia, among the Toba Batak, the traditions were such that, "Daughters are married off to members of other lineages... Because their welfare is the responsibility of the men of those lineages, daughters do not inherit valuable goods." Ihromi (1994, p. 536) also implies that traditionally investments in daughters were also reduced for the same reason. Karim (1995, p.

39) observes that Errington (1990), a prominent scholar of gender relations in South-east Asia, found gender relations to be on the whole complementary rather than oppressive and unequal, but noted exceptions, such as patrilineal societies of Sumatra, including the Batak, and other groups in Eastern Indonesia.

Gender inequality also displays variation across class, according to some authors. Williams (1990, p. 57) comments: “Although many other accounts indicate that women have a relatively high level of autonomy within the family in Indonesia (Bangun 1981), as married women are allowed a substantial role in household decisions, this is certainly not without exception, particularly among lower classes (Mangkuprawira, 1981; Hull, 1976), and does not necessarily translate from equal status prior to marriage.”¹ Karim (1995, pp. 46-7) notes that many of the early 20th century novels of Java portrayed upper-class women as quite oppressed by men, and sharply circumscribed in their choices; the 1970s also saw the emergence of literatures concerned with female emancipation. Karim (1995, p. 48) also summarizes the serious scholarly dispute over the appropriate characterization of female autonomy for the Minangkabau. Although the matrilineal and matrilocal social organization of the Minangkabau suggests investments in children might be biased towards daughters, at least compared with neighbors, there seems to be little evidence that sons and daughters are treated differently.

Authors also occasionally make statements about changing patterns of gender within South-east Asia. On the Minangkabau areas, Whalley (1998, p. 234) notes, “The rise of the nuclear household has led to the husband contributing more subsistence for his wife and children, allocating inheritance to his children, providing for the education of his children, having moral authority over his wife and children, and having a voice in whom his daughters

¹ Williams (1990, p. 59-60) goes on to report results from a small survey of 130 households conducted in central Java in 1985 on whether a person had input into the marriage decision about whom he or she was going to marry. Women more often reported no involvement and men more often reported they were sole decision-makers about marriage.

marry.” Ihromi observes that Batak people “no longer think that investing in a daughter’s education is a waste.” Karim (1995, p. 40) remarks that, “a growing preference for neolocal residence and the nuclear family... reduces the dominance of the husband’s parents over the wife.”

In sum, there is no shortage of anthropologists finding variation in the status of daughters and women, and variation in virilocality, among different ethnic groups of South-east Asia and Indonesia in particular, among different economic classes, and over time.

This paper considers the narrow question of whether variation in treatment of daughters is correlated with variation in rules of post-marital residence. We take as given that causation is from the rule (virilocality) to the practice (differential treatment of daughters). The paper proceeds as follows. Section 2 briefly introduces the dataset used in the paper and summarizes the data on post-marital rules of residence, showing a strong correlation between norms of residence and actual behavior. Section 3 conducts a number of tests of whether investments in girls are lower in virilocal areas or virilocal marriages. Section 4 briefly outlines some checks on the robustness of the results presented here. Section 5 discusses a number of alternative theories for why we find no correlation between virilocality and investments in daughters. Section 6 offers some concluding comments.

2. Virilocality in the IFLS dataset

The data used in this analysis come from the 1993 and 1997 waves of the Indonesia Family Life Survey (IFLS). The 1993 survey has information on individuals in 7224 households distributed in 321 communities; the 1997 re-survey was able to track almost all of these original households (Frankenberg and others 1995; Thomas and others 1999). The IFLS is a representative sample of 13 of 27 provinces in the country; these provinces contained 83 percent of the population in late 1993. Small provinces and the politically unstable provinces of Aceh, Irian Jaya and the former East Timor were not sampled. After stratifying by urban and rural

areas, households were randomly selected in the community, either villages or neighborhoods or census tracts. Within households different members were interviewed according to various selection criteria; for example, to ensure adequate numbers of older respondents.

We use a number of different sources to identify virilocal regions. One source is a unique survey of *adat*, the local norms and traditional law that applied in each village. This survey, part of the 1997 IFLS, asked one respected elder in each of 270 enumeration areas about local *adat*. These traditional laws and local norms stand in contrast to the formal laws of the nation-state (Warren 1995). In many parts of Indonesia the state is far removed, and *adat* norms guide behavior. The *adat* questionnaire included approximately ninety questions related to customs concerning family life and gender. Each respondent was asked to state whether the custom held in traditional law and whether it was common practice at the time of the 1997 interview.

The *adat* survey contained a small component for determining the residential location of new conjugal units, a basic aspect of local family systems. Experts were asked, "Putting aside economic constraints, where does the newly married couple live after the wedding?" If the expert indicated that the couple would live in the parents' house, they were asked for how long. If the expert indicated that they would reside in the parents' 'place', or in a new 'place', they were asked whether this 'place' was with the male's or female's parents or relatives.

We coded answers to these questions as follows. First, we coded the *adat* as ambilocal if the expert indicated one of the following: the new couple resided "wherever they want"; if they resided in "a new place for the couple;" if they resided in the parents' place but not 'with' anyone; the couple resided with relatives after the wedding but then went on their own later; or if the expert gave multiple responses (i.e. could live with relatives or parents of either male or female). Second, we coded as virilocal if the expert indicated that after the wedding the couple lived in the male's parents' house or in the male's place, and then continued to live with the

male's parents or relatives, or if the couple started off in the male's place and did not move into their own place until they had a house, child, or work. Third, we coded the *adat* as uxorilocal if the expert indicated that after the wedding the couple lived in the female's parents' house or in the female's place, and then continued to live with the female's parents or relatives, or if the couple started off in the female's place and did not move into their own place until they had a house, child, or work. Of the 270 communities, 53% were described as traditionally uxorilocal, 23% virilocal, and 23% ambilocal. Thirty-two localities were reported as 'switching' from uxorilocal or virilocal to ambilocal, five switched from ambilocal to uxorilocal, and only one from ambilocal to virilocal.

Table 1 shows that the *adat* assessment of local traditions corresponds well with individual responses to whether and where a person had moved at marriage. According to the individual responses from the 1997 survey, in *adat* areas that were labeled virilocal, about 68% of women married after 1970 said that their marriage was virilocal, more than twice the rate of uxorilocal marriages. Similar results hold for the responses offered by men, or using the data from the 1993 round, or using answers to questions asked in separate interviews about migrations patterns.

When we cross-tabulate norms of post-marriage relocation and ethnicity, we find the expected patterns.² As seen in Table A1 in the appendix, Balinese, Batak and Sasak reported 91, 58 and 76 percent of marriages as virilocal, respectively. In contrast, the Bugis, Javanese and Sundanese, Madura, Minang, and Banjar were predominantly uxorilocal and ambilocal (though more mixed than the virilocal groups). We also report the relevant anthropological

² We code ethnicity using a common method for the IFLS, which is to use the language of interview if not in Indonesian. Smaller language groups are coded into larger groups according to the classifications in LeBar (1972). Hindus living in Bali are coded as Balinese. Christians living in North Sumatra are counted as Batak. We have then gone through the dataset and applied the ethnicity codings to siblings and biological children of anyone coded. These codings correspond very closely to *adat* experts' responses concerning dominant ethnic groups of the enumeration area.

understanding of settlement patterns as of 1975 from LeBar's (1975) comprehensive compilation.

Javanese (who made up almost half the sample) were the most difficult to categorize. Ethnographies emphasize the ambilocal nature of Javanese norms, with a modest tendency to locate near the wife's family (e.g., Jones, 1992). In contrast, one third of the Javanese *adat* experts claimed their locality was virilocal. Actual marriages in these Javanese areas were also more likely to be virilocal than in other parts of Java, though virilocal marriages still constituted less than 50% of marriages. The virilocal marriages among Javanese were more concentrated in central Java, ambilocal more common in Yogyakarta, and uxori-local concentrated in East and Central Java.

Virilocal or uxori-local norms mean more, presumably, when movement of sons or daughters is further away. The IFLS does not contain data on the distance moved at marriage, but it does ask whether the new location is a different district or administrative unit (kecamatan and kabupaten). About two-thirds of women who move at marriage move out of their villages. Table 2 shows that in women in virilocal marriages are somewhat more likely to cross district lines than men in uxori-local marriages.

Virilocal, uxori-local and ambilocal population groups exhibited different socio-economic indicators (restricting the sample of adults to men and women who were married at least once). Because the Balinese are both virilocal and Hindu, virilocal enumeration areas are less likely to be Muslim. Education for both adults and children are basically the same in virilocal, uxori-local and ambilocal areas (confirmed in the regression analyses below), but there were differences in the education attainment of the parents of the adults in the sample. For these 'grandparents', education was lower in virilocal areas (much more so for 'grandmothers'), though the gap disappears for 'grandfathers' of younger respondents. Households in virilocal areas tended to

have similar value of household assets and annual expenditures as did residents in other areas.

People in virilocal societies had more siblings; family sizes average about half a child larger.

Using the data on individuals living in virilocal areas, we also find that women in virilocal areas are slightly less likely to be heads of households (and hence perhaps less likely to be divorced).

This brings up one problem with using information on actual marriage patterns, or normative marriage patterns from the adat, as indicative of a rule influencing behavior. Perhaps the rule is or has been of little import because marriages in Indonesia may not be expected to last very long. A daughter who moves away, but is highly likely to return after a quick divorce, would not be subject to the investment externality. Guest (1992) reports on World Fertility Survey data from 1976, and finds the incidence of divorce to be quite high in Indonesia, with 28% of marriages ending in divorce within the first five years.³ Divorce is far less frequent in the more recent IFLS sample, with less than 10% of women indicating having been divorced. This evidence is in accord with other evidence of rapidly declining divorce rates in Indonesia (Jones 1994, 1997).

Ideally we want to know the norm of marriage residence that applied to the person when the person was a child. But a small fraction of the IFLS respondents moved from their childhood homes. If a person's parents moved when the child was under age twelve (about 2.7% of the sample), then the ethnicity of the parents might not be a good guide to what norm guided their behavior. The individual's parents might have adapted to new customs. These individuals we exclude from the analysis. Another larger group of respondents moved to a new island in the archipelago after childhood (about 7% of the sample), that is, after age twelve when the

³Guest (1992) finds that divorce rates vary predictably with age at marriage (more divorce) and education (less divorce), and have been declining across cohorts. Ethnicity apparently is a major element after controlling for these other factors: Sundanese have much higher divorce rates and Balinese much lower.

investment by their parents in schooling had been substantially completed. For these, if the person's individual ethnicity could be coded, and if their ethnic group had a well-defined norm, we assigned to them the 'locality norm' of their ethnic group rather than the norm of their present residence. Otherwise they were excluded from the sample. We recognize there is some possibility of sample selection bias. We simply have no feasible way of knowing which norm, between two competing norms (that of the parents or that of the new locality), might have influenced the investment decisions of the parents. Nor can we control for the sample selection, since for adults we have little information on the determinants of their parents to migrate when the present adults were children.

3. Are there lower investments in daughters in virilocal areas?

We now proceed to examine the extent to which virilocality predicts low investments in daughters. We start with the relation of virilocal adat and other norms that disadvantage daughters, as reported by the *adat* experts. We then consider birth spacing and other measures of son preference. Following that we examine investments in early nutrition and health by looking at height-for-age, and investments in education. We close by examining buying patterns of food versus adult goods; having more daughters in virilocal areas should increase expenditures on adult goods such as tobacco if daughters are less valued.

Virilocal adat and other norms

A number of authorities provide examples from different parts of Asia where virilocal norms are part of a network of norms that reduce the status of women (Agarwal 1994; Dube 1997). Most obviously, if inheritances are partly a reward for caring for elderly parents, the parents have lower incentives to provide inheritances to distant daughters (and daughters have a difficult time claiming any inheritance their parents would like them to have). More generally, if virilocality is part of a system of patriarchy, then it will also predict women marry young

relative to their husbands, women make fewer decisions in the household, and women inherit less.

We check the correspondence between virilocality and gendering of household and social relations. Is there a clear pattern? Table 3 gives the breakdown of answers by the *adat* experts. Virilocality is correlated with some gendered social outcomes, but often these are the opposite of what one might expect.

Consider the first category of responses concerning marriage norms. In virilocal areas women are less likely to marry when they are very young. It is less likely that women have no say in their marriage partner. There is a lower likelihood of a large disparity in age between groom and bride. A man is less likely to have multiple wives. There is more likelihood of bridewealth, but also more likelihood of dowry (i.e., more flows in both directions). On other dimensions the correlates, as given by the *adat* experts, of virilocality are mixed. For intra-household relations, women seem to score consistently slightly higher in virilocal areas. After marriages end, however, they fare worse (in terms of what happens to assets of the couple). Children remain with the father in virilocal areas.

Table 4 considers the answers given by *adat* experts regarding norms that disadvantage daughters. Compared to uxori-local regions, the *adat* experts in the virilocal regions were more likely to claim traditional norms emphasized preferring a son as first child (.60 vs. .47), and were also more likely to have no pressure to also have a daughter (.88 vs. .70). (It should be noted that when an *adat* expert indicated that there was social pressure to have a son, an answer coded 0 almost always meant no pressure to have either gender, rather than pressure to have a daughter.) These preferences presumably were related to the fact that in 48 percent of the uxori-local regions, but only 12 percent of the virilocal ones, parents traditionally lived with their daughters. Correspondingly, daughters were far less likely to get the same share of inheritance as their brothers in virilocal regions (13 percent vs. 35 percent).

More directly related to the issue of disadvantage, boys were far more likely to be given education priority in the uxorilocal regions (59 percent) than in the virilocal regions (30 percent). This result strongly contradicts the view that virilocality is bad for daughters. More consistent with that story, boys and girls usually received equal priority in health care, but almost none of the exceptions were in uxorilocal regions.

While there is more son preference in virilocal areas (in terms of wanting to have sons, and giving them better health care), the magnitude of the son preference is not strikingly high in any of the areas.

Other incentives against daughters are present: in virilocal areas elderly parents are less likely to live with daughters, and sons definitely inherit more than daughters. On the other hand, sons seem to receive less education. The *adat* data tells us, then, that the hypothesis that there may be more son preference in virilocal areas cannot be immediately rejected.

Actual behavior indicating son preference

Tables 5 to 9 give the results for five standard tests of son preference. In general we find few significant differences between the virilocal, uxorilocal and ambilocal areas (as defined by the *adat* experts).

The tests are carried out using samples of different cohorts constructed from two sources, the responses of ever-married women, and the responses by adult household heads and spouses about their own siblings (i.e., their families when they were children). The data for the 1940-60 cohorts are from the adult responses, while the 1970-90 cohorts are from the ever-married women responses. Further details on the samples can be found in Kevane and Levine (2001).

If girls receive lower investments in health and nutrition in virilocal regions, then there should be a problem of “missing girls” as in much of South and East Asia (Bardhan and Klasen 1999). Table 5 breaks down the percent of children alive at particular times who are boys, according to whether the parents of the children are currently living in virilocal or uxorilocal

areas. Thus, the theory of virilocal disadvantage for girls predicts a majority of children under five will be male. In fact, there are always very close to as many boys as girls, and the small deviations from equality show no pattern of preference for boys in virilocal regions.

Table 6 presents the percent of children who die who are boys. As can be seen, there are no significant differences for the two areas in the different years that are meaningful for the virilocality hypothesis. Three of the four cases of statistically significant difference have more deaths of boys in virilocal and ambilocal areas, the opposite of what one might expect.

Son preference also implies particular ‘stopping patterns’ as families make fertility decisions. Table 7 breaks down by locality the percent of last children who are sons, for families that have completed their fertility. Son preference implies that fertility will be completed, on average, more often following the birth of a son. There are no statistically significant differences from equality using the *adat* breakdown, and contradictory significant results for the practice breakdown.

The theory of son preference also suggests that families of girls should be larger, on average, as parents who have daughters continue to have children in hope of producing their desired number of sons. In fact, family sizes are almost identical for boys and for girls (Table 8).

Finally, son preference implies that time intervals following birth of a daughter are shorter in length than intervals after the birth of a son, as parents hurry to have the desired son. Again, while two results have statistically significant differences from equality in Table 9, one shows longer and the other shows shorter intervals after daughters in virilocal regions.

In summary, for five tests of son preference, as expressed in mortality rates and birth spacing, there is no evidence of son preference being stronger in virilocal regions.

Health and Education Investments

Tables 10 and 11 present results from two other tests of the virilocality hypothesis. We run regressions trying to explain variation in two major investments parents make in their children:

height and education. For adults, we expect a gap between male and female adult height; our tests involve checking whether this gap is larger in virilocal regions. We include interaction terms that measure being a daughter and living in a virilocal region, and being a son and living in an uxorilocal area. Both of these interaction terms should be negative, but these residence dummies are of little importance in explaining intra-household resource allocations. We run these regressions also with a continuous measure of virilocality: the percent of adults in an area who indicated their marriage was virilocal. Results were similar.

Expenditure Shares

A common test of son preference is to see whether consumption shares on items largely benefiting children are higher when a larger number of children are male, and whether consumption shares on items largely intended for adults are lower when a larger number of children are male. Intuitively, parents with strong son preference who have many daughters will spend more on tobacco and adult clothing and less on children's clothing or milk than parents of many sons. Although this intuition is sensible, even places where other evidence suggests very strong son preference exists, such as Bangladesh, sometimes do not exhibit son preference based on this test (Deaton, 1997; see also Burgess and Zhuang 2000 for negative results in a region of China with strong son preference).

In spite of the possibility of the test having low power, we performed this analysis in Indonesia. Our test uses a standard Engel curve, where child-oriented goods are basic foodstuffs. Goods benefiting adults are coffee and tea, tobacco products and betel, alcohol, ceremonies, and sweepstakes. We control for the log of expenditure, number of adults in the household, and the age and sex composition of the household. We include variables on whether the household is in a virilocal or uxorilocal area (with ambilocal the excluded category). We also include an index of prices from 1993, which captures spatial variation development and market integration across

enumeration areas. Our sample is all families with at least one child 14 or younger living at home.

Our key variables are number of young daughters in the various age categories, and the interaction of daughters with virilocal and with uxorilocal traditions and/or practice. We estimate two equations, one using levels of expenditures and control variables, and the other using the differences between 1993 and 1997 (that then controls for household heterogeneity).

The main results are seen in Tables 12a and 12b, and are easy to summarize. First, the proportion of children who are daughters has no relation with the share of expenditures on adult goods or food. This result is consistent with other evidence of no systematic son preference in Indonesia on average (Kevane and Levine, 2001), although it could also be due to the test having low power. Of more relevance for this article, when we compare virilocal and uxorilocal regions, the presence of more daughters continues to have no relation with the share of expenditures on adult goods or on food expenditures. The coefficients on the other variables are reasonable and in accord with intuition: when there are more young children, food is a greater share of expenditures; when there are adult men, adult goods are a greater share; when there are adult women, food is a greater share; when expenditures are higher, the food share is lower; female-headed household spend relatively more on food and less on adult goods; and rural areas see households spend greater share on adult goods.

4. Robustness checks

We performed a number of robustness checks, none of which changed the basic results. For example, results for tables 5 to 9 are similar when we disaggregate birth cohorts more finely. In the tables and regressions we presented results using two definitions of “virilocal” communities: either virilocal adat or virilocal practice when over 65 percent of the households sampled in the community followed the pattern of the bride moving to the groom’s village. We replicated all

results using three additional methods: (1) looking at communities with over 75 percent virilocal behavior; (2) defining at the household level whether the parents in the household had followed virilocal norms; and (3) grouping communities into ethnic groups, and using the average virilocal or uxorilocal tradition of the ethnic group to code the community. Alternative cuts of households and communities did not change the basic story.

5. Explanations for lack of correlation between virilocality and son preference

There are a number of potential explanations for why we find no evidence of reduced investments in daughters in virilocal areas.

Implicit in the hypothesis that virilocality leads to daughters' disadvantage is the assumption that parents are not reimbursed by the groom or his family for parental investments in daughters. That is, parents who invest in their daughter create a positive externality in a virilocal society; the externality need not reduce investment in daughters if the groom or his family can create a side payment that leads the wife's family to internalize the externality. Unfortunately, the data on marriage payments contained in the IFLS does not permit testing of this hypothesis. The questions asked of survey respondents were open to multiple interpretations, and suffer from severe respondent or recall bias.

In addition, it may be that expected transfers from daughters who marry far away are particularly valuable to their parents, as her new village's weather shocks may not be highly correlated with those of her parents' village (Rosenzweig and Stark 1989). In this case, parents' still have strong incentives to invest in daughters.

Finally, the pattern or practice of post-marital residence is too crude a measure of the disincentive to invest in daughters. There may be confounding norms regarding which child, among many children, is to take care of parents when they are older, or who will manage family property (see Cameron 2000). Different children may play different roles in managing family or lineage property; daughters may move away but retain rights over property in their natal areas

(or their children might). Parents presumably invest more in children who will care for them or their property.

6. Conclusions and recommendations for further research

Analysis of data from the Indonesia Family Life Survey finds no strong correlation between virilocality and differential investments in or treatment of daughters. On the one hand, regions with virilocal norms were more likely than other regions to report other norms that disadvantaged their daughters. On the other hand, virilocal regions did not have “missing daughters,” nor patterns of rapid attempts to have another child after the birth of a daughter, nor relatively lower levels of education of women, nor relatively low height for age for women, relative to uxori-local or ambilocal regions.

These findings stand in contrast to the comparison commonly made between Indonesia and much of South and East Asia. In general, South and East Asia has more consistent virilocal norms and more son preference than Indonesia (and Southeast Asia more generally). Many scholars have argued convincingly that there is a causal relationship between virilocality and son preference. The evidence from Indonesia casts doubt on these assertions. (A suggestive study using district-level data from India by Malhotra, Vanneman and Kishor, 1995, also finds that a proxy for movement at marriage under virilocality is not related to fertility outcomes.) At the same time, it is possible that the received wisdom applies in those nations, even if not in Indonesia, because virilocality there is coupled with other norms that harm women. The clustering of patriarchal norms does not seem to be very tight in Indonesia (Tables 3 and 4). It could be the combination of norms that include, but are not restricted to, virilocality, reduces investments in daughters. Moreover, daughters in virilocal regions may retain more contact with their parents in Indonesia than in most of India or China.

For that reason, arguments about the effects of virilocality should be complemented by examination of the marriage market and norms regarding care of parents, and should be confirmed by looking more intensively at border areas where there is variation in norms of post-marital residence. Recent studies are indeed beginning to shed more light on the link between virilocality, son preference, marriage markets, and other aspects of economy and society. Burgess and Zhuang (2001) argue that census-level data from two provinces in China suggests that son preference diminishes with rising per capita income. Anderson (2000) develops a model explaining differences in dowry payments across societies. Zhang and Chan(1999) use a unique dataset from Taiwan to unpack some of the differential effects of marriage payments on subsequent marriage outcomes.

Further research is needed to shed light on the importance of transfers from the groom's family that reward investments in daughters, the role of altruism, and potential economic or non-economic forces that raise the relative status of women in Indonesia and other regions in Southeast Asia relative to much of South and East Asia.

References

- Agarwal, Bina. *A field of one's own : gender and land rights in South Asia* Cambridge South Asian studies. Cambridge England ; New York, NY, USA: Cambridge University Press, 1994.
- Anderson, Siwan. *The economics of dowry payments in Pakistan*. : CentER Discussion Papers, Tilburg University, 2000.
- Bardhan, Kalpana, and S. Klasen. "Women's welfare and gender equity in emerging Asia." *Asian Development Review* (1999).
- Bloom, Shelah S., David Wypij, and Monica Das Gupta. "Dimensions of Women's Autonomy and the Influence on Maternal Health Care Utilization in a North Indian City." *Demography* 38, no. 1 (2001): 67-78.
- Burgess, Robin, and Juzhong Zhuang. *Modernisation and Son Preference*. : London School of Economics, 2000.
- Cameron, L. "The residency decision of elderly Indonesians: A nested logit analysis." *Demography* 37, no. 1 (2000): 17-27.
- Deaton, Angus, *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy*, Johns Hopkins University Press and World Bank, 1997.
- Dube, Leela. *Women and Kinship: Comparative Perspectives on Gender in South and South-East Asia*. Tokyo: United Nations University Press, 1997.
- Errington, Shelley. "Recasting Sex, Gender and Power: A Theoretical and Regional Overview." In *Power and Difference: Gender in Island Southeast Asia*, ed. Jane Monnig Atkinson and Shelley Errington. Stanford: Stanford University Press, 1990.
- Firth, Rosemary. "Prologue: A Woman Looks Back on the Anthropology of Women and Feminist Anthropology." In *'Male' and 'Female' in Developing Southeast Asia*, ed. Wazir Jahan Karim, 3-10. Oxford: Berg Publishers, 1995.
- Frankenberg, E., L. Karoly, P. Gertler, C. Peterson, and Wesley D. *The 1993 Indonesian Family Life Survey: Overview and Field Report*. Santa Monica, CA: RAND, 1995, DRU-1195.
- Guest, Philip. "Marital Dissolution and Development in Indonesia." *Journal of Comparative Family Studies* 23, no. 1 (1992): 95-113.
- Ihromi, T. Omas. "Inheritance and Equal Rights for Toba Batak Daughters." *Law & Society Review* 28, no. 4 (1994): 525-38.
- Jones, Gavin W. *Marriage and divorce in Islamic South-East Asia* South-East Asian social science monographs. Kuala Lumpur ; New York: Oxford University Press, 1994.
- Jones, Gavin. "Modernization and Divorce: Contrasting Trends in Islamic Southeast Asia and the West." *Population and Development Review* 23, no. 1 (1997): 95-114.

- Karim, Wazir Jahan. "Bilateralism and Gender in Southeast Asia." In *'Male' and 'Female' in Developing Southeast Asia*, ed. Wazir Jahan Karim, 35-74. Oxford: Berg Publishers, 1995.
- Kevane, Michael, and David Levine. "The Changing Status of Daughters in Indonesia," mimeo, Haas School of Business, University of California at Berkeley, 2001.
- LeBar, Frank. *Ethnic groups of insular Southeast Asia* New Haven, Human Relations Area Files Press 1975.
- Malhotra, Anju, Reeve Vanneman, and Sunita Kishor. "Fertility, Dimensions of Patriarchy, and Development in India." *Population and Development Review* 21, no. 2 (1995): 281-305.
- Rajagukguk, E., T. O. Ihromi, and M. Mastura. "Islam, State Law, and Everyday Practice in Indonesia - Issues of Polygamy, Inheritance, and Interreligious Marriage." *Law & Society Review* 28, no. 3 (1994): 482-485.
- Rosenzweig, M. R., and O. Stark. "Consumption Smoothing, Migration, and Marriage - Evidence From Rural India." *Journal of Political Economy* 97, no. 4 (1989): 905-926.
- Skinner, G. William. "Family Systems and Demographic Processes." In *Anthropological Demography: Toward a New Synthesis*, ed. David Kertzer and Tom Fricke, 53-114. Chicago: University of Chicago Press, 1997.
- Thomas, Duncan, Elizabeth Frankenberg, Kathleen Beegle, and Graciela Teruel. *Household budgets, household composition and the crisis in Indonesia: Evidence from longitudinal household survey data*. : RAND, 1999.
- Warren, Carol. *Adat and dinas : Balinese communities in the Indonesian state* South-East Asian social science monographs. Kuala Lumpur ; New York: Oxford University Press, 1995.
- Whalley, Lucy. "Urban Minangkabau Muslim Women: Modern Choices, Traditional Concerns in Indonesia." In *Women in Muslim Societies: Diversity within Unit*, ed. Herbert L. Bodman and Nayereh Esfahlani Tohid, 229-250. Boulder, Colo.: Lynne Rienner Publishers, 1998.
- Williams, L. B. "Marriage and Decision-Making - Inter-Generational Dynamics in Indonesia." *Journal of Comparative Family Studies* 21, no. 1 (1990): 55-66.
- Winzeler, Robert. "Sex Role Equality, Wet Rice Cultivation, and the State in Southeast Asia." *American Anthropologist* 76 (1974): 563-6.
- Winzeler, Robert. "Ecology, Culture, Social Organization, and State Formation in Southeast Asia." *Current Anthropology* 17, no. 4 (1976): 623-632.
- Zhang, J. S., and W. Chan. "Dowry and wife's welfare: A theoretical and empirical analysis." *Journal of Political Economy* 107, no. 4 (1999): 786-808.

Table 1: Marriage residence patterns by year of marriage and adat norm

Derived from women's responses from 1997 survey

	adat indicated as uxori local		adat indicated as viri local		adat indicated as ambi local	
	Mean	N	Mean	N	Mean	N
Percent of women who indicated marriage was viri local						
before 1970	0.28	996	0.61	468	0.40	545
after 1970	0.27	1506	0.68	713	0.34	881
Percent of women who indicated marriage was uxori local						
before 1970	0.53	996	0.24	468	0.44	545
after 1970	0.60	1506	0.20	713	0.49	881
Percent of women who indicated marriage was ambi local (that is, with neither set of parents)						
before 1970	0.11	996	0.06	468	0.11	545
after 1970	0.09	1506	0.10	713	0.12	881

Table 2: Percent of adults who move far at wedding

Derived from marriage locality

<i>Locality after marriage</i>	Percent move to new subdistrict	Percent move to new district	N
<i>men</i>			
uxorilocal	0.30	0.18	1581
virilocal	0.01	0.01	2278
ambilocal	0.29	0.26	825
<i>women</i>			
uxorilocal	0.01	0.01	3109
virilocal	0.35	0.24	1741
ambilocal	0.25	0.22	1156

Note: Virilocal and uxorilocal coded as not having men or women move, respectively. Exceptions are where the new couple moves, but into the home of one set of parents.

Table 3: Traditional Adat Related to Gender

<i>Traditional adat concerning location of the family after marriage</i>	uxorilocal	virilocal	ambilocal
Number of communities	132	60	78
<i>Marriage</i>			
man chooses marriage, woman does not	0.08*	0.02	0.09*
wedding ceremony is in man's house	0.01**	0.50	0.05**
newlyweds live with man's family [#]	0.00**	1.00	0.10**
women marry when under 17	0.50	0.37	0.58*
Men more than 3 years older than women at marriage.	0.45	0.37	0.38
woman's family gives to man (dowry)	0.34	0.30	0.27
man's family gives gifts at marriage (bridewealth)	0.67	0.70	0.65
woman's family gives gifts at marriage	0.53	0.57	0.45
man can have multiple wives	0.64**	0.43	0.68**
<i>Relations within the family</i>			
woman cannot own land before marriage	0.30	0.27	0.21
woman cannot own business	0.07	0.10	0.05
woman cannot earn living outside house	0.18	0.12	0.05
woman must ask man permission to work	0.98	1.00	0.97
woman cannot spend earnings as pleases	0.60	0.62	0.58
man decides alone (?xx) how to spend earnings	0.17	0.17	0.15
man can take 2nd wife without first wife's consent	0.18**	0.05	0.17*
woman cannot have two husbands	0.99	0.98	0.99
man manages household finances	0.44	0.37	0.31
woman alone does not manage household finances	0.64	0.63	0.63
man manages daily household expenses	0.09	0.07	0.06
man manages household luxury expenses	0.35**	0.15	0.23
man manages medical expenditures	0.33	0.24	0.26
man manages transfers to relatives	0.24	0.14	0.08
woman alone does not do financial transfers	0.83*	0.70	0.81
man decides about savings	0.28	0.16	0.20
man decides selling livestock and land	0.29	0.30	0.26
man decides about selling jewelry	0.14*	0.04	0.08
woman alone does not sell jewelry	0.77	0.85	0.81
man decides about children's education	0.24	0.19	0.28
<i>When marriage ends</i>			
man gets all pre-wedding assets	0.03*	0.10	0.01*
man gets all post-wedding assets	0.05*	0.15	0.05
man gets children	0.05**	0.32	0.09**
young widows do not remarry, widowers do	0.13	0.12	0.12
old widows do not remarry, widowers do	0.47	0.40	0.36
dead man's family, not wife, gets assets	0.30*	0.45	0.44

Notes. Items are coded so that unity reflects a norm disadvantaging women.

[#] This item was the main component identifying viri- and uxorilocal communities.

* (**) represents statistical significant difference at the 5% (1%) level between virilocal and uxorilocal, or virilocal and ambilocal, on two-sided t-tests. Uxorilocal (virilocal) families move to the bride's (groom's) village.

Table 4: Adat questions related to gender of children

coded 0-1, by locality after marriage, traditional practice

	uxorilocal n=132	virilocal n=60	ambilocal n=78
want male child for first child	0.47	0.60	0.41*
pressure to have a male child	0.42	0.45	0.27*
no pressure to have female child	0.70**	0.88	0.78
husband might remarry if no male child	0.07	0.08	0.10
if adopt, boys more likely to be adopted	0.00	0.03	0.11
boys given education priority	0.59**	0.30	0.46
boys given health care priority	0.02**	0.10	0.08
boys more than 50% of inheritance	0.65**	0.87	0.60**
parents live with daughter	0.48**	0.12	0.44**

* (**) represents statistical significant difference at the 5% (1%) level between virilocal and uxorilocal, or virilocal and ambilocal, on two-sided t-tests.

Table 5: Are there more boys than girls in virilocal areas?

	% boys of children under 5 alive in year indicated			
	children alive in years 1973 and 1983		children alive in years 1993 and 1997	
	% boys	n	% boys	n
uxorilocal adat	0.48	2956	0.51	2598
virilocal adat	0.51	1341	0.51	1351
ambilocal adat	0.52	1584	0.52	1422
uxorilocal practice	0.51	1319	0.54**	1083
virilocal practice	0.48	789	0.52	792

Notes: Column (1) count children aged five and under who were alive in January of 1973 and January of 1983, as reported in the pregnancy history administered to 4890 women in the 1993 IFLS. Column (2) counts children aged five who were reported alive, from the same pregnancy history, in 1993, and also children under 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 household weights.

* and ** indicate cells where a t-test indicated that the number of boys was different from the number of girls at the 5% and 1% level, respectively.

Table 6: Do girls die more frequently than boys in virilocal areas?

	Percent of deaths that were boys			
	(1) Children born in the 1960s and 1970s	(2) Children born in the 1980s and 1990s		
uxorilocal adat	0.53	458	0.49	498
virilocal adat	0.52	197	0.59*	236
ambilocal adat	0.62**	198	0.57	226
uxorilocal practice	0.57*	208	0.56	249
virilocal practice	0.49	112	0.63*	138

Notes: Column 1 is derived from the pregnancy history administered to 4890 women in the 1993 IFLS. Column 2 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 ** represent significantly different from .5 at the 5% and 1% level in a two-sided t-test.

n = # of deceased children.

Table 7: Are youngest children more often boys in virilocal areas?

	Percent of youngest children who are boys, according to age cohort of youngest child in family			
	1940s- 1970s		1980s- 1990s	
uxorilocal adat	0.49*	4286	0.50	1722
virilocal adat	0.51	2037	0.52	774
ambilocal adat	0.49*	2506	0.52	947
uxorilocal practice	0.50	1721	0.54	709
virilocal practice	0.53*	1239	0.51	479

Notes: Observations are weighted using household weights.

Observations for 1940-70 come from families of adult household heads and spouses, while 1980-90 come from survey of ever-married mothers who had completed fertility, determined by having responded negatively to a question about desire for more children.

Cells with n<50 have been excluded

* and ** indicate significantly different from .5125 (the normal proportion of boys) at the 5% and 1% level, respectively, in a two-sided t test that takes into account the complex survey design.

Table 8: Do girls live in bigger families in virilocal areas?

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

	(1) ratio for children born in 1940s- 1970s		(2) ratio for children born in 1960s- 1990s	
	ratio	n	ratio	n
uxorilocal adat	1.01	18479	1.01	6631
virilocal adat	1.00	9605	0.99	3083
ambilocal adat	1.00	10700	1.02	3515
uxorilocal practice	1.00	7117	1.02	2853
virilocal practice	0.98	5643	1.00	1835

Notes: Column (1) uses data on siblings of household head and spouses.

Column (2) uses data from children of ever-married mothers, and includes families that have not completed fertility.

Mean size of family calculated using household weights.

* and ** indicate that size of family of girls are different from size of families of boys at 5% and 1% level of significance, respectively.

Table 9: After a boy, do parents wait longer to have another child in virilocal areas?

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

	(1) siblings of adults, born 1940s-1970s		(2) children of ever-married women, born 1970s-1990s	
	ratio	n	ratio	n
uxorilocal adat	1.02	12162	0.99	3767
virilocal adat	1.04	6540	0.94*	1831
ambilocal adat	1.05*	7108	0.99	1956
uxorilocal practice	1.02	4633	0.98	1616
virilocal practice	1.07	3824	1.00	1067

Notes: Column (1) uses sample of families of adult heads of households and spouses of heads,

Column (2) uses 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

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 column (1), and year and month of birth for column (2).

Mean intervals are constructed using household weights.

* 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.

Table 10: Are Young Women Shorter and Less Educated in Virilocal Regions?

	Virilocality measured by average behavior		Virilocality measured by adat dummy	
	(1)	(2)	(3)	(4)
	z-scored height	years of schooling	z-scored height	years of schooling
Female	0.521 (1.40)	-0.182 (0.42)	0.050 (0.24)	-0.062 (0.30)
virilocal area	-0.131 (0.29)	-1.321 (3.05)**	-0.184 (1.25)	-0.205 (1.12)
virilocal area * girl	-0.984 (1.94)	0.318 (0.58)	0.006 (0.03)	0.053 (0.25)
uxorilocal area	-0.439 (1.08)	-0.776 (1.96)	-0.046 (0.37)	-0.249 (2.05)*
uxorilocal area * girl	0.089 (0.20)	0.382 (0.77)	0.115 (0.73)	0.263 (1.68)
age in years	-0.347 (8.09)**	1.074 (26.09)**	-0.347 (8.08)**	1.072 (25.79)**
age squared	0.028 (7.09)**	-0.018 (9.76)**	0.028 (7.03)**	-0.018 (9.62)**
number of siblings	-0.059 (3.19)**	-0.066 (2.98)**	-0.055 (3.04)**	-0.062 (2.81)**
are you only child?	-0.064 (0.76)	-0.096 (1.03)	-0.068 (0.79)	-0.083 (0.91)
percent siblings who are brothers	0.006 (0.01)	0.431 (0.88)	0.116 (0.59)	-0.296 (2.12)*
percent siblings brothers * girl	0.040 (0.06)	-0.242 (0.34)	-0.014 (0.05)	0.417 (2.01)*
virilocal area * % brothers	-0.539 (0.73)	-0.100 (0.15)	-0.415 (1.29)	0.454 (1.98)*
uxorilocal area * % brothers	0.422 (0.71)	-1.119 (1.88)	-0.088 (0.37)	0.202 (1.13)
virilocal area * girl * % brothers	0.566 (0.57)	-0.220 (0.25)	0.201 (0.55)	-0.538 (1.80)
uxorilocal area * girl * % brothers	-0.444 (0.57)	0.921 (1.05)	0.034 (0.11)	-0.436 (1.65)
Muslim	-0.097 (0.70)	-0.111 (0.85)	-0.244 (1.73)	-0.127 (0.92)
Muslim * girl	-0.041 (0.23)	-0.185 (1.10)	0.069 (0.38)	-0.150 (0.85)
urban area	0.411 (5.15)**	0.801 (8.77)**	0.430 (5.82)**	0.898 (10.64)**
Constant	-0.693 (1.85)	-4.901 (12.54)**	-0.759 (3.91)**	-5.592 (20.00)**
Observations	5796	10402	5796	10402
R-squared	0.05	0.66	0.05	0.66
Test that viri*girl=uxori*girl	F(1, 317)=7.01*	F(1, 319)=0.03	F(1, 317)=0.36	F(1, 319)=1.06
Test that % bro*s*vir*girl= % bro*s*uxori*girl	F(1, 317)=2.29	F(1, 319)=4.06*	F(1, 317)=0.27	F(1, 319)=0.14
Absolute value of t-statistics in parentheses				
* significant at 5% level; ** significant at 1% level				

Table 11: Are Adult Women Shorter and Less Educated in Virilocal Regions?

	Virilocality measured by average behavior		Virilocality measured by adat dummy		Virilocality measured by individual marriage	
	(1)	(2)	(3)	(4)	(5)	(6)
	height in cm.	years of schooling	Height in cm.	years of schooling	height in cm.	years of schooling
Female	-10.112 (5.44)**	-2.019 (2.26)*	-11.760 (16.67)**	-2.419 (6.89)**	-11.291 (16.09)**	-2.088 (5.33)**
virilocal area	-1.097 (0.49)	-4.110 (3.39)**	-1.393 (1.92)	0.116 (0.27)	-0.320 (0.57)	-0.022 (0.07)
virilocal area * female	-1.910 (0.80)	-0.239 (0.20)	-0.406 (0.45)	0.264 (0.66)	-0.539 (0.77)	-0.253 (0.62)
uxorilocal area	0.538 (0.25)	-5.236 (4.43)**	-0.845 (1.46)	-0.797 (2.45)*	0.365 (0.65)	-0.451 (1.42)
uxorilocal area * female	-2.187 (0.95)	0.580 (0.53)	0.018 (0.03)	0.686 (2.27)*	-0.455 (0.73)	0.408 (1.07)
age in years	0.160 (1.73)	-0.057 (1.10)	0.165 (1.80)	-0.066 (1.26)	0.155 (1.64)	-0.069 (1.32)
age squared	-0.003 (2.73)**	-0.000 (0.39)	-0.003 (2.79)**	-0.000 (0.21)	-0.003 (2.61)**	-0.000 (0.16)
number of siblings	0.086 (2.07)*	0.247 (10.01)**	0.094 (2.25)*	0.269 (10.88)**	0.092 (2.19)*	0.269 (10.72)**
are you only child?	-0.135 (0.43)	0.066 (0.39)	-0.142 (0.45)	0.072 (0.41)	-0.132 (0.41)	0.058 (0.33)
percent siblings who are brothers	3.073 (1.27)	-0.397 (0.32)	-0.813 (1.33)	-0.941 (2.95)**	-0.445 (0.62)	0.068 (0.15)
percent siblings brothers * female	-5.973 (2.10)*	0.102 (0.06)	0.457 (0.54)	0.971 (2.62)**	-0.564 (0.65)	0.647 (1.12)
virilocal area * % brothers	-4.357 (1.31)	0.004 (0.00)	0.488 (0.47)	0.472 (0.85)	0.528 (0.59)	-0.732 (1.42)
uxorilocal area * % brothers	-4.153 (1.42)	0.051 (0.03)	0.482 (0.56)	1.026 (2.46)*	-0.542 (0.62)	-0.273 (0.54)
virilocal area * female * % brothers	8.849 (2.21)*	0.090 (0.04)	1.112 (0.77)	-0.366 (0.54)	1.347 (1.10)	0.232 (0.34)
uxorilocal area * female * % brothers	6.808 (1.82)	0.579 (0.29)	-0.282 (0.24)	-0.986 (1.84)	1.279 (1.17)	-0.678 (1.02)
Muslim	-1.624 (3.15)**	-0.897 (2.62)**	-1.798 (3.23)**	-1.075 (2.87)**	-1.417 (2.86)**	-1.244 (3.62)**
Muslim * female	0.456 (0.93)	-0.035 (0.13)	0.395 (0.70)	0.186 (0.66)	0.246 (0.49)	0.137 (0.53)
urban area	1.096 (4.55)**	2.433 (10.14)**	1.080 (4.56)**	2.849 (11.76)**	1.228 (5.18)**	2.793 (11.97)**
Constant	160.445 (60.27)**	11.826 (7.52)**	160.956 (81.63)**	8.379 (7.24)**	160.113 (77.20)**	8.468 (7.08)**
Observations	7477	7766	7477	7766	7477	7766
R-squared	0.49	0.26	0.49	0.24	0.49	0.24
Test that viri*female=uxori*female	F(1, 384)=0.03	F(1, 388)=0.92	F(1, 384)=0.24	F(1, 388)=1.24	F(1, 384)=0.02	F(1, 388)=3.94*
Test that % bros*virifemale= % bros.*uxorifemale	F(1, 384)=0.52	F(1, 388)=0.10	F(1, 384)=0.95	F(1, 388)=0.82	F(1, 384)=0.00	F(1, 388)=2.47

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

Table 12a: Do Families with Daughters Spend More on Adult Goods or Less on Food in Virilocal Regions?

	(1) share of food items 1993	(2) share of adult goods 1993	(3) share of food items 1997	(4) share of adult goods 1997
girls 0 to 4	0.016 (2.57)*	-0.005 (1.64)	0.019 (2.76)**	0.000 (0.07)
boys 0 to 4	0.018 (2.56)*	-0.005 (2.12)*	0.013 (2.11)*	-0.003 (0.96)
girls 5 to 9	0.012 (1.74)	-0.009 (3.64)**	0.021 (3.57)**	-0.003 (1.00)
boys 5 to 9	0.016 (3.20)**	-0.005 (1.86)	0.019 (2.77)**	-0.002 (0.66)
girls 10 to 14	-0.013 (2.47)*	-0.005 (2.22)*	0.014 (2.64)**	-0.005 (2.21)*
boys 10 to 14	0.002 (0.36)	-0.010 (4.86)**	0.011 (2.05)*	0.000 (0.05)
girls 15 to 19	-0.002 (0.36)	-0.004 (1.62)	0.000 (0.06)	-0.007 (2.44)*
boys 15 to 19	0.002 (0.39)	-0.010 (3.90)**	0.016 (2.69)**	0.000 (0.02)
women 20 to 29	0.010 (1.56)	0.000 (0.10)	-0.005 (0.77)	-0.006 (2.07)*
men 20 to 29	0.009 (1.37)	0.009 (3.19)**	0.007 (1.12)	0.012 (4.04)**
women 30 to 54	0.021 (3.00)**	-0.004 (1.33)	0.015 (2.01)*	-0.006 (1.84)
men 30 to 54	-0.004 (0.48)	0.017 (3.84)**	-0.015 (1.92)	0.016 (3.64)**
women 55 or over	0.010 (1.43)	-0.005 (1.29)	0.003 (0.39)	0.000 (0.10)
men 55 or over	-0.006 (0.55)	0.003 (0.75)	0.002 (0.24)	0.007 (1.80)
girls 0 to 4*viri adat	-0.002 (0.14)	0.002 (0.31)	0.010 (0.60)	0.005 (0.70)
boys 0 to 4*viri adat	0.027 (2.03)*	-0.001 (0.19)	0.004 (0.27)	0.003 (0.63)
girls 5 to 9*viri adat	-0.022 (1.67)	0.009 (1.85)	-0.018 (1.21)	0.001 (0.16)
boys 5 to 9*viri adat	-0.025 (2.33)*	0.007 (1.49)	0.024 (1.80)	-0.001 (0.13)
girls 10 to 14*viri adat	0.008 (0.64)	0.004 (0.81)	-0.012 (0.98)	0.006 (1.12)
boys 10 to 14*viri adat	0.014 (1.52)	-0.000 (0.10)	0.005 (0.44)	0.001 (0.09)
girls 15 to 19*viri adat	-0.005 (0.43)	0.004 (0.64)	0.017 (1.09)	-0.002 (0.34)
boys 15 to 19*viri adat	0.004 (0.34)	-0.005 (1.03)	-0.002 (0.13)	-0.008 (1.70)
women 20 to 29*viri adat	-0.001 (0.11)	-0.011 (1.56)	0.044 (2.99)**	0.002 (0.32)
men 20 to 29*viri adat	-0.007 (0.54)	-0.000 (0.01)	-0.023 (1.45)	-0.009 (1.23)
women 30 to 54*viri adat	-0.025	-0.009	0.009	-0.006

	(1.61)	(1.35)	(0.50)	(1.05)
men 30 to 54*viri adat	0.009	-0.007	-0.003	0.002
	(0.60)	(1.09)	(0.24)	(0.25)
women 55 plus*viri adat	-0.023	0.004	-0.007	0.000
	(1.06)	(0.64)	(0.34)	(0.03)
men 55 plus*viri adat	0.038	-0.005	0.031	-0.016
	(1.99)*	(0.67)	(1.60)	(2.48)*
Female headed household	0.034	-0.021	0.029	-0.019
	(2.77)**	(4.54)**	(2.68)**	(4.01)**
Log of per capita expenditure	-0.042	0.001	-0.054	-0.006
	(6.90)**	(0.23)	(7.04)**	(2.38)*
is enumeration area rural?	-0.014	0.010	-0.005	0.018
	(1.55)	(2.24)*	(0.47)	(4.47)**
virilocal marriage adat	-0.004	0.006	-0.013	-0.001
	(0.19)	(0.50)	(0.43)	(0.09)
uxorilocal marriage adat	-0.016	0.002	-0.007	0.006
	(1.55)	(0.45)	(0.68)	(1.50)
local price index	-0.153	-0.024	-0.022	-0.013
	(2.58)*	(0.98)	(0.35)	(0.55)
Constant	0.835	0.119	0.913	0.142
	(12.80)**	(4.75)**	(11.72)**	(5.32)**
Observations	5820	5820	4996	4996
R-squared	0.06	0.04	0.08	0.05
Absolute value of t-statistics in parentheses				
* significant at 5% level; ** significant at 1% level				

Table 12b: Do Families with Daughters Spend More on Adult Goods or Less on Food in Virilocal Regions? (Differences between 1993 and 1997)

	(1)	(2)
	change in share of food items 1993-97	change in share of adult goods 1993-97
change in girls 0 to 4	0.006 (0.86)	-0.007 (2.26)*
change in boys 0 to 4	0.004 (0.46)	-0.013 (3.66)**
change in girls 5 to 9	0.001 (0.15)	-0.007 (2.18)*
change in boys 5 to 9	-0.008 (1.13)	-0.009 (2.30)*
change in girls 10 to 14	0.004 (0.47)	0.000 (0.06)
change in boys 10 to 14	-0.007 (1.07)	-0.006 (1.87)
change in girls 15 to 19	0.008 (1.14)	-0.000 (0.01)
change in boys 15 to 19	0.002 (0.28)	-0.002 (0.53)
change in women 20 to 29	-0.001 (0.10)	-0.001 (0.23)
change in men 20 to 29	0.000 (0.03)	0.017 (5.08)**
change in women 30 to 54	0.014 (1.63)	-0.007 (1.64)
change in men 30 to 54	-0.006 (0.66)	0.021 (4.42)**
change in women 55 or over	0.025 (1.95)	-0.008 (1.36)
change in men 55 or over	-0.002 (0.17)	0.014 (2.19)*
change in girls 0 to 4*viri adat	-0.001 (0.08)	-0.001 (0.23)
change in boys 0 to 4*viri adat	0.001 (0.09)	0.006 (0.72)
change in girls 5 to 9*viri adat	-0.008 (0.55)	0.005 (0.69)
change in boys 5 to 9*viri adat	0.020 (1.27)	0.007 (1.04)
change in girls 10 to 14*viri adat	-0.004 (0.26)	-0.003 (0.54)
change in boys 10 to 14*viri adat	0.030 (1.64)	-0.002 (0.31)
change in girls 15 to 19*viri adat	-0.006 (0.33)	-0.008 (1.08)
change in boys 15 to 19*viri adat	0.005 (0.30)	0.000 (0.00)
change in women 20 to 29*viri adat	0.039 (2.39)*	-0.015 (1.83)
change in men 20 to 29*viri adat	-0.004 (0.26)	-0.004 (0.49)
change in women 30 to 54*viri adat	0.041 (1.75)	-0.004 (0.40)
change in men 30 to 54*viri adat	-0.032 (1.56)	0.009 (0.89)
change in women 55 plus*viri adat	0.028 (1.19)	-0.006 (0.55)
change in men 55 plus*viri adat	0.010 (0.46)	-0.008 (0.60)
change in log total expenditures	-0.028 (3.25)**	-0.006 (1.87)
Constant	0.079 (11.83)**	-0.000 (0.02)
Observations	5387	5387

R-squared	0.01	0.02
Absolute value of t-statistics in parentheses		
* significant at 5% level; ** significant at 1% level		

Table A1: Ethnic groups and residence patterns after marriage

	# of EA with adat answers	% of EA virilocal adat	% of EA uxori local adat	% of marriages virilocal	% of marriages uxori local	Predominant island	Comment from LeBar (1975)
Balinese	15	87	0	90	3	Bali	Residence after marriage is virilocal, and man's parents... [preferred marriage is with (pp. 62-3)
Banjar	9	0	89	28	59	Kalimantan	Banjar is major city in Dayak/Ibon area; Le about locality
Batak	10	80	20	50	23	Sumatra	Normally patrilocal, although temporary bridegroom's father occurs in cases where the full [maximal lineage] is theoretically exogamous
Bugis	9	11	78	17	65	Sulawesi	...membership in localized nonunilineal corporate either his father or mother... ultimate member
Java + Betawi	125	14	48	36	49	Java	There is no fixed rule of residence determined should live (p. 50)
Madura	9	0	56	26	54	Java	Although the ideal is an independent neolocal many young couples stay at the wife's parents of married life. One of the daughters, mother the obligation to care for the parents in the
Minang	15	0	100	17	64	Sumatra	Matrilocal in the village with the husband matrilineally extended family...Value is placed majority of marriages are within the village
Sasak	10	100	0	76	9	Lombok	Residence is generally neolocal or ambilocal
Sundanese	42	7	54	22	54	Java	The ideal is an independent neolocal household
Other	26	35	42	41	32		
Mixed	26	n. a.	n. a.	33	67		
All	270 EA for adat; 304 EA for marriages	22	49	37	45		

Note: Ambilocal communities are the omitted category, so that %virilocal + %uxori local + %ambilocal = 100%
 Betawi are Jakarta's indigenous community. There were 17 enumeration areas listed by adat experts as Betawi.
 All groups are predominantly Muslim except for Batak (Christian) and Balinese (Hindu).